Transcription of Intonation of the Spanish Language

Introduction

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The main features of Sp_ToBI

The 1st Sp_ToBI Workshop held at The Ohio State University in October 1999 had the important outcome of proposing a set of transcription conventions that would be useful for the transcription of Spanish intonation within the Tones and Break Indices (ToBI) framework. A preliminary proposal for these transcription conventions for Spanish—or Sp_ToBI—was published in 2002 by Beckman, Díaz-Campos, McGory and Morgan on behalf of the participants of the Workshop. While this was a very important first step in establishing a consensus-based transcription system, more recent work on the prosodic phonology of Spanish varieties suggested the need for modifications to this preliminary proposal. Revised versions of the Sp_ToBI system have thus been proposed successively by Hualde (2003), Face and Prieto (2007), and Estebas-Vilaplana and Prieto (2008).

At the 2nd and 3rd Spanish ToBI Workshops, held in Barcelona, Spain, in 2005 and Braga, Portugal, in 2007, a number of individual presentations focused on the difficulties encountered in actually using the Sp_ToBI system to label transcriptions of different dialects of Spanish. As a consequence, the main goal of the 4th Sp_ToBI Workshop, which took place in Las Palmas de Gran Canaria, Spain, in conjunction with the Phonetics and Phonology in Iberia 2009 conference, was to reach consensus on a transcription system for Spanish intonation that would ultimately be applicable to all varieties of Spanish. The novelty at this fourth workshop was that researchers studying different dialects of Spanish within the

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framework of Autosegmental-Metrical (AM) phonology had used the same methodology to elicit parallel databases of spontaneous speech, an approach that allowed for precise and systematic cross-dialectal comparisons. One of the important conclusions reached at the workshop was that there was considerable agreement regarding the transcription of the parallel data sets under analysis. It was also clear that there existed a group of core intonational contours that were shared across Spanish dialects. Moreover, the revised version of the Sp_ToBI transcription system as set forth in Beckman et al. (2002), Face and Prieto (2007) and Estebas-Vilaplana and Prieto (2008) was proved to be fully capable of accounting for both the set of meaningful intonational contrasts found within each dialect and the homogeneity of contours found across dialects. Thus, as a whole the 4th Workshop provided convincing evidence that the revised Sp_ToBI does indeed perform well as a common pan-Hispanic transcription system and obviates the need to develop specific transcription tags for each major dialectal area. These were very important motivations for starting the project of which this book is one product (the other being the Interactive Atlas of Spanish Intonation) and which has the goal of making available the consensus-based Sp_ToBI analysis as applied to each dialectal variety under investigation. Used in this way, Sp_ToBI constitutes a valuable research tool to help us separate the core intonational phenomena that are shared across Spanish dialects from the unique prosodic traits that are characteristic of each dialectal area.

The Sp_ToBI analysis followed in this book is consistent with the initial Sp_ToBI transcription system plus all its later revisions. A good summary of the system is presented in the Sp_ToBI Training Materials, an online course with examples of labelled utterances and exercises intended to be a practical tool for learning how to label prosodically diverse speech data in Spanish (Aguilar, de-la-Mota and Prieto 2009). Nevertheless, because Sp_ToBI is the basic notation system used throughout this book, we will offer here a brief introduction. As is well known, the ToBI system rests heavily on the AM model of intonation, a model that draws a clear distinction between the two sorts of tonal units, namely, tonal entities associated with prominent or metrically strong syllables (or pitch accents) and tonal entities associated with edges of prosodic domains (or boundary tones). Tonal units can be monotonotonal or bitonal. In the case of pitch accents, Pierrehumbert (1989) proposed a phonological inventory of six pitch-accent shapes for English (H*, L*, H*+L, H+L*, L*+H, L+H*), some of them encoding alignment differences. As used in the AM model, the star notation ‘*’ in bitonal pitch accents indicates tonal association with metrically strong syllables and relative alignment. For instance, the combination of a low tone followed by a starred high tone L+H* is phonetically realized as a rising pitch movement where the peak is aligned with the accented syllable. Dependent tones preceding starred tones are leading tones, since they act as pointers (like L in the case above), and dependent tones following starred tones are trailing tones.

Regarding the notation of rising pitch accents, early research on Spanish intonation within the AM framework (Sosa 1999 and Face 2001) proposed different categories to model both the prenuclear and nuclear accents of Spanish declaratives. According to these authors, prenuclear pitch accents were better described by means of a bitonal accent, L*+H, which stands for a low or rising F0 during the accented syllable with the F0 peak on the posttonic syllable. This notation was adopted by the first Sp_ToBI proposal (Beckman et al. 2002). However, more recent work conducted by Prieto and Face (2007) showed that rising accents with a late peak, that is, with the F0 maximum on the posttonic syllable, actually correspond to three distinct tonal categories in Castilian Spanish. The L*+H tonal category is used by
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these authors to describe a low F0 during the accented syllable with the rise starting at the beginning of the postaccentual syllable. A new entity L+H* is proposed to account for those accents which show a rising movement during the accented syllable with the F0 peak on the posttonic. It differs from a third L+H* pitch accent in that the F0 peak is aligned with the end of the accented syllable. This three-way distinction is based both on the realizational differences observed in acoustic analyses of the patterns and on perceptual evidence which shows that the accented syllable of L*+H is identified as low and the accented syllable of L+H* and L+H+H accents is perceived as high. This distinction is mainly attested in the prenuclear position of yes-no questions (L*+H) as compared to broad focus statements (L+H*).

The Spanish nuclear pitch accent has also been given a variety of phonological descriptions within the AM tradition. Basically, the debate lies between H* (a F0 peak) and L* (a F0 valley). Prieto, van Santen and Hirschberg (1995), Prieto, Shih and Niebert (1996), and Nibert (2000) propose H* to account for the last accent of a neutral declarative in Spanish since a strongly lowered F0 peak is observed in some of their data. This tonal category is also used in declaratives with only one accent where a clear high target is produced within the limits of the accented syllable. However, since the majority of declaratives with prenuclear accents show no peak on the final accent but instead a progressively falling movement (what Sosa calls the ‘tobogán or slide pattern’), several authors such as Sosa (1999), Beckman et al. (2002) and Estebas-Vilaplana and Prieto (2008) propose to transcribe the nuclear accent in multi-stressed declaratives as a low tone (L*). In this book, we have adopted this proposal, and L* is the nuclear pitch accent of long broad focus utterances in the chapters describing Castilian, Cantabrian, Canarian, Mexican, Ecuadorian Andean, Argentinian and Mexican dialects, to which we may add the falling H+L* nuclear accent of Puerto Rican broad focus statements. Downstepped versions of a high or rising nuclear accents are found in Venezuelan Andean and Chilean varieties, and Dominican Spanish shows a rising nuclear configuration in such statements, that is L+H* H%.

Although in the standard AM model only low and high boundary tones were contemplated, the original Sp_ToBI proposal by Beckman et al. (2002) proposed the existence of a mid (M) boundary tone. The existence of such scaling contrasts at the boundary tone level in Spanish has long been noted in the Spanish literature on intonation (e.g. it is one of Navarro Tomás’ 1944 five tonemas, the semianticadencia, or ‘half anti-fall’ – i.e. ‘half rise’). In this book, the M% boundary tone notation has been used throughout in the transcription of uncertainty statements in many varieties (i.e. Castillian, Canarian, Venezuelan Andean, Chilean and Argentinian Spanish), and the stylized vocative contour in all dialects, with the sole exception of Dominican Spanish.

Two levels of prosodic structure will be relevant in the Sp_ToBI notation used in this book: the intonation phrase and the intermediate phrase. The intonation phrase is the domain of the minimal tune. It consists of at least one pitch accent followed by a boundary tone. It is also the domain for pre-boundary lengthening (see Vizcaíno Ortega, Cabrera Abreu, Estebas Vilaplana and Astruc Aguilera 2008) and it defines the position for pauses. The intermediate phrase is a minor domain located below the intonation phrase in the prosodic tree. Phrase accenting has been the subject of debate in recent years within the AM model. Researchers such as Sosa (1999), Beckman et al. (2002) and Cabrera Abreu and Vizcaíno Ortega (2007) have regarded the incorporation of the phrase accent in the description of Spanish intonation as unnecessary since, unlike English, Spanish is a language
which tends to locate the main accent in sentence-final position and thus there is no ‘space’ between the last pitch accent and the boundary tone that needs to be accounted for by means of a phrase accent. The revised version of the Sp_ToBI system incorporates this idea and no phrase accents are present at the end of intonational phrases. Yet in Spanish the tonal movements at the end of an intonation unit show a certain degree of complexity, which arises from the presence of more than one tonal target after the nuclear tone. In order to account for complex pitch trajectories at the end of utterances, Estebas-Vilaplana and Prieto (2008) proposed the incorporation of bitonal boundary tones, that is, tones with two tonal targets, similar to those found in bitonal pitch accents (and not a phrase accent followed by a boundary tone). This proposal allows for bitonal pitch accents with a leading tone in the nuclear position followed by complex pitch movements at the end of the utterance. Thus, a fall-rise pitch movement at the end of a contour can now be described by means of a L+H* nuclear accent followed by a bitonal boundary tone LH%.

Yet phrase accents will continue to be used in the Sp_ToBI system to mark the presence of an intermediate phrase. The main argument for the presence of an intermediate phrase is a perceptual one, since two clear degrees of disjuncture are perceived in Spanish intonational patterns. For example, neutral declaratives with a long subject clearly show a weaker break between the subject and verb which is generally signalled by an H- boundary tone associated with the right of the minor or intermediate phrase domain. The end of the weaker disjuncture corresponds to a level 3 break index in the Sp_ToBI system while the strong disjuncture corresponds to a level 4 break index. Frota, D’Imperio, Elordieta, Prieto and Vigario (2007) examined the phonetic and phonological properties of prosodic boundaries in five Romance languages, among them Spanish, and found that the end of an intermediate phrase, such as the first constituent of a neutral declarative, was always realized with a high tone (H-) or continuation rise or with a mid tone (M-) or sustained pitch. The end of intonation phrases, on the other hand, was always marked by either a low tone (L%) or a wider inventory of tone combinations. According to the Sp_ToBI Training Materials, other break indices indicate the cohesion between orthographic words constituting a prosodic word (level 0 break index) or boundaries between prosodic words (level 1 break index). Finally, a level 2 break index is supposed to mark the edge of a phonological phrase, a level of phrasing below the intermediate phrase. At this point the existence of phonological phrases in Spanish is an unresolved issue.

Contents of this book

The chapters included in this book are text versions of the presentations given at the 4th Sp_ToBI Workshop, to which we have added chapters on Dominican Spanish (by Erik W. Willis) and Venezuelan Andean Spanish (by Elsa Mora, Lluïsa Astruc and Simon Rew). The chapters appear in the following order, reflecting dialect groupings: Castilian Spanish and Cantabrian Spanish (representing Peninsular dialects); Canarian Spanish; Dominican Spanish and Puerto Rican Spanish (Caribbean dialects); Venezuelan Andean Spanish and Ecuadorian Andean Spanish (Andean dialects); Chilean Spanish and Argentinean Spanish (southern South America); and Mexican Spanish (North America). The book thus provides an intonational description of the main Spanish dialect areas while at the same time in most cases offering the possibility of comparing two subdialects from within that area. In general, the variety of Spanish chosen for analysis is the dialect spoken in the administrative capital of the country or region and thus corresponds to the local standard. The only exceptions are
the chapter on Dominican Spanish, which focuses on the dialect of the Cibao region, and the chapter on Cantabrian Spanish, whose informants came from an area located in the north-western area of Cantabria.

As mentioned above, one of the advantages of the cross-dialectal work presented here is the common methodology used to collect the recorded speech data. This methodology involved recording informants not simply reading a text but reacting to a guided questionnaire, which is based on the one used in Prieto (2001). This questionnaire comprises a set of 69 controlled situations designed to elicit a wide array of intonational contours with a specific pragmatic meaning. It is an inductive method in which the researcher presents the subject with a series of hypothetical situations to which the subject is asked to react. For example, in order to obtain an utterance with the typical intonation pattern of a statement of the obvious, speakers were provided with the following context: ‘You are with a friend and you tell her that María, a mutual friend of yours, is pregnant. Your friend asks you who the father is. You are surprised that she doesn’t know because everyone knows that the father is her boyfriend, Jaime. What do you say to her?’ The subject then produces naturally a target utterance that fits in the given context ‘It’s Jaime’s, of course!’ (in Spanish, ‘Pues, hombre, ¡de Jaime!’). It is important to stress that this questionnaire is centred around common everyday contexts designed to elicit realistic communicative answers, which can then be analysed for their pragmatic meaning. This would not be possible with read speech, which tends to be unreliable because it fails to take context into consideration. The respective authors of each chapter recorded between 2 and 25 informants to represent that specific dialectal variety.

The questionnaire was slightly adapted to make it appropriate culturally or linguistically for the particular local context. The various versions of the questionnaire as well as audio files of the recorded target utterances can be found in the Interactive Atlas of Spanish Intonation (Atlas interactivo de la entonación del español, coordinated by Pilar Prieto and Paolo Roseano, 2009-2010, accessible at http://prosodia.upf.edu/atlasentonacion). At present the authors of the different chapters in this book head the research groups covering the respective dialect areas for which material is available in the Atlas.

In order to facilitate the comparison of similar intonation contours across dialects, all chapters follow the same general structure. The first section of each chapter reviews both the traditional and autosegmental work on intonation carried out to date for that particular dialect and then presents an overview of the chapter. The second section presents the inventory of the basic units (pitch accents and boundary tones) found in the dialect. The third section consists of a description and Sp_ToBI analysis of the various target utterance types, in the following order: broad focus statements, narrow focus statements, exclamatives, statements of the obvious, uncertainty statements, information-seeking yes-no questions, echo yes-no questions, imperative yes-no questions, confirmation yes-no questions, neutral wh- questions, echo wh- questions, imperative wh- questions, rhetorical wh- questions, commands, requests and, finally, vocatives. For each utterance that is discussed, this third section also includes a figure showing the spectrogram, oscillogram and orthographic transcription of the sentence, as well as the tone labels and break indices. Finally, the fourth section presents a summary of the main properties of the intonation contours found in that variety. Though the general descriptions presented in section 3 cover both the nuclear and prenuclear parts of the intonation contours, the summary at the end of each chapter concentrates on the nuclear configuration patterns. This is because, as is well-
known, the main traits of an intonation contour are usually realized in the final nuclear and boundary tones. Importantly, if the utterance is made up of just one word (with one accent), then the contour will typically be that of the corresponding nuclear configuration.

Each chapter presents all meaningful intonational distinctions found for each dialect under investigation. A concerted effort has been made to make the transcription system, terminology and visualization of the intonation contours consistent across chapters. It is important to emphasize that, taken as a whole, the chapters included in this book clearly demonstrate that the revised version of the Sp_ToBI proposal (with minor additions required for the description of a few of the dialects—see below) is amply able to handle the transcription of intonational contours and contrasts in the range of Spanish dialects described here.

The Castilian Spanish intonation chapter, written by Eva Estebas-Vilaplana and Pilar Prieto, describes the intonation patterns found in Madrid Spanish. After reviewing the standard works on Castilian intonation by Navarro Tomás (1944, 1948) and Quilis (1993), they examine the main intonation contours found in this variety. Some of the patterns are recurrent across other dialects, such as the nuclear trajectories of broad (L* L%) and narrow focus statements (L+H* L%). Prenuclear pitch accents in broad focus utterances are typically rising pitch accents with delayed peaks, that is, L+H* pitch accents. The use of M% tones at the edge is frequent in Castilian Spanish, as it is found in uncertainty statements, stylized calling contours (L+H* M%) and statements of the obvious (L+H* LM%). Complex boundary tones are also commonly found, as in correction narrow focus statements (L* HL%), insistent vocatives (L+H* HL%), statements of the obvious (L+H* LM%) and counterexpectational yes-no questions (L+H* LH%). Finally, information-seeking yes-no questions are characterized by a high rising nuclear configuration (L* HH%), confirmation-seeking questions by a rising configuration (L+H* H%), echo questions by a rise-fall circumflex pattern (L+H* L%) or a high rise pattern (L+H* HH%), and imperative questions by a falling pattern (H+L* L%).

The Cantabrian Spanish intonation chapter, written by María Jesús López-Bobo and Miguel Cuevas-Alonso, describes the intonation patterns found in the traditional dialect spoken in north-western Cantabria and also provides some interesting comparisons with the standard subvariety of Spanish which is typically present in urban areas of the same region. After reviewing the literature on this subject, the authors offer a description of the main intonational features of Cantabrian Spanish. Most of the patterns found in statements are shared with the other Peninsular variety described in this book, Castilian Spanish. Probably the most noteworthy commonality with the Castilian dialect is found in the difference between broad and narrow focus statements, the former being characterised by a L* L% nuclear configuration and the latter by L+H* L%. Similarly to Castilian Spanish, the prenuclear pitch accent of broad focus utterances is L+H*. The use of final M% tones in Cantabrian Spanish is well documented, as it is found in imperative yes-no questions (H+L* M%, L+H* M%), echo wh- questions (L+H* M%) and stylized calling contours (L+H* M%). Complex boundary tones are also found in statements of the obvious (L+H* LM%), echo yes-no questions (H* HL%), invitation yes-no questions (L+H* HL%), counterexpectational yes-no questions (L+H* HL%), confirmation yes-no questions (L+H* HL%) and insistent calls (L+H* HL%). As far as information-seeking yes-no questions are concerned, it is worth pointing out that the standard subvariety of Cantabrian Spanish shows a L* HH% nuclear configuration, as in Castilian Spanish, whereas the more traditional subvariety presents the falling contour H* HL%, which is comparable with the pattern found in several western Romance varieties of

The chapter about Canarian Spanish is the result of research carried out by Mercedes Cabrera Abreu and Francisco Vizcaíno Ortega, who collected intonational data on the island of Gran Canaria. The authors first provide a review of the literature on the intonation of this dialect produced since the late 1980s (Quilis 1989) and then proceed with an analysis of its basic intonational patterns as seen in the data they collected for this project. Regarding statements, Canarian Spanish is shown to share some important features with the other European Spanish varieties described in this book (i.e. Castilian and Cantabrian): broad focus statements are characterised by L* L%, whereas narrow focus statements are uttered with a L+H* L% nuclear configuration (for both kinds of statements, the prenuclear accent is L+L*). The use of final M% tones in Canarian Spanish seems to be slightly less common than in other European varieties, since they appear only in uncertainty statements (IH* M%), polite wh- questions (L* M%) and the contours used to gently call and demand attention (L* (H*) M%). Complex boundary tones are found in a limited set of utterance-types, namely statements of the obvious, where the cross-dialectally common L+H* LM% configuration is found, and the most common kind of vocative (L+H* HL%). As for yes-no questions, the authors confirm that Canarian Spanish, differently from Castilian dialect but similarly to some Caribbean and south-American varieties, makes use of a descending pattern (IH* L%), which is found in not only information-seeking questions but also echo, confirmation and imperative questions.

The description of Dominican Spanish intonation is contained in the chapter written by Erik W. Willis. Besides reviewing the main intonational studies of the dialect spoken in the Cibao region of the Dominican Republic, he describes the main intonational features of this variety. The intonational contours of this dialect differ from the ones described for other Spanish in several respects. One of the differences is the fact that statements generally end in a slight rise (H% or LH%), with the sole exception of statements of uncertainty (H+L* L%). Regarding prenuclear accents, Dominican Spanish shows a clear tendency to use L+L* in broad focus statements. Final M% tones in Dominican Spanish occur only in invitation yes-no questions and requests, both having a L+H* M% nuclear configuration. The only complex boundary tone found is LH%, which always follows a L+H* nuclear pitch accent and is characteristic in narrow focus statements, exclamatives and vocatives. Regarding information-seeking yes-no questions, Dominican Spanish shows a falling H+L* L% pattern which resembles the intonation contour found in Canarian and Puerto Rican Spanish. On the other hand, echo, counterexpectational and confirmation-seeking yes-no questions are characterised by the rising pattern H+L* H%.

The description of the main features of Puerto Rican intonation, as well as a review of the studies concerning this subject, is contained in the chapter written by Meghan E. Armstrong. Her analysis is based on the dialect spoken in San Juan, and it shows that broad focus and narrow focus statements differ in terms of both prenuclear accents and the nuclear pitch accent (typically L*+H ... H+L* L% in the former and L+L* ... H* L% in the latter). Final M% tones in Puerto Rican Spanish are attested in calling contours (L+H* M%). Two complex boundary tones were found in the data presented in this chapter: LM% was found in statements of the obvious (L+H* LM%) and rhetorical wh- questions (L+H* LM%), while HL% appeared in counterexpectational yes-no questions (L* HL%), requests (L* HL%) and insistent calls (L+H* HL%). This chapter again confirms that, especially as far as yes-no
questions are concerned, there are several intonational similarities between Canarian, Dominican and Puerto Rican Spanish, in so far as all three dialects use final falls in yes-no information-seeking questions, although with some minor differences. In fact, Puerto Rican Spanish makes use of both \( \text{jH}^* \, \text{L}\% \) and \( \text{jH}+\text{L}^* \, \text{L}\% \) nuclear configurations, the latter being found also in Dominican Spanish and the former in Canarian Spanish for the same question type.

Lluïsa Astruc, Elsa Mora and Simon Rew are the authors of the chapter on the Spanish variety spoken in the Venezuelan Andean town of Mérida. The first part of this chapter offers an overview of past intonational research in Venezuelan Spanish intonation. The central sections focus on an analysis and description of the basic intonational patterns of this dialect as seen in the data recorded for this project. Broad focus statements in Venezuelan Andean Spanish are characterised by a \( (\text{i})\text{H}^* \, \text{L}\% \) nuclear configuration, which differs from the usual \( \text{L}^* \, \text{L}\% \) found in the majority of Spanish dialects and which is comparable to the \( \text{L}+\text{H}^* \, \text{L}\% \) configuration found in Argentinian Spanish. In contrast to other Spanish dialects, the typical prenuclear accent in broad focus statements is \( \text{L}+\text{H}^* \). Final \( \text{M}\% \) tones in Venezuelan Andean Spanish are found in uncertainty statements \( (\text{i})\text{H}^* \, \text{M}\% \) and calling contours \( (\text{L}+\text{H}^* \, \text{M}\%) \). Complex final boundary tones are very rare in this particular corpus: the only example is \( \text{H}\text{L}\% \), which appears in insistent calls \( (\text{L}+\text{H}^* \, \text{H}\text{L}\%) \). In terms of information-seeking yes-no questions, Venezuelan Andean Spanish is one of the several dialects that exhibit a low final boundary tone \( \text{L}\% \). Nevertheless, its nuclear pitch accent \( \text{L}+(\text{i})\text{H}^* \) differs from that found in Dominican Spanish \( (\text{H}+\text{L}^* \, \text{L}\%) \), and is similar to that seen in the same utterance type in Argentinian Spanish \( (\text{L}+\text{H}^* \, \text{L}\%) \) and, to some extent, those found in Canarian and Puerto Rican Spanish (in both cases \( \text{jH}^* \, \text{L}\%) \).

The Ecuadorian Andean Spanish intonation chapter, written by Erin O’Rourke, describes the intonation patterns found in the Spanish spoken in Quito. After reviewing traditional works by authors such as Toscano Mateus (1953) and Argüello (1978), the chapter offers a description of the main intonation contours found in this variety. The nuclear configurations of broad focus and narrow focus statements are, like in most dialects, \( \text{L}^* \, \text{L}\% \) and \( \text{L}+\text{H}^* \, \text{L}\% \) respectively. Also similarly to most dialects of Spanish, the prenuclear pitch accent found in such statements in Ecuadorian Andean Spanish is \( \text{L}+\text{H}^* \). The use of \( \text{M}\% \) tones can be seen in Ecuadorian Andean Spanish in stylized calling contours \( (\text{L}+\text{H}^* \, \text{M}\%) \), as in several other dialects, and neutral wh- questions (either \( \text{L}+\text{H}^* \, \text{M}\% \) or \( \text{L}^* \, \text{M}\% \)). The only complex final boundary tone, \( \text{H}\text{L}\% \), is found in echo and counterexpectational yes-no questions only, where it always follows a \( \text{L}^* \) nuclear pitch accent. As far as information-seeking yes-no questions are concerned, Ecuadorian Andean Spanish has the same nuclear configuration as Peninsular varieties, i.e. \( \text{L}^* \, \text{HH}\% \). Non-information-seeking yes-no questions differ from such varieties, however, in so far as Quito Spanish uses circumflex configurations in echo yes-no questions \( (\text{L}^* \, \text{HL}\%) \), counterexpectational yes-no questions \( (\text{L}^* \, \text{HL}\%) \) and invitation yes-no questions \( (\text{L}+\text{H}^* \, \text{L}\%) \).

The Chilean Spanish dialect spoken in the area of Santiago is described by Héctor Ortiz, Marcela Fuentes and Lluïsa Astruc. The authors open their chapter with a review of the literature on the intonation of this variety, beginning with the studies by Silva Fuenzalida (1956-1957). In the following sections a description of the main intonational features of the dialect is offered. For broad focus and narrow focus statements, the authors found the same nuclear configurations as in most dialects, that is to say \( \text{L}^* \, \text{L}\% \) and \( \text{L}+\text{H}^* \, \text{L}\% \) respectively. The prenuclear accent of Chilean broad focus statements is \( \text{L}+\text{H}^* \), a characteristic which is
shared with most Spanish dialects. Final M% tones in Chilean Spanish are found in uncertainty statements (H* M%) and calling contours (L+H* M%). The use of complex final boundary tones is limited to counterexpectational yes-no questions (L+H* LH%). Finally, yes-no questions are generally characterized by a rising nuclear configuration (which is L+H* HH% for information-seeking questions, L* HH% for echo questions and L+H* LH% for counterexpectational questions), except for confirmation-seeking questions, where the final boundary tone is falling (H+L* L%).

The chapter about Argentinian Spanish intonation is the result of the joint research carried out by Christoph Gabriel, Ingo Feldhausen, Andrea Pešková, Laura Colantoni, Su-Ar Lee, Valeria Arana and Leopoldo Labastía. The authors first offer a summary of previous descriptions of the dialect under study, which is the variety of Spanish spoken in Buenos Aires, starting with the early analyses by Vidal de Battini (1964) and Fontanella de Weinberg (1966). One of the most noteworthy features of this particular dialect is the presence of the tritonal L+H*+L pitch accent, which typically occurs in nuclear position and in utterances with a contrastive or emphatic value. For example, the broad focus statement can present an L* L% nuclear configuration, as in most other dialects, whereas narrow focus statements are characterised by the tritonal nuclear pitch accent (L+H*+L L%). It is important to note that broad focus statements are produced with L+H* prenuclear accents, in contrast to other Spanish varieties. The use of M% tones is common in Argentinian Spanish, as it is found in uncertainty statements (L* M%), counterexpectational wh- questions (L+i H* M%) and stylized calling contours (L+H* M%). The rising pitch accent L+H* followed by the complex boundary tone HL% constitutes the typical nuclear configuration in all information-seeking yes-no questions and counterexpectational echo questions, as well as in vocatives (L+H* HL%).

The Mexican Spanish intonation chapter, written by Carme de-la-Mota, Pedro Martín Butragueño and Pilar Prieto, describes the intonation patterns found in the Spanish spoken in the federal capital. The first section of the chapter offers an overview of past intonational research in Mexican Spanish and the central sections describe the main intonational features of this variety. Mexican Spanish is shown to share some important features with the Peninsular Spanish varieties described in this book in that broad focus statements are characterised by L* L%, whereas narrow focus statements are uttered with a L+H* L% nuclear configuration. Interestingly, the Mexican dialect also uses a variety of circumflex contours to express broad focus statements. The use of final M% tones is found in invitation wh- questions (L+H* M%) and, once again, in calling contours (L+H* M%). Complex boundary tones are very commonly found, in statements of the obvious (L+H* LM%), information-seeking yes-no questions (L* LH%), counterexpectational yes-no questions (L* LH%), imperative yes-no questions (L* LH%), neutral wh- questions (L+H* HL%), echo wh-questions (L* LH%), requests (L+H* HL%), calling vocatives (L+H* HL%) and request vocatives (L* HL%). Finally, yes-no questions are characterized by a low rising nuclear configuration (L* LH%), which can also be found in information-seeking and confirmation-seeking questions, and counterexpectational and imperative yes-no questions, whereas invitation yes-no questions and confirmation yes-no questions show L* HH% and L* H% respectively.
A cross-sectional analysis

A comparison of the results found in each chapter reveals that there is a very broad common ground in terms of the specific intonational contours that are shared cross-dialectally in Spanish.

Broad focus statements have a nuclear configuration characterised by a low or falling nuclear accent and a low final boundary tone in the majority of dialects. The most noteworthy exception is Dominican Spanish, where this type of utterance is characterised by a falling nuclear accent followed by a high final boundary tone. It is also worth mentioning that Venezuelan Andean Spanish, despite sharing the low final boundary tone with other varieties, has a downstepped nuclear accent (\text{lH*}).

Several authors have noted that in many varieties of Spanish there is a contrast between focal and non-focal accent types. The data presented in this book corroborate this assertion: in all dialects examined the non-focal nuclear accent is either low, falling or downstepped, whereas the focal accent is either high or rising, the contrast being thus always prosodically realized. In the majority of dialects, exclamatives share the same nuclear configuration found in narrow focus statements, which is typically L+H* L%. The exceptions are Canarian Spanish, where a characteristic chant is found, and Venezuelan Andean Spanish, where a rising nuclear accent is followed by a mid final tone. Argentinian Spanish presents a tritonal L+H*+L nuclear accent, followed by a low final boundary tone, in both narrow focus and exclamative statements.

As far as statements of the obvious are concerned, the dialects can be divided into two groups. Half of them, including all European dialects, express obviousness by means of the nuclear configuration L+H* LM%, which is employed exclusively for this pragmatic purpose (Castilian, Cantabrian and Canarian Spanish, but also Puerto Rican and Mexican Spanish). The remaining varieties (i.e. Dominican, Venezuelan Andean, Ecuadorian Andean, Chilean and Argentinian Spanish) make use of the same nuclear configuration used in narrow focus statements, namely, L+H* L% (though L+H*+L L% in the case of Argentinian Spanish).

According to the classical description by Navarro Tomás (1944), uncertainty statements in Spanish are characterised by a final mid tone. In fact this final M% boundary tone is present in the data for only five of the dialects reported here (Castilian, Canarian, Venezuelan Andean, Chilean and Argentinian Spanish), and follows different kinds of nuclear pitch accents. The other dialects do not employ a specific configuration used exclusively for this type of pragmatic meaning. In Cantabrian Spanish, for example, uncertainty statements are produced with a L+H* L% configuration (which differs from the L* L% configuration of broad focus statements).

Yes-no questions in Spanish have classically been characterised as exhibiting cross-dialectal intonational variability (Navarro Tomás 1944, Quilis 1993, Sosa 1999). The patterns found in the information-seeking yes-no questions described in this book clearly suggest the existence of two main dialect clusters. In the first dialect cluster, which includes Peninsular varieties as well as Ecuadorian Andean and Chilean Spanish, information-seeking yes-no questions are characterized by final high rise HH%, usually preceded by a L* nuclear accent. Mexican Spanish may also be included in this group, although the final boundary tone is LH% (HH% being used in invitation questions). In the second dialect cluster, which includes
Canarian, Argentinian, Venezuelan Andean and Caribbean (i.e. Dominican and Puerto Rican) Spanish, such questions typically show a final falling pattern with a L% final boundary tone. In these dialects, the contrast between information-seeking questions and broad focus statements is realized by means of either the whole nuclear configuration or the nuclear accent only. Dominican Spanish, for example, uses the L+H* H% nuclear configuration for broad focus statements, while information-seeking-yes-no questions are produced with a final H+L* L%. Canarian, Argentinian, Puerto Rican and Venezuelan Andean Spanish varieties realize such a contrast by means of the nuclear accent, that is, while broad focus statements have low or downstepped nuclear pitch accents followed by a low boundary tone L%, information-seeking yes-no questions are characterized by high or even upstepped nuclear accents.

Echo yes-no questions and counterexpectational questions show an even higher degree of interdialectal variety. The contrast between information-seeking questions and echo yes-no questions can be realized in some dialects by using the same intonational contour with a difference in pitch range (i.e. Cantabrian, Canarian, Dominican and Mexican Spanish). It can also be realized by means of the whole nuclear configuration. One of the most common nuclear configurations used for echo questions is the rise-falling nuclear configuration L+H* L% or H*L%, found in Peninsular, Puerto Rican and Canarian Spanish. On the other hand, several dialects use a variety of intonation contours with complex boundary tones to express incredulity and echo question meanings: Venezuelan Andean Spanish uses H+L* L% for echo yes-no questions, Ecuadorian Andean Spanish makes use of L* HL% in both echo and counterexpectational yes-no questions, and Chilean Spanish exhibits L* HH% in echo questions and L+H* LH% in counterexpectational questions.

As is common in several languages, confirmation-seeking utterances may be expressed by means of different strategies. In the Spanish dialects described in this book, two main patterns can be found: a tag question (e.g. ¿verdad?, ¿eh?, ¿no?) and a yes-no confirmation question (the latter being sometimes introduced by a phrase explicitly seeking confirmation, such as ¿Verdad que... ‘Is it true that...’) (see Hernanz and Rigau 2006). The data discussed in this book does not provide sufficient evidence to conclude that there is a dialectal preference for any of the above-mentioned strategies, since in several varieties they tend to coexist. With respect to the potential intonational contrast between confirmation questions and other types of yes-no questions, it must be noted that this contrast is realized by a variety of means in all dialects. This is to say, there is no nuclear configuration that is cross-dialectally common for this utterance type. This notwithstanding, there seems to be a common pattern, which consists in using a final boundary tone that is radically different from that used in information-seeking yes-no questions. In dialects where the latter utterance type shows a rising final boundary tone, confirmation questions have a falling or low boundary tone, and in dialects where information-seeking yes-no questions exhibit a falling or low boundary tone, the boundary tone for confirmation questions rises.

Traditional studies concerned with Peninsular Spanish intonation, like Navarro Tomás (1944) and Quilis (1993), pointed out that the unmarked configuration of wh- questions generally corresponds to the declarative intonation, with the highest peak associated with the first accented word (in many cases the wh- word) and then followed by a gradual descent which ends in a final fall. On the other hand, Sosa (2003) found that Mexican, Colombian, Venezuelan and Puerto Rican Spanish had a preference for the use of falling contours in wh- questions in spontaneous speech. If we attempt to find commonalities
among the dialects analysed here, we may point out in first place that most of these varieties display low or falling final boundary tones in this utterance type. More specifically, it is noteworthy that in most varieties (Castilian, Cantabrian, Canarian, Dominican, Puerto Rican, Venezuelan Andean, Chilean and Argentinian Spanish) the final boundary tone in neutral wh- questions is the same as in broad focus statements. In addition, in five of these dialects these two utterance types share not only the final boundary tone but also the nuclear pitch accent. In Mexican and Ecuadorian Andean Spanish, by contrast, neutral wh-questions and broad focus statements have no element in common in the nuclear configuration.

Predictably, echo wh- questions show different nuclear configurations across dialects. It is of note that in most dialects echo yes-no questions and wh- echo questions have different nuclear configurations. The only exceptions are Castilian and Puerto Rican Spanish, where both question-types show L+IH* L%. Moreover, it is of interest that in all dialects echo wh-questions differ from neutral wh- questions in both the nuclear accent and the final boundary tone, the whole nuclear configuration thus being different. As for counterexpectational wh- questions, they are realized with a high or ascending final boundary tone in most varieties (Castilian, Cantabrian, Dominican, Venezuelan Andean and Chilean Spanish), while in a minority of cases this tone is low or falling (Canarian and Mexican Spanish). Counterexpectational wh- questions differ from neutral wh- questions in all dialects, with the sole exception of Canarian Spanish. This particular contrast is realized by means of a different final boundary tone only in Castilian and Mexican Spanish, by means of a single nuclear accent in Dominican and Chilean Spanish, and by mean of both (i.e. the whole nuclear configuration) in Cantabrian, Venezuelan Andean and Argentinian Spanish.

Commands show a low final boundary tone in all dialects. In addition, it is important to note that the nuclear configuration of this utterance type tends to be the same as either that of broad focus statements (Venezuelan Andean, Ecuadorian Andean and Argentinian Spanish) or that of narrow focus statements and exclamatives (Castilian, Canarian, Chilean and Mexican Spanish). Requests always have a low or falling final boundary tone and tend to have the same nuclear configuration as commands, as is the case in Cantabrian, Canarian, Dominican, Ecuadorian and Chilean Spanish. In some cases, we find special nuclear configurations to express requests (e.g. L* HL% in Castilian and Puerto Rican Spanish, L+H* HL% in Mexican Spanish).

Vocatives constitute quite a diversified class of utterances, due to both the variability in their pragmatic purpose and the potential nuances they may express (e.g. calling, calling repeatedly, reproaching, ordering). The examples of vocatives discussed in the chapters of this book reveal a widespread presence of the configuration L+H* M%, which appears in eight of these ten dialects (and, in a slightly different form, also in Canarian Spanish). This configuration, which generally is used to call someone, may be conceived as the most neutral form of vocative. If the vocative is more marked, i.e. when it conveys a nuance of insistence or imperativeness, the most frequent configuration is L+H* HL%, which is also found in eight of the dialects analysed.
In sum, this book represents a valuable contribution towards a comprehensive description of the intonation of the many varieties of Spanish. The various chapters describe in systematic fashion the more salient intonational phenomena found in the specific dialects for which data was collected. In the process, this book makes it plainly evident that the ToBI system is not simply a transcription system (see also Beckman et al. 2005: 14) but also a tool that can be used to analyse the phonological contrasts present in the intonational system of a given variety. Nonetheless, while the evidence for a broad common ground in the use of intonation contours across Spanish dialects is clear, it is also apparent that much work remains to be done before Sp_ToBI can become a standard communal resource. That is why many of the chapters conclude by proposing perception experiments to test specific phonological contrasts. Collectively, the authors of this book have raised many questions that we hope will motivate further research on the intonational system of Spanish and other Romance languages.

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Barcelona, 18 June 2010
References


Castilian Spanish Intonation

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1. Introduction

The aim of this chapter is to present the basic intonational tunes found in Castilian Spanish within the Sp\_ToBI system of prosodic annotation (Beckman et al. 2002, Estebas-Vilaplana and Prieto 2008). This system is based on the Autosegmental-Metrical (AM) approach to intonational analysis (Pierrehumbert 1980, Pierrehumbert and Beckman 1988, Ladd 1996 and Gussenhoven 2004, among others), which describes intonational patterns by means of two tones, H and L, associated with metrically strong syllables and the edges of the F0 contours. This model has been used to describe the intonational patterns of several languages including Castilian Spanish (Sosa 1999, 2003, Face 2001, 2002a, 2002b, 2002c, Beckman et al. 2002, Hualde 2002, Ramírez Verdugo 2005, Estebas-Vilaplana 2006, Prieto, Estebas-Vilaplana and Vanrell in press, and Face and Prieto 2007, among others) and it has been used in studies that examine the interrelation between Castilian Spanish intonation and other areas of linguistics, such as pragmatics and semantics (Escandell-Vidal 1996, 1999 and 2002).

The description of Castilian Spanish intonation has a long tradition beginning with the works of Navarro Tomás in the first half of the 20\textsuperscript{th} century (Navarro Tomás 1918, 1939, 1944). In these early descriptions the modelling of Spanish intonation was in line with the British school of intonational analysis. Thus, the typical tunes of Spanish utterances were described by means of tonemas ‘tones’ that represented the tonal configurations of the pitch movements, such as, for example, cadencia ‘falling tone’, anticaadencia ‘rising tone’ and suspensión ‘level tone’. Further works on Spanish intonation expanded and developed Navarro Tomás's initial analyses and helped to build up a fuller overview of the field with more specific descriptions (Kvavik and Olsen 1974, Quilis 1975, 1981, Quilis and Fernández 1985, Canellada and Kuhlmann Madsen 1987, de-la-Mota 1995 and Alcoba and Murillo 1999, among others).

In this chapter we would like to provide a further contribution to the description of Castilian Spanish intonation by examining new empirical data and typical tunes of several sentence types within the tenets of the Sp\_ToBI framework. The types of sentences that will be examined for Castilian Spanish are the following: broad and narrow focus statements,

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wh- questions, yes-no questions, commands, requests and vocatives. We also include the analysis of several biased sentences, that is, sentences with specific meanings and nuances, such as statements of the obvious, uncertainty and contradiction statements, confirmation yes-no questions, and counterexpectational yes-no and wh- questions, to mention a few. The data described in this study were gathered by means of a guided questionnaire (Prieto 2001) which consisted of a variety of situations, each intended to elicit a given type of intonation. The analysis of the data is based on the initial proposal of Sp_ToBI (Beckman et al. 2002) as well as the revised version (Face and Prieto 2007, Estebas-Vilaplana and Prieto 2008).

The chapter is organized as follows. Section 2 introduces the inventory of pitch accents and boundary tones found in Castilian Spanish in line with the works of Beckman et al. (2002) and Estebas-Vilaplana and Prieto (2008). It also takes into consideration other investigations on Spanish intonation within the AM model that are relevant for the present study. In section 3 we describe the basic intonation patterns found in Castilian Spanish for a variety of sentence types. Finally, in the conclusion, we summarize the most important points of this study and compare the main tonal configurations with those found in other varieties of Spanish. We also include the typical nuclear configurations for the different kinds of sentences.

2. Castilian Spanish intonational phonology

In this section we will present the inventory of pitch accents and boundary tones attested in Castilian Spanish together with their Sp_ToBI labels and phonetic realizations. This inventory of pitch accents and boundary tones follows the proposal for Sp_ToBI first put forth by Beckman et al. (2002) and later revised by Face and Prieto (2007) and Estebas-Vilaplana and Prieto (2008). Examples of these tonal units are provided in section 3 along with examples of the most common intonational patterns in Castilian Spanish.

2.1. The pitch accents

The original Sp_ToBI system (Beckman et al. 2002) described the intonational patterns of Spanish by means of three bitonal pitch accents: L*+H (rising accent with the F0 peak on the postaccentual syllable), L+H* (rising accent with the F0 peak aligned with the end of the accented syllable) and H+L* (falling accent within the accented syllable). This proposal is consistent with the traditional distinction between prenuclear accents with a late rising peak (L*+H) and nuclear accents with an early rising peak (L+H*) described in Sosa (1999), Face (2001) and Hualde (2003). The first Sp_ToBI proposal also included a monotonal pitch accent (H*) which was mainly used for those cases where no F0 dip was observed before the accented syllable. All H accents had the option of being realized with either downstep or upstep.

The revised Sp_ToBI proposal (Estebas-Vilaplana and Prieto 2008) introduces two main differences with respect to its predecessor. First, it incorporates the three-way distinction between rising accents described in Face and Prieto (2007). This study maintains the category L+H* to describe an accent with the peak aligned within the limits of the accented syllable but distinguishes between two types of accents with a late peak: 1) L*+H, which accounts for a low F0 during the accented syllable with a rising movement starting on the postaccentual syllable, and 2) L+H*, which is used to describe a rising F0 contour within the accented syllable with a peak on the postaccentual (see section 3.1.1 for more details). This distinction is clearly observed in the prenuclear position of information-seeking yes-no
questions (L*+H) and broad focus statements (L+>H*). As noted, the three-way distinction between rising accents is maintained in this study.

The second difference between the traditional Sp_ToBI proposal and the revised version is the introduction of the monotonal L* pitch accent. This accent involves a low plateau within the limits of the accented syllable and is observed in the nuclear position of broad focus statements and information-seeking yes-no questions.

Table 1 reproduces the inventory of pitch accents proposed in Estebas-Vilaplana and Prieto (2008) for the description of Castilian Spanish.

**Table 1: Inventory of monotonal and bitonal pitch accents in Castilian Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th>Bitonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This accent is phonetically realized as a low plateau at the minimum of the speaker’s range. In our corpus, it is found in the nuclear position of broad focus statements and information-seeking yes-no questions (with a rising contour).</td>
</tr>
<tr>
<td>H*</td>
<td>This accent is phonetically realized as a high plateau with no preceding F0 valley. In our data, it is attested as one of the possible choices for nuclear position in echo and rhetorical wh-questions.</td>
</tr>
<tr>
<td>L+H*</td>
<td>This accent is phonetically realized as a rising pitch movement during the accented syllable with the F0 peak located at the end of this syllable. It is commonly found in the nuclear position of narrow focus statements, counterexpectational yes-no and wh-questions, statements of the obvious, commands and vocatives, among other sentence types.</td>
</tr>
<tr>
<td>L+H*</td>
<td>This pitch accent is phonetically realized as a very steep rise to a peak located in the accented syllable. It contrasts with L+H* in F0 scaling. It is used in echo yes no-questions and counterexpectational questions.</td>
</tr>
<tr>
<td>L+&gt;H*</td>
<td>This accent is phonetically realized as a rising pitch movement on the accented syllable with the F0 peak aligned with the postaccentual syllable. It is attested in the prenuclear position of broad focus statements.</td>
</tr>
<tr>
<td>L*+H</td>
<td>This accent is phonetically realized as a F0 valley on the accented syllable with a subsequent rise on the postaccentual syllable. This accent is found in the prenuclear position of information-seeking yes-no questions.</td>
</tr>
<tr>
<td>H+L*</td>
<td>This accent is phonetically realized as a F0 fall within the accented syllable. It is attested in nuclear position in imperative and confirmation yes-no questions (with a falling contour).</td>
</tr>
</tbody>
</table>
2.2. The boundary tones

In Castilian Spanish, the tonal movements at the end of an intonation unit show a certain degree of complexity. Sometimes this complexity arises from the presence of more than one tonal target after the nuclear tone. Other times it is derived from the fact that the final pitch contour is neither high nor low but attains a mid level pitch. Both types of pitch configuration are difficult to describe within the parameters of the AM model, which only considers two possible types of boundary tones, H% and L%. In order to account for the complex pitch trajectories at the end of utterances, Estebas-Vilaplana and Prieto (2008) proposed to incorporate bitonal boundary tones, that is, tones with two tonal targets, similar to those found in bitonal pitch accents. This proposal allows bitonal pitch accents with a leading tone in the nuclear position followed by complex pitch movements at the end of the utterance. Thus, a fall-rise pitch movement at the end of a contour can now be described by means of a L+H* nuclear accent followed by a bitonal boundary tone LH%.

As far as final mid level pitch is concerned, the first Sp_ToBI proposal (Beckman et al. 2002) decided to include a tonal category M% to account for a half-rise or mid level plateau after a L+H* or H* pitch accent. Mid tones in sentence-final position have been found in several languages, such as English (Beckman and Ayers-Elam 1997), Greek (Arvaniti and Baltazani 2005), German (Grice et al. 2005), Korean (Jun 2005) and Catalan (Prieto et al. submitted). Since in the original AM model pitch movements could be described by means of two tones only (L and H), the notation of mid tones varies in the literature. For example, in Greek the mid tone is transcribed as !H% and the sustained mid tone as !H!H%. Beckman et al. (2002) decided to use a more transparent transcription for the mid tone, M%. Though it adds a new level of tonal description (M), we regard this notation as much clearer than using downstep symbols and thus made use of it in both the revised Sp_ToBI proposal (Estebas-Vilaplana and Prieto 2008) and the present study.

Table 2 includes a slightly modified version of the inventory of monotonal and bitonal boundary tones proposed in Estebas-Vilaplana and Prieto (2008) for the description of Castilian Spanish. In principle, the same inventory of boundary tones can appear both at the end of a major phrase (intonation phrase) and at the end of a minor phrase (intermediate phrase). When boundary tones signal the end of an intermediate phrase they are marked with a hyphen (e.g. H-, L- LH- and HL-).

Table 2: Inventory of monotonal and bitonal boundary tones in Castilian Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /> L%</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

L% is phonetically realized as a low sustained or falling tone at the baseline of the speaker. It is attested at the end of broad and narrow focus statements, commands, echo yes-no questions, etc.
3. Basic intonational patterns in Castilian Spanish

In this section we will present the basic intonational tunes for a variety of sentences in Castilian Spanish. As noted, the data presented in this study were gathered by means of an intonation guided questionnaire (based on Prieto 2001 for Catalan) which consisted of 69 situations, each intended to elicit a given type of intonation. It is an inductive method in which the researchers present the subjects with a series of hypothetical situations to which they are asked to react. The Castilian Spanish version of the Catalan questionnaire (as well as the adaptations to other Spanish varieties) can be found in the Atlas interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010).

Two female speakers from the centre of Spain (Madrid) aged 42 and 45 recorded the utterances. 69 sentences were recorded for each speaker. To obtain data for each tune, speakers were given a context and asked to produce an utterance in response to it. For example, in order to obtain an utterance with the typical intonation pattern of a request, speakers were provided with the following context: ‘Imagine that your grandchildren are playing very noisily and you can’t listen to the news on TV. Ask them to quiet down.’ One of the main advantages of using this type of context-based questionnaire is that you can gather, in a semi-spontaneous way, a wide variety of different tunes which are difficult or impossible to obtain by means of a reading task or in spontaneous speech.
The guided questionnaire included the following kinds of sentences: 1) statements, 2) questions (yes-no questions and wh- questions), 3) imperatives (commands and requests) and 4) vocatives. For some of the utterances, non-neutral (biased) intonation patterns were also obtained. For example, apart from broad focus statements, the data also included narrow focus statements, exclamative statements, statements of the obvious, contradiction statements and uncertainty statements. Perceptual and acoustic analyses of the utterances were performed using Praat (Boersma and Weenink 2010).

3.1. Statements

3.1.1. Broad focus statements

Statements with a broad focus intonation typically show a L+>H* pitch accent in prenuclear position, indicating that the rising contour is realized within the accented syllable and the F0 peak is produced on the postaccentual syllable. A progressively falling contour starts after the final prenuclear syllable and lasts till the end of the sentence. The final pitch accent does not show any relevant pitch movement but is part of this progressive fall or ‘slide pattern’ (Sosa 1999). Given the low F0 attained during the last accented syllable, this final movement is described by means of a L* pitch accent followed by a L% boundary tone. This pitch contour has been found in other Romance languages such as Catalan (Prieto et al. 2008, Prieto in press) and is also common in other varieties of Spanish, such as Argentinian Spanish (Gabriel et al. this volume), Mexican Spanish (de-la-Mota et al. this volume) and Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume). The intonational movement of a broad focus statement with a prenuclear accent and a nuclear accent in Castilian Spanish is illustrated in figure 1.

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

The nuclear accent of narrow focus statements differs from that of broad focus in that a clear F0 peak is observed within the limits of the accented syllable. Thus, the pitch accent used to signal narrow focus is L+H*, as opposed to L*, which signals broad focus. In our corpus, L+H* is also found in other types of tunes such as the nuclear position of imperatives and echo yes-no and wh- questions. An example of a narrow focus statement is presented in figure 2 for the utterance No, de limones ‘No, of lemons’. This tune was obtained as the correction of a wrongly interpreted item. The first intonation unit (no) is produced with a rising pitch accent and a fall to a mid pitch, described as L+H* M-. This mid tone realization is typically observed as a tonal continuation marker. The second intonation phrase includes the focalized element which is produced with an early rising accent with the peak located at the end of the accented syllable followed by a L% boundary tone (L+H* L%). The L+H* L% configuration to express narrow focus is typical of all Spanish varieties (see the other chapters in this volume).

A different contour obtained for the narrow focus statement No, de limones is presented in figure 3. In this case, the nuclear configuration shows a L* nuclear accent followed by a bitonal boundary tone HL%. If we compare the pitch trace of this production with that of figure 2 we can see clear differences in the nuclear tonal configuration. Whereas in figure 3 there is a low pitch during the accented syllable followed by a complex F0 movement at the end of the contour, in figure 2 the nuclear accent exhibits a high pitch followed by a fall.
Furthermore, contrary to what we see in figure 2, the utterance in figure 3 is only produced with one tone unit and thus there are no relevant tonal movements at the end of no.

Narrow focus contradiction statements are similar to correction statements, that is, statements whose intention is to clearly indicate that what the speaker says is right and definite. Contradiction statements involve a L* nuclear accent followed by a bitonal boundary tone (HL%). This is exemplified in figure 4 for the utterance ¡Que irán a Lima! ‘They are going to Lima, for sure’. The prenuclear configuration shows a L+H* pitch accent.

The L* HL% nuclear configuration to express a contradiction statement has also been found in Mexican Spanish (de-la-Mota et al. this volume). In other varieties, such as Venezuelan Andean Spanish (Astruc et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume), Chilean Spanish (Ortiz et al. this volume), Argentinian Spanish (Gabriel et al. this volume) and Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), these statements are produced with a high pitch accent ((L)+H*) followed by a L% boundary tone.

3.1.2.2. Exclamative statements

In utterances with an exclamative nuance, as in ¡Qué olor a pan tan bueno! ‘What a lovely aroma of bread!’, the nuclear accent is also produced with an early rising peak aligned within the limits of the accented syllable. In this particular example the nuclear accent also shows upstep with respect to the previous F0 peak (L+H*), as can be observed in figure 5. The final boundary tone is L%. The prenuclear accents are also produced with the F0 peak anchored within the accented syllable (L+H*), as shown in the stressed syllables of olor and pan. The second prenuclear accent is downstepped (L+!H*).

3.1.2.3. Statements of the obvious

Figure 6 includes an example of a sentence which conveys obviousness and certainty on the part of the speaker: ¡Sí, mujer, de Guillermo! ‘Yes, woman, Guillermo’s [of course]!’. The sentence is uttered with two tone units. The first one is produced with a rising pitch movement L+H* on the nuclear accent (mujer) followed by a L- boundary tone. The second one includes a L+H* nuclear accent followed by a bitonal boundary tone with low and mid targets (LM%). The final pitch movement in the contour of figure 6 is interpreted as L+H* LM%. It conveys obviousness, and contrasts with the L+H* LH% final contour which is used in counterexpectational yes-no questions (see section 3.2.2.1 below). The same final boundary tone (LM%) to express obviousness has been found in Mexican Spanish (de-la-Mota et al. this volume), Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and Puerto Rican Spanish (Armstrong this volume). In varieties such as Argentinian Spanish (Gabriel et al. this volume), Venezuelan Andean Spanish (Astruc et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume) and Chilean Spanish (Ortiz et al. this volume), the nuclear tonal configuration of statements of the obvious involves an early rising accent L+H* followed by a L% boundary tone. This tonal configuration, which is the same one used in emphatic and contrastive statements, has also been found in our Castilian Spanish data.
Figure 1: Waveform, spectrogram and F0 trace for the neutral statement Bebe una limonada ‘She is drinking lemonade’ produced with a L+H* prenuclear accent and L* nuclear accent followed by a L% boundary tone.

Figure 2: Waveform, spectrogram and F0 trace for the narrow focus statement No, de limones ‘No, of lemons’ produced with L+H* M- in the first tone unit and a L+H* L% nuclear configuration in the second tone unit.
Figure 3: Waveform, spectrogram and FO trace for the narrow focus statement *No, de limones* ‘No, of lemons’ produced with a L* HL% nuclear configuration.

Figure 4: Waveform, spectrogram and FO trace for the contradiction statement *¡Que irán a Lima!* ‘They’re going to Lima, for sure!’ produced with a L+H* prenuclear accent and a L* HL% tonal configuration.
Figure 5: Waveform, spectrogram and F0 trace for the exclamative ¡Qué olor a pan tan bueno! ‘What a lovely aroma of bread!’ produced with two prenuclear L+H* pitch accents (the second one with downstep) and a L+¡H* L% nuclear configuration.

Figure 6: Waveform, spectrogram and F0 trace for the statement of the obvious ¡Sí, mujer, de Guillermo! ‘Yes, woman, Guillermo’s [of course]!’ produced with two tone units. The first one ends with H+L* L- and the second one consists of a L+H* nuclear accent followed by a LM% bitonal boundary tone.
3.1.2.4. Uncertainty statements

Uncertainty statements are a good example of utterances containing a M% boundary tone. The nuclear tone is produced with a L+H* pitch accent and the pitch then falls into a mid level. Figure 7 illustrates an example of a statement conferring a meaning of uncertainty and doubt. *Puede que no le guste el regalo que le he comprado* ‘S/he may not like the present I have bought him/her’ produced with a L+H* M% nuclear configuration at the end of the sentence. The final M% in uncertainty statements has also been found in other varieties, such as Canarian (Cabrera Abreu and Vizcaíno Ortega this volume) and Chilean Spanish (Ortiz et al. this volume). In Argentinian Spanish (Gabriel et al. this volume) a final M% boundary tone is also found in uncertainty statements. However, the nuclear accent preceding M% is low (L*) rather than high. Finally, as illustrated in figure 7, the accents in prenuclear position involve a L+1H* tone except for the first accent, which shows a peak aligned within the accented syllable (H*).

3.2. Questions

3.2.1. Yes-no questions

Information-seeking yes-no questions are produced with a L*+H prenuclear accent which differs from the prenuclear accents examined so far (L+H*) in that the rising contour starts at the offset of the accented syllable. This is illustrated in figure 8 below for the sentence ¿Tiene mermelada? ‘Have you got any jam?’ The nuclear accent clearly shows a F0 dip which is interpreted as a L* pitch accent. The final rising movement is described as HH% given the sharp rise observed at the end of the utterance. The L* HH% nuclear configuration for information-seeking yes-no questions has also been observed in many other varieties, such as Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Venezuelan Andean Spanish (Astruc et al. this volume), and Chilean Spanish (Ortiz et al. this volume). In Mexican Spanish, the L* HH% pattern has been found in invitation yes-no questions as reported in de-la-Mota et al. (this volume).

One of the questions that may arise from this tonal choice is whether we need a bitonal accent with two high targets to account for this kind of final rise and more importantly whether a HH% boundary tone contrasts with a H% boundary tone that has only one tonal high target. The contrastive opposition between H% and HH% (H- and HH- at the end of a minor tone unit) has been observed at the end of the first constituent of a declarative sentence which shows a weak rise (marked H-) and at the end of the first constituent of a disjunctive question which exhibits a much higher rising contour (marked HH-). This is illustrated in figure 9 for the following sentences reproduced from Estebas-Vilaplana and Prieto (2008).
The necessity of having two levels of high boundary tones (H% and HH%) has also been attested in a recent study by Estebas-Vilaplana (2009) in which the tonal contrasts between four pitch levels at the end of sentences (L%, M%, H%, HH%) were examined. The data obtained in this study provide empirical evidence for the presence of four contrastive pitch levels at the edge of prosodic domains in Castilian Spanish.

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

Echo yes-no questions, also known as reiterative questions, are used to signal a failure to understand what one of the interlocutors in a conversation has just said. In our corpus, echo yes-no questions are produced with a L+H* nuclear accent followed by a L% boundary tone. This nuclear tone involves an upstepped peak with respect to the preceding high accent. This intonation pattern has already been reported in Escandell-Vidal (1999, 2002) and is illustrated in figure 10 for the sentence ¿Que son las nueve? ‘(Are you saying) that it’s nine o’clock?’ In this utterance a L+H* prenuclear accent can also be observed on the word son. The nuclear configuration (L)+H* in echo yes-no questions has also been found in Canarian (Cabrera Abreu and Vizcaíno Ortega this volume) and Argentinian Spanish (Gabriel et al. this volume).

Another type of echo yes-no question, this one with a counterexpectational connotation, has also been found in our data. This nuclear configuration is transcribed as L+H* LH% and is illustrated in figure 11 for the sentence ¿(Dicen) que no vendrás? ‘(Are you saying) that you aren’t coming?’ This nuclear pitch configuration contrasts with the nuclear configuration L+H* LM%, which expresses a statement of the obvious meaning (see figure 6 in section 3.1.2.3). Since they were spoken by the same informant, the two contours can be compared: while the end point of the boundary tone configuration LH% (figure 11) is 459 Hz, the end point of the LM% configuration is 253 Hz.

Another type of counterexpectational yes-no question consists of a contour involving a L+H* nuclear accent followed by a HH% boundary tone. The phonetic realization of this bitonal high accent almost reaches the maximum F0 pitch range of the speaker. An example is provided in figure 12 for the sentence ¿Que no vendrás? ‘(Are you saying) that you aren’t coming?’ In this sentence there is no prenuclear accentuation. Similar rising nuclear trajectories for counterexpectational yes-no questions have been found in Venezuelan Andean Spanish (Astruc et al. this volume), Argentinian Spanish (Gabriel et al. this volume) and Chilean Spanish (Ortiz et al. this volume).
3.2.2.2. Imperative yes-no questions

Questions can also convey the illocutionary force of an order, that is, the speaker intends to force his/her interlocutor to do something. In our corpus, the prompt context for an imperative yes-no question was a grandmother talking to her grandchildren and asking them to be quiet. The example of the imperative yes-no question ¿Queréis callar? ‘Would you please be quiet?’ is presented in figure 13. This sentence was produced with a L+>H* prenuclear accent followed by a H+L* L% nuclear configuration.

3.2.2.3. Confirmation yes-no questions

Confirmation-seeking rather than information-seeking questions are usually produced with a final fall which involves a H+L* nuclear accent followed by a L% boundary tone. This is exemplified in figure 14 for the utterance ¿Tienes frio? ‘Are you cold?’, which is pronounced with a nuance of surprise and disbelief. The prenuclear accent is the same as that of information-seeking yes-no questions (L*+H).

Another way of producing confirmation-seeking questions in our corpus is through the use of a rising contour L* H%. Figure 15 illustrates this contour with the confirmatory utterance ¿No te encuentras bien, eh? ‘You aren’t feeling well, are you?’ Typically, the final rise of the confirmation-seeking question is lower than the final rise of the information-seeking question. We can compare the two contours as produced by the same speaker: while the utterance-final value for the final rise in figure 15 is 287 Hz, this value for the information-seeking question is 380 Hz (see figure 8). Consequently, we propose to introduce a phonological contrast between these two types of rising contours, a L* HH% for information-seeking questions and a L* H% for confirmation-seeking questions.

In other varieties of Spanish, the nuclear configuration for confirmation yes-no questions shows very different tonal patterns. For example, the final pitch movement has been described as L* H% in Ecuadorian Andean Spanish (O’Rourke this volume), L+H* LH% in Chilean Spanish (Ortiz et al. this volume) and L+¡H*+L L% in Argentinian Spanish (Gabriel et al. this volume).
E. Estebas-Vilaplana, P. Prieto

**Figure 7:** Waveform, spectrogram and F0 trace for the uncertainty statement *Puede que no le guste el regalo que le he comprado* ‘*S/he may not like the present I have bought him/her*’ produced with a L+iH* nuclear accent followed by a M% boundary tone in the nuclear configuration.

**Figure 8:** Waveform, spectrogram and F0 trace for the information-seeking yes-no question *¿Tiene mermelada?* ‘*Have you got any jam?*’ produced with a L*+H prenuclear accent and a L* nuclear accent followed by a HH% boundary tone.
Figure 9: Waveform, spectrogram and F0 trace for two sentences (upper panel: statement with two constituents; lower panel: disjunctive question) showing the contrast between H- (at the end of the first constituent of the statement) and HH- (at the end of the first prosodic unit of the disjunctive question).
Figure 10: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Que son las nueve? ‘[Are you saying] that it’s nine o’clock?’ produced with a L+H* L% nuclear configuration.

Figure 11: Waveform, spectrogram and F0 trace for the counterexpectational yes-no question ¿Que no vendrás? ‘[Are you saying] that you aren’t coming?’ produced with a L+H* LH% nuclear configuration.
**Figure 12:** Waveform, spectrogram and F0 trace for the counterexpectational yes-no question ¿Que no vendrás? ’[Are you saying] that you aren’t coming?’ produced with a L+H* HH% nuclear configuration and no prenuclear accentuation.

**Figure 13:** Waveform, spectrogram and F0 trace for the imperative yes-no question ¿Queréis callar? ‘Would you please be quiet?’ produced with a L+>H* nuclear accent and H+L* L % nuclear configuration.
Figure 14: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Tienes frío? ‘Are you cold?’ produced with a L*+H prenuclear accent and H+L* nuclear accent followed by a L% boundary tone.

Figure 15: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿No te encuentras bien, eh? ‘You aren’t feeling well, are you?’ produced with a L* nuclear accent followed by a H% boundary tone.
3.2.3. Wh- questions

Information-seeking wh- questions are produced with two possible patterns in the nuclear configuration: a falling contour (L* L%) or a rising contour (L* HH%), which expresses a nuance of interest and greater speaker involvement in the speech act. The two patterns are illustrated in figure 16 for the sentences ¿Qué hora es? ‘What time is it?’ Both sentences present a high tone (H*) pitch accent in the prenuclear position (note that the wh- word qué is produced at the same pitch level in both examples (see the two panels in figure 16).

The L* L% nuclear configuration (sometimes with a H+L* pitch accent) for information-seeking wh- questions has also been attested in Argentinian Spanish (Gabriel et al. this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Venezuelan Andean Spanish (Astruc et al. this volume) and Puerto Rican Spanish (Armstrong this volume). The L* HH% (sometimes L* H%) rising contour in wh- questions has been reported for Chilean Spanish (Ortiz et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume) and Puerto Rican Spanish (Armstrong this volume).

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

Similar to echo yes-no questions, echo wh- questions are produced with two different patterns. The first one involves a fall in the nuclear configuration, as illustrated in the upper panel of figure 17, which depicts the sentence ¿Qué dónde voy? ‘[Did you ask me] where I’m going?’ In this case, the speaker produces an upstepped nuclear accent followed by a low boundary tone (iH* L%). Here the preceding nuclear accent involves a rise with a displaced F0 peak (L+>H*). As mentioned in section 3.2.2.1, Escandell-Vidal (1999, 2002) proposes an upstepped high accent (L+iH*) as the typical nuclear accent in echo questions. In our example, the lack of a low leading tone is most probably due to the fact that a high prenuclear accent (L+>H*) is located very near the nuclear one and there is no time to produce a low target before iH* as in L+iH*. However, we interpret iH* as a truncated realization of L+iH*.

The second pattern is similar to that of echo yes-no questions with a counterexpectational nuance and likewise involves a sharp final rise. This is illustrated in the lower panel of figure 17 for the same sentence. In this contour, a nuclear L+iH* pitch accent is followed by a HH% boundary tone. A H* prenuclear accent is produced in the first syllable of the word dónde.
Figure 16: Waveform, spectrogram and F0 trace for two productions of the information-seeking wh-question ¿Qué hora es? ‘What time is it?’ produced with a falling contour (L* L%—upper panel) and a rising contour (L* HH%—lower panel).
Figure 17: Waveform, spectrogram and F0 trace for two productions of the echo wh-question ¿Qué dónde voy? ['Did you ask me] where I’m going?' In the upper panel the nuclear accent shows an upstepped peak ¡H* followed by a L% boundary tone and preceded by a L+¡H* prenuclear accent. The F0 trace in the lower panel involves a rising nuclear configuration (L+¡H* HH%) preceded by a high prenuclear accent (H*). This latter pattern has a counterexpectational nuance.
3.2.4.2. Imperative wh-questions

Sometimes wh-questions can be produced with an imperative nuance indicating that the speaker seeks not only an answer but also an action. An imperative wh-question ¿Cuándo lo harás? ‘When are you going to do it?’ is illustrated in figure 18. Prenuclear accents show a rising contour during the accented syllable with a displaced peak (L+\rightarrow H*). The nuclear configuration is H+L* L%. In this case the nuclear accent shows a progressively falling F0 with no peak.

In other contexts imperative wh-questions can also have a nuance of invitation, that is, the speaker offers his/her interlocutor the possibility of doing something. In this case the typical nuclear configuration includes a rising nuclear accent L+iH* followed by a HL% boundary tone. This final tone involves a high pitch in the posttonic syllable/s followed by a fall. An example is provided in figure 19 for the sentence ¿Por qué no venís? ‘Why don’t you come?’ No prenuclear accents are observed in this contour.

3.2.4.3. Rhetorical wh-questions

Rhetorical wh-questions involve an interrogation with no answer expected. An example of a rhetorical question is illustrated in figure 20 for the sentence ¿Qué haríais sin mi? ‘What would you do without me?’ The most interesting aspect of this tune is that the nuclear accent falls not on the last word but rather on the verb haríais, which exhibits a H* nuclear pitch accent followed. The postnuclear part of the contour is the dislocated utterance sin mi, which exhibits a !H* pitch accent followed by a M% boundary tone.

3.3. Imperatives: commands and requests

3.3.1. Commands

Imperative utterances are direct speech acts in which the speaker wants the hearer to perform the action described in the proposition. The illocutionary strength with which this speech act is performed can go from a gentle request to a strong command. The most common tonal configuration for commands produced with a stronger illocutionary force is L+H* M%. This is illustrated in figure 21 for the sentence Ven aquí, por favor ‘Come here, please’ produced as two intonation phrases with the same tonal configuration L+H* M%. This tonal movement has also been found in Chilean Spanish (Ortiz et al. this volume) and Dominican Spanish (Willis this volume). Another characteristic of strong commands is that they tend to be produced with an expanded pitch range which is used to express the urgency of the speech act.
Figure 18: Waveform, spectrogram and F0 trace for the imperative wh-question ¿Cuándo lo harás? ‘When are you going to do it?’ produced with an imperative nuance. The nuclear configuration is H+L% and it is preceded by a L+>H* prenuclear accent.

Figure 19: Waveform, spectrogram and F0 trace for an invitation wh-question ¿Por qué no venís? ‘Why don’t you come?’ The nuclear configuration is L+H* HL%.
**Figure 20:** Waveform, spectrogram and F0 trace for the rhetorical wh- question ¿Qué haríais sin mi? ‘What would you do without me?’ produced with a H* pitch accent followed by a M% boundary tone.

**Figure 21:** Waveform, spectrogram and F0 trace for the command ¡Ven aquí! ¡Por favor! ‘Come here, please!’ produced as two intonation phrases with the same tonal configuration L+H* M%.
3.3.2. Requests

A common nuclear configuration for requests is a L* pitch accent followed by a HL% boundary tone. This is illustrated for the first (va) and the last (hombre) intonation phrases of the utterance Va, vente al cine, hombre ‘Come on, man, come (with us) to the cinema’ presented in figure 22. Though the pitch range is broader in the last phrase (hombre) than in the first (va), both units have the same tonal characteristics: L* HL%. The intonation unit (vente al cine) is produced with a L+H* L% nuclear configuration. The L* HL% pattern has also been attested in Mexican Spanish (de-la-Mota et al. this volume) for request vocatives and in Puerto Rican Spanish (Armstrong this volume) for exhortative commands.

3.4. Vocatives

As in many other languages, the typical calling contour in Castilian Spanish is characterized by a sustained mid pitch. This is exemplified in figure 23 for the utterance ¡Mariña! which is produced with a L+H* nuclear accent followed by a fall in the F0 into a sustained mid pitch M% that lasts until the end of the sentence. This pattern has also been attested in most varieties of Spanish, such as Venezuelan Andean Spanish (Astruc et al. this volume), Argentinian Spanish (Gabriel et al. this volume), Mexican Spanish (de-la-Mota et al. this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Chilean Spanish (Ortiz et al. this volume), Dominican Spanish (Willis this volume) and Puerto Rican Spanish (Armstrong this volume).

![Figure 22: Waveform, spectrogram and F0 trace for the request Va, vente al cine, hombre ‘Come on, man, come (with us) to the cinema’ produced as three intonation phrases (L* HL%, L+H* L%, L* HL%).](image)
Figure 23: Waveform, spectrogram and F0 trace for the vocative ¡Marina! produced with a L+H* pitch accent followed by a M% boundary tone.

Figure 24: Waveform, spectrogram and F0 trace for the vocative ¡Boby! produced with a L+H* pitch accent followed by a HL% boundary tone.
Finally, figure 24 illustrates a variant of a calling contour used to express an insistent call, in this case to a wayward dog. This tune involves a L+H* nuclear accent followed by a HL% boundary tone. A rising pitch contour is observed over the accented syllable and then the pitch remains high during the posttonic syllable, which also shows a final fall. This pattern is also observed in Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), Mexican Spanish (de-la-Mota et al. this volume) and Puerto Rican Spanish (Armstrong this volume).

4. Conclusions

In this study we have analyzed a set of commonly occurring tunes for a variety of sentences in Castilian Spanish within the Sp_ToBI framework. In particular, we have examined the intonation patterns of statements, yes-no questions, wh-questions, imperatives and vocatives. We have also included the analysis of a variety of biased and marked tunes.

The tonal configurations obtained in this study have shown that some patterns are recurrent across dialects, such as the nuclear trajectories of broad (L* L%) and narrow focus statements (L+H* L%). Other patterns, however, show much more dialectal variability and ways of expressing a particular prosodic meaning within the same dialect. As far as statements are concerned, the major differences are found in statements of the obvious and uncertainty statements. The former present two main patterns, L+H* LM% and L+H* L%. They can both occur in the same dialect, as is the case with our Castilian Spanish data, while in other dialects one of them may predominate. The first pattern is typical of Castilian Spanish, Mexican Spanish (de-la-Mota et al. this volume), Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and Puerto Rican Spanish (Armstrong this volume). The L+H* L% pattern, on the other hand, is found in Argentinian Spanish (Gabriel et al. this volume), Venezuelan Andean Spanish (Astruc et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume) and Chilean Spanish (Ortiz et al. this volume).

The most common tonal pattern for uncertainty statements in Castilian Spanish is L+H* M%. This configuration is also reported for Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and Chilean Spanish (Ortiz et al. this volume). Other varieties, such as Argentinian Spanish (Gabriel et al. this volume) show a final rising pattern (L* M%).

The typical configuration of information-seeking yes-no questions obtained from the Castilian Spanish data is L* HH%, also reported for Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume). This type of question presents great intonational variability across dialects, with some of the Caribbean dialects, for example, producing primarily falling contours of the type H+L* L%. In other varieties, such as Argentinian Spanish (Gabriel et al. this volume) and Ecuadorian Andean Spanish (O’Rourke this volume), information-seeking yes-no questions involve a H* M% nuclear configuration. For their part, confirmation-seeking yes-no questions are produced in Castilian Spanish either with a falling nuclear pattern (H+L* L%) or with a rising L* H% nuclear accent. One of the features of the rising intonation pattern found in confirmation-seeking questions is that the final rise is lower (L* H%) than that found in information-seeking questions (L* HH%).

In Castilian Spanish, wh-questions also show two tonal contours: 1) a rising pattern (L* HH%), as in yes-no questions, and 2) a fall (L* L% or H+L* L%), which has also been attested.
Echo questions (whether wh- questions or yes-no echo questions) show two possible patterns in Castilian Spanish: either L+H* L%, or L+H* HH% and L+H* LH% (the latter two with a counterexpectational nuance). The main feature of echo questions is the presence of an upstepped L+H* nuclear accent. A L+H* L% configuration is also found in Argentinian Spanish (Gabriel et al. this volume) and Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume). L+H* HH% is typical of Venezuelan Andean Spanish (Astruc et al. this volume), Argentinian Spanish (Gabriel et al. this volume) and Chilean Spanish (Ortiz et al. this volume).

As far as the intonation of commands is concerned, the nuclear configuration obtained in Castilian Spanish is L+H* L% like in Chilean Spanish (Ortiz et al. this volume) and Dominican Spanish (Willis this volume). For requests, the L* HL% pattern is attested in Castilian Spanish as well as in Mexican Spanish (de-la-Mota et al. this volume) and Puerto Rican Spanish (Armstrong this volume).

Finally, vocatives in Castilian Spanish are produced with two patterns, L+H* M% and L+H* HL%, which are also found in many other dialects.

To sum up, the nuclear pitch configurations (combinations of the final pitch accent and the following boundary tones) for Castilian Spanish are presented in the following chart for the different sentence types.

**Table 3: Inventory of nuclear pitch configurations in Castilian Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Statements</th>
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<tbody>
<tr>
<td>Broad focus statements</td>
<td>L* L%</td>
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<tr>
<td>Biased statements</td>
<td></td>
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<tr>
<td>Narrow focus, exclamative statements</td>
<td>L+H* L%</td>
</tr>
<tr>
<td>Narrow focus, contradiction statements</td>
<td>L* HL%</td>
</tr>
<tr>
<td>Statements of the obvious</td>
<td>L+H* LM%</td>
</tr>
<tr>
<td>Uncertainty statements</td>
<td>L+H* M%</td>
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<tr>
<td>Questions</td>
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</tr>
<tr>
<td><strong>Yes-no questions</strong></td>
<td></td>
</tr>
<tr>
<td>Information-seeking yes-no questions</td>
<td>L⁺ HH%</td>
</tr>
<tr>
<td><strong>Biased yes-no questions</strong></td>
<td></td>
</tr>
<tr>
<td>Echo yes-no questions</td>
<td>L⁺H⁺ L%</td>
</tr>
<tr>
<td>Counterexpectational yes-no questions</td>
<td>L⁺H⁺ HH%</td>
</tr>
<tr>
<td></td>
<td>L⁺H⁺ LH%</td>
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<td>Imperative and confirmation yes-no questions</td>
<td>H⁺L⁺ L%</td>
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<tr>
<td>Confirmation yes-no questions</td>
<td>L⁺ H%</td>
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<tr>
<td><strong>Wh- questions</strong></td>
<td></td>
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<tr>
<td>Information-seeking wh-questions</td>
<td>L⁺ L%</td>
</tr>
<tr>
<td></td>
<td>L⁺ HH%</td>
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<tr>
<td><strong>Biased wh- questions</strong></td>
<td></td>
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<tr>
<td>Echo wh- questions</td>
<td>iH⁺ L%</td>
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<tr>
<td>Counterexpectational wh-questions</td>
<td>L⁺H⁺ HH%</td>
</tr>
<tr>
<td>Exhortative and imperative wh- questions</td>
<td>H⁺L⁺ L%</td>
</tr>
<tr>
<td>Invitation wh- questions</td>
<td>L⁺iH⁺ HL%</td>
</tr>
</tbody>
</table>
Rhetorical wh- questions | H* M%  
---|---

*Imperatives: commands and requests*

| Commands   | L+H* M%  
---|---
| Requests   | L* HL%  

*Vocatives*

| Vocatives and calling contours | L+H* M%  
---|---
|             | L+H* HL%
References


Cantabrian Spanish Intonation

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1. Introduction


Current dialectology regards Cantabrian as a dialect of Spanish. Nevertheless, it is not surprising that Cantabrian Spanish, historically linked to the Astur-Leonese dominion (Holmsquist 1988, Penny 1970, 2004, Ealo 2007, Fernández Juncal 1998), possesses certain features that Castilian Spanish never inherited or were lost early in its formation process (Lasén Pellón 2004). The old Leonese intonation survives in certain areas of the Kingdom of León that were hispanicized at an early date (Penny 1970, 2004, Meléndez Matías et al. 2008, Zamora Salamanca 2009, López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press). This situation results in a continuum extending across the north-western Iberian Peninsula with blurred interdialectal boundaries where a variety of intonation patterns can be found.

In the case of Cantabria, the linguistic panorama is especially complex as it is an area populated by inhabitants with diverse origins: the Cantabrian north, the west of León and the east of the region, which is strongly influenced by the Basque Country (Alarcos 1982). This situation, together with a prosodic base that is characteristic of north-western Peninsular Romance varieties from the Basque Country and Castille, has resulted in intonation patterns that differ significantly between the western and the eastern areas of the region.

Studies devoted to the prosody of northern dialects of Peninsular Spanish, especially those focused on Cantabrian varieties, are scarce. Indeed, these dialects have long been

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M.ª J. López-Bobo, M. Cuevas-Alonso


In previous research (López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press) we described and compared the intonation patterns of broad focus statements and information-seeking yes-no questions in the eastern and western parts of Cantabria. The coexistence of two different intonation patterns was confirmed. We see on the one hand the north-western Peninsular or traditional pattern, which has largely been preserved within rural areas and to a lesser extent urban areas, and which shows a number of similarities with other varieties of the north-west of the Iberian Peninsula (Galician, Asturian and Basque Country Spanish), among them the fact that information-seeking yes-no questions end in falling intonation. On the other hand, we find the standard pattern, which is typically present in urban areas and shows a falling contour in declarative sentences and a rising one in information-seeking yes-no questions, as in Castilian Spanish (see Estebas-Vilaplana and Prieto this volume). Nonetheless, neither of these subvarieties of Cantabrian Spanish is homogeneous, since they both show significant differences from east to west.

Generally speaking, the contrast between the two subvarieties is clearest in the intonation of information-seeking yes-no questions. The more castilianized subvariety shows L* HH%, whereas L+H* M% is the usual configuration in the traditional subvariety (reinterpreted in this chapter as H* HL%), with upstepping in the more western areas of the region. In our studies, we have noted the presence of truncation in questions in the traditional subvariety of Cantabrian Spanish when an oxytone is present at the end of the sentence. This phenomenon (see Ladd 2008: 180-184; Gussenhoven 2004: 236 and following) is probably caused by the fact that “the speaker rejects the possibility of producing a falling tonal movement on a stressed syllable” (Toledo and Gurlekian 2009: 409) or that there is not enough phonetic space to complete a double tonal movement, i.e. rising and falling (Vizcaíno Ortega et al. 2008). However, declarative sentences do not show different patterns between the two subvarieties as regards their nuclear configuration, which is in most cases H+L* L% (this could be phonologically interpreted as a L* L% realization). In cases where the last lexical stress of the sentence corresponds to a paroxytone word, L+IH* L% can be found (López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press).

In the present study, a new contribution to the description of Cantabrian Spanish intonation is provided. In order to do this, we have relied on a wider corpus that includes varied syntactic structures with different pragmatic meanings.
The chapter is organized as follows: section 2 introduces the basic inventory of pitch accents and boundary tones attested in Cantabrian Spanish, in line with the revised version of Sp_ToBI (Estebas-Vilaplana and Prieto 2008). Section 3 presents a description of the intonation patterns in different types of sentences with or without the presence of focus and containing various pragmatic meanings such as insistence, disbelief, obviousness, etc. Finally, the most noteworthy conclusions and a summary of the main nuclear configurations found in Cantabrian Spanish are presented in section 4.

2. Cantabrian Spanish intonational phonology

In the following sections, we will first briefly analyse the prosodic group levels attested in Cantabrian Spanish and then establish the pitch accents and boundary tones documented in this variety, relying on the Sp_ToBI initial proposal and its revisions (Beckman et al. 2002, Face and Prieto 2007, Estebas-Vilaplana and Prieto 2008).

2.1. The pitch accents

Cantabrian Spanish has two monotonal pitch accents: L*, which in nuclear position establishes configurations mainly with L%, HH% and HL% (and to a lesser extent, with M%); and H*, which combines with L% and HL%.

Four bitonal pitch accents have been attested in this variety: L*+H, L+H*, L+>H* and H+L*. The data presented in this study seem to confirm the triple contrast among early rising accent (L+H*), delayed peak (L+>H*) and late rising accent (L*+H) proposed by Face and Prieto (2007). High tones can be produced with upstep or downstep in the following cases: ¡H*, ¡H*, L+¡H*, L+¡H*, ¡H+L*. L+H* is very frequent in nuclear position and combines with almost every boundary tone found in Cantabrian Spanish (i.e. L%, M%, HH%, LM% and HL%). L+H* L% is the combination that seems to appear in the largest number of contexts. On average, these contexts coincide with those described for Castilian Spanish (Estebas-Vilaplana and Prieto 2008, this volume) and for Catalan (Prieto in press). On the other hand, L+H* L- is common in non-final constituents.

H+L* is a characteristic nuclear tone in information-seeking wh- questions. Nevertheless, when it expresses some kind of pragmatic meaning, it is normally downstepped. Although the number of informants will have to be increased in order for us to draw definitive conclusions, downstepping in this tone seems to be common. In contrast with information-seeking wh- questions, this downstepped combination characterizes imperative sentences. Only cases in combination with L% have been documented, and not with other possible boundary tones.

Regarding prenuclear positions, several pitch accents have been attested. The delayed peak accent L+>H* is the most frequent in broad focus statements and imperatives, but it is also present in biased statements, where it alternates with the early rising accent L+H*, as well as biased questions, in which it alternates with the late rising accent L*+H. However, in yes-no questions L*+H predominates in coexistence with L+H*. In this position, H+L* has also been documented, appearing in the longest intonation units.
Table 1: Inventory of monotonal and bitonal pitch accents in Cantabrian Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This accent is phonetically realized as a low plateau at the minimum of the speaker’s pitch range. It is found in nuclear position for broad focus statements, exclamative and rhetorical wh- questions, disjunctive questions and information-seeking yes-no questions (in the standard subvariety only).</td>
</tr>
<tr>
<td>H*</td>
<td>This accent is phonetically realized as a high plateau with no preceding F0 valley. In this corpus, it is found in information-seeking yes-no questions (in the traditional subvariety).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal pitch accents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L+H*</td>
<td>This accent is phonetically realized as a rising pitch movement in the accented syllable with the F0 peak located within this syllable. It is found in nuclear position for narrow focus statements, confirmation yes-no questions, imperative yes-no questions (traditional subvariety only), requests and calling contours.</td>
</tr>
<tr>
<td>L+&gt;H*</td>
<td>This accent is phonetically realized as a rising pitch movement on the accented syllable with the F0 peak aligned with the postaccentual syllable. It is attested in prenuclear position.</td>
</tr>
<tr>
<td>L*+H</td>
<td>This accent is phonetically realized as a F0 valley on the accented syllable with a subsequent rise on the postaccentual syllable. This accent is found in prenuclear position.</td>
</tr>
<tr>
<td>H+L*</td>
<td>This accent is phonetically realized as a F0 fall within the accented syllable. It is found in nuclear position for imperative yes-no questions (standard subvariety only), imperative and exhortative wh- questions, commands and requests.</td>
</tr>
</tbody>
</table>

2.2. The boundary tones

With regard to boundary tones, Cantabrian Spanish presents two monotonal tones L% and M% (Beckman et al. 2002 adds H%), and three bitonal tones, HL%, HH% (as in Estebas-Vilaplana and Prieto 2008), and LM%. However, the tritonal boundary tone (LHL%) proposed by Estebas-Vilaplana and Prieto (2008) for insistent requests has not been attested in our corpus.

As will be explained later in this chapter, the M% boundary tone is highly productive in the traditional subvariety of Cantabrian Spanish. In this subvariety, imperative yes-no questions and echo wh- questions are characterized by this boundary tone. However, it has also been documented in the standard subvariety of Cantabrian Spanish. Special attention must be paid to the presence of a phonetic variant of the bitonal boundary tone HL% within
the traditional subvariety, characterized as a rise from a high tone and then a fall to a mid tone. Consequently, this phonetic realization often combines with nuclear L+H* accents, sometimes upstepped, and with H*.

Table 2: Schematic representations of monotonal and bitonal boundary tones in Cantabrian Spanish

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
<td>![Schematic representation of L%] L% is phonetically realized as a low sustained tone or a falling tone at the speaker’s baseline. It is attested at the end of broad and narrow focus statements, information-seeking wh- questions and imperatives, among other utterance types.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal boundary tones</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HH%</td>
<td>![Schematic representation of HH%] HH% is phonetically realized as a sharp rise at the end of the phrase usually reaching the highest level of the speaker’s pitch range. It is found in information-seeking yes-no questions in the standard subvariety of Cantabrian Spanish.</td>
</tr>
<tr>
<td>LM%</td>
<td>![Schematic representation of LM%] LM% is phonetically realized as a low F0 valley followed by a rise to a mid tone. It is attested in statements of the obvious in the standard subvariety.</td>
</tr>
<tr>
<td>HL%</td>
<td>![Schematic representation of HL%] HL% is phonetically realized as a peak in F0 followed by a fall. It is commonly found in statements of the obvious and in information-seeking yes-no questions (in the traditional subvariety only), in confirmation yes-no questions and in insistent calls.</td>
</tr>
</tbody>
</table>

3. Basic intonational patterns in Cantabrian Spanish

In this section the basic intonation contours found in Cantabrian Spanish are described. The present analysis has been carried out by examining sequences and contexts proposed for obtaining the corpus which forms the basis of the Atlas interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010). The sentences were obtained through a guided questionnaire based on the one proposed by Prieto (2001), which contains 69 different contexts and situations intended to induce semi-spontaneous responses. The informants were four women aged between 25 and 40 from two towns located in the northwestern area of Cantabria (Unquera and Cabezón de la Sal). In developing this description, a total of 276 sentences were analysed. The types of sentences included in the corpus are statements, yes-no questions, wh- questions, echo questions, commands, requests and vocatives. The analysis was performed using Praat v. 5.1.31 (Boersma and Weenink 2010).
Our description relies on 1) traditional research into Spanish and Cantabrian intonation, 2) previous studies based on Sp_ToBI and 3) a systematic analysis of the two intonation patterns (traditional and standard) seen in Cantabrian Spanish. Despite notable divergences between these two linguistic subvarieties, we shall take the standard subvariety as a point of reference to facilitate comparison with descriptions of Spanish dialects that are included in this volume. Nevertheless, references to the intonation of the traditional subvariety of Cantabrian Spanish will also be made.

3.1. Statements

3.1.1. Broad focus statements

Broad focus statements (see figure 1) in this dialect of Spanish are characterized by a L* L% nuclear configuration, regardless of whether they are made up of one or several intonation units. This behaviour coincides with that seen in most varieties of Spanish: Castilian Spanish (Estebas-Vilaplana and Prieto 2008; see also Estebas-Vilaplana and Prieto this volume), Canarian Spanish (Cabrera-Abreu and Vizcaino-Ortega this volume), Mexican Spanish (de-la-Mota et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume) and Argentinian Spanish (Gabriel et al. this volume).

As in other varieties of Spanish, prenuclear pitch accents of broad focus statements are L+H*; after the rising movement produced throughout the tonic syllable, the prominence falls on the posttonic. However, in those cases where the tonal unit presents a larger number of tonal accents, L*+H or H+L* is attested.

In sentences with two tonal units, the pattern of intermediate phrases is characterized by the continuation rise H- preceded by a L+H* accent, as in the majority of Spanish dialects.

Sentences containing incidental units that are not independent but are not integrated in the sentence either) behave in a similar way. The cases analysed in this chapter contain this type of element either at the beginning of the sentence, embedded in it or as bearers of the nuclear configuration at the end of the sentence; in none of these positions does the presence of this type of syntagmatic group influence the L* L% nuclear configuration. In the intermediate phrase there is a L+H* pitch accent followed by H-.

\[
\begin{align*}
\text{a pesar de la lluvia,} & \quad \text{esta mañana he ido al médico} \\
L+H^* & \quad H+L^* \quad \text{L%} \\
\text{despite the rain} & \quad \text{I went to the doctor’s this morning} \\
\text{esta mañana,} & \quad \text{a pesar de la lluvia,} & \quad \text{he ido al médico} \\
H+L^* & \quad L+H^* & \quad L^* \quad \text{L%} \\
\text{this morning} & \quad \text{despite the rain} & \quad \text{I went to the doctor’s} \\
\text{esta mañana he ido al médico,} & \quad \text{a pesar de la lluvia} \\
L+H^* & \quad L^* \quad \text{L%} \\
\text{this morning I went to the doctor’s} & \quad \text{despite the rain}
\end{align*}
\]

A special case is those incidentals which, coming at the end of the sequence, specify the reference of the term that precedes them (i.e. Yo viví muchos años allí, en Lima ‘I lived there for many years, in Lima.’). They involve a L+H* L% configuration. The presence of this nuclear accent, quite common in contrastive statements, is due to its grammatical and pragmatic characteristics and the fact that these clauses are subject to some kind of focalization.
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement La niña morena se come una mandarina ‘The dark-haired girl is eating a tangerine’. The intermediate phrase is L+H* H and the nuclear configuration is L* L%.

Figure 2: Waveform, spectrogram and F0 trace for the narrow focus statement No, de limones ‘No, of lemons’. It shows a L+H* L% nuclear configuration.
3.1.2. Biased statements

3.1.2.1. Narrow focus statements

Narrow focus statements (figure 2) are produced with a nuclear pitch accent characterized by a rising movement that starts in the last tonic syllable of the sentence and whose peak is aligned with the end of this syllable (L+H*). After this, the tone descends to the tonal baseline of the speaker (L%). Other varieties of Spanish also present this nuclear pitch accent in narrow focus statements, in contrast to broad focus statements (Estebas-Vilaplana and Prieto 2008 and the other chapters in this volume). In the specific case of figure 2, it is interesting to note that the first intonation unit is characterized by a pitch accent L+H* and an edge tone M-, as has been documented in Castilian Spanish (Estebas-Vilaplana and Prieto this volume) and in contrast with the L+H* L-, documented in Canarian Spanish (Cabrera-Abreu and Vizcaíno-Ortega this volume), Venezuelan Andean Spanish (Astruc et al. this volume), Chilean Andean Spanish (Ortiz et al. this volume), and with L* HL-, which is found in Mexican Spanish (de-la-Mota et al. this volume).

The same nuclear configuration used in contrastive narrow focus statements is found in contradiction statements, where the speaker firmly contradicts a preceding assertion and conveys the idea that what s/he says is definitive and cannot be contested. As can be seen in figure 3 Que no, que irán a Lima ‘No, they are going to Lima’, the typical configuration to convey this meaning is a bitonal nuclear L+H* accent followed by a low boundary tone L%. This nuclear configuration has been also found in other varieties, such as Ecuadorian Andean Spanish (O’Rourke this volume) and Chilean Andean Spanish (Ortiz et al. this volume). This kind of sentence offers L+H* as prenuclear pitch accent. The first intonation unit, Que no, shows L+H* H-.

3.1.2.2. Exclamative statements

In our corpus, the same configuration attested in narrow focus and contradiction statements is also found to express emphasis. As can be seen in figure 4, in the exclamative utterance ¡Qué olor a pan tan bueno! ‘What a lovely aroma of bread!’ the nuclear accent is L+H*, the peak is located in the accented syllable of bueno and it is followed by a L% boundary tone.

The prenuclear accent is L+H*, followed by a high plateau. It then falls throughout the second half of syllable tan. This configuration has also been attested in other Spanish dialects, such as Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Mexican Spanish (de-la-Mota et al. this volume) and Chilean Andean Spanish (Ortiz et al. this volume).
Figure 3: Waveform, spectrogram and F0 trace for the contradiction statement Que no, que irán a Lima 'No, they are going to Lima' produced with a L+H* nuclear accent followed by a L% boundary tone. The first intonation unit, Que no, shows L+H* H-.

Figure 4: Waveform, spectrogram and F0 trace for the exclamative statement ¡Qué olor a pan tan bueno! 'What a lovely aroma of bread!' produced with prenuclear L+>H* and H* pitch accents and a L+H* L% nuclear configuration.
3.1.2.3. Statements of the obvious

In Cantabrian Spanish, the tune of statements of the obvious contrasts with what is seen in broad focus statements. As reported by Armstrong (this volume), this behaviour is due to the fact that the speaker is aware of the truth value of the propositional content and assumes that it is shared by the listener. However, because of something s/he has heard in the immediately preceding context, the speaker realizes the content is not really shared by the listener after all and thus s/he produces a statement that clearly underlines the obvious nature of the message.

In the statement of the obvious contained in our corpus Sí, mujer, de Guillermo ‘Yes, woman, Guillermo’s [of course]!’ the obviousness meaning is expressed by the presence of a low to mid boundary tone LM% at the end of the obvious information, i.e. de Guillermo ‘Guillermo’s’. The affirmation codified by the adverb Sí ‘Yes’ is reinforced by the tonal configuration that is characteristic of obviousness (L+H* LM%). In our opinion, the procedural information emerges from the sum of two elements: 1) the affirmation, which answers the question, and 2) the nuclear configuration, which adds the obviousness meaning. Figure 5a shows the waveform and F0 pitch track of the utterance Sí, mujer, de Guillermo ‘Yes, woman, Guillermo’s [of course]!’ with the typical nuclear accent L+H* and a boundary tone LM%. After the prominence, the F0 starts a slight descent to the nucleus centre of the posttonic syllable, which makes up this complex tone’s first target. From there, it starts a rise persisting to the end of the sentence that does not reach the sorts of high frequency values that are seen in information-seeking yes-no questions in the standard subvariety of Cantabrian Spanish.

Statements of the obvious present varied behaviour. The standard subvariety exhibits a configuration that is common to other dialectal varieties of Spanish (see Estebas-Vilaplana and Prieto this volume for Castilian Spanish, Cabrera-Abreu and Vizcaino-Ortega this volume for Canarian Spanish, de-la-Mota et al. this volume for Mexican Spanish, Armstrong this volume for Puerto Rican Spanish and Astruc et al. this volume for Venezuelan Andean Spanish), although this is not the only pattern found in Cantabrian Spanish. Figure 5b shows the type of intonation pattern found in the traditional subvariety. The nuclear accent is kept low until the start of the posttonic syllable, from which point a sharp rises to a prominence located at the beginning-middle of the posttonic nucleus. Therefore, the nuclear configuration is L* HL%, as seen in other languages such as Catalan (Prieto in press).

Just as in neutral declaratives, prenuclear accents in statements of the obvious are characterized by a rising pitch movement throughout the tonic syllable, which starts in its onset or in the nucleus of the pretonic. The peak generally falls in the vowel of the posttonic syllable (L->H*).

In the non-final constituents, the configuration is not very different from what we see in broad focus statements, i.e. L+H* H-. However, the presence of a pause causes the boundary tone to come out as L-.
Figures 5a and 5b: Waveform, spectrogram and F0 trace for the statement of the obvious Sí, mujer, de Guillermo ‘Yes, woman, Guillermo’s [of course]!’ with a L+H* LM% nuclear configuration in the standard subvariety (upper panel) and L* HL% in the traditional subvariety (lower panel).
3.1.2.4. Uncertainty statements

As opposed to other Spanish dialects studied in this volume (Castilian, Canarian, Argentinian and Chilean Spanish), in which hesitation and uncertainty are expressed by a M% boundary tone, in Cantabrian Spanish the sentences which contain these pragmatic meanings show L%. Like in Castilian and Canarian Spanish (Estebas-Vilaplana and Prieto, and Cabrera Abreu and Vizcaíno Ortega this volume), the nuclear pitch accent attested in this northern Peninsular dialect is L+H*. This nuclear configuration L+H* L% is illustrated in figure 6 for the sentence _Puede que no le guste el regalo que le he comprado_ ‘S/he may not like the present I have bought him/her’.

In prenuclear position, L+>H* is attested in the first and third lexical accents, i.e. _puede_ and _guste_; the second accent coincides with the adverb _no_ and presents H+L*. On the other hand, after the prominence aligned with the posttonic syllable of the verb of the subordinate clause (_guste_), the tone falls and is kept low until the last accent of the utterance. Thus, the last pitch accent before the nuclear one is commonly L*.

![Figure 6: Waveform, spectrogram and F0 trace for the uncertainty statement Puede que no le guste el regalo que le he comprado ‘S/he may not like the present I have bought him/her’ characterized by a L+H* L% nuclear configuration.](image-url)
3.2. Questions

Cantabrian Spanish questions present particular features. As a consequence of the contact between the traditional subvariety, which is linked to Astur-Leonese, and the standard subvariety, this type of sentence displays different intonation patterns (López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press).

However, as has been already noted, because it is closer to Castilian Spanish, the standard subvariety will serve as the basis of our description of sentences in order to allow comparison with all the Spanish dialects described in this volume.

3.2.1. Yes-no questions

As is shown in figures 7a and 7b, information-seeking yes-no questions in Cantabrian Spanish present two different intonation configurations whose different origins can be seen in the specific dialectal traits mentioned above. The L* HH% nuclear configuration, which is consistent with what is documented in other Spanish dialects, such as Castilian Spanish (Estebas-Vilaplana and Prieto this volume) and Ecuadorian Andean Spanish (O’Rourke this volume), characterizes the standard subvariety. The prenuclear accents contrast with those found in statements. Cantabrian Spanish questions show low pitch in the accented syllable and a rise that begins at the end of this syllable (L*+H).

By contrast, the nuclear configuration of the traditional pattern, H* HL%, diverges considerably from Castilian Spanish, while presenting numerous resemblances to those varieties that make up the north-western Peninsular Romance dialect continuum (Canellada 1944, Zamora Salamanca et al. 2009, López-Bobo et al. 2008, López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press) as well as other Spanish dialects described in this volume that are characterized by a circumflex configuration: Canarian Spanish, Argentinian Spanish, Puerto Rican Spanish and Venezuelan Andean Spanish (see Cabrera Abreu and Vizcaíno Ortega this volume, Gabriel et al. this volume, Armstrong this volume, Astruc et al. this volume).

As can be seen in figures 7a and 7b (¿Tienes hora? ‘Have you got the time?’), after a first L+>H* prenuclear accent the tone is kept high until the nuclear accent H*, creating a high plateau all around the prenuclear contour. This combines with a bitonal boundary tone HL%. The first target, located in the nucleus of the posttonic syllable, is higher than the nuclear accent; the second, which coincides with the intonational phrase’s limit, is phonetically realized as a mid-tone. This HL% variant has been characterized at the beginning of this chapter as a rise and then a fall to a mid tone.

At this point we must explore the possibility of the existence of a phonological HM% boundary tone due to the fact that this phonetic realization seems to appear in all information-seeking yes-no questions in the traditional subvariety of Cantabrian Spanish. At first sight it would seem that such boundary tones are HL%, so the question is whether the HM is phonologically relevant or just an allitone of HL%. Phonetically, the existence of HM seems to be clear. In spite of this, our initial hypothesis was that this might be a case of truncation since it generally appears in oxytone items. However, paroxytone words, which offer sufficient phonetic space, also reveal a mid tone (see figure 7a).

Figure 8 shows a confirmation yes-no question (¿Tienes frío?, ‘Are you cold?’) in which HL% can be attested. These examples confirm the phonetic basis of the contrast between HM and HL.
Figures 7a and 7b: Waveform, spectrogram and FO trace for the information-seeking yes-no question ¿Tienes hora? ‘Have you got the time?’ The contrast between the configuration of the traditional variety, characterized by $H^* HL\%$ (upper panel), and the standard variety with $L^* HH\%$ (lower panel) can be seen.
Figure 8: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Tienes frío? ‘Are you cold?’ with a clear HL% that contrasts with the information-seeking yes-no question exemplified in figure 7a.

However, although the F0 trace represented in figures 7a and 8 seems to confirm the validity of the contrast between HM and HL boundary tones, as they seem to differentiate between confirmation and neutral information-seeking yes-no questions, an initial study suggested that HM is a phonetic variant of HL%.

In this study, the synthetic modification of a mid tone to a low tone in neutral information-seeking yes-no questions did not lead to a change in the pragmatic value of the sequence. However, a downstep in the prominence associated with the last lexical accent caused such a question to be interpreted as a confirmation yes-no question.

Therefore, an exhaustive experimental study is required in order to evaluate the importance of the pitch accent of the prominence and final tone of the question, although it is the former that seems to be the reason for this pragmatic contrast. Pending such a study, this chapter will regard HM as a phonetic variant of the HL% boundary tone.

In those cases where information-seeking yes-no questions have more than one prosodic constituent (e.g. enumerations or when some kind of extra-sentential element is found), the intermediate phrase presents an accent L+H*, which is upstepped in the traditional variety, and an edge tone H-.

On the other hand, intermediate phrases of the disjunctive questions (¿Vas hoy o mañana?, ‘Are you going today or tomorrow?’) have a configuration that does not diverge from the L+H* HH- attested in Castilian Spanish. Therefore, the contrast established for the intermediate phrases in Castilian Spanish between H- in statements and HH- in questions (see Estebas-Vilaplana and Prieto 2008: 277 and this volume) is maintained in Cantabrian...
Spanish intonation. The intonational phrase’s nuclear configuration of a disjunctive question is $L^* L^\%$, bearing in mind that the second intonation unit is the one that makes up the alleged affirmative in this type of question; by contrast, the first unit represents the interrogated element (Navarro Tomás 1991[1944]: 118-119).

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

Echo questions are defined within the Relevance Theory framework (Wilson and Sperber 1993, Sperber and Wilson 1995) as elements whose outstanding condition does not imply, unlike what has been claimed, being mere repetitions of what has been said previously in the discourse. Noh (1995, 1998) proposes that these questions must be defined as echoic uses of language, i.e. they involve a certain questioning attitude about what has been said. This definition thus allows us to consider sentences without a prior utterance as echo questions; indeed, they are meta-representational. According to Noh (1995, 1998), this kind of question asks not about the state of affairs but rather about a previous utterance or thought. Assuming the meta-representational character of these questions proposed by Noh (1995, 1998), Iwata (2003) points out that the rising pitch leads to their interrogative status.

In order to analyse echo questions, the existence of two units must be considered: on the one hand, the repeated element itself or echo, and on the other hand, the wh-question that precedes it, which is formed as an independent intonation unit and whose omission is possible. In most cases, the latter has the characteristic intonation contour of a wh-question, with a $H+L^* L^\%$ nuclear configuration. In those instances where the interrogative character is emphasized, they will show $L+H^* HH\%$.

Regarding the echo element, it shows the characteristics described by Navarro Tomás (1991[1944]: 112); according to his research, these sentences are insistent questions about what has just been heard or said, “sometimes to make sure we have understood something clearly, and in other cases to enhance the interest and importance attached to what has been said or heard”. This allows us to include echo questions within the category of intensified questions. Uncertainty regarding the interpretation of what has just been heard and an incredulity nuance (sometimes with the emphasis derived from a previous question) result in a rising contour throughout the intonation pattern, with a sharp ending (Navarro Tomás 1991[1944]: 100, 112 ff.). This kind of question presents some features that, in our opinion, arise from its intensified and meta-representational nature: wider tonal range than yes-no or wh-questions and a $L+H^* / H^*$ nuclear pitch accent.

As is shown in figure 9, when the echo element is made up of a yes-no question, i.e. ¿Qué has dicho? ¿Que son las nueve? ‘What did you say? It’s nine o’clock?’, a high tone is maintained until the end of the tonic syllable with a $H^*$ nuclear accent, consistent with the characteristic intensification of this type of sequence. From this point, there is a rise in the F0 until the middle of the posttonic syllable, where it starts a descent towards a low tone ($H L^\%$).

Since echo questions express the speaker’s attitude toward what has been said, it is common to find surprise or disbelief in pragmatic meanings associated with this type of structure.
Figure 9: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Qué has dicho? ¿Qué son las nueve? ‘What did you say? It’s nine o’clock?’ produced with a H* HL% nuclear configuration.

Figure 10: Waveform, spectrogram and F0 trace for the counterexpectational echo question ¿Qué dices? ¿Qué Mario se presenta por alcalde? ‘What are you saying? Mario is running for mayor?’ produced with a L+H* prenuclear accent followed by a L+H* HL% nuclear configuration.
Just as in Castilian Spanish (Estebas-Vilaplana and Prieto 2008 and this volume), the nuclear pitch accent of these sentences is L+H* (figure 10, ¿Qué dices? ¿Que Mario se presenta para alcalde? ‘What are you saying? Mario is running for mayor?’), sometimes produced with an upstep. After that, the contour ends in a final rising-falling to a mid tone, the phonetic realization of HL%; this edge tone characterizes questions in this variety of Spanish, as opposed to HH%, which is attested in Castilian Spanish (Estebas-Vilaplana and Prieto 2008 and this volume) and in Chilean Spanish (Ortiz et al. this volume).

In sentences that produce a conflict between the active assumptions of speaker and listener (i.e. ¿Marina? ¿Quieres ir? ‘Marina? Does she want to go?’), a L+H* HH% intonation scheme can been found in both traditional and standard subvarieties of Cantabrian Spanish. In those cases where there are two intonation units, the former is generally characterized by a L+H* pitch accent, with the frequency sustained till the end of the sentence. In other cases, there is a slight fall to a mid tone (M-).

This nuclear accent also characterizes counterexpectational exclamative yes-no questions of this variety. Figure 11, which represents the sequence ¿¡Aún no ha llegado!? ‘S/he still hasn’t arrived?!’, shows a clear upstepping in the nucleus (L+¡H*) though it presents a HL% boundary tone.

![Figure 11: Waveform, spectrogram and F0 trace for the counterexpectational exclamative yes-no question ¿¡Aún no ha llegado!? 'S/he still hasn’t arrived?!' produced with a L+¡H* prenuclear accent followed by a L+¡H* HL% nuclear configuration.](image)
Figures 12a and 12b: Waveform, spectrogram and F0 trace for the imperative yes-no question ¿Queréis callar!? ‘Would you please be quiet!’ in the traditional variety (upper panel), with $L+H^*$ M%, and $H+L^*$ M% in the standard variety (lower panel).
3.2.2.2. Imperative yes-no questions

An imperative pragmatic use of questions introduces some modifications in the nuclear accent with respect to the characteristic configuration of information-seeking questions. Just as happens in the case of non-question imperatives, the Cantabrian Spanish standard subvariety has a nuclear H+L* pitch accent.

Beyond the valley, the main frequency is slightly increased until it reaches a mid boundary tone M%; by contrast, in Castilian Spanish these sequences present H+L* L% (Estebas-Vilaplana and Prieto 2008 and this volume). This mid-boundary tone shows the interrogative character of these utterances, clearly contrasting with the L% of non-question imperatives (see 3.3). Figure 12b shows an example of an imperative yes-no question in the standard subvariety.

However, the traditional subvariety exhibits a clear upstepping in the nucleus (L+iH*) and a monotonal boundary tone M% (illustrated in figure 12a). In both cases, the prenuclear accent of these two types of sentences is L+>H*.

In questions which entail an invitation or offer (¿Te vienes a tomar una limonada? / ¿Queréis caramelos? ‘Are you coming for a lemonade?’ / ‘Would you like some sweets?’), the nuclear configuration in the traditional Cantabrian subvariety is similar to that of exclamatives, as can be seen in figure 13. Therefore, the L+iH* HL% pattern of these sentences coincides with the one documented in Argentinian Spanish (Gabriel et al. this volume) and differs from the nuclear configuration L+H* HH% attested for this kind of sentences in Castilian Spanish (Estebas-Vilaplana and Prieto 2008) as well as in the standard subvariety of Cantabrian Spanish.

3.2.2.3. Confirmation yes-no questions

Confirmation yes-no questions, i.e. questions that seek confirmation of the expected answer, are provided with varied intonational configurations linked to two different grammatical structures. In sequences like Vendrás a merendar, ¿no? ‘You’ll come to tea, won’t you?’ or No te encuentras bien ¿eh? /¿verdad? ‘Not feeling well, are you?’, which imply the appearance of two intonation units, the element that is really being interrogated is the incidental one. The first unit shows the traits of an enhanced assertion, confirmation of which is sought by the incidental. This explains why this configuration is identical to that seen in narrow focus statements, i.e. L+H* L%. The second unit has the same configuration as an information-seeking yes-no question of the standard subvariety (L* HH%), similar to the pattern found in Castilian Spanish (Estebas-Vilaplana and Prieto this volume).

On the other hand, confirmation yes-no questions (figure 14) where the interrogated element is not an independent unit (¿Verdad que vendrás?, ‘You are coming [aren’t you?]’) have the same configuration as invitation questions, i.e. L+H* HL%, probably because in the two cases the pragmatic meaning is similar. L+>H* and H+L* can be attested as first and second prenuclear accents respectively.
Figure 13: Waveform, spectrogram and F0 trace for the invitation yes-no question (traditional subvariety) ¿Te vienes a tomar una limonada? ‘Are you coming for a lemonade?’

Figure 14: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Verdad que vendrás? ‘You are coming [aren’t you]?’ with a L*+H prenuclear pitch accent and L+H* HL% nuclear configuration.
3.2.3. Wh- questions

As in other Spanish varieties described in this volume, information-seeking wh- questions in Cantabrian Spanish are produced with two patterns. H+L* L% is the nuclear configuration found in most cases. It can also be observed in wh- questions in Puerto Rican Spanish (Armstrong, this volume) and Venezuelan Andean Spanish (Astruc et al. this volume). Nevertheless, L* HH% configuration appears in some tokens from our corpus and in other varieties of Spanish, such as Castilian, Ecuadorian and Chilean Spanish (Estebas-Vilaplana and Prieto this volume, O’Rourke this volume, Ortiz et al. this volume).

The intonation contour of information-seeking wh- questions is quite different from the one observed in information-seeking yes-no questions: after the wh- word, which usually carries a high tonal H* accent, the path of the F0 is similar to the one of declarative sentences. Moreover, unlike the L* L% configuration of broad focus statements, information-seeking wh- questions exhibit H+L* L%. In any case, it must be pointed out that on those occasions where there is a syllabic clash, the wh- word is unstressed. It seems that this nuclear configuration (H+L* L%) characterizes information-seeking wh- questions in Cantabrian Spanish. This pattern differs from the one attested in other Spanish varieties: L* L% in Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Argentinian Spanish (Gabriel et al. this volume) and Chilean Spanish (Ortiz et al. this volume), ¡H* L% in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), L+H* HL% in Mexican Spanish (de-la-Mota et al. this volume) and L* M% / L+H* M% in Ecuadorian Spanish (O’Rourke this volume).

Sentences with more than one intonation unit offer a different nuclear configuration depending on the grammatical relationship established among its units: coordination or subordination. When a question is made up of two coordinated wh- questions, headed by a wh- word with pitch accent H*, the last unit presents the same nuclear configuration (H+L* L%). Similarly to the first unit of coordinated statements, the intermediate phrase has L+H* H-.

Information-seeking wh- questions formed of two clauses with a subordination relationship show the same configuration in each clause (i.e. ¿Qué le dirás si vuelve? ‘What will you tell her/him if s/he comes back?’). However, the first one bears H* on the wh- word, followed by a !H* pitch accent. The subordinate unit has two realizations: H+L* L% as in information-seeking wh- questions (illustrated in figure 16) and L* HH%, when the interrogative character is emphasized.
Figure 15: Waveform, spectrogram and F0 trace for the information-seeking wh- question ¿De dónde has salido? ‘Where have you come from?’ with a H+L* L% nuclear configuration.

Figure 16: Waveform, spectrogram and F0 trace for the information-seeking wh- question ¿Qué le dirás si vuelve? ‘What will you tell her/him if s/he comes back?’
3.2.4. Biased wh- questions

The intonational behaviour of biased wh- questions is generally conditioned by their pragmatic-semantic features. Thus they show a wide variety of intonation contours and few similarities with information-seeking wh- or information-seeking yes-no questions.

3.2.4.1. Echo wh- questions

As can be seen in figure 17, the insertion of a wh- question into an echo structure modifies its intonation contour substantially since a high tone is maintained throughout virtually the entire unit. The fundamental frequency rises, coinciding with the start of the last tonic syllable; later on, it starts a light descent until it reaches a mid tone. Therefore, unlike other Spanish varieties (see the other chapters of this volume), the configuration for this type of sequence is L+I H* M%.

In those cases where the echo elements are made up of two coordinated wh- questions, i.e. ¿Qué me has preguntado? ¿Que a dónde voy y cuándo volveré? ‘What did you ask me? Where am I going and when am I coming back?’, the intonation contour in both cases is identical to that of wh- questions made up of one unit, since both units preserve their interrogative character.

On the other hand, echo disjunctive questions, i.e. ¿Qué me has preguntado? ¿Por dónde he llegado o por dónde he entrado? ‘What did you ask me? How did I get here or how did I get in?’, bear a different intonation contour in the second intonation unit. As has been pointed out in the case of other disjunctive structures, this element represents the alleged affirmative and therefore exhibits a L* L% nuclear configuration, even though the wh-word keeps a high tone H*, which is typical of wh- questions. However, the first unit ¿Por dónde he llegado...? presents the characteristic nuclear pitch accent of echo questions (L+I H*); at the same time, contrasting with M-, which is the standard endpoint in some cases of echo yes-no questions, in this case the frequency rises until it reaches a H- edge tone.

As was noted in Section 3.2.2.1 of this chapter, as well as in the chapter on Castilian Spanish in this volume, some sort of counterexpectational meaning (surprise, incredulity, disapproval, etc.) is commonly associated with echo questions. They are intended to show that the situation is at variance with the speaker’s expectations. Although the syntactic structure of a echo wh-question expressing incredulity is similar to neutral echo questions, its intonation contour is closer to that of information-seeking yes-no questions in the standard subvariety. As can be seen in figure 18 (¿Qué dices que te dieron? ‘What did you say they gave you?’), after the prominence associated with the first prenuclear accent (L+H*), the tone is kept relatively low until the last syllable of the sentence, where we find a L* nuclear accent. Finally, the contour ends in a HH%. This pattern is very similar to the one attested in Venezuelan, Dominican and Chilean Spanish (Astruc et al. this volume, Willis this volume, Ortiz et al. this volume). However, in these varieties, the nuclear accent is L+H*.

Note that this token is unusual in that it presents one single intonation unit. This is due to the particular structural and typological features of the second element of the reiterative.
Figure 17: Waveform, spectrogram and F0 trace for the echo wh-question ¿Qué me has preguntado? ¿Qué a dónde voy? 'What did you ask me? Where am I going?' It presents a L+H* M% nuclear configuration.

Figure 18: Waveform, spectrogram and F0 trace for the counterexpectational echo wh-question ¿Qué dices que te dieron? 'What did you say they gave you?' with a L* HH% nuclear configuration.
3.2.4.2. Imperative wh-questions

As Estebas-Vilaplana and Prieto (2008, this volume) state for Castilian Spanish and Willis (this volume) for Dominican Spanish, imperative sentences exhibit a (!)H+L* L%. Likewise, !H+L* is the characteristic nuclear accent of gentle and strong commands, as well as non-interrogative requests. In the prenuclear area, the wh- word presents not H*, but L+>H* (L+H* in the irritated imperative wh- question). The nuclear configuration found in Cantabrian Spanish (figures 19a and 19b ¿¡Cuándo lo harás!? ‘When are you going to do it?!’ / ¿¡Qué quieres!? ‘What do you want?!’) contrasts with the configurations L* L% seen in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and Ecuadorian Andean Spanish (O’Rourke this volume), L+H* L% attested in Mexican Spanish (de-la-Mota et al. this volume) and Chilean Spanish (Ortiz et al. this volume).

However, the predominance of their interrogative character over any other pragmatic meaning in some dubitative wh- questions explains why their intonation contour does not differ from that of information-seeking wh- questions, with a H+L* L% nuclear configuration.

3.2.4.3. Rhetorical wh-questions

Rhetorical wh-questions are closer to some statements than to questions (Escandell Vidal 1986: 502 ff.) due to the fact that the answer is implicit in the sentence itself and the speaker is merely seeking the listener’s acceptance or confirmation of the affirmative presumption contained in the question (Navarro Tomás 1991[1944]: 108-109 and 114-117, Escandell Vidal 1986: 502 ff., Escandell Vidal 1999: 3985 ff.). These pragmatic-semantic characteristics may explain the presence of a nuclear L* L% configuration (as illustrated in figure 20). In addition, this behaviour differs from what is described for information-seeking wh-questions, which present H+L* L% (see 3.2.3).

This pattern is similar to the one attested in Argentinian Spanish (Gabriel et al. this volume) but contrasts with the configurations found in other varieties: !H* M% in Castilian Spanish (Estebas-Vilaplana and Prieto this volume), H+L* L% in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and L+H* L% in Chilean and Puerto Rican Spanish (Ortiz et al. this volume, Armstrong this volume).

3.3. Imperatives: commands and requests

Let us now describe the intonation patterns of imperatives. These sentences are directive speech acts so they are used to tell someone to do something. The intonation contour of imperative sentences in this variety of Spanish differs depending on the illocutionary force with which the speaker conveys this speech act. It shifts between two pragmatic extremes: the command and the gentle or polite request.
Figures 19a and 19b: Waveform, spectrogram and F0 trace for the imperative wh-question ¿Cuándo lo harás!? ‘When will you do it?!’ (upper panel) and the irritated imperative wh-question ¿Qué quieres!? ‘What do you want?!’ (low panel). This types of sentences are prototypically characterized by a !H+L* L% nuclear configuration.
Figure 20: Waveform, spectrogram and F0 trace for the rhetorical wh-question ¿Qué haríais sin mí?
‘What would you do without me?’, which exhibits a L* L% nuclear configuration.

3.3.1. Commands

Commands are directive speech acts exhibiting the highest level of illocutionary force. In these utterances, the first prenuclear accent is characterized by a very prominent rising pitch accent (L+H*) with its peak falling on the tonic syllable. After that, an initially sharp descent continues until the end of the sentence, yielding a H+L* L% nuclear configuration (figure 21). The downstepping feature seems significant as it differentiates these sentences from wh-questions described above. Cantabrian Spanish shares with Argentinian and Dominican Spanish (see Gabriel et al. this volume and Willis this volume) this nuclear configuration.

3.3.2. Requests

At the other end of the illocutionary force we find requests. This kind of sentence can be defined not as commands but as the speaker’s expression of his/her desire for the listener to do something that in some cases could be interpreted as a suggestion. The nuclear configuration is not different from that observed in commands (see 3.3.1), i.e. H+L* L%, but the prenuclear pitch accent seems to establish the difference between them, since the L+H* in requests contrasts with the L+H* found in commands. The stronger illocutionary force of the latter is, in our opinion, the source of the peak’s alignment with the accented syllable. Figure 22 sheds some light on the typical behaviour of a request (Rellenen este formulario, ‘Fill in this form’), whose F0 trace shows again a strong resemblance with some imperative wh-questions. The same nuclear pattern to express requests has only been found in Dominican Spanish (Willis this volume).

On the basis of the available data we can conclude that this Spanish dialect seems to make no intonational distinction between strong and soft commands. However, in contrast with what has been described about requests, polite requests exhibit a L+H* L% nuclear configuration.
Figure 21: Waveform, spectrogram and F0 trace for the command ¡Ven aquí ahora mismo! ‘Come here at once!’ This type of sentence is characterized by a !H+L* L% nuclear configuration.

Figure 22: Waveform, spectrogram and F0 trace for the request Rellenen este formulario ‘Fill in this form’. This type of sentence is characterized by a !H+L* L% nuclear configuration.
Figure 23: Waveform, spectrogram and F0 trace for the tentative call ¡Marina! with the nuclear configuration L+H* M% that characterizes a calling contour.

Figure 24: Waveform, spectrogram and F0 trace for the insistent vocative ¡Luna! produced with a L+H* HL% nuclear configuration.
3.4. Vocatives

As happens in other Spanish dialects as well as other languages, there exist a range of intonation contours in the linguistic varieties studied in this chapter for the calling utterances linked to various pragmatic meanings. Figure 23 represents the unmistakable calling contour that pragmatically works as a tentative call when you enter a house and call out someone’s name. This kind of vocative is characterized by a rising contour throughout the tonic syllable (L+H*). From then on, F0 is kept at a sustained mid tone to the end of the sentence (M%).

This nuclear configuration is quite common in other varieties of Spanish, such as Castilian, Mexican, Puerto Rican, Argentinian, Chilean and Venezuelan Andean Spanish (Estebas-Vilaplana and Prieto this volume, de-la-Mota et al. this volume, Armstrong this volume, Gabriel et al. this volume, Ortiz et al. this volume, Astruc et al. this volume).

The other two varieties of vocative sentences included in our corpus, a vocative used to call over a long distance and an insistent call, whose pragmatic meaning seems to be closer to a command, present a different configuration from anything seen thus far in this chapter. As has been noted for Castilian (Estebas-Vilaplana and Prieto this volume), Mexican (de-la-Mota et al. this volume), Canarian (Cabrera Abreu and Vizcaíno Ortega this volume), Venezuelan (Astruc et al. this volume) and Puerto Rican Spanish (Armstrong this volume), these sentences show a nuclear rising pitch accent L+H*, closely followed by a HL% bitonal boundary tone. This vocative contour nevertheless shows a wider pitch range in insistent calls (see figure 24). Due to its emphatic character, this kind of sentence would be pragmatically inappropriate if used as a first call or soft request for attention. It is important to underline that in all cases the vowel of the last syllable of these sentences undergoes significant lengthening.

However, the configuration of the vocative used as a call, whether insistent or not, diverges from the standard structure of this unit when it is embedded in wider structures. In these cases, the great structural independence of vocatives as well as their semantic-pragmatic characteristics explain the presence of a L+H* nuclear accent combined with L%.

4. Conclusions

This chapter offers a description of the intonation contours of Cantabrian Spanish. The different kinds of sentences that make up our corpus (statements, yes-no and wh- questions, echo questions, commands, requests and vocatives) may involve a neutral realization in the context as well as different pragmatic meanings. Our analysis allows for the comparison of Cantabrian Spanish with the other Spanish dialects described in this volume.

As can be concluded from previous research (López-Bobo and Cuevas-Alonso 2009, Cuevas-Alonso and López-Bobo in press), this Spanish dialect shows two intonation diasystems, one of them with melodic patterns similar to those found in other Romance varieties of the north-west Iberian Peninsula, and the other with intonation contours that resemble those of Castilian Spanish.
As regards pitch accents and boundary tones, the ones proposed for Castilian Spanish (Estebas-Vilaplana and Prieto 2008), with the exception of LHL%, have all been documented in Cantabrian Spanish. Generally speaking, broad focus statements show a L* L% configuration, which contrasts with the L+H* L% of narrow focus statements, with upstepping in some sentences in the traditional subvariety.

Greater differences are to be seen between the intonation of questions in the two Cantabrian linguistic subvarieties. Thus, information-seeking yes-no questions show L* HH% and H* HLL% configurations in the standard and traditional subvarieties respectively. However, as may be seen in table 3, the diverse pragmatic meanings of questions involve different nuclear contours. The scheme of information-seeking wh- questions (H+L* L%) does not coincide with what is seen in other Spanish dialects, which is generally L* L%. In addition, the downstep in the H+L* tone is important because it establishes a contrast between imperative wh- questions, which show this downstep, and non-imperative wh-questions, which do not. This idea is reinforced by the fact that all other statements with an imperative nuance within our corpus also present a !H+L*. Echo questions maintain a high tone throughout the sequence. Their nuclear configuration is L+iH* M% or H* HLL%, depending on the echo element (i.e. depending on whether it is a wh- or yes-no question). In each case, it is important to point out that the nuclear configuration is very similar to that seen in the corresponding non-echo question.

The characteristic contour of a calling utterance is L+H* M% but in those cases where the pragmatic nuance is one of insistence, L+H* HL% appears as a standard configuration. All these nuclear configurations have also been found in other varieties of Spanish.

By way of a concluding summary, the nuclear configurations of Cantabrian Spanish and their schematic representations are shown in table 3.

**Table 3:** Cantabrian Spanish nuclear configurations by utterance type and their schematic representations

<table>
<thead>
<tr>
<th>Statements</th>
<th>Nuclear Configuration</th>
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<tr>
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<td>Biased statements</td>
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<tr>
<td>Narrow focus statements</td>
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<td>Contradiction statements</td>
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<td>---------------------------</td>
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<tr>
<td></td>
<td>Traditional</td>
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<tr>
<td>Uncertainty statements</td>
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**Information-seeking yes-no questions**

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<td>Traditional</td>
<td>H* HL%</td>
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**Biased yes-no questions**

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**Wh- questions**

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### Biased wh-questions

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### Imperatives: commands and requests

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### Vocatives

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<td>Insistent calls</td>
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Canarian Spanish Intonation

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1. Introduction

In this chapter we describe the inventory of nuclear pitch accents and boundary tones found in Canarian Spanish using a restrictive approach to the Sp_ToBI labelling conventions proposed by Beckman et al. (2002) and later by Estebas-Vilaplana and Prieto (2008). Our analysis is more restrictive inasmuch as we dispense with the phrase accent altogether (as already argued in Vizcaíno et al. 2008) and limit bitonal boundary tones to LM%, HH% and HL%. In addition, we analyse the variety of contrastive pitch configurations present in the dialect together with their associated meanings. In order to do so, we describe the intonation tunes of statements, questions, imperatives and vocatives, as a device for encoding neutral and biased meanings.

Descriptions of Canarian Spanish intonation like Quilis (1989), Dorta and Hernández (2005), Dorta (2007) and Vizcaíno et al. (2007) coincide in their report on the intonation of statements as follows: the overall contour shows a rise to the first tonic (or posttonic) syllable followed by a gradual descending movement that lasts till the end of the utterance, in those cases in which the specific meaning of completeness is being conveyed. In the present study, we confirm these findings, and additionally note that when a nuance of uncertainty is being manifested the ending tune shows a descending movement to a mid pitch well above the speaker’s baseline.

As far as questions are concerned, both Quilis (1989) and Dorta (2004) claim that one of the most frequent contours for information-seeking yes-no questions in Canarian Spanish shows a circumflex shape which either extends across the question or begins on the last accented syllable. While the second part of this claim is confirmed, in the present study the first part is questioned, since the prenuclear contour presents mostly a high sustained pitch, or even a set of sustained descending terraces. In addition to final falls (including those in which there is truncation – see figure 12), we have also encountered tunes ending in a clear rising movement to transmit the nuance of counterexpectation, as illustrated in figure 11.

In the case of information-seeking wh- questions, Quilis (1989) claims that one overall shape of the F0 contour shows a gradual descent from the peak located in the first half of the utterance to the end. He adds that, sometimes, if the wh- word is far away from the end of the utterance, the last accented syllable may show a circumflex movement. From the evidence we present in this chapter, the first claim is observed to be true for rhetorical wh-

* This research was presented at the 4th Sp_ToBI Workshop: Transcription of Intonation of the Spanish Language (Las Palmas de Gran Canaria, June 2009). We are very grateful to Miguel Cuevas-Alonso, Meghan E. Armstrong, María Jesús López-Bobo, Pilar Prieto and Paolo Roseano for their valuable comments on an earlier draft of this chapter, which have improved our final description of Canarian Spanish intonation.
questions only, but this is by no means the intonation pattern for their neutral version, contrary to what seems to be implicit in Quilis’s description. Instead, as we shall claim in section 3.2.3, information-seeking wh- questions recurrently show the circumflex movement over the nuclear word (which he actually limits to cases where the wh- word is located far away from the end of the utterance). Thus, contrary to the intonation of, for example, Castilian Spanish, in Canarian Spanish both information-seeking wh- questions and information-seeking yes-no questions present the same circumflex nuclear configuration.

2. Canarian Spanish intonational phonology

In this section we illustrate the inventory of pitch accents and boundary tones attested in Canarian Spanish intonation, together with their phonetic manifestations, and provide a short description of their occurrence in different utterance types. This inventory is based on Beckman et al. (2002) and Estebas-Vilaplana and Prieto (2008) for Sp_ToBI; on Cabrera Abreu and Vizcaíno Ortega (2003, 2007 and 2009) and Vizcaíno Ortega and Cabrera Abreu (2009) for Canarian Spanish intonation.

2.1. The pitch accents

Table 1 shows the stylized F0 contour of the pitch accents found in our data, together with a short phonetic description of its manifestation in either the nuclear or prenuclear section of the intonation tune. We also specify the utterance types in which these contours are attested.

In this study we drop the former notation H+H* in favour of a new one, iH*, which we also treat as a phonologically distinct pitch accent, and not as a phonetic variant of H*. Following the initial inventory of pitch accents proposed by Pierrehumbert (1980), Sosa (1999) resorted to H+H* to account for the ‘accumulation’ of further high pitch in the vicinity of the nuclear syllable in information-seeking yes-no questions in Caribbean Spanish. Given that extremely similar contours were observed in Canarian Spanish intonation for the same type of utterances, we also adopted this representation in Cabrera Abreu and Vizcaíno Ortega (2003) and subsequent work.

However, as suggested by Elordieta (p.c.), further analysis of the interpretation of H+H* in terms of targets and their alignment leads to a set of predictions which are undesirable given that none of them are attested: (i) the presence of H as a leading tone predicts that there will be a delay in the alignment of the peak with the accented syllable, as typically observed in the interpretation of other pitch accents with a leading tone like, for instance, L+H*; (ii) the presence of H+H* (with a leading tone) as a phonological unit may result in the assumption that H*+H (with a trailing tone) is also included in the inventory of pitch accents, in the same way that both L+H* and L*+H are indeed predicted and attested in the data; (iii) the presence of the leading tone H in H+H* stands as an indication that pitch is relatively high before reaching a peak, which is not always the case, as we shall see for the pretonic syllable in the case of counterexpectational wh- questions (in section 3.2.4.1); and (iv) the sequence of two identical tonal units in the pitch accent countervenes the Obligatory Contour Principle (or OCP; see Leben 1973, McCarthy 1986) (which we do wish to subscribe to).
In view of this set of unconfirmed predictions, an alternative option is clearly called for. Beckman et al. (2002: 26) adopt \( iH^* \), as they claim that the leading tone in \( H+H^* \) is ‘functioning merely to upstep the following peak’. This is the most descriptively adequate representation, as it fulfils its own predictions: (i) the peak is consistently aligned with the accented vowel, as there is no leading tone, and the phonetic manifestation of \( iH^* \) as a rise to the aforementioned peak results from interpolation, and not from the phonetic manifestation of an alleged \( L \) leading tone; (ii) there is a noticeable high target, regardless of the pitch height of the pretonic syllable; and finally, (iii) since \( iH^* \) is monotonal, we avoid violation of the OCP.

An allophonic variant of \( H^* \), \( iH^* \) is phonetically interpreted as relatively high pitch which, if compared to the peak that typically precedes it, sounds clearly lower but is located a good distance above the speaker’s baseline. It is found in prenuclear contours and in the nuclear configuration of contradiction statements and exclamative statements.

Finally, \( L+iH^* \) is likewise an allophonic variant of \( L+H^* \), and it is perceived as a rising movement over the accented syllable, except that the actual peak for the \( H^* \) target is situated at a pitch level which is lower than the one for a preceding \( H \).

**Table 1:** Inventory of monotonal and bitonal pitch accents in Canarian Spanish intonation and their schematic representation

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L^* )</td>
</tr>
<tr>
<td>( H^* )</td>
</tr>
<tr>
<td>( iH^* )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td>( L+H^* )</td>
</tr>
</tbody>
</table>
2.2. The boundary tones

The inventory of boundary tones initially proposed in Cabrera Abreu and Vizcaíno Ortega (2007, 2009) contemplated only two monotonal units, H and L. In the present study, however, following Estebas-Vilaplana and Prieto (2008), the inventory is expanded to include the following notations: L%, M%\(^1\) and H% in the set of monotal boundary tones; and LM%, HH%, and HL% in the set of bitonal boundary tones. These account respectively for the complex ending tones of the following utterance types: statements of the obvious; counterexpectational yes-no questions, reprise echo wh-questions, commands and commands with a nuance of encouragement; and finally, vocatives (with a nuance of expectation). They are all illustrated in table 2.

Table 2: Inventory of monotal and bitonal boundary tones in Canarian Spanish intonation and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
<th>L%</th>
<th>M%</th>
<th>H%</th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
<td>L% is manifested as either low pitch near the speaker’s baseline, or as a falling movement. Its phonetic interpretation can also be truncated (or absent) when it is implemented over oxytone words bearing (\downarrow)H* as their nuclear accent. It is attested in broad and narrow focus, contradiction and exclamative statements; in yes-no questions of the following types: information-seeking, echo, imperative and confirmation; in wh-questions of the following types: information-seeking, counterexpectational, imperative and rhetorical. Finally, it is found in strong commands and requests.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M%</td>
<td>M% is perceived as relatively mid-pitch. This target can be reached from a high point, as in the case of uncertainty statements, or from a low point, as in polite wh-questions and gentle vocatives.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H%</td>
<td>The manifestation of H% as sustained high pitch (together with a noticeable lengthening of the accented vowel) is found in vocatives calling over a long distance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) For the purposes of offering a unified model across the whole set of chapters in this volume, we have decided to incorporate M% into the inventory of boundary tones.
3. Basic intonational patterns in Canarian Spanish

Let us now turn to a sketch of the methodology followed in the data collection, together with a brief description of the subjects. Following Prieto’s (2001) inductive method, we presented subjects with a series of situations and asked them to respond accordingly. For instance, in order to elicit the typical intonation pattern of a polite wh-question, subjects were set in the following context: ‘You are just about to pay for all your goods in a shop, and want to know about the final cost. Ask politely how much you owe’. This procedure was performed with 6 female subjects aged between 40 and 45 and 1 male speaker aged 47, all from the island of Gran Canaria. They had all completed a secondary education. Perceptual and acoustic analyses of 75 utterances were performed using Praat (Boersma and Weenink 2010). Those cases in which there was a mismatch between our perception and the F0 display were followed up with two actions: (1) we checked the signal settings to exclude any interferences and identify any micro-intonation effects, and (2) we presented the F0 contours to a third trained phonetician for an independent analysis.

3.1. Statements

3.1.1. Broad focus statements

The nuclear F0 shape of broad focus statements in Canarian Spanish intonation is illustrated in figure 1. The prenuclear tonal configuration shows a single accent, L+>H*, which is responsible for the rise over the accented syllable and the delayed peak on the posttonic syllable.

The nuclear section of the contour observed in figure 1 looks rather flat due to the high degree of zooming performed in the analysis. The gradually descending pitch over the accented syllable is accounted for by L*, which is the same representation as that proposed by Estebas-Vilaplana and Prieto (this volume) for Castilian Spanish. However, in Cabrera Abreu and Vizcaíno Ortega (2007), we proposed L+!H* as the nuclear accent in another broad focus statement, more specifically, for the utterance La niña morena come mandarinas, since we observed that the downward trend of the F0 contour over the prenuclear syllable turned into a timid but clearly perceptible rise at the onset of the accented nuclear syllable. This representation resembles those proposed for some
Caribbean varieties of Spanish. For instance, in Venezuelan Andean Spanish, the nuclear contour proposed by Astruc, Mora and Rew (this volume) is represented as !H*, whereas in Dominican Spanish, Willis (this volume) puts forward L+H*.

This conflict in the representation of the nuclear accent in broad focus statements in Canarian Spanish may be resolved if we assume that the phonological representation is L+H*, and that tonal compression may affect the phonetic manifestation of such an accent to the extreme that the expected rise may be absent altogether, resulting in the F0 shape over the nuclear syllable just described in relation to figure 1. The use of L+!H* in Canarian Spanish against L* in Castilian Spanish may explain why Canarian Spanish speakers claim that Castilian Spanish speakers tend to sound too categorical in their statements. Until all this is confirmed with further data and perception tests, we shall assume that L* is the appropriate phonological representation for the nuclear accent in broad focus statements.

3.1.2. Biased statements

As the reader will note, we include a description of the prenuclear pattern of the tunes, since we suspect that these contribute to the achievement of the meaning desired by the speaker. Future research should undertake a more detailed analysis into the effects of changing the prenuclear pattern and keeping the nuclear configuration constant, in order to calculate the weight of the former against the latter in the manifestation of pragmatic meanings.

3.1.2.1. Narrow focus statements

Figure 2 illustrates a token of narrow focus statements, where we observe a rise-fall F0 nuclear contour, in which the peak is aligned with the end of the nuclear syllable. The sequence L+H* followed by L% accounts for this shape. This representation is similar to the one proposed for Venezuelan Andean Spanish by Astruc, Mora and Rew (this volume). Given this description for Canarian Spanish intonation, it seems that the difference between the nuclear pitch accents in broad versus narrow focus statements is a question of resorting to one or the other of two different accents, L* versus L+H*, as is the case in Castilian Spanish.

A close comparison with Puerto Rican Spanish (Armstrong this volume) reveals that H* stands as the representation of the nuclear pitch accent. After listening carefully to the same utterance in the two varieties, we note that the tunes are quite similar, but in the case of Canarian Spanish the rise (adequately accounted for by L+H*) is clearly perceptible (and there is no tonal compression), whereas in Puerto Rican Spanish tonal compression is active, and consequently, as claimed by Armstrong (this volume), the contour sounds rather monotonally over the nuclear syllable.

Narrow focus statements of the type illustrated in figure 2 are similar to contradiction statements like the one shown in figure 3 below. The typical tune used to convey the meaning that what the speaker says is definite and unequivocal shows the nuclear accent !H*, followed by the boundary tone L% in the second intonation phrase (henceforth IP). L+>H* stands as the prenuclear accent. We clearly perceive the drop in pitch from the first pitch accent (the peak is located at 245 Hz) to the nuclear one (230 Hz), together with a noteworthy extra lengthening of the nuclear vowel. The observed final sustained mid pitch of the first IP is represented by the boundary tone M%.
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement Bebe una limonada ‘She is drinking lemonade’. L+H* accounts for the prenuclear contour and L* represents the nuclear accent, followed by L%.

Figure 2: Waveform, spectrogram and F0 trace for the narrow focus statement No, de limones ‘No, of lemons’. The two IPs show the same tonal sequence: L+H* L%.
This contour differs from that typically used in broad focus statements in terms of the nuclear pitch accent, which is !H* here but L* in broad focus statements. There is also a noticeable lengthening of the nuclear vowel in the case of the contradiction statement.

Further examination of this tune and the one described for the same type of utterance in Castilian Spanish (Estebas-Vilaplana and Prieto this volume) reveals that though they share equivalent prenuclear pitch accents, L+>H*, both the nuclear pitch accents and the boundary tones are different: !H* versus L* and L% versus HL%.

### 3.1.2.2. Exclamative statements

After examining the intonation of the utterance depicted in figure 4, our first tentative phonological analysis of exclamative statements was !H* M%. Initially, such an analysis seemed to us the most descriptively accurate.

However, the same utterance produced by a different speaker (speaker 2) unexpectedly resulted in a slightly different contour (figure 5), in which there is no perceptible final mid pitch.

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We are grateful to Martine Grice for her insightful comments at the 4th Sp_ToBI Workshop: Transcription of Intonation of the Spanish Language (Las Palmas de Gran Canaria, June 2009) about the phonetic shapes of all the contours discussed here, and their mappings to phonological representations.
Figure 4: Waveform, spectrogram and F0 trace for the exclamative statement ¡Fuerte simplón! ‘What a simpleton!’ produced with L*+H in the prenuclear section and !H* followed by L% in the nuclear section, as uttered by a female speaker (speaker 1). There is tonal truncation and tone shift leftwards of !H* and L%.

Figure 5: Waveform, spectrogram and F0 trace for the exclamative statement ¡Fuerte simplón! ‘What a simpleton!’ produced with H* in the prenuclear section and !H* followed by L% in the nuclear section, as uttered by a male speaker (speaker 2). Tonal truncation is apparent.

3 Although M% was the representation initially proposed to account for the observed mid pitch, a full investigation resulted in the choice of L% as the definitive phonological representation.
As trained phoneticians and native speakers of Canarian Spanish, we decided that the contour produced by speaker 1 sounded like a marked variant of the more natural variant produced by speaker 2.

In order to work out whether this difference was due to speaker variability or the lexical stress pattern of the nuclear word, a third speaker was asked to produce the same type of utterance, but this time also including nuclear paroxytone and proparoxytone words. We found that, in these cases, there was indeed a descending movement implemented on the posttonic syllables (as can be seen in figure 6 for ¡Fuerte estúpido! ‘What an idiot!’ This tune, phonologically represented as !H* L%, was then identified as the same irrespective of the different stress patterns, shown by the three speakers, who all agreed that this was the most natural rendering.

In relation to the exclamative nuance conveyed by the contour in figure 4, this is achieved by means of two factors (the second one not being exclusive to Canarian Spanish intonation): (i) final sustained mid pitch, and (ii) tone shift to the left of both !H* and L%. According to Ladd (1996: 59), in rather emphatic statements of French, word-final ‘pitch accents may associate to syllables which are not necessarily stressed’, so that they end up being shifted to the left. The phenomenon observed in the case of speaker 1 is similar to the situation just described: the metrically strong syllable in the word simplón is the last one (-plón). However, we notice that the metrically weak syllable (sim-) is clearly lengthened, rather high and followed by a drop in pitch. Thus, following Ladd’s (1996) analysis for French, we suggest that both !H* and L% are shifted to the left.

From all this analysis we conclude that, in the intonation of exclamative statements in Canarian Spanish, speakers may resort to one of two phonetic strategies in the implementation of phonological representation whenever there is insufficient segmental material to support the manifestation of a string of tones: (i) truncation of L% (speaker 2), or (ii) partial truncation of L% (as some drop in pitch is present) and tone shift to the left of both !H* and L% (speaker 1).

There are striking similarities between the tune illustrated in figure 6 and the one offered by Armstrong (this volume) from Puerto Rican Spanish for the utterance ¡Está riquísimo! They both show a prenuclear rise followed by what may be informally described as a compressed circumflex movement over the nuclear word which persists to the end of the utterance.

3.1.2.3. Statements of the obvious

Figure 7 illustrates a statement in which the speaker conveys the meaning of obviousness by means of the observed complex pitch movements from the nuclear configuration to the end of the tune. Thus, the rising movement and the peak on the accented syllable are followed by a dip in the postnuclear syllable, which is subsequently followed by another rise. Given L+H* for the pitch accent, and an alleged H% for the final rise, we are confronted with a phonological representation which falls short of a satisfactory account, since the observed dip is not captured. Estebas-Vilaplana and Prieto (2008) resort to bitonal boundary tones as the units responsible for the manifestation of such complexity at the end of tunes. This is an excellent solution, since it introduces no new element into phonological representations but instead assumes that the well-attested nature of pitch accents as bitonal units can be extended to boundary tones, too. Thus, the aforementioned dip together with the rise can be described in terms of the bitonal boundary tone LM%. 

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Figure 6: Waveform, spectrogram and F0 trace for the exclamative statement ¡Fuerte estúpido! ‘What an idiot!’ produced with L*+H in the prenuclear section and !H* followed by L% in the nuclear section, as uttered by a second female speaker (speaker 3). The interpolation between !H* and L% is present.

Figure 7: Waveform, spectrogram and F0 trace for the statement of the obvious ¡De Guillermo! ‘Guillermo’s [of course]!’ produced with a L+H* in the nuclear accent followed by the bitonal LM% boundary tone.
In Puerto Rican Spanish (Armstrong this volume) and Castilian Spanish (Estebas-Vilaplana and Prieto this volume), the same utterance type yields tunes that sound very similar, and they are consequently accounted for by the same tonal configuration.

3.1.2.4. Uncertainty statements

The tune of statements in which the speaker shows a clear degree of uncertainty or hesitation is illustrated in figure 8. Note that the F0 starts from rather low pitch followed by a long continuously rising movement over the first section of the prenuclear contour (puede que no le gus- in guste), and then, during the second section, it remains high and sustained (over -te el regalo que le he com-), until it reaches an extra-high peak on the nuclear syllable (-pra-). This is followed by a falling movement to a point well above the low pitch level shown at the beginning of the utterance. It is precisely this final mid pitch, in addition to the previously described rising movement, which conveys the nuance of hesitation. As far as the phonological representation of this tune is concerned, this is our first instance of iH* M% in the nuclear stretch, and in the prenuclear one we find the tonal sequence L+>H* iH* iH* for the first section and H* for the second section.

Uncertainty statements share the same nuclear pitch accent (iH*) with information-seeking yes-no questions and information-seeking wh- questions, as we shall see later in sections 3.2.1. and 3.2.3. However, these statements deviate from both types of questions in as much as the boundary tone is different in each case, M% versus L%.

Evidence in support of iH* against L+iH* as the preferred nuclear representation for uncertainty statements is the fact that it is descriptively adequate, as it confirms the absence of a low target. The presence of such a dip in the same utterance type in Castilian Spanish, on the other hand, justifies the phonological representation L+iH* in the rather different tune that variety presents (see chapter 2 in this volume).

Another rendering of Puede que no le guste el regalo que le he comprado, this time in Venezuelan Andean Spanish intonation, shows a different contour altogether, albeit split up into two IPs. As illustrated in chapter 7 of this volume, the overall contour shows a set of downstepped Hs (either in bitonal or monotonal pitch accents), together with final low pitch, which is transcribed as L%.

3.2. Questions

3.2.1. Yes-no questions

A constant characteristic across all questions (including the biased variants) has turned out to be the speakers’ use of a pitch range which is higher here than in statements. Figure 9 illustrates the tune of an information-seeking yes-no question.

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4 The following description of tunes for questions in Canarian Spanish is based on ongoing research in which we study the relationship between such tunes and the pragmatic meanings with which they are associated following the notion procedural meaning as used in current Relevance Theory studies (see Escandell Vidal 1998 for Standard European Spanish). Obviously, this falls out of the scope of the present volume, but it has allowed us to deepen our understanding of how interrogatives work in Canarian Spanish to the extent that we are now able to offer their systematic analysis and description.
In Canarian Spanish intonation, a monotonal phonological representation, \(\text{iH}^* \text{ L}\%), accounts for the observed circumflex nuclear contour in information-seeking yes-no questions. Note that the extra-high peak is aligned with the nuclear vowel (without there being any dip before it). As already claimed above, since the F0 curve before this nuclear accent mostly exhibits high pitch and there is also no dip before the extra rise, there is, then, no justification for postulating \(\text{L+}\text{iH}^*\). The observed rise in figure 9 is due to interpolation between the prenuclear accent (\(\text{L}^+\text{iH}^*\)) and the nuclear one (\(\text{iH}^*\)). After this last rise, pitch falls sharply to the end of the utterance. As already described in Cabrera Abreu and Vizcaíno Ortega (2003), the falling interpolation between \(\text{iH}^*\) (or, for that matter, \(\text{H+H}^*\) in Cabrera Abreu and Vizcaíno Ortega 2003) and \(\text{L}\%\) may be absent if the nuclear word is oxytone, since there is no segmental material on which to implement the falling movement (i.e. there is tonal truncation). This is illustrated in figure 12 below.

For Puerto Rican Spanish, Armstrong (this volume) proposes \(\text{iH}^*\) (as an allophonic variant of \(\text{H}^*\)) to capture the nuance of an ‘extra degree of involvement’ on the part of the speaker. By contrast, in Canarian Spanish, \(\text{iH}^*\) sounds neutral, that is, it is free of the nuance which Armstrong mentions in her analysis.\(^5\)

Although the circumflex shape just described is also observed in Venezuelan Andean Spanish intonation for the same type of utterance, as described in chapter 7 of this volume, note that its phonological description nicely captures a difference between them. In the case of Canarian Spanish, \(\text{iH}^*\) accounts for the systematic drastic jump up in pitch to the accented syllable, whereas in Venezuelan Andean Spanish \(\text{L+H}^*\) is responsible for the observed dip followed by a rise which is not systematically higher than a preceding H. The question that then arises is whether \(\text{iH}^* \text{ L}\%\) is attested at all in questions in Venezuelan Andean Spanish, and if so, what type of meaning is associated with it. The answer is that in this variety \(\text{iH}^* \text{ L}\%\) is used in wh- questions which convey the meaning of a very polite request.

According to Willis (this volume), in Dominican Spanish \(\text{H+L}^* \text{ L}\%\) is responsible for information-seeking yes-no questions with narrow and/or contrastive focus. Thus, Canarian Spanish information-seeking yes-no questions share with Dominican Spanish the fact that they both resort to L as the boundary tone, although the nuclear accent is different. This last observation, however, may be the result of different focal structures—broad focus in our case, and narrow/contrastive focus in Dominican Spanish.

Finally, the nuclear contour in Castilian Spanish shows a completely different tonal configuration: \(\text{L}^* \text{ HH}\%\). Thus, in this respect, Canarian Spanish intonation patterns with some Caribbean varieties, and not with Castilian Spanish.

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\(^5\) In Canarian Spanish intonation, any biased meaning in an information-seeking yes-no question whose utterance shows \(\text{iH}^* \text{ L}\%\) as the phonological representation of the nuclear contour is inferred from the context in which the utterance is inserted, and not from the combination of the starred tone with the boundary tone.
Figure 8: Waveform, spectrogram and F0 trace for the uncertainty statement Puede que no le guste el regalo que le he comprado ‘S/he may not like the present I have bought him/her’. It is transcribed as L+>H* ¡H* ¡H* H* ¡H* M%.

Figure 9: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿Tiene mermelada? ‘Have you got any jam?’ with the sequence L+>H* in the prenuclear section and ¡H* followed by L% in the nuclear section.
3.2.2. Biased yes-no questions

In this section, we introduce echo questions and imperative questions, all of which display the nuclear pattern iH* L% mentioned above. Other biased yes-no questions like, for instance, those showing counterexpectation or incredulity present a different nuclear configuration: L* HH%.

3.2.2.1. Echo yes-no questions

The utterance illustrated in figure 10 is an example of yet another prenuclear contour shape, while the nuclear configuration is already familiar to us. L*+H is responsible for the initial rise. !H*, associated with the last syllable of aprender, is responsible for the subsequent shallow descent up to that syllable, together with the non-high sustained stretch up to the offset of -ta-. At this point, pitch rises sharply in order to reach the following target iH*, which is already in the nuclear section. Finally, pitch drops again to L%.

The ending of this tune is similar to that proposed by Armstrong (this volume) for an echo-surprise yes-no question in Puerto Rican Spanish, which she transcribes as L+H* L%. The fact that Armstrong shows a bitonal nuclear accent while we resort to the monotonal accent iH* may be due to the manifestation of a perceptual effect of greater involvement on the speaker’s part in the former, that is, the implementation of the surprise. We suggest further that this effect may also be encoded in the shape of the prenuclear section, which presents a sequence of peaks and valleys in this Caribbean variety, each one of them accounted for by L*+H.

Another type of echo question can be called counterexpectational question. Such questions convey a degree of counterexpectation or incredulity which results from the speaker’s confrontation with a state of affairs different from the expected one. The tune responsible for this meaning is illustrated in figure 11 over the utterance ¡Aquí no había un cine?! ‘Didn’t there use to be a cinema here?’ Both echo and counterexpectational questions share the fact that the situational context is somehow reactivated: in the former, by means of the repetition of a previous utterance, and in the latter, through the use of a set of words which somehow convey information that is common ground to both interlocutors and that clearly conflicts with what they are actually observing.

This is the first final rising contour we encounter in Canarian Spanish questions which reaches an extra-high target and is transcribed as L* HH%. As can be seen, this ending tune is used by speakers to convey this biased meaning of finding out that a previous assumption has, surprisingly, proved to be false. The prenuclear pattern is accounted for by L* and H* for the rise over -gui no and H+L* for the fall over habia un, thus yielding a complex pitch configuration which is unattested in previous studies.

Canarian Spanish intonation shares with Puerto Rican Spanish (see chapter 6 in this volume) the fact that they both resort to L* as the nuclear tone, and that this is followed by a rise. However, they differ in the fact that in the former variety, HH% is present in the phonological representation to account for the sharp rising trajectory after the nuclear syllable, while in the latter, HL% is responsible for the falling section over the postnuclear syllable.
Figure 10: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Que si voy a aprender italiano? [Did you ask me... ] ‘If I’m going to learn Italian?’ produced with L*+H !H* in the prenuclear contour followed by ¡H* and L% in the nuclear contour.

Figure 11: Waveform, spectrogram and F0 trace for the counterexpectational yes-no question ¿Aquí no había un cine!? ‘Didn’t there use to be a cinema here?’ produced with L* H* H+L* in the prenuclear contour followed by L* HH% in the nuclear contour.
Figure 12: Waveform, spectrogram and F0 trace for the imperative yes-no question ¿¡Se quieren callar!? ‘Would you please be quiet?’ produced with L+>H* in the prenuclear contour followed by ¡H* and L% in the nuclear contour (with truncation of L%).

Figure 13: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Vienes a merendar? ‘Are you coming for tea?’ produced with L+>H* in the prenuclear contour followed by ¡H* and L% in the nuclear contour (with truncation of L%).
3.2.2.2. Imperative yes-no questions

Figure 12 illustrates the typical intonation of a yes-no question formulated with the nuance of an order.

The peak in the nuclear contour is accounted for by \( \text{iH}^* \), and although \( \text{L}\% \) is included in the phonological representation, its manifestation is truncated due to the fact that the tune is implemented on an oxytone word. Had this word been paroxytone or proparoxytone, the fall would have been manifested over the posttonic syllable(s), exactly in the same fashion as the contour illustrated in figure 9. Interestingly, this is what we observe in the same utterance type in Venezuelan Andean Spanish, with which Canarian Spanish coincides once more.

3.2.2.3. Confirmation yes-no questions

In Canarian Spanish, the contour typically used to convey the meaning of a confirmation in a yes-no question is the same as the one just described above for an imperative yes-no question, and also for the information-seeking yes-no question, \( \text{L}+\text{H}^* \text{iH}^* \text{L}\% \). Furthermore, it also displays truncation of the final pitch movement in this particular utterance. In view of these findings, hearers are forced to resort to the context of the situation in which the question is embedded in order to identify the meaning intended by the speaker, since this tonal configuration is also typical of information-seeking yes-no questions.

This nuclear contour differs from those found in other varieties of Spanish intonation. In Castilian Spanish, both \( \text{H}^*\text{L}\% \) and \( \text{L}\%\text{H}^* \) are used (Estebas-Vilaplana and Prieto this volume). In Dominican Spanish, two tonal configurations are also attested, though in this case \( \text{H}^*\text{L}\% \) and \( \text{H}^*\text{L}\% \) (Willis this volume).

3.2.3. Wh- questions

Information-seeking wh- questions share with information-seeking yes-no questions the circumflex nuclear contour already described in section 3.2.1., namely \( \text{iH}^* \text{L}\% \). Although the prenuclear section in both types sounds very similar, the beginning is slightly different in the following respects: the prenuclear section of a yes-no information-seeking question begins with \( \text{L}+\text{H}^* \), whereas in the information-seeking wh- question the prenuclear section begins with \( \text{H}^* \), possibly because of the presence of a wh- word.

Unlike the nuclear contour just described in Canarian Spanish information-seeking wh-questions, nuclear contours in Castilian show either the sequence \( \text{L}^* \text{L}\% \) or \( \text{L}^* \text{HH}\% \). This is not to say that these sequences are absent in Canarian Spanish, but rather that they are used to convey biased meanings. Thus, the configuration \( \text{L}^* \text{L}\% \) is used in imperative wh-questions (see section 3.2.4.2.) and \( \text{L}^* \text{HH}\% \) in reprise echo wh- questions (see figure 16 in section 3.2.4.1.).

When compared with Caribbean varieties like Puerto Rican, the different trend followed by Canarian Spanish becomes apparent. Thus, the nuclear accent \( \text{H}^*\text{L}\% \) stands in sharp contrast with \( \text{iH}^* \). However, as far as the boundary tone is concerned, they both share \( \text{L}\%. \) If we further set the Canarian Spanish \( \text{iH}^* \text{L}\% \) representation against Dominican, another Caribbean variety, we detect yet another tonal difference in the same type of utterance, since Dominican resorts to the phonological string \( \text{L}^* \text{H}\% \) (or even \( \text{H}^*\text{L}^* \)).

In contrast to the aforementioned nuclear descending movement for information-seeking wh- questions in Canarian Spanish, there is a nuclear rising tune for interrogatives showing politeness, as can be observed in the token illustrated in figure 15, in which the final rise is accounted for by the sequence \( \text{L}^* \text{M}\% \).
¿Qué te parece la excursión que estamos haciendo?

Figure 14: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿Qué te parece la excursión que estamos haciendo? ‘How do you like the trip we are taking?’ $H^* H^* H^* H^*$ is the sequence of pitch accents in the prenuclear contour, and $iH^*$ followed by $L\%$ occurs in the nuclear section.

¿Cuánto le debo?

Figure 15: Waveform, spectrogram and F0 trace for the polite wh-question ¿Cuánto le debo? ‘How much do I owe you?’ transcribed as $L+>H^*$ in the prenuclear contour followed by $L^*$ and $M\%$ in the nuclear contour.
It is precisely M% which transmits the nuance of politeness, since, had the contour ended instead in HH%, this utterance would have been understood as a reprise echo wh-question. By contrast, in Puerto Rican Spanish (Armstrong this volume) the nuclear accent is H* followed by HH% in this sort of utterance.

3.2.4. Biased wh-questions

As already stated for biased yes-no questions, biased wh-questions present both the recurrent nuclear pattern iH* L%, and other nuclear phonological representations, namely, L* HH%, L* L% and H+L* L%.

3.2.4.1. Echo wh-questions

The tunes for echo wh-questions show the same nuclear tonal configuration as echo yes-no questions, that is, iH* L%.

A special type of echo question also found in Canarian Spanish intonation is the one Sosa (2003) refers to as reprise. He investigates the shape and meaning of wh-questions in four Latin American varieties (Mexican, Colombian, Puerto Rican and Caracas Venezuelan) and adds a fourth tonal configuration to the three contours described in Navarro Tomás’s (1944) account. In Venezuelan Spanish, it is described by the author as a rise throughout the utterance, which he interprets as the speaker’s request to be reminded of something he or she already knew, either implicitly or explicitly. As is the case with echo questions, reprise questions reactivate a piece of information which is already in play.

Given that Canarian Spanish intonation shows similarities with Caracas Venezuelan Spanish intonation (such as the circumflex nuclear configuration of information-seeking yes-no questions), we expected to find affinities in reprise questions as well. The results of our investigation are illustrated in the token illustrated in figure 16.

These two varieties of Spanish, Caracas Venezuelan and Canarian, have in common the fact that pitch in this utterance type ends rather high. However, the overall prenuclear contour together with the nuclear configuration seem to differ. While in Caracas Venezuelan Spanish the rise takes place throughout the utterance, in Canarian Spanish there are at least two separate rises: one at the very beginning of the utterance (which is accounted for by L*H*), and another extending from after the nuclear syllable to the end of the utterance (which is accounted for by HH%). Further investigation into Canarian Spanish intonation, with a more extensive set of utterances and speakers, may reveal whether the tune attested in Caracas Venezuelan Spanish is also present in Canarian Spanish.

As far as Puerto Rican Spanish (Armstrong this volume) is concerned, the prenuclear contour is rather sustained, unlike Canarian Spanish but similar to Caracas Venezuelan Spanish. The nuclear contour shows a tonal sequence identical to that seen in Canarian Spanish, L* HH%.

Another type of biased wh-question we illustrate in this section is counterexpectational wh-questions, which signal the speaker’s confrontation with an unexpected situation. This displays the tune illustrated in figure 17, in which the widening of the pitch range in the area of the nuclear accent is the result of such counterexpectation.
### Figure 16: Waveform, spectrogram and F0 trace for the reprise echo wh-question ¿Cómo me dijiste (que) se llamaba el fenómeno? ‘What did you say the phenomenon was called?’ transcribed as L+>H* H* !H* in the prenuclear pattern followed by L* and HH% in the nuclear pattern.

### Figure 17: Waveform, spectrogram and F0 trace for the counterexpectational wh-question ¿A qué hora acabó llegando!? ‘What time did she finally arrive?!’ transcribed as L+>H* !H* in the prenuclear contour followed by iH* and L% in the nuclear contour.
Canarian Spanish speakers resort to the nuclear sequence \( \text{¡H}^* \text{L}\% \) to convey a counterexpectational meaning in wh- questions. Also, the prenuclear contour shows a delayed rise (\( \text{L}^{+}\text{H}^* \)) followed by a shallow descent to a point in pitch which is still well above the baseline (\( \text{IH}^* \)). The transition from the prenuclear to the nuclear section (i.e. from \( \text{IH}^* \) to \( \text{iH}^* \)) shows an abrupt rise in pitch. This abruptness provides further evidence that there can be no L target in the vicinity, for this would result in a gradient rise over the accented syllable, and possibly the vowel would be elongated. Given the tonal string \( \text{¡H}^* \text{L}\% \), we note that the final tune is extremely similar to that seen in information-seeking yes-no questions, information-seeking wh- questions and also biased echo yes-no questions.

3.2.4.2. Imperative wh- questions

Figure 18 illustrates a wh- question which conveys the speaker’s intention to force the hearer into doing something. In order to do so, Canarian Spanish speakers select \( \text{L}^* \text{L}\% \), which is different from what we presented in the case of imperative yes-no questions: \( \text{¡H}^* \text{L}\% \). In imperative wh- questions, the hearer infers the meaning of the order directly from the form of intonation, while in the case of imperative yes-no questions, the imperative nuance is inferred from the context in which the utterance is embedded.

In this tune, we wish to highlight once again the abrupt transition across the prenuclear and nuclear sections. If in the case of counterexpectational wh- questions this transition showed an abrupt rise, here we encounter a sharp drop in pitch. The sequence \( \text{L}^* \text{L}\% \) stands as the vehicle used to convey the sense of the command, while the rise at the beginning of the utterance together with sustained descending pitch terraces contribute the meaning of interrogation.

3.2.4.3. Rhetorical wh- questions

Rhetorical wh- questions, those used by speakers to trigger the hearer’s interest in an answer which the speaker himself is about to offer, typically show \( \text{H}^+\text{L}^* \text{L}\% \) in the nuclear configuration. Figure 19 illustrates this type of interrogative.

As can be seen, the tunes for an imperative and a rhetorical wh- question are accounted for by the same tonal sequence, except that the nuclear pattern in the latter case shows \( \text{H}^+\text{L}^* \) instead of \( \text{L}^* \).

3.3. Imperatives: commands and requests

The different degrees of illocutionary strength in commands which are illustrated in this chapter are as follows: command, strong command and command showing a nuance of encouragement. We will see that, as speakers are requested to increase further the strength of the command (in the first two cases), they resort increasingly to the high end of their frequency range (as shown in figures 21 and 22) together with extra-long sustained vowels and a very staccato-type of rhythm.
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Figure 18: Waveform, spectrogram and F0 trace for the imperative wh- question ¿Cuándo lo vas a hacer!? 'So when are you going to do it?' accounted for by L+>H* !H* in the prenuclear pattern followed by L* and L% in the nuclear pattern.

Figure 19: Waveform, spectrogram and F0 trace for the rhetorical wh- question ¿Por qué necesitamos saber idiomas? 'Why do we need to know languages?' accounted for by L+>H* H* !H* in the prenuclear pattern followed by H+L* and L% in the nuclear pattern.
3.3.1. Commands

Let us turn to the most typical tonal configuration for a command in Canarian Spanish, which shows a final rise to an extra high pitch (L+H* HH%), as can be seen in figure 20. If, unexpectedly, the hearer decides to ignore the order, then the speaker most probably will resort to the tune illustrated in figure 21 to assign extra force to the command.

The tune just described sounds very similar to that proposed for Castilian Spanish for the same utterance (see chapter 2 in this volume), in as much as the same L+H* nuclear accent is proposed. However, in Canarian Spanish, the postnuclear section of the contour continues rising (hence HH% in the phonological representation), whereas in Castilian Spanish, it drops to mid pitch (M%). This falling tendency is also present in Dominican Spanish (Willis this volume), although here the descent clearly reaches low pitch. Hence, it is accounted for by H+L* L%. From the point of view of Canarian Spanish intonation, both the Castilian and the Dominican intonation patterns for commands would be interpreted as a very sharp order.

Figure 21 exhibits the common configuration for a strong command. Though in this case the prompt context required a more forceful imperative, we presented speakers with the same utterance in order to keep constant the lexical stress patterns of words and consequently to allow for a transparent comparison between them.

A set of changes is evident between the prosody of commands and strong commands: (i) all potential landing sites for pitch accents are accented in strong commands; (ii) all the accented syllables tend to be lengthened; (iii) the body of the prenuclear contour is raised and sustained in pitch; (iv) the nuclear pitch accent changes from L+H* in a command into H* in a strong command; and (v) the boundary tone changes from HH% in the former to L% in the latter, thus showing opposite interpolations: a rise in a command, and a sharp fall in a strong command. This strong command tune is similar to the one described for Venezuelan Andean Spanish (Astruc et al. this volume), except that our speaker assigns pitch accents to all potential landing sites instead of breaking up the utterance into a set of IPs.

When asked to increase the illocutionary force still further, speakers produced intonation tunes closely resembling that illustrated in figure 21, and now shown in figure 22. Note that, in the specific token we offer here, the speaker herself modified the wording of the response, but as far as the prosody is concerned, it is quite similar to that seen in the strong command. Thus, we observe a high sustained prenuclear configuration accounted for by the already attested sequence of H*s (except for the first accent, which is L+>H*), and the nuclear configuration is yet again accounted for by H* L% (only here, due to the fact that the last word is oxytone, there is no segmental material onto which the fall in pitch can be implemented, with the result that it is not observed).

Finally, the tune in figure 23, which shows a wide valley followed by a final sharp rise in pitch, is used by speakers to encourage someone to do something; this can be interpreted as a suggestion which the hearer treats as the obvious action to perform. This utterance was elicited following the prompt ‘Your son has to draw an animal typically found in the desert, and cannot think of one. Encourage him to draw a camel’. We propose L* HH% as the phonological representation responsible for this tune. L* accounts for low pitch over the accented syllable (-me-). Then pitch rises sharply, which is phonologised as HH%.
**Figure 20:** Waveform, spectrogram and F0 trace for the command ¡Ven aquí ahora mismo! ‘Come here at once!’ accounted for by L+>H* H* in the prenuclear contour and L+H* followed by HH% in the nuclear contour.

**Figure 21:** Waveform, spectrogram and F0 trace for the strong command ¡Ven aquí ahora mismo! ‘Come here at once!’ [and don’t you dare disobey me!] accounted for by L+>H* H* in the prenuclear contour and H* followed by L% in the nuclear contour.
Figure 22. Waveform, spectrogram and F0 trace for the (insistent) strong command ¡Que te he dicho que vengas aquí!! ‘I told you to come here at once!’ accounted for by L+>H* H* H* in the prenuclear contour and H* followed by L% in the nuclear contour (with tonal truncation of L%).

Figure 23: Waveform, spectrogram and F0 trace for the command with a nuance of encouragement ¡Pues dibuja un camello! ‘Then draw a camel!’ accounted for by H+L* L*+H in the prenuclear section and L* HH% in the nuclear contour.
3.3.2. Requests

The cajoling request ¡Andal ¡Vente al cine! ‘Come on! Come to the cinema with us!’ in figure 24 shows two IPs. The first one contains a single word and shows a gradient rise followed by a fall, which is accounted for by L+H* L%. The second IP shows a gradient rise-fall as well, only the contour is mapped onto a longer stretch of words. The rise is accounted for by the sequence L+>H* H*, and the fall by the interpolation between H* and L%.

After setting Canarian Spanish requests against Puerto Rican Spanish (Armstrong this volume), we note that, although they both end in a falling movement, there is also a two-way contrast: H* versus L*, and L% versus HL%.

Finally, having compared this contour with the one used in Castilian Spanish intonation (see chapter 2 in this volume), it seems that there are at least three strategies to encode a gentle request in the prosodic components of an imperative utterance: (i) by means of different nuclear pitch accents (H* versus L*); (ii) by means of different boundary tones (L% versus HL%); or (iii) by means of adding extra length to different syllables (e.g. the tonic ci- in cine versus the posttonic -bre in hombre).

3.4. Vocatives

In Canarian Spanish, the typical tune of a vocative in which the speaker’s intention is to demand attention gently is modelled as L* H* M%. In the example shown in figure 25, we see that the speaker accentuates the name twice (even though the second syllable is lexically unstressed). This unstressed syllable also shows a noticeable degree of lengthening.

Figure 26 illustrates the standard configuration used for calling over a distance. Note that all the vowels are lengthened, as if the speaker were trying to project her voice across a long distance.

After the gradient rise and the peak at the offset of the accented syllable, pitch remains high and sustained over the last posttonic syllable, which is extra long. We assume that this tune corresponds to the interpolation between H* (of L+H*) and H%, and that an expected rise is not observed since speakers reach the highest point in their pitch range too early, and consequently by the time they reach a point towards the end of the utterance, their physiology prevents them from ascending any further. The only strategy they can resort to in these circumstances consists in keeping their pitch sustained.

Figure 27 exhibits the usual tune used by speakers to catch the attention of someone who is nearby. It can be understood as a vocative with a nuance of expectation. In fact, the context set as a prompt to elicit this utterance is the following: ‘Your son is sitting opposite you reading a book; call him in such a way that you create some type of expectation, as if you were going to request something, or you were going to inform him about something unexpected.’ In the description of the resulting tune over the same vocative, ¡Javi!, we resort to the bitonal boundary tone HL% to account for the sustained pitch and fall over the unstressed syllable -vi.
Figure 24: Waveform, spectrogram and F0 trace for the request ¡Anda! ¡Vente al cine! ‘Come on! Come to the cinema with us!’ with the first IP accounted for by $L+H^* L\%$ and the second by $L+>H^* H^* L\%$.

Figure 25: Waveform, spectrogram and F0 trace for the gentle vocative ¡Javi! accounted for by the tonal configuration $L^* H^* M\%$ (with double accenting of the nuclear word).
Figure 26: Waveform, spectrogram and F0 trace for the vocative calling over a long distance ¡Gustavo! accounted for by the tonal configuration L+H* H%.

Figure 27: Waveform, spectrogram and F0 trace for the vocative showing a nuance of expectation ¡Javi! accounted for by the tonal configuration L+H* HL%.
The tonal inflection captured by the presence of H in the sequence HL% is responsible for the transmission of the desired meaning, to the extent that, had it been absent, the perceived meaning would have been loaded with a strong illocutionary force, like the strong command illustrated in figure 21 (which in fact is modelled as H* L%).

In relation to whether other varieties of Spanish resort to similar tunes, Estebas-Vilaplana and Prieto (this volume) put forward the same phonological representation for a contour in Castilian Spanish which is interpreted as an insistent call. Armstrong (this volume) also resorts to this tonal sequence for a type of vocative in Puerto Rican Spanish. Lastly, while Willis (this volume) presents L+H* as the nuclear accent, thus coinciding with the analysis of Canarian Spanish, he proposes LH% to account for the ending of the tune, which is the mirror image of the sequence HL% illustrated in our figure 27.

4. Conclusions

In the course of this chapter, we have observed that Canarian Spanish intonation shares some features with Castilian Spanish and other features with Caribbean Spanish. We note these similarities in the following summary of the typical characteristics of Canarian Spanish.

a) The nuclear contour of broad focus statements presents either L* L% (as in Castilian Spanish) or L+IH* L% as the allophonic variant of L+H*, which is proposed for Dominican Spanish. We suggest that broad focus statements with L* L% may sound more categorical than those with L+IH* L%, though this requires further research.

b) Canarian Spanish intonation coincides with Castilian and Puerto Rican Spanish in the description of statements of the obvious as L+H* LM%.

c) While Castilian Spanish shows L* HL% in contradiction statements, Canarian Spanish prefers IH* L%, together with assigning extra length to the nuclear syllable.

d) The contrast between uncertainty statements, information-seeking wh- questions and information-seeking yes-no questions on the one hand, and all other utterance types on the other is established by the presence of IH* in the former, but not in the latter. Furthermore, the contrast between uncertainty statements on the one hand and wh- and information-seeking yes-no questions on the other derives from the presence of M% in the former versus L% in the latter.

e) The sequence IH* L% shows tonal truncation if the nuclear word is an oxytone.

f) IH* L% is similar (but not exactly the same) to what is attested in Andean Venezuelan and Puerto Rican Spanish for information-seeking yes-no questions, but clearly different from what is seen in Castilian Spanish (L* HH%) and Dominican Spanish (H+L* L%) for the same type of question.

g) Rises at the end of tunes over questions in Canarian Spanish are limited to the following two types: counterexpectational yes-no questions (HH% - interestingly, like information-seeking yes-no questions in Castilian Spanish) and polite wh- questions (M%).

h) While the nuclear contour in a typical command in Canarian Spanish intonation is represented as L+H* HH%, the nuclear contour in the same utterance type in Castilian Spanish is represented as L+H* M%. Thus, they exhibit equivalent nuclear pitch accents but different boundary tones. The falling trend found in Castilian Spanish is also present in Dominican Spanish, though as H+L* L%. In view of this finding, it seems that Canarian Spanish intonation stands on its own.
i) In relation to vocatives, we select L+H* HL% (figure 27, a vocative with the nuance of expectation) as the most representative of Canarian Spanish intonation. We have noted earlier that this tune is used in Castilian Spanish to convey the meaning of an insistent call, whereas in Puerto Rican Spanish it typifies a vocative chant.

A summary of stylized diagrams of prenuclear pitch patterns in questions is included in table 3.

**Table 3: Summary of stylized representations of prenuclear patterns in Canarian Spanish and the questions in which they are attested**

<table>
<thead>
<tr>
<th>Prenuclear configurations</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>High sustained</td>
<td>Information-seeking yes-no questions</td>
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<tr>
<td></td>
<td>Imperative yes-no questions</td>
</tr>
<tr>
<td></td>
<td>Information-seeking wh- questions</td>
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<tr>
<td>Complex - circumflex</td>
<td>Yes-no incredulity questions</td>
</tr>
<tr>
<td></td>
<td>Polite wh- questions</td>
</tr>
<tr>
<td>Complex - with descending terraces</td>
<td>Counterexpectational wh- questions</td>
</tr>
<tr>
<td></td>
<td>Wh- imperative questions</td>
</tr>
<tr>
<td></td>
<td>Wh- rhetorical questions</td>
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<tr>
<td></td>
<td>Reprise echo wh- question</td>
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</tbody>
</table>

In table 4 we include the combinations of nuclear accents and boundary tones for the different utterance types.

**Table 4: Inventory of nuclear pitch configurations in Canarian Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Statements</th>
<th>Nuclear pitch configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad focus statements</td>
<td>L* L%</td>
</tr>
<tr>
<td>Biased statements</td>
<td></td>
</tr>
<tr>
<td>Narrow focus statements</td>
<td>L+H* L%</td>
</tr>
<tr>
<td>Contradiction statements</td>
<td>!H* L%</td>
</tr>
<tr>
<td>Exclamative statements</td>
<td>!H* L%</td>
</tr>
<tr>
<td>Statements of the obvious</td>
<td>L+H* LM%</td>
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<tr>
<td>-------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Uncertainty statements</td>
<td>iH* M%</td>
</tr>
<tr>
<td><strong>Information-seeking yes-no questions</strong></td>
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<td>Information-seeking yes-no questions</td>
<td>iH* L%</td>
</tr>
<tr>
<td><strong>Biased yes-no questions</strong></td>
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<tr>
<td>Echo yes-no questions</td>
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</tr>
<tr>
<td>Confirmation yes-no questions</td>
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<tr>
<td>Information-seeking wh- questions</td>
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<td>Polite wh- questions</td>
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<td>Rhetorical wh- questions</td>
<td>H+L* L%</td>
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### Imperatives: commands and requests

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<thead>
<tr>
<th>Type</th>
<th>Tune</th>
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<tbody>
<tr>
<td>Commands</td>
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<tr>
<td>Strong commands</td>
<td>H* L%</td>
</tr>
<tr>
<td>Commands showing a nuance of encouragement</td>
<td>L* HH%</td>
</tr>
<tr>
<td>Requests</td>
<td>H* L%</td>
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### Vocatives

<table>
<thead>
<tr>
<th>Type</th>
<th>Tune</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentle vocatives</td>
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<td>Vocatives for calling over a long distance</td>
<td>L+H* H%</td>
</tr>
<tr>
<td>Vocatives showing a nuance of expectation</td>
<td>L+H* HL%</td>
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</table>
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Dominican Spanish Intonation

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1. Introduction

The Cibaeño variety of Dominican Spanish is known for a large number of segmental features that includes coda liquid vocalisation, extreme weakening or elision of final /s/, pre-breathy-voiced trills,1 nasalized vowels and coda nasal velarization. Compared to other varieties of Spanish there has been little intonation research conducted previously on Dominican Spanish. The small literature that exists on Dominican Spanish has primarily focused on a very small set of utterance signalling patterns or a very particular unique contour. For example, the double negative expression discussed by Jiménez Sabater (1975), no vamos no ‘we aren’t going, no’ is described as having a ‘brusque final fall’ on the final word no. Alba (2000: 22) describes a rising pitch accent in an inserted phrase within a larger utterance that also has a final fall on the final syllable of the utterance. Sosa (1999) reports on a particular contour of declaratives reportedly used in the case of exclamations and described as a falling nuclear pitch accent to a low tone in the nuclear tonic syllable followed by a final boundary rise. Willis (2003) also documents this contour, but finds it to be produced in cases of broad focus among educated college students in the Cibao region of the country.

Willis (2006-2007) provides the schematic shown in figure 1 to demonstrate the main contours of similar sentences in broad focus produced as declaratives, absolute interrogatives and pronominal or wh-questions.

![Figure 1: Schematic of the basic broad focus intonational contours of declaratives, absolute interrogatives and pronominal interrogatives in Dominican Spanish with targets for distinguishing tonal levels (reproduced from Willis 2006-2007: 197).](image)

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*The author wishes to express gratitude to the faculty and staff of the Pontificia Universidad Católica Madre y Maestra for providing facilities to perform the recordings, in particular, Professor Rafaela Carrasco and Patricia Álvarez, and to the wonderful Dominican speakers who participated so generously. This chapter has also benefited from comments from Meghan Armstrong, Mercedes Cabrera Abreu, Francisco Vizcaíno Ortega, Pilar Prieto and Paolo Roseano. The usual claims of error ownership apply in the present work.

1 See Figure 6 for an example of a pre-breathy-voiced trill on the word rico ‘rich’.
The alignment patterns of prenuclear pitch accents in Dominican Spanish are an area that varies from previous standard characterizations of Spanish rising pitch accents. Willis (2003) illustrates a rising prenuclear pitch accent with a low tone that is aligned late in the tonic syllable followed by a rise to a peak in the posttonic. This pitch accent pattern was later described for Peninsular Spanish yes-no questions with narrow focus (Face 2006) and was also found to be highly productive in Puerto Rican Spanish (Armstrong this volume).

Final boundary tones in Dominican Spanish also present a unique feature in the case of declaratives with a final rising boundary tone. This contour was illustrated by Sosa and Willis and was found by both authors in laboratory read speech. It was also found in a spontaneous speech corpus by Willis (2003). Nuclear pitch accents had been described as a falling H+L* tone. This falling nuclear pitch accent often had a low valley near the offset of the tonic syllable and was also produced with a low tone near the onset of the tonic syllable followed by a plateau until a final boundary rise beginning at the offset of the tonic syllable. Sosa (1999) claims that a final rise in Dominican Spanish declaratives was the result of a marked emphasis. However, Willis (2003) reports a near universal final rise in broad focus laboratory speech utterances. It should be noted that this declarative final rise bears considerable similarity to the High Rising Terminals noted in a variety of English dialects (see Warren 2005 for New Zealand English).

As can be seen from this brief review, only a few items have been studied with respect to Dominican Spanish intonation and the current exposition seeks to present a broader series of intonational situations in order to amplify the range of future research. The remainder of this chapter will proceed as follows. Section 2 provides the inventory of pitch accents and boundary tones found in the contextualized data set. Section 3 presents the F0 contours associated with the distinct utterance types and contexts from the corpus. The chapter concludes with a review of findings in Section 4 and includes a presentation of the nuclear pitch accents and boundary tones commonly referred to as tonemas in the Hispanic Linguistics tradition.

2. Dominican Spanish intonational phonology

2.1 The pitch accents

The following pitch accents and boundary tones were observed in the current corpus of Dominican Spanish based on the labelling conventions advanced within a Sp_ToBI notational system (Beckman et al. 2002, Estebas-Vilaplana and Prieto 2008).

*Table 1: Inventory of monotonal and bitonal pitch accents in Dominican Spanish and their schematic representations*

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td>H*</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

This pitch accent was manifested as a high level tone through the tonic syllable. It was primarily found in question contours in prenuclear position.
**Dominican Spanish Intonation**

L* The L* pitch accent was realized as a low steady tone over the tonic syllable. The low was typically preceded by a falling tone, but it is not clear if the fall is part of the pitch accent, or the result of reaching the low tone target.

**Bitonal pitch accents**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This pitch accent was manifested phonetically as a falling pitch accent through the tonic syllable typically reaching a low valley tone at or just before the syllable boundary. This pitch accent was observed in statements and questions with focus, in both prenuclear and nuclear position.</td>
</tr>
<tr>
<td>H+L*</td>
<td>This pitch accent was manifested phonetically as a rising tone through the tonic syllable typically reaching a high tone or peak in the posttonic syllable. It was observed in statements with more than one unit and focalized questions. There was also an upstepped variant, ¡L+&gt;H*, with much higher tonal values of both the low and high tone compared to the previous similar tones in the utterance.</td>
</tr>
<tr>
<td>L+H*</td>
<td>This pitch accent had at least two variants, which are illustrated in the schematics. The pattern was characteristically produced as a rising tone during the initial portion of the tonic syllable and often reached a peak or high tone near the syllable boundary. In other cases, the high tone was aligned near the midpoint of the tonic syllable.</td>
</tr>
<tr>
<td>L*+H</td>
<td>This pitch accent was produced with a low tone or elbow turning point late in the tonic syllable, typically past the midpoint. The low or elbow was followed by a rise to a high or peak in the posttonic.</td>
</tr>
</tbody>
</table>

---

2 Variations on this falling tone included a valley or low tone reached near the midpoint of the tonic syllable. The high tone of this pitch accent could also be produced near the onset of the tonic syllable, or up to several syllables prior to the tonic.

3 This tonal specification for a rising pitch accent with an early aligned High tone was first proposed as a tonal label by Beckman et al.: “¡L+H* upstepped variant of L+H*, e.g. accent on mañana ‘morning’ in Figure 6c” (2002: 33).
2.2. The boundary tones

Table 2: Inventory of monotonal and bitonal boundary tones in Dominican Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
</tr>
<tr>
<td>The L% boundary tone presented a falling tone to the speaker’s lower threshold, or a plateau when the speaker had already reached his or her lower threshold, and occurred following both rising and falling nuclear pitch accents.</td>
</tr>
</tbody>
</table>

| H%                                       |
| This boundary tone was manifested as a tonal rise that would begin near the onset of the final unstressed syllable of the utterance and occurred in both statements and questions. The degree of rise varied considerably across the three speakers. The magnitude of rise was typically higher in the declarative utterances compared to the questions. |

| M%                                       |
| The M% was phonetically realized as a plateau following a high tone of the nuclear pitch accent and seen in imperative yes-no questions. This tone is labelled MM% in other analyses. |

<table>
<thead>
<tr>
<th>Bitonal boundary tones</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH%</td>
</tr>
<tr>
<td>From a preceding nuclear peak, this boundary tone was produced as a fall to a low tone at the offset of the nuclear tonic syllable followed by a rise.</td>
</tr>
</tbody>
</table>

3. Basic intonational patterns in Dominican Spanish

This chapter presents the basic intonational patterns in Dominican Spanish of the Cibaeño variety as produced primarily by educated speakers in response to the series of hypothetical situations as described previously in this volume. The current data set was recorded in Santiago, Dominican Republic, by the author using a Tascam DR-007 digital recorder and Shure WH-20A head-mounted microphone, and the analysis was carried out using Praat (Boersma and Weenik 2010). The guided questionnaire was essentially the same as that utilized by Armstrong for Puerto Rican comprising 69 utterances (this volume), which is based on (Prieto 1991) and adapted for the Atlas Interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010), with occasional changes in vocabulary or situation to better fit the local context. Participants occasionally modified the lexicon and would

While Beckman et al. (2002) do use a M% in their paper, we draw attention to the fact that this was intended as a ‘temporary label’ until conclusive evidence could be provided: “Rather than commit prematurely to either analysis, the Sp_ToBI group chose to adopt, as a temporary measure, a mid-level boundary tone tag (M%) to differentiate the half rise from the full rise” (2002: 23).

While the instrument was essentially identical to that used by Armstrong (this volume), the elicitation was different. In the current corpus the author described the situation to the informant and then asked how they would respond. This approach avoided potential reading intonation but also introduced ‘creativity’ on the part of the informants with the result that some cases did not

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change instances of usted ‘you-formal’ to tú ‘you-informal’ and modify the pronoun system to the second person singular. The current speakers included one male and two females, all students at or recently graduated from the UTESA (Universidad Tecnológica de Santiago) or UAS (Universidad Autónoma de Santo Domingo), both public universities located in Santiago, Dominican Republic. The speakers were all residents of the Cibao region which comprises the northern and central-western part of the country. The Cibaeño dialect is one of two generally accepted dialects in the Dominican Republic, the other being Capitaleño, which is spoken in Santo Domingo. The notational system that is employed in the current Dominican Spanish description is based on previous work that sought to uniformly characterise Spanish intonation within an Autosegmental-Metrical framework, and draws specifically from two iterations of a Spanish ToBI system put forth originally by Beckman et al. (2002) and more recently by Estebas-Vilaplana and Prieto (2008). We will also provide measurements on the magnitude of tonal movements using the semitone scale (s.t.) for comparison across utterances and contexts (Rietveld and Gussenhoven 1985).

3.1. Statements

Declarative utterances presented a full range of pitch accent types and boundary tone types and variation within similar contexts, which poses a challenge for attempting to map a particular tone in Dominican Spanish to a specific contextual meaning.

3.1.1. Broad focus statements

The broad focus statement in figure 2 was produced with prenuclear rising pitch accents that reached a peak in the posttonic syllable, L+>H*. The nuclear pitch accent is a rising variety, L+H*, but due to the final boundary tone that is also a rising tone, we cannot comment on the precise alignment of the nuclear pitch accent. The degree of final rise in this contour is somewhat higher than those seen in other utterances by this speaker, 4.5 s.t., suggesting the combination of a rising nuclear pitch accent plus the H% boundary to account for the magnitude of the rise. This pattern was similar for broad focus declaratives regardless of the number of lexical words.

Declaratives with enumerations were also produced with a rising boundary tone between each of the units and also demonstrated the final boundary rise. In figure 3, the majority of the days of the week were also produced with the L*+H late low aligned pitch accent in which the elbow of the low tone occurs near the offset of the tonic syllable. The L*+H pitch accent was found extensively in Puerto Rican Spanish (Armstrong this volume). We also note that the magnitude of the final declarative rise was 4 s.t.

match the goals of the project. For example, when provided the context for asking the time to a stranger on the street, one informant responded with a polite command telling the other to regálame la hora ‘gift-me the hour’.

6 Following the convention adopted for this volume, the first tier presents a standardized orthographic transcription of the utterances and not the actual phonetics, which as stated, can be quite reduced or varied with respect to segmental manifestation in Dominican Spanish, especially in the case of coda /s/ and coda liquids.
Figure 2: Waveform, spectrogram and F0 trace for the broad focus statement *Anoche yo vi a Marina la morena* ‘Last night I saw Marina the dark-skinned one’ produced with rising pitch accents $L+\rightarrow H^*$ and a final rising boundary tone $H%$.

Figure 3: Waveform, spectrogram and F0 trace for the utterance *Lunes, martes, miércoles, jueves, viernes, sábado y domingo* ‘Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday’ produced with intermediate rises, a final falling nuclear pitch accent and a $H%$ final boundary.
3.1.2. Biased statements

3.1.2.1. Narrow focus statements

In the Dominican corpus there were two pitch accents that conveyed narrow or contrastive focus. The L+H* accent was typically found in statements, while the H+L* in non-final position typically conveyed focus in questions. The L+H* contrastive focus pitch accent shown in figure 4 could also be upstepped giving it an even greater degree of emphasis or attention. The first example produced in response to a question concerning a choice of fruit is the utterance, No, de limones ‘No, of lemons’ which has a rising L+H* followed by a LH% boundary tone. The alignment of the nuclear pitch accent of both the low and high tones is somewhat different than previously described for other dialects of Spanish. For example, even though the pitch accent is focalized, the rise of the low tone does not begin until the end of the consonant and the high tone is reached 60 ms before the tonic syllable boundary, resulting in a relatively short rise with respect to the duration of the whole syllable. The boundary rise from the nuclear pitch accents is 2.2 semitones and within the range of a perceptible tonal movement. After the initial boundary rise, there is a plateau that is 60 ms long and is primarily produced on the aspirated /s/, raising the question of whether or not this is a final M% or a simple H% that is reduced.

In figure 5 there are two L+H* focus pitch accents in contiguous syllables with a peak produced within the tonic syllable in both cases despite the tonal clash context. The overall contour pattern is descending as previously reported for Spanish, with the difference that two phrase-internal prenuclear pitch accents have a high tone preceding the tonic syllable and low target in the tonic, resulting in a falling H+L* pitch accent instead of the rising pitch accent characteristic of previous reports of Spanish intonation. There is no final rise on this declarative contour.

3.1.2.2. Exclamative statements

The example of an exclamative contour in figure 6 is based on the context of responding to a great smell as you enter a bakery in figure 6. This exclamative contour was produced with multiple focus or contrastive focus pitch accents, namely L+H*.

As noted earlier, these nuclear pitch accents in the contrastive focus and emphatic contexts both have a high tone that is aligned well before the end of the tonic syllable. This high tone appears to occur considerably earlier than what is seen in comparable utterances illustrated for Castilian Spanish in figures 2 and 3 in Estebas-Vilaplana and Prieto (this volume). And again we note the H% final boundary that is produced with a 3 s.t. rise.

---

7 There is a low tone between these two pitch accents, which suggests that the clash does not necessarily neutralize or truncate in cases of tonal clash of this type, or that low tone undershoot is not the only resolution possible.
Figure 4: Waveform, spectrogram and F0 trace for the narrow focus statement *No, de limones* ‘No, of lemons’ produced with contrastive focus and utilizing a L+H* pitch accent followed by a LH% boundary tone.

Figure 5: Waveform, spectrogram and F0 trace for the utterance *Mi amor vengo ahora voy al mercado de un pronto* ‘My love, I’ll be right back, I’m going to the store’ produced with two rising focalized pitch accents in a clash environment.
3.1.2.3. Statements of the obvious

In figure 7 we have two contours in response to the context requiring a statement of the obvious. The context for this utterance was a question regarding the identity of the child’s father. The first part is produced as an obvious question *Pues, ¿de quién más puede ser?* ‘Well, so from whom else could it be?’ There is a rising pitch accent on the interrogative word and an intermediate boundary rise of 2 s.t. The obvious question is followed by the statement of the obvious *Solamente he estado con él* ‘I only have been with him.’ The first pitch accent of the obvious statement is a falling H+L* tone followed by a plateau until the nuclear pitch accent, which is produced as a rising tone and leads directly into the boundary tone which is also a rise, H%. The final boundary of the declarative statement has a rise of 9 s.t., which is considerably greater than the 2 s.t. in the immediately preceding question. The final rise in figure 7 does seem to correspond with the claim by Sosa that emphasis results in a final rise; however, we have seen the rise in numerous contours lacking any emphasis. It may be that an increased degree of emphasis potentially conditions a higher tonal rise. A final rise of this sort is also illustrated for Puerto Rican Spanish (Armstrong this volume).

3.1.2.4. Uncertainty statements

The uncertainty statement seen in figure 8 begins with a rising pitch accent. The second portion of the utterance contains an early rising L+H* pitch accent on the phrase *yo no* ‘I don’t’ with the peak centred on the negation, perhaps to put focus on the speaker’s doubt or uncertainty concerning the present that was purchased. The rise in this prenuclear pitch accent is 7 s.t. The nuclear pitch accent appears to be a H+L* but is somewhat difficult to characterise due to the voiceless segments. The nuclear pitch accent on the final word is followed by a L%.

3.2. Questions

3.2.1. Yes-no questions

In the corpus of Dominican Spanish there were two main types of questions, those with a falling nuclear pitch accent and those with a rising nuclear pitch accent. As boundary tone rises are found in declarative utterances in Dominican Spanish, questions must rely on some other mechanism to convey interrogativity. Additionally, as Sosa (1999: 240) notes, Dominicans never misinterpret a declarative with a final boundary rise as a question. The falling nuclear pitch accents were very similar to the yes-no patterns presented for Puerto Rican Spanish (Armstrong this volume) with the exception of the final rise. The basic pattern is also observed in some examples from Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) with a slight variation in the alignment of the nuclear pitch accent, which yielded a iH* instead of the falling H+L* seen in both Dominican and Puerto Rican Spanish.

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8 We assume the nuclear pitch accent is a bitonal L+H* due to previous patterning when there is a rising nuclear pitch accent.

9 We have included the degree of final tonal rise in semitones (s.t.) throughout this chapter for the different utterance types to clearly document the degree of final rise in Dominican Spanish intonation and facilitate comparison. In most cases, when there was a final rise, the declaratives were produced with a larger final rise compared to interrogatives. We analyse a midtone M% as a final plateau above the low tonal threshold for the speaker. An example is found in the corpus following a pitch accent with a high tone.
Figure 6: Waveform, spectrogram and F0 trace for the exclamative statement ¡Mmm! ¡Qué rico huele! ‘How great it smells!’ which presents a L+H* prenuclear pitch accent on mmm and rico ‘great’ followed by a nuclear L+H* and LH% boundary tone.

Figure 7: Waveform, spectrogram and F0 trace for the statement of the obvious Pues, ¿qué de quién más puede ser? Solamente he estado con él ‘Well, so from whom else can it be? I have only been with him’ produced with a L+H* H% nuclear configuration.
Figure 8: Waveform, spectrogram and F0 trace for the utterance *Yo le compré una camisa, yo no sé si le va a gustar* ‘I bought him a shirt, I don’t know if he’ll like it’ produced with a H+L* L% nuclear configuration.

Figure 9: Waveform, spectrogram and F0 trace for the information-seeking yes-no question *¿Ustedes tienen mermelada aquí?* ‘Have you got jam here?’ produced with a H+L* falling pitch accent.
The most commonly occurring yes-no interrogative in the Dominican Spanish corpus had a rising pitch accent at the beginning of the utterance and remained at a high tonal level until a H+L* falling nuclear pitch accent on the final stressed syllable. The boundary tone could be either a high or a low. This pattern is illustrated in figure 9. The intent of the question in figure 9 is to determine whether a particular product is available in a shop, in this case, jam. The target word for the falling pitch accent H+L* has stress in the penultimate syllable, which permits us to see the alignment of the fall.

3.2.1. Biased yes-no questions

3.2.2.1. Echo yes-no questions

The echo yes-no question, also known as reiterative yes-no question, was produced with a contour that matched the general pattern for yes-no questions in multiple contexts, namely, a rising pitch accent on the first stressed syllable followed by a high tonal level presumably due to a H* tone, and then a tonal fall H+L* to the final stressed syllable and boundary rise. This pattern is different than the example of the echo yes-no question provided for Puerto Rican Spanish (Armstrong this volume).

Figure 10 is an echo question with focus on the exact hour. In this production the nuclear pitch accent was produced as a falling tone that begins in the current example midway through the consonant of the nuclear tonic syllable. The boundary rise was 2 s.t. and clearly appreciable with a narrow band spectrogram.

There were also cases in which several elements of the question were focalized. In figure 11 there were actually several components of this counterexpectational yes-no question that were focalized and this focalization was manifest in the three H+L* falling pitch accents that were utilized on each of those words. It is interesting to note that in the case of multiple foci, the same focus pitch accent can be repeated with the sense that each word is important. The utterance begins with the late aligned L*+H pitch accent.

The magnitude of the H+L* tonal falls in all three cases was much greater than the rise produced to create the falling tone, whereas in the case of the declaratives this was not consistently the case. Because there was a rise to produce a fall, the alignment of the tones to the stressed syllable is vital to determining the type of pitch accent. In each case in figure 11, the high tone of the falling pitch accent occurs or is aligned with the pretonic syllable.

Figure 12 has a declarative statement followed by an echo question in the sense that the speaker is responding to a perceived state that goes against the general expectation, namely being cold when to others the temperature is warm.
¿Tú me dijiste que son las nueve? ‘You told me it was nine o’clock?’ with a nuclear falling H+L* pitch accent and a compressed boundary rise H% (2 s.t.).

¿Fue María que llegó ahí? ‘Was it Maria that arrived there?’ produced with multiple H+L* falling pitch accents and a L% boundary tone.
The counterexpectational question in figure 12 is preceded by a statement regarding the warm temperature. The statement ends with a 4 s.t. rise on the word calor ‘heat’. On the question portion there is an upstepped rising pitch accent ¡L+>H* on the word tú ‘you’ which results in the entire pitch accent being produced at a higher level than previous rising pitch accents. There is also a contiguous tonal rise on tienes ‘have’, but due to crowding the alignment is tonally overlapped with the previous pitch accent. The nuclear falling H+L* on the word frío ‘cold’ still reaches the lower threshold for this speaker but with a slightly later alignment of the low than seen elsewhere, possibly due to the increased magnitude of the tonal fall. There is a final boundary rise of 2 s.t. which, while perceptible, is half the magnitude of the tonal rise of the immediately preceding declarative.

There was one counterexpectational context that prompted two different tonal patterns by the same speaker based on the types of prenuclear pitch accents employed. The first production shown in figure 13 has two consecutive rising L+H* pitch accents, while figure 14 begins with a rising pitch accent L+H* followed immediately by a falling H+L* pitch accent. Both versions have a rising pitch accent on the word postula ‘is running for’; however, the alignment is different. In figure 13 the high tone is aligned within the tonic syllable, L+H*, while in figure 14 the high tone is aligned in the posttonic resulting in a L+>H*.

Both figures 13 and 14 have a falling pitch accent on the word sindico ‘mayor’ H+L* and the negative particle and conclude with a low boundary tone L%.

3.2.2.2. Imperative yes-no questions

An imperative question can be produced with a degree of confirmation-seeking as in the production shown in figure 15. The first rising prenuclear pitch accent L*+H on the word vemos ‘shall we’ provides a clear example of a late aligned low tone followed by a tonal rise. The high tonal level is maintained until the final word, which has a rising pitch accent that is upstepped ¡L+H*; the low tone of the nuclear pitch accent is considerably higher here than previous lows. This is essentially the pattern found in Willis (2003) for broad focus questions in laboratory speech except for the M% boundary tone. We posit a M% tone for this utterance as the final tonal level is maintained for a considerable duration, 125 ms.

---

10 Willis (2004) empirically examines this tonal specification in Dominican Spanish by comparing the tonal levels of similar contours produced as statements or yes-no questions and finds categorical differences in tonal height between the two utterance types.
Figure 12: Waveform, spectrogram and F0 trace for a question with contrastive focus on the final element, Yo me estoy asfixiando de calor. ¿Tú tienes frío? *I am asphyxiating from the heat, and you are cold?*

Figure 13: Waveform, spectrogram and F0 trace for the confirmation question ¿Pero es Mario el que se postula para síndico, no? *But it's Mario who is running for mayor, isn't it?*
Figure 14: Waveform, spectrogram and F0 trace for the confirmation question ¿Pero es Mario que se postula para síndico, no!? ‘But it’s Mario who is running for mayor, isn’t it?’

Figure 15: Waveform, spectrogram and F0 trace for the utterance Oye, ¿vamos a tomar una fria hoy? ‘Hey, shall we go have a cold drink today?’ produced as a confirmation question of an invitation.
3.2.2.3. Confirmation yes-no questions

Confirmation questions were often accompanied by a question tag, either ¿Es verdad? ‘Is it true?’, or a simple ¿no? ‘isn’t it?’

The utterance in figure 16 illustrates a rising pitch accent followed by an intermediate boundary H% tone with a tonal movement of 8 s.t. on the word conmigo ‘with me’, and then a falling H+L* and L% boundary without any final rise. This tonal pattern may correspond to Jiménez Sabater’s report concerning the double negative construction, or in this case, a single final negative construction with a falling low boundary tone (1975). The focused word before the negative tag is produced with a rising L+H* accent and a H% intermediate boundary tone followed by a falling H+L* and L% boundary tone. This pattern was realized repeatedly within the elicited corpus and the Dominican informants tended to phrase the contextualized questions with a negative tag, in essence forcing a choice. An identical contour was produced for the disjunctive utterance, ¿Vamos a ir hoy, o mañana? ‘Are we going to go today, or tomorrow?’

Another confirmation utterance is shown in figure 17. The context for figure 17 is a second phone call to determine if María has arrived home (at the first phone call she had not arrived home from an errand). The first pitch accent is a rising tone L+>H* and contrasts with the prenuclear H+L* falling pitch accent in figure 11 on the same name, María.

The sense in this utterance is that of double confirmation: that María has not arrived, and particularly that she has still not arrived between now and the previous phone call. This focus is conveyed by the two H+L* falling pitch accents on these words. There is a final rise of 2 s.t. from the nuclear low tone to the end of the utterance that is also evident in the narrow band spectrogram.

The context for the utterance in figure 18 was intended to elicit a confirmation question. Additionally, following the production of the question, the informant also produced an emphatic declarative expressing that she was also from the same town. In the question portion the alignment of the high tone of the falling H+L* pitch accent on the name of the town Aguadilla is indicated by the placement of the tonal label to illustrate that the fall begins before the start of the tonic syllable. There is a 3 s.t. rise on the final word of the question. The declarative portion of the contour has a rising pitch accent on the first word yo ‘I’, and a rise that begins on the nuclear tonic syllable followed by a high boundary rise H%. The final boundary rise in the emphatic declarative portion of the phrase is the largest tonal excursion of the utterance (12 s.t.).

3.2.3. Wh- questions

The wh- questions in the Dominican Spanish corpus were consistently produced with a rising pitch accent on the pronominal and typically had a falling or low tone on the nuclear pitch accent syllable. In most cases wh-questions began at a considerably higher tonal level than either statements or yes-no questions. 11 Wh- questions also typically were produced as a declining contour throughout the utterance as opposed to yes-no questions, which often had a final dramatic fall on the nuclear pitch accent.

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11 See Willis (2003, 2006-2007) for empirical evidence of this distinction.
E.W. Willis

Figure 16: Waveform, spectrogram and F0 trace for the confirmation question with a negative tag ¿Tú vas a ir al cine conmigo, o no? ‘Are you going to go to the movies with me or not?’

Figure 17: Waveform, spectrogram and F0 trace for the utterance ¿María no ha llegado todavía? ‘María has still not arrived?’ produced with a H+L* H% nuclear configuration.
Figure 18: Waveform, spectrogram and F0 trace of a focalized and emphatic confirmation question ¿De verdad tú eres de Aguadilla? Yo también ‘Is it true you are from Aguadilla? I am too’ produced with a nuclear falling pitch accent H+L* on the interrogative and an emphatic nuclear pitch accent on the statement followed by a H% boundary tone.

Figure 19: Waveform, spectrogram and F0 trace for the information-seeking wh- question ¿Qué le digo al hombre de gas si vuelve mañana? ‘What shall I tell the gas man if he comes tomorrow?’
In the information-seeking wh- question contour shown in figure 19 we can see an example of the L*+H prenuclear pitch accent produced on the word *hombre* ‘man’, followed by a H+L* on the word *gas* ‘gas’, and another L*+H on the word *vuelve* ‘return’. The tonal rise following the tonic syllable low, may in fact be a tonal movement in preparation for the H+L* nuclear pitch accent. The nuclear H+L* presents a clear case of a low tone aligned late, at the tonic offset, that is followed by a 2 s.t. rise.

The production of a wh- question seen in figure 20 with more than one unit provides an example of a prenuclear rising pitch accent L+H* followed by a falling prenuclear pitch accent H+L* and another rising pitch accent into a high intermediate phrase boundary. This production and analysis implies several pitch accents in a compact phonetic space. This compounding of prenuclear pitch accents may have also contributed to the lack of an initial high boundary tone in this utterance.

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

There were several nuclear pitch accents for the echo or reiterative wh- question: a low tone, L*, a rising pitch accent jL+H* and a falling pitch accent H+L*.

Figure 21 presents another example of an echo wh- question with a falling nuclear pitch accent H+L*. This utterance begins with a %H boundary tone and contains multiple tones in a compressed environment. The words *yo ‘I’* may have a H tone that is conflated with the rising pitch accent of *dónde ‘where’* and *iba ‘was going’, or the words *yo ‘I’* and *iba ‘was going*’ are produced as a single unit with a nuclear falling pitch accent H+L*. The boundary tone shows some movement but does not exceed 1 s.t. at any point.

The contour for utterance in figure 22 has an upstepped rising nuclear pitch accent, jL+H*, followed by a H% high boundary tone. The contour of the echo yes-no question shown in figure 22 with a H% boundary tone contrasts with the similar upstepped nuclear pitch accent followed by a M% boundary in the request illustrated in figure 28. These two cases vary both in the direction of the tonal movement, rise versus plateau, as well as the height of the final tone (383 Hz in figure 22 compared to 275 Hz in figure 28).

In figure 23, and in contrast with the previous wh- question word in figure 22, the initial utterance portion prior to the pronominal wh- word, *Quién ‘Who’,* is produced at the normal beginning tonal level and then jumps dramatically at the onset of the wh- word to rise to a high tone within the word boundary. From this high tone there is a gradual tonal downdrift until what could presumably be a H+L* nuclear pitch accent on *puerta ‘door*’ with a low tone L* on the word *hora ‘hour*’ followed by a reduced final rise. The final boundary exhibits a slight rise of 1.3 semitones, which is near a perceptible level.
Dominican Spanish Intonation

Figure 20: Waveform, spectrogram and F0 trace for the wh-question ¿Para dónde tú vas y cuándo tú vuelves? ‘Where are you going and when will you get back?’

Figure 21: Waveform, spectrogram and F0 trace for the wh-question ¿Qué fue lo que tú me preguntaste, que adónde yo iba? ‘What was it that you asked me, where was I going?’
Entonces ¿qué fue lo que te dieron?

¿Entonces qué fue lo que te dieron? ‘So what was it that they served you?’

Pero Dios mío. ¿Quién estará tocando la puerta a esta hora? ‘Goodness! Who could be knocking on the door at this hour?’

---

**Figure 22:** Waveform, spectrogram and F0 trace for the counterexpectational echo wh- question ¿Entonces qué fue lo que te dieron? ‘So what was it that they served you?’

**Figure 23:** Waveform, spectrogram and F0 trace for the exclamative wh- question Pero Dios mío. ¿Quién estará tocando la puerta a esta hora? ‘Goodness! Who could be knocking on the door at this hour?’
3.2.4.2. Imperative wh-questions

The imperative wh-question illustrated in figure 24 was produced with the standard high tonal level boundary start and a rise to a high tone within the pronominal word cuándo ‘when’. From the pronominal interrogative there is a downdrift until the pronoun yo ‘I’ which is produced with a L+>H* and then a nuclear falling pitch accent that extends from the onset of the pretonic syllable in mandé ‘told’ and continues until the final tonic syllable hacer ‘to do’. The contour concludes with a L%.

An almost identical contour to figure 24 was produced for the context of an imperative wh-question demanding to know why someone wouldn’t be able to come for a special meal, ¿Y por qué ustedes no pueden venir a comer? ‘And why can’t you guys come to eat?’

The contour in figure 25 is produced with an increased emotional force and is in response to an annoying person persistently trying to get the speaker’s attention. The increased emotion and initial boundary tone account for the high tonal level of the prenuclear rising pitch accent, which then falls 14 s.t. to the word quieres ‘want’. The contour in figure 25 also provides an example of a particular low tone over the course of the stressed syllable and corresponds to the monotone L* on the word quieres ‘want’. Following this low tone, there is a reduced H+L* on the word contigo ‘with me’ and a final boundary rise at the end of the utterance of 5 s.t.

3.3. Imperatives: commands and requests

3.3.1. Commands

Imperatives can be produced as questions or as statements. In the case of the declarative command in figure 26, the nuclear pitch accent is a falling tone, H+L*, and the final boundary tone is assumed to be a low, L%. Despite an emphatic production, there is no final rise as suggested by Sosa (1999).

3.3.2. Requests

In the request question contour in figure 27, there is a rising pitch accent at the onset of the utterance followed by a sustained high tone until the beginning of the tonal fall just prior to the onset of the nuclear tonic syllable. There is a low plateau throughout the tonic syllable to a low boundary L%. The politeness marker, por favor ‘please’, is also produced with the same falling pattern as the preceding pitch accent and is followed by a reduced rising boundary tone H% of 2.5 s.t. This request contour is similar to the contour seen in the broad focus question in figure 9. The politeness marker has a falling pitch accent and a H% boundary tone that rises 2.5 s.t.

The second example of a request shown in figure 28 was produced in response to the prompt question, ‘How would you ask someone the time on the street?’ It should be noted that the context intended a wh-question as in ‘What time is it?’ but was converted by both female speakers into an imperative. The male speaker had a simple final rising boundary tone.

Whereas the request in figure 27 had a nuclear falling pitch accent similar to most questions, figure 28 does have a rising nuclear pitch accent (similar to the yes-no interrogative contour described by Willis 2003) The tonal specification for figure 28 is a rising L+>H* pitch accent followed by a high tone H*, an upstepped IL+H* nuclear pitch accent and a M% boundary tone.
E.W. Willis

Figure 24: Waveform, spectrogram and F0 trace for the imperative wh-question ¿Y cuándo que tú piensas hacer lo que yo te mandé hacer? ‘And when do you intend to do what I told you to do?’

Figure 25: Waveform, spectrogram and F0 trace for the wh-question expressing irritation, Y ¿qué es lo que tú quieres conmigo? ‘And what is it that you want with me?’ produced with an initial boundary on the wh-word and a rising L+H* pitch accent followed by a L* tone on the word quieres ‘want’ and a final H%.
Figure 26: Waveform, spectrogram and F0 trace for the utterance including an imperative Yo vengo ahora, voy a buscar la cartera, ¡no te muevas! ‘I’ll be right back, I’m going to get my wallet, don’t move!’

Figure 27: Waveform, spectrogram and F0 trace for the request ¿Usted me puede decir la hora por favor? ‘Could you tell me the time, please?’ with a falling H+L* on the words hora ‘time’ and por favor ‘please’.
3.4. Vocatives

The context designed to yield an imperative command in the case of calling a dog actually elicited a particular pattern for pets and was produced by all three informants as a frequent repetition of the dog’s name with a series of high tones, followed by a command to come. The vocative utterance used for calling humans employed a L+H* and LH% boundary tone and is shown in figure 29. The final rise was 4.5 s.t. This contour conveyed the idea of ‘Where are you?’ using a person’s name. The actual prompt used was ‘You enter the house of your friend Marina, but upon entering you don’t see her. How would you call for her?’ Although the conjecture was not tested, it is believed that this contour would be basically the same regardless of the length of the name.

4. Conclusions

The intonation patterns in Dominican Spanish elicited in this study demonstrated considerable variation in response to the task contexts. The same context would often result in a different contour the second time the speaker repeated it or would vary across speakers. This variation may in part be due to the elicitation procedure employed in the current chapter in which the author described the context and then asked the informant how they would respond. Stylistic variation due to task type has been recently demonstrated by Henriksen (2010), who shows that a broad focus declarative question could be produced with three different patterns, consisting of two versions of a final rise and a third pattern that was a final fall. These variations depended in part on the style of the task, that is, whether it was read speech or a personal identification task that was essentially a directed interview.

Dominican Spanish statements were produced with three different pitch accents and typically used the L+H* in cases of focus with a much earlier alignment of the high tone than what is reported for other dialects of Spanish. Question utterances also employed several different pitch accents and tended to use a H+L* falling tone in the case of focus. In yes-no questions we also found several examples of multiple H+L* focus tones used within a single utterance. The nuclear pitch accent in yes-no questions was typically a H+L* tone. Wh-questions were typically produced with a declining or downstepping F0 contour. The nuclear pitch accent was typically a H+L*. Tones in Dominican Spanish could also be upstepped in that both tones of a bitonal pitch accent were produced at higher levels than a preceding bitonal pitch accent. This upstepping occurred in both yes-no and wh-questions.

The nuclear pitch accent and final boundary tones could be produced in a variety of combinations, and except for a few stylized contexts did not correspond directly to a particular utterance type. All utterances could potentially be produced with a final rise, including statements. Across the sample, statements were consistently produced with much larger final tonal rises compared to questions. When there were two contiguous utterances with a final rise (statement and question), the statement was typically produced with twice the magnitude of final boundary rise in a semitone scale. The final rise in statements bears some similarity to the High Rising Terminal (HRT) described for New Zealand English. As Warren notes, “there is an implicit assumption that the HRT has a common meaning, and that there is therefore a definable form-context correspondence” (2005: 226); however, we did not find a particular meaning associated with the final rising boundary tone across the utterances observed.

12 Entras en la casa de una amiga tuya, Marina, pero al entrar, no la ves. ¿Cómo la llamarías con su nombre?
Figure 28: Waveform, spectrogram and F0 trace for the request Hazme el favor y dime la hora ‘Do me a favour and tell me the time’ with a final M% boundary tone.

Figure 29: Waveform, spectrogram and F0 trace for the calling vocative ¡Marina! produced with L+H* rising pitch accent and LH% boundary tone.
There are certain intonational similarities between Dominican, Puerto Rican and Canarian Spanish, which also share many segmental similarities. Both Dominican and Puerto Rican Spanish use a late low prenuclear pitch accent L*+H in declaratives and a L+H* pitch accent to express focus. Questions can be produced with a falling nuclear pitch accent in Dominican, Puerto Rican and Canarian Spanish, though it is attested in a greater variety of contexts in Dominican Spanish. The final declarative rise is only noted explicitly for Dominican Spanish.

In table 3 we list the combinations that were observed along with the utterance types in which they occurred in the corpus used in this study. There were additional configurations found in the corpus but are not described due to space considerations. Several of the patterns could also be upstepped; in these instances, the tonal alignment pattern was identical but the tonal levels were realized at a higher level (an upstepped low is higher than a low tone occurring earlier in the utterance).

**Table 3: Inventory of nuclear pitch accent and boundary tone configurations in Dominican Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Statements</th>
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<tbody>
<tr>
<td>Broad focus statements</td>
<td>H+L* H%</td>
<td><img src="image1" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>L+H* H%</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td>Biased statements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrow focus statements</td>
<td>L+H* LH%</td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>H+L* L%</td>
<td><img src="image4" alt="Diagram" /></td>
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<tr>
<td>Exclamative statements</td>
<td>L+H* LH%</td>
<td><img src="image5" alt="Diagram" /></td>
</tr>
<tr>
<td>Statements of the obvious</td>
<td>L+H* H%</td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
<tr>
<td>Uncertainty statements</td>
<td>H+L* L%</td>
<td><img src="image7" alt="Diagram" /></td>
</tr>
<tr>
<td>Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes-no questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information-seeking yes-no</td>
<td>H+L* H%</td>
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<tr>
<td>questions</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>H+L* L%</td>
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<tr>
<td>Category</td>
<td>Type</td>
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<td>--------------------------------</td>
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</tr>
<tr>
<td><strong>Biased yes-no questions</strong></td>
<td>Echo yes-no questions</td>
<td>H+L* H%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H+L* L%</td>
</tr>
<tr>
<td></td>
<td>Counterexpectational echo yes-no questions</td>
<td>H+L* H%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H+L* L%</td>
</tr>
<tr>
<td></td>
<td>Invitation yes-no questions</td>
<td>L+H* M%</td>
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<tr>
<td></td>
<td>Confirmation yes-no questions</td>
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</tr>
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<td></td>
<td></td>
<td>H+L* L%</td>
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<tr>
<td><strong>Wh- questions</strong></td>
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<td></td>
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<td>L* H%</td>
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<tr>
<td><strong>Biased wh- questions</strong></td>
<td>Echo wh- questions</td>
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<td></td>
<td>Counterexpectational wh-questions</td>
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<td></td>
<td>Exclamative wh- questions</td>
<td>L* L%</td>
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<td></td>
<td>Imperative wh- questions</td>
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### Imperatives: commands and requests

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<tr>
<th>Type</th>
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<td>Commands</td>
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<tr>
<td>Requests</td>
<td>¡L+H* M%</td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td>H+L* L%</td>
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</table>

### Vocatives

<table>
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<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Calling vocatives</td>
<td>L+H* LH%</td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
</tbody>
</table>
References


1. Introduction

The goal of the 1st Sp_ToBI workshop held in October 1999 at The Ohio State University was to develop prosodic transcription conventions that would be useful for the description of multiple varieties of Spanish. These conventions are laid out in Beckman et al. (2002), and a revised version of these is depicted in Estebas-Vilaplana and Prieto (2008). Both proposals are based on the Autosegmental-Metrical (AM) approach for intonational analysis, which resulted from the seminal work of Pierrehumbert (1980) and was later developed by Ladd (1996). While the intonational phonologies of a wealth of other languages as well as other varieties of Spanish (most extensively Castillian Spanish) have been analysed within the AM framework, only Sosa (1999) has analysed Puerto Rican Spanish within the AM model.

Comprehensive studies of Puerto Rican Spanish intonation prior to the late 1980s/early 1990s are few. Earlier investigations include a brief description by Kvavik (1978) and an even earlier one by Mauleón Benítez (1974), who compared intonational contours for five utterance types in Puerto Rican Spanish with speakers from the Loiza Aldea neighbourhood of Puerto Rico as well as a Papiamentu speaker. Quilis (1987) later considered F0 contours for basic utterance types from a dialectal perspective, comparing those contours found in the spontaneous speech of Puerto Rican Spanish, Mexican and Castillian Spanish speakers. He also (1993) compared Puerto Rican Spanish, Mexican, Canarian and Madrid Spanish, reporting on expressive and stylistic uses of intonation in those dialects. Sosa’s (1999) section on dialect and intonation (1999) includes an AM theory analysis of basic utterance types in Puerto Rican Spanish that builds on Quilis’ claims for the variety. More recent work by Sosa (2003) elaborates on wh- questions in Mexican, Colombian, Venezuelan and Puerto Rican Spanish, and he points out similarities between the latter two Caribbean varieties for this type of question. While Sosa couches his 1999 account within the AM framework for intonational analysis, no complete description of the intonational phonology of Puerto Rican Spanish within the tenets of Sp_ToBI exists. Therefore this chapter aims to provide a more complete picture of Puerto Rican Spanish intonational phonology than has previously been rendered, providing an up-to-date analysis reflecting the most recent advances in transcription conventions for Spanish intonation within the Sp_ToBI framework.

In this chapter I account for the typical tunes of Puerto Rican Spanish based on new empirical data, and as mentioned above, within the Sp_ToBI framework. While previous
accounts have described basic utterance types such as declaratives, yes-no questions and wh- questions, my data set includes a much wider array of utterance types. The utterance types investigated here are: broad and narrow focus statements, yes-no questions, wh- questions, commands, requests and vocatives. I also include the analysis of several specific contours for exclamative statements, statements of the obvious and other specific question types. The data included in this study come from two guided questionnaires. The first questionnaire, based on the one used in Prieto (2001), described a variety of prompt contexts intended to elicit a broad range of intonational contours.¹ Later, a follow-up questionnaire was administered to examine four types of yes-no questions as well as two types of confirmation questions. Differences in contours were found based on pragmatic context and information structure. Like the other chapters in this volume, my analysis is based on the ideas laid out in the first Sp_ToBI proposal (Beckman et al. 2002), but mainly on its revised version (Estebas-Vilaplana and Prieto 2008).

The organization of the chapter is as follows: in Section 2 I present an overview of Puerto Rican Spanish intonational phonology, laying out the inventory of pitch accents (monotonal and bitonal) as well as boundary tones (monotonal and bitonal). In Section 3 I present a description of various utterance types in Puerto Rican Spanish that best demonstrate the variety of intonational patterns in this dialect of Spanish. I conclude by highlighting the most important findings as well as providing a summary of the nuclear configurations that are most common in this variety of Spanish.

2. Puerto Rican Spanish intonational phonology

2.1. The pitch accents

The most recent Sp_ToBI proposal (Estebas-Vilaplana and Prieto 2008) includes a distinction between the category L*+H, phonetically realized as a low tone on the accented syllable followed by a rise on the posttonic syllable (or later), and the L+>H* category, which is realized as a rising pitch movement throughout the accented syllable and a H tone aligned on the posttonic syllable. Part of the motivation for revisiting rising bitonal pitch accents in Sp_ToBI comes from Willis (2003), who showed that Dominican Spanish uses L*+H in prenuclear position in broad focus declaratives, but L+>H* in prenuclear position for narrow focus declaratives. My analysis shows evidence for this distinction in Puerto Rican Spanish as well, and not surprisingly, given the many phonological features shared among Caribbean varieties. It should be noted, however, that Puerto Rican Spanish strongly favours the prenuclear pitch accent L*+H in general, which appears very frequently in statements, yes-no questions, wh- questions and commands. The frequent use of L*+H in prenuclear position is typical of both Canarian and Dominican Spanish (both in this volume) and, as I will show, is one of a number of intonational characteristics that these dialects share. The bitonal pitch accent L+H* is commonly found in nuclear position for narrow focus statements and exclamative statements. The frequent use of L+H* at intermediate phrase boundaries for statements is also noteworthy in this variety. My data also confirm the need, cited by Estebas-Vilaplana and Prieto, to incorporate the monotonal pitch accent L* into the Sp_ToBI system in order to account for an array of nuclear configurations in the variety such as tag

¹ An adapted version of Prieto (2001) was also used for the Atlas interactivo de la entonación del español. http://prosodia.upf.edu/atlasentonacion/
questions, incredulity questions, polite and exhortative requests and statements of the obvious.

Table 1 shows the inventory of pitch accents available in Puerto Rican Spanish as well as some of the types of utterances for which they are typically found, as well as their descriptions based on Estebas-Vilaplanas and Prieto (2008).

**Table 1: Inventory of monotonal and bitonal pitch accents in Puerto Rican Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This accent is phonetically realized as a low plateau at the bottom of the speaker’s pitch range. In this corpus, it is found in nuclear position for tag questions and incredulity questions.</td>
</tr>
<tr>
<td>H*</td>
<td>This accent is phonetically realized as a high plateau with no preceding F0 valley. In this corpus, it is used in nuclear position for narrow focus and exclamative statements, and in prenuclear position in yes-no questions.</td>
</tr>
<tr>
<td>¡H*</td>
<td>This pitch accent occurs in nuclear position, with the high tone produced extra high. Its phonetic realization in nuclear position is affected by the following boundary tone. When followed by a high boundary (top), the high plateau persists throughout the duration of the tonic syllable. When followed by a low boundary (bottom), the F0 persists throughout the syllable onset and may begin the fall anywhere from early in the vowel to about three quarters of the way through it. It is found in nuclear position for polite questions, imperative questions and broad focus yes-no questions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal pitch accents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L+H*</td>
<td>This accent is phonetically realized as a rising pitch movement during the accented syllable with the F0 peak located within this syllable. The peak is typically aligned with the end of the syllable for exclamative statements (top). The peak may also be reached early in the syllable as found for narrow focus statements in this corpus (bottom). This may be accompanied with syllable lengthening. It is quite common to find this pitch accent at intermediate phrase boundaries in Puerto Rican Spanish for statements.</td>
</tr>
<tr>
<td>L+¡H*</td>
<td>This accent is phonetically realized as a rising pitch movement during the accented syllable to an extra-high F0 peak. It is found for yes-no and wh- echo questions as well as counterexpectational questions.</td>
</tr>
</tbody>
</table>
L+>H*  This accent is phonetically realized as a rising pitch movement throughout the accented syllable with the F0 peak located in the posttonic syllable. These can be found in prenuclear position in narrow focus statements and echo wh- questions.

L*+H  This accent is phonetically realized as a flat F0 valley throughout the accented syllable with a subsequent rise on a post-accented syllable. This is by far the most common prenuclear pitch accent in the data for this dialect, and can be found for statements, yes-no questions, wh- questions and commands, among others.

H+L*  This accent is phonetically realized as a F0 fall throughout the nuclear accented syllable for wh- questions (top). For positive confirmation questions, the onset of the fall is found in the pretonic syllable (bottom).

!H+L*  This accent is phonetically realized as a fall from a relatively high tone produced which is produced in a low (compressed) pitch range to a low target. This pitch accent is typical in nuclear position for broad focus statements.

2.2. The boundary tones

As noted in the Castilian Spanish chapter in this volume, Sosa’s proposal to use a bitonal pitch accent (T*+T) followed by a monotonal pitch accent becomes problematic when considering complex final pitch movements. This is discussed in Section 3.1.2.3 for the statements of the obvious, where a final rise-fall always occurs in the posttonic syllable. Without allowing for bitonal boundary tones, a nuclear configuration like L+H* LM% is difficult to justify. If we were to incorporate the rise in the posttonic into the pitch accent itself, the pitch accent would then need to reflect three pitch movements (HLM). While tritonal pitch accents are indeed necessary to explain complex movements in Spanish dialects (see Gabriel et al. this volume for Argentinian Spanish), it is a more marked option to propose them. By analysing the final rise-fall as a complex boundary tone, this problem is avoided. Therefore, the incorporation of complex boundary tones in the revised Sp_ToBI proposal was a very necessary modification for the description of boundary tones in Puerto Rican Spanish.

Prieto and Estebas-Vilaplana (this volume) also note that within the traditional AM theory, only low (L) and high (H) tones are allowed, though the original Sp_ToBI proposal does allow for a mid (M) boundary tone. The revised version of Sp_ToBI confirms the usefulness of this transparent labelling convention. The data from Puerto Rican Spanish show clear instances of mid (M) boundary tones at the end of non-final constituents and in nuclear position for some exclamative statements and also for polite requests in Puerto Rican Spanish. In table 2 I provide the inventory of boundary tones found in the data for Puerto Rican Spanish.
Puerto Rican Spanish Intonation

Table 2: Inventory of monotonal and bitonal boundary tones in Puerto Rican Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
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<tbody>
<tr>
<td>L%</td>
<td>L% is phonetically realized as a low sustained tone or a falling tone at the baseline of the speaker. It is attested at the end of broad and narrow focus statements, yes-no questions, wh-questions and imperatives, among others.</td>
</tr>
<tr>
<td>M%</td>
<td>M% is phonetically realized as a rising (right) or a falling (centre) movement to the end of a non-final constituent, or a sustained midtone after a high nuclear pitch accent (left). It is attested in broad and narrow focus statements, and also at the end of commands and statements of the obvious.</td>
</tr>
<tr>
<td>H%</td>
<td>H% is phonetically realized as a rising pitch movement coming from a low or a high pitch accent. It may be found at the end of non-final constituents, but also at the end of an intonational phrase. A final rise from a low pitch accent is found in tag questions and reprise wh-questions. A sustained high tone is found for imperative yes-no questions in this variety.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal boundary tones</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HL%</td>
<td>HL% is phonetically realized as a peak in F0 followed by a fall. It is commonly found for incredulity questions, exhortative requests and stylized calling contours.</td>
</tr>
<tr>
<td>LH%</td>
<td>LH% is phonetically realized as a low F0 valley followed by a rise. It is attested in statements of the obvious.</td>
</tr>
</tbody>
</table>

3. Basic intonational patterns in Puerto Rican Spanish

The first guided questionnaire employed in this study was adapted from Prieto 2001 specifically for Puerto Rican Spanish. The Appendix of this volume shows the sixty-nine sentences elicited for the first questionnaire (for Ecuadorian Andean Spanish). The questionnaire was adapted so that it included lexical items and syntactic structures commonly found in Puerto Rican Spanish. For instance, Puerto Rican Spanish shows many English borrowings. While many of the Spanish dialects included in this volume use the word *panadería* for ‘bakery’, it is common in Puerto Rican Spanish to use the English loanword ‘bakery’ ['bejkeri]. Similar dialectal nuances were considered when preparing the situations and target utterances in the questionnaire.

The situations included in the questionnaire were designed to elicit an array of intonational contours from the subjects. For both questionnaires, the participants silently read contexts for each situation and produced the target utterances out loud. At times
instead of silently reading a situation, the participant and the experimenter (the author) would engage in a scripted dialogue. The participants were told that they could repeat any of the utterances if they felt that they had produced them unnaturally. Additionally, they were told they could change the scripted utterance and substitute some other phrase that they deemed more natural in the situation. Two males (aged 30 and 21) and five females (ages 21-25) responded to the first questionnaire and were recorded using a Zoom H2 Handy recorder. 483 utterances were analysed.

As I have noted above, a second, follow-up questionnaire was conducted in addition to the one based on Prieto 2001 in order to explore more thoroughly the area of yes-no questions in Puerto Rican Spanish. This questionnaire consisted of two parts. The first part included four different question types: broad focus yes-no questions, yes-no questions with negation, incredulity yes-no questions and echo questions (see Armstrong 2010 for an in-depth description of the distribution of these four question types). The participants were presented with 20 different contexts for which they had to read aloud each question type. Participants produced the same or a very similar segmental string for each question type. For example, the question ¿María vive en Aguada? ‘Does María live in Aguada?’ was produced as a broad focus question, with negation, as an incredulity question and as an echo question. The second part of the questionnaire was a loose translation of the situations used in Ladd’s (1981) paper on inner and outer negation and was designed to assess the effect of information structure on intonational encoding for three question types: broad focus yes-no questions and two types of confirmation questions. The confirmation questions differed in terms of the speaker’s belief about propositional content. I elicited confirmation questions produced in situations in which the speaker had just found out the negation of some proposition (~p) and another for which the speaker believed the proposition to be true (p). Striking differences were uncovered based on this distinction and are described in Section 3.2.2.3. The second questionnaire was comprised of a total of 26 target utterances. 14 participants (4 males, 10 females) from various parts of Puerto Rico participated as subjects in this second study and were between the ages of 19 and 45 at the time of the recording. Therefore, 364 utterances were analysed from the second questionnaire. A grand total of 847 utterances, then, were yielded by the two questionnaires. The data were analysed using Praat (Boersma and Weenink 2010). This chapter only reports on tunes that were found to be consistent across speakers (those from the San Juan metropolitan area as well as other parts of Puerto Rico).

3.1. Statements

3.1.1. Broad focus statements

In the first Sp_ToBI version, Beckman et al. (2002) proposed a rising, bitonal prenuclear accent L*+H, described as having a peak after the stressed syllable and valley toward the beginning or toward the middle of the stressed syllable as a prenuclear accent in some Caribbean varieties. In his account of prenuclear broad focus statements in Dominican Spanish, Willis (2003) reports a low tone throughout most of the accented syllable followed by a rise in F0 beginning near the end of the stressed syllable. The rise occurs mainly in the posttonic syllable. Face and Prieto (2007) responded to the need to account for this low flat tone throughout the accented syllable as opposed to one that rises throughout, proposing a distinction between two nuclear accents: L*+H for the former and L+H* for the latter in their Sp_ToBI revision. Like Dominican Spanish, Puerto Rican Spanish also has a prenuclear rising pitch accent characterized by a flat low tone throughout the accented syllable followed by a rise in a posttonic syllable. This rise is heavily favoured in Puerto Rican Spanish.
for broad focus statements. Figure 1 shows a typical broad focus statement in Puerto Rican Spanish, with a L*+H prenuclear pitch accent. As described in table 1, L*+H is characterized by a level low tone throughout the stressed prenuclear syllable followed by a rising trajectory that occurs in the posttonic syllable(s). In Puerto Rican Spanish, the flat low tone tends to continue throughout the entire accented syllable.

The final pitch movement for broad focus statements within Sp_ToBI is characterized by a fall throughout the accented syllable of the final word. This fall is produced within a compressed pitch range and as a result, the high tone produced within this compressed range is lower in the speaker’s range than we would typically expect for a high tone. To reflect this, the fall within the nuclear tonic syllable is labelled !H+L*, followed by a low boundary tone L%. Note that the leading tone of this bitonal pitch accent is labelled as downstepped. In this case, the diacritic (!) indicates the scaling of the high tone (the high is “lower” than a typical high)\(^2\). The onset of the fall for the !H+L* pitch accent occurs at a lower point than it does for positive confirmation questions and wh- questions in this variety, as I show later in the chapter. Similar phrase final falls are found for broad focus in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume). As mentioned, Canarian Spanish and Puerto Rican Spanish have been claimed to share a number of both segmental and suprasegmental features (Quilis 1993, Quilis 1987, Sosa 1999, Torreira 2008). The utterance Está _bebiendo limonada_ in figure 1 shows the !H+L* nuclear pitch accent for the accented syllable -na- in the phrase-final word _limonada_. As shown, the fall is produced low in the speaker’s pitch range.

An additional phenomenon found in broad focus declaratives is a mid boundary tone at the intermediate phrase boundary. Figure 2 shows two instances of the mid boundary tone M- preceded by the L+H* nuclear pitch accent in the utterance _La nena morena está comiendo chinas mandarinas_. Here they are found at the end of each intermediate phrase: after the word morena and after the word comiendo. In both cases, we find a fall to a mid tone from the preceding high tone from the L+H* pitch accent. As stated above, the use of L+H* at the intermediate phrase boundary is quite characteristic of Puerto Rican Spanish. The nuclear pitch accent is the same as in that in figure 1, !H+L*.

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

Rather than the nuclear fall through the syllable to a low target that we would expect for broad focus statements in Puerto Rican Spanish, a high plateau throughout the accented nuclear syllable is characteristic of some narrow focus statements. Figure 3 shows the utterance _No, de limones_ as an example of a narrow focus statement which the speaker uses to correct her interlocutor, who thought the speaker had wanted a pound of oranges. The speaker corrects her by telling her that she wants a pound of lemons (i.e. not oranges, lemons), using contrastive focus. We find contrastive focus on _limones_ which occurs in nuclear position and shows a high plateau (H*) throughout the accented syllable, followed by a low boundary tone L%.

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\(^2\) In traditional ToBI labelling the downstepped symbol would indicate that a given tone is produced lower in relationship to a preceding tone of the same category. In this case, the diacritic indicates that the high tone is produced lower than expected. Therefore, the scaling of the nuclear tone is not an effect of preceding tones.
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement "Está bebiendo limonada" 'She's drinking lemonade' produced with a $L^*+H$ prenuclear accent and $!H+L^*$ nuclear accent followed by a $L^\%$ boundary tone.

Figure 2: Waveform, spectrogram and F0 trace for the neutral statement "La nena morena está comiendo chinas mandarinas" 'The dark-haired girl is eating oranges' produced with $L+H^*$ nuclear pitch accents before a $M-$ phrase boundaries, and finally the typical $!H+L^* L^\%$ nuclear configuration.
Differently from broad focus statements, we also find the L+>H* prenuclear pitch accent for narrow focus statements, phonetically implemented as a rise throughout the accented syllable with a peak reached in the posttonic. As I pointed out in the previous section, Willis (2003) showed that broad focus statements were produced with L*+H prenuclear accents by his Dominican Spanish informants. He describes this prenuclear pitch accent with the F0 valley aligned near the onset of the accented syllable, and the F0 peak in the posttonic (similar to the prenuclear accents in many varieties of Spanish). At least for some narrow focus statements in Puerto Rican Spanish, the same is true, as shown in figure 4. In the utterance *Se mudan a Aguadilla*, we find a rise throughout the accented syllable *mu-* which continues into the posttonic syllable. The nuclear configuration shown here is common for other varieties of Spanish in this volume (Chilean, Mexican, Castilian): a rise to a peak within the nuclear accented syllable followed by a fall to a low boundary. This nuclear configuration is labelled L+H* L%. Figure 4 shows an utterance that the speaker produces to correct her interlocutor, who thinks that some mutual friends are moving to Ponce. The speaker is sure that they are moving to Aguadilla (both cities in Puerto Rico). Therefore, the word *Aguadilla* is in contrastive focus. The nuclear pitch accent L+H* used for narrow focus statements contrasts with the category L+¡H* in Puerto Rican Spanish (used for echo questions, for example). The two categories contrast based on scaling differences of the starred high tone in the tonal space: it is produced at a higher pitch level in echo questions, for example, than the one used for narrow focus statements. Echo questions are discussed in more detail in Section 3.2.2.1. Figure 4 shows an example of the utterance *Se mudan a Aguadilla* produced with a L+>H* prenuclear pitch accent and a L+H* L% nuclear pitch configuration. The difference between L+H* for narrow focus and L+¡H* for echo questions has also been described for Catalan by Borràs-Comes et al. (2010).

3.1.2.2. Exclamative statements

Figure 5 is an example of a wh- exclamative with which the speaker conveys that she likes the smell of bread in a bakery. The common contour for this specific context is produced with a low plateau in the stressed vowel (L*) in the monosyllabic word *pan* followed by a rise to a mid target at the end of the utterance. The boundary tone is labelled M%. Figure 5 shows the utterance *¡Qué rico olor a pan!* produced with the L*+H prenuclear accent and L* M% nuclear configuration. This contour is found in other varieties of Spanish with the same function, as in Ecuadorian Andean Spanish (O’Rourke this volume), for example.

Figure 6 is an example of an exclamative statement. With the utterance *¡Está riquísimo!* ‘It’s really delicious!’ the speaker makes a remark about the degree of tastiness of some food she has tried, using the Spanish intensifier *-ísimo* on the adjective for delicious *rico*. The nuclear accent is realized as a rise to a high F0 peak which is reached within the accented syllable followed by a fall to a low boundary tone L+H* L%. The typical prenuclear pitch accent L*+H is used.
Figure 3: Waveform, spectrogram and F0 trace for the narrow focus statement No, de limones ‘No, of lemons’ produced with a H* nuclear pitch accent and L% phrase boundary.

Figure 4: Waveform, spectrogram and F0 trace for the narrow focus statement Se mudan a Aguadilla ‘They’re moving to Aguadilla’ produced with a L+>H* prenuclear pitch accent and high phrase boundary H-, followed by the L+H* L% nuclear configuration.
Figure 5: Waveform, spectrogram and F0 trace for the biased exclamative statement ¡Qué rico olor a pan! ‘How good the bread smells!’ produced with a L*+H prenuclear pitch accent and L* M% nuclear configuration.

Figure 6: Waveform, spectrogram and F0 trace for the biased exclamative statement ¡Está riquísimo! ‘It’s really delicious!’ produced with a L*+H prenuclear pitch accent, L+H* nuclear pitch accent and L% phrase boundary.
3.1.2.3. Statements of the obvious

Like other Spanish varieties, Puerto Rican Spanish has a distinct tune for statements of the obvious. Here the speaker uses a specific intonational contour that makes obvious the fact that she believed the propositional content of a given utterance to have been accessible to both her and her interlocutor prior to the time of utterance (i.e. shared in the speakers’ common ground). The tune in figure 7 is used when just prior to the time of utterance the speaker becomes aware that her interlocutor does not in fact share this information. The temporal relationship between the time of utterance and the speaker becoming aware of the mismatch in common ground is a key pragmatic restriction for statements of the obvious, i.e. the speaker must have just found out about the common ground mismatch. Additionally, the speaker must have believed that the information in question was not only shared, but very accessible.

In this corpus, the nuclear configuration observed for statements of the obvious shows a rise throughout the stressed nuclear syllable to a peak, which occurs within this same syllable. In figure 7, the speaker reveals the identity of the father of a common friend’s baby. The speaker was presented with a situation in which his interlocutor asked him who the baby’s father was, which the speaker assumed to be obvious since the common friend had been dating her boyfriend, Mariano, for many years. Therefore, the speaker is incredulous with respect to her interlocutor’s failure to calculate the identity of the father. The utterance in figure 7 shows the second of two intonational phrases: ¿De quién va a ser? ¡De Mariano! ‘Whose do you think it is? Mariano’s!’ In the statement of obviousness ¡De Mariano! we find a L+H* pitch accent on the accented syllable -rían- followed by the complex boundary tone which is comprised of a fall and subsequent rise in the posttonic syllable, the complex boundary tone LM%. The nuclear configuration is L+H* LM%. The form-function relationship for this nuclear configuration seems to be common for many Spanish varieties, such as Mexican (de-la-Mota et al. this volume) Castilian (Estebas-Vilaplana and Prieto this volume) and Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume).

3.2. Questions

3.2.1. Yes-no questions

Yes-no questions in Caribbean Spanish varieties in general have traditionally been of interest in the literature given their ‘radical’ nature in lacking the F0 dip and final rise in nuclear position that we typically find for broad focus yes-no questions in Castilian, Mexican and Andean varieties, to name a few. Instead of this fall-rise, Puerto Rican Spanish is known to use a nuclear rise-fall to encode yes-no questions. Sosa (1999) lays out a dichotomy for yes-no questions in Caribbean versus non-Caribbean dialects in which yes-no questions are invariably produced with a falling toneme for varieties of the former group, but rising for the latter. For Sosa this is further evidence for a typological distinction between Caribbean and non-Caribbean dialects, in addition to the many segmental differences that Caribbean dialects have been known to share. Recent investigations in Caribbean Spanish, though, show that not all Caribbean dialects categorically employ a nuclear fall for yes-no questions (Willis 2004 for Dominican Spanish; Alvord 2006 for Miami Cuban Spanish). Additionally, as the intonational phonologies of an increasing number of dialects of Spanish are reported on, we find that many non-Caribbean dialects also encode yes-no questions with a final fall (see the chapters on Argentinian, Chilean and Cantabrian Spanish in this volume, for example). The use of a fall versus a rise for questions in Spanish varieties may depend on pragmatic restrictions (Escandell-Vidal 1998). The corpus investigated here, however, does confirm a general resistance in Puerto Rican Spanish against final rises for questions, though as we will see, a rise is indeed found in very restricted pragmatic contexts.
As Sosa notes, a circumflex movement dominates for yes-no questions in this variety as it does for declaratives. However, the general pitch height throughout the utterance is higher for yes-no questions. Like Castilian Spanish, we find that a L*+H prenuclear pitch accent is used for yes-no questions. Yes-no questions tend to resist declination, not unlike the phenomenon to which Ladd (2008) refers to as the suspension of ‘downdrift’ in Hausa questions (though Hausa has downdrift in statements, while my corpus does not show evidence of downdrift for Puerto Rican Spanish statements). Suspension of downdrift can also be found in declaratives in the Spanish creole language Palenquero (Hualde and Schwegler, 2007) spoken in San Basilio de Palenque, Colombia. High, level tones are found on prenuclear stressed syllables instead of the rising prenuclear pitch accents typically found in Spanish declaratives. The F0 contour remains high throughout the utterance in Puerto Rican Spanish, not unlike the German ‘bridge contour’ in shape, with an initial rise followed by a sustained high F0 contour until a final fall (Wunderlich 1991). However, F0 suspension is not the only F0 contour found in Puerto Rican Spanish yes-no questions. It is also possible to find a gradual rise throughout the utterance to the high nuclear tone.

Puerto Rican Spanish broad focus yes-no questions exhibit an utterance-initial L*+H prenuclear pitch accent which is typically followed by either tonal absence or ensuing H* prenuclear accents (yielding the aforementioned F0 suspension) until final nuclear movement. A final nuclear fall is typically found for this utterance type. The fall initiates from a nuclear pitch accent, iH*, whose peak may occur very early in the syllable nucleus or around its midpoint. It is rare to find the extra-high tone realized as a full plateau maintained throughout the duration of the entire syllable (as we find for H* for some narrow focus statements, as shown in figure 3). The tone found in the tonic syllable is labelled iH*, the diacritic indicating that this tone is upstepped. As with the case of declaratives, the relevant diacritic (i) does not indicate upstep relative to the pitch height of some preceding tone. Rather, it indicates that the tone is extra-high. It contrasts, for example, with the high tone (H*) used in nuclear position for some narrow focus statements, (see figure 3). For the broad focus yes-no questions analysed here, the fall to the low boundary (L%) occurs within the tonic nuclear syllable, while the elbow is most often found in the posttonic. An example of a yes-no question produced with the iH* L% nuclear configuration is shown in figure 8 with the phonetic implementation I have just described.

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

The nuclear configuration for echo questions in Puerto Rican Spanish is most typically a rise throughout the nuclear accented syllable to an upstepped high tone followed by a fall to a low boundary. Here the issue of scaling comes into play again, as it does in the case of broad focus yes-no questions versus broad focus statements. For echo questions, I use the label L+¡H* L% since it contrasts with narrow focus statements for which the peak of the starred high tone in L+H* is produced lower in the speaker’s pitch range (i.e. not upstepped). With identification tasks, Borràs-Comes et al. (2010) used perception data and reaction times to argue for a categorical difference between two rising nuclear pitch accents in Catalan. They found a categorical distinction between affirmative or focalized statements (L+H* nuclear pitch accent) and echo questions (L+¡H* nuclear pitch accent). The production data analysed here show a similar distinction. While the narrow focus statement in figure 4 shows a L+H* nuclear pitch accent, the pitch scaling for the high tone in the echo question is much higher, resulting in a steeper fall to a low boundary tone. Figure 9 shows an example of a short echo question produced with the L+¡H* L% pitch accent. There is rise to a peak high in the speaker’s pitch range followed by a fall in the echo question ¿A las nueve?
Figure 7: Waveform, spectrogram and F0 trace for the statement of obviousness ¡De Mariano! ‘Mariano’s!’ produced with a L+H* nuclear pitch accent before a LM% phrase boundary.

Figure 8: Waveform, spectrogram and F0 trace for the yes-no question ¿Hay reunión mañana? ‘Is there a meeting tomorrow?’ produced with a ¡H* nuclear pitch accent and L% phrase boundary.
Figure 9: Waveform, spectrogram and F0 trace for the echo question ¿A las nueve? ‘At nine?’ produced with the L+H* L% nuclear configuration.

Figure 10: Waveform, spectrogram and F0 trace for the echo question ¿Que vieron a Marina? ‘You saw Marina?’ produced with a L*+H prenuclear pitch accent followed by the L+H* L% nuclear configuration.
Echo questions are often used to express the speaker’s attitude towards the meaning of an utterance, including its presuppositions and implicatures (Noh 2005: 117). They not only question what the echoer has failed to hear, but also express his attitude towards what he has heard (Noh 2005: 132). It is common to find some notion of surprise or disbelief associated with echo questions in general. In the echo question ¿Que vieron a Marina? we find a L*+H prenuclear pitch accent on *vieron* followed by a L+iH* nuclear pitch accent on *Marina*. This specific flavour of echo question implies that the speaker is surprised about the propositional content, or that it goes against his/her expectations. Note that no FO ’bridge’ is found after the prenuclear pitch accent, as we would expect in a broad focus yes-no question. Instead, after the prenuclear pitch accent on *vieron* the speaker targets a low tone produced near the baseline of the speaker’s pitch range. We then find a rise throughout the nuclear accented syllable -ri- to a high tone produced high in the speaker’s pitch range L+iH*, followed by a low boundary tone L%. By returning to the baseline area of the tonal space after realizing previous high tone in order to produce the nuclear L+iH*, the speaker conveys that the information she has just received is not in line with her expectations.

The FO contour in figure 10 closely resembles the one presented by Sosa in his discussion of the San Juan focus contour, which he describes as the tonema ascendente-descendente puertorriqueño, specifically found in San Juan. He claims that the nuclear peak occurs within the stressed nuclear syllable, which he calls L*+H L%. Sosa describes this nuclear configuration as circumflex in design, but distinguishes it from a second contour that also shows a rise-fall. However, differently from figure 10 the final peak coincides not with the accented nuclear syllable but rather with the onset of the posttonic syllable. The most striking characteristic of this toneme for Sosa is that the fall to the low boundary tone is never produced until the posttonic syllable. He points out a possible labelling issue for the contour, since the AM framework does not allow for pitch accents on unaccented syllables, whereas in this case the FO peak indeed occurs in the posttonic syllable. Sosa’s interpretation is that it is not the case that the posttonic syllable in fact becomes stressed, but rather that it shares the same peak with the stressed syllable. He argues therefore, that the H tone is then ambisyllabic on the surface level.

The data analysed in this chapter revealed a contour that seems to show the same utterance-final pitch movement as Sosa’s ambisyllabic version in San Juan Spanish. These were found for questions of incredulity, when the speaker implicates that she is not willing to admit or accept the propositional content as true. They are different from the echo question shown in figure 11 because they also implicate doubt with respect to the propositional content, and are described in Section 3.2.3.2. I should point out that the contours described by Sosa were both used for exclamatives in San Juan Spanish. It is appropriate to note the semantic similarity between exclamatives and echo questions. Rett (2009) observes that the goal of a speaker in an exclamative is to show that she is surprised by the content of the utterance. Gutiérrez-Rexach (2008) points out that wh- exclamatives, for example, express emotive attitudes like amazement, surprise or other attitudes that are relevant to the context. I have also pointed out Noh’s characterization of echo questions such that they allow the speaker an opportunity to express an emotion about what has just been heard (or even inferred). It is perhaps not surprising that we should find two kinds of echo questions implicating surprise and incredulity with intonational contours similar to the ones used for the exclamatives. While Sosa’s account does not provide the context in which these exclamatives were produced, we might surmise that the speakers were expressing similar emotive attitudes to those expressed by speakers when they produced L+iH* L% in
figure 10 or when they realized the bitonal boundary tone HL% for incredulity echo question which is shown in figure 11. Incredulity questions are produced quite consistently with the L* HL% nuclear configuration.

The incredulity echo question in figure 11, ¿Que Mario se postuló para alcalde? is produced with a L*+H prenuclear pitch accent. At the end of the utterance, a low plateau is found during the stressed syllable of alcalde followed by a subsequent rise and final fall in the posttonic syllable de, much like Sosa’s description of the San Juan focus contour with an ambisyllabic high peak. However, with the incorporation of complex boundary tones proposed in Estebas-Vilaplana and Prieto (2008), there is no longer a need to treat the H tone found in the posttonic as ambisyllabic, since it can now be analysed as the first of two pitch movements in the posttonic syllable. Hence, the bitonal boundary tone is labelled HL%. This nuclear configuration is described here as L* HL%. The pragmatic difference between this sort of echo question and the incredulity echo question shown in figure 10 is the element of doubt implicated in figure 11. The incredulity contour doubts the veracity of the propositional content while the contour in figure 10 implicates that the information is contrary to the speaker’s expectations. The speaker is in a state of incredulity at the time of the utterance. In Puerto Rican Spanish, incredulity is implicated through use of the nuclear configuration L* HL%. These sorts of questions are necessarily confirmatory, since the speaker is typically incredulous to some information that has recently been activated either linguistically or extra-linguistically.

3.2.2.2. Imperative yes-no questions

As I indicated earlier, Puerto Rican Spanish strongly resists nuclear configurations ending with a high boundary tone, though they can be found in quite restricted pragmatic contexts. Imperative questions and polite questions are examples of such a context. The F0 contour shown in figure 12 ¿Puedo pasar? was elicited for a situation in which the speaker was asking a doctor for permission to enter his office. We can also assume that for this utterance there may be an element of deference to be considered. Figure 12 shows the pitch track for the utterance ¿Puedo pasar? produced with a L*+H prenuclear pitch accent. After the rise from the prenuclear pitch accent we find another small rise to an extra-high target on the stressed syllable of the word pasar iH*. A sustained high tone is found in the posttonic syllable, followed by a high boundary tone H%. Note the difference in the phonetic realization of the iH* pitch accent when followed by a high phrase boundary. Unlike broad focus yes-no questions, where the extra-high tone is not usually maintained as a plateau throughout the tonic nuclear syllable due to the following low phrase boundary, we do find that the phonetic implementation of iH* when followed by HH% is that of a high plateau maintained throughout the vowel’s duration. The iH* HH% configuration is also used for imperative yes-no questions.

The use of H* H% in polite questions in Puerto Rican Spanish is an interesting finding, considering the strong preference for low final boundary tones in questions for this variety of Spanish, typically associated with Caribbean dialects in general. This contour is also used for imperative questions in Canarian Spanish. However, it should be noted that one of the contours used for broad focus yes-no questions, H* L%, can also be found in imperative questions.
Figure 11: Waveform, spectrogram and F0 trace for the incredulity echo question ¿Qué Mario se postuló para alcalde? ‘Mario is running for mayor?’ produced with two L*+H prenuclear pitch accents followed by the L* HL% nuclear configuration.

Figure 12: Waveform, spectrogram and F0 trace for the polite question ¿Puedo pasar? ‘Can I come in?’ produced with a L*+H prenuclear pitch accent, jH* nuclear pitch accent and HH% phrase boundary.
3.2.2.3. Confirmation yes-no questions

In Puerto Rican Spanish, a specific contour is used to confirm information that the speaker believes to be true. I will refer to these as positive confirmation questions. In the second study reported on here, speakers produced questions that differed in speaker belief states about the propositional content of the question. When speakers produced a confirmation question about information they believed to be true at the time of utterance, the question tended to be produced with a fall through the nuclear accented syllable to a low target, labelled H+L* L%. The alignment of this pitch accent is implemented such that the fall from a high tone begins in the pretonic syllable of the utterance-final prosodic word. The low target is reached in the tonic syllable. This contour was not found when the speaker did not have any specific belief about the propositional content; the iH* nuclear pitch accent was used, as expected, since this accent already found to be preferred for broad focus yes-no questions.

In the context for the question produced in figure 13, the speaker asks ¿No hay por aquí un lugar que vende piononos? ‘Isn’t there a piononos place around here?’ The participants were told in the preceding context before producing the target utterance that they believed that there was indeed a place nearby that sold piononos. Therefore, the propositional content (p = there is a place that sells piononos) in the utterance is believed to be true by the speaker. In figure 14, the speaker asks if there is a place that sells piononos, with no specific expectation about whether or not there is such a place. Note that for the two different questions, the speakers’ beliefs about the existence of a place that sells piononos is also marked by mood choice. The confirmation question in figure 13 uses the indicative form vende of the verb vender ‘to sell’, while the broad focus yes-no question is marked with subjunctive mood, venda. In this way the speaker implicates that the existence of the place that sells piononos is realis in the confirmation question, but not in the broad focus yes-no question.

The difference in question type is reflected by nuclear pitch accent choice. For the positive confirmation question in figure 13, we see that the FO is already falling at the onset of the syllable and that the fall is quite shallow in the realization of the H+L* nuclear pitch accent. Figure 14 shows a typical broad focus yes-no question, as discussed in Section 3.2.1. It is not uncommon to find longer duration for the accented nuclear syllable in the positive confirmation question than we find for the broad focus yes-no question. For instance, when comparing figures 13 and 14, which were produced by the same speaker, we find that the duration of the nuclear accented syllable no for the positive confirmation question is 201 ms, while the same segmental string in the broad focus question has a duration of 182 ms.

The second questionnaire also explored a context in which the speaker, by inference, found out that some proposition was not true. In figure 15, the speaker has just found out by inference that there is no place close by that sells piononos. This target was produced as part of a dialogue, and the speaker infers the propositional content of her question from her interlocutor’s statement Vamos a tener que ir a Piñones para comprar piononos. En este barrio va a ser difícil. ‘We’re going to have to go to Piñones to buy piononos. It’ll be difficult [to do so] in this neighborhood.’ Therefore, when the speaker produces the utterance ¿Por aquí no hay ningún lugar que venda piononos? ‘There’s no place that sells piononos around

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3 Piononos are a fried food common in Puerto Rico.
here?' s/he confirms the negation of the proposition (p= there is a place nearby that sells piononos), which s/he has just inferred (see Ladd, 1981 and Büring and Gunlogson 2000 for semantic/pragmatic discussions). While she was never told explicitly ‘There are no places that sell piononos around here’, her interlocutor’s utterance provides ample evidence that there are no places that sell piononos close by. In this context, speakers often produced the same nuclear configuration used for echo questions, L+H* L%.

From a pragmatic point of view, the use of L+H* L% for this type of confirmation question is not surprising since echo questions themselves confirm/check information that has been explicitly activated in the discourse. For this specific situation, while the information being confirmed is not explicitly stated in the discourse (which is sometimes the case for echo questions), it is very easily accessible and therefore highly activated (see Dryer 1996). While the speaker does not echo verbatim what her interlocutor stated, she echoes instead what she infers from the prior utterance, i.e. ‘the unsaid’ (Grice 1975). Figure 15 shows an example of a confirmation question for which the speaker shows surprise, as if she had previously expected there to be a place that sells piononos nearby, but finds out through inference that there is not. The speaker uses the L+H* nuclear pitch accent, with a rise throughout the nuclear accented syllable to a high peak produced higher in the speaker’s pitch range than the high peak in the narrow focus statements for which speakers use L+H*, as I have discussed in section 3.2.2.1. As in figure 10, the implication of counterexpectation in this question is apparent due to the realization of the low tone of the nuclear pitch accent around the baseline of the speaker’s pitch range. Additionally, in broad focus yes-no questions we would expect to find an initial L*+H prenuclear accent followed either by tonal absence or H* pitch accents on the content words throughout the question, allowing for declination suspension (a flat, high contour). Here an initial L*+H prenuclear accent is used, but followed by the L+H* prenuclear pitch accents which are found on the quantifier ningúin and the verb venda. Recall the use of the L+H* prenuclear pitch accent in narrow focus statements as well.

As seen in the previous sections, Puerto Rican Spanish favours low final boundary tones, with the exception of some polite and imperative questions. Another exception is tag questions, which also confirm information. The most common nuclear configuration for tag questions in Puerto Rican Spanish is phonetically realized as a low plateau followed by a rise to a high level, labelled as L* H%. Figure 16 shows the utterance Vienes a comer, ¿verdad? The fall-rise typical of tag questions in Puerto Rican Spanish is found on the tag word verdad where we find a F0 dip to a low target in the nuclear syllable -dad followed by a rising movement to a high final boundary tone. This nuclear configuration is labelled L* H%. The fall-rise is very restricted, then, in Puerto Rican Spanish relatively to other dialects of Spanish that use it to encode broad focus yes-no questions.
Figure 13: Waveform, spectrogram and F0 trace for the positive confirmation question ¿No hay por aquí un lugar que venda piononos? "Isn’t there a place that sells piononos around here?" produced with a H+L* nuclear pitch accent and L% phrase boundary.

Figure 14: Waveform, spectrogram and F0 trace for the broad focus yes-no question ¿Hay por aquí un lugar que venda piononos? "Is there a place that sells piononos around here?" produced with a ¡H* nuclear pitch accent and L% phrase boundary.
**Figure 15:** Waveform, spectrogram and F0 trace for the incredulity confirmation question ¿Por aquí no hay ningún lugar que venda piononos? 'There isn’t a place that sells piononos around here?' produced with an initial L*+H prenuclear pitch accent and followed by L+¡H* prenuclear pitch accents. The nuclear configuration is L+iH L%.

**Figure 16:** Waveform, spectrogram and F0 trace for the confirmation question with tag Vienes a comer, ¿verdad? ‘You’re coming to eat, right?’ produced with a L* HH% nuclear configuration.
3.2.3. Wh-questions

Navarro Tomás (1944) distinguishes between three pragmatically different types of wh-questions in Spanish (referred to in the literature as preguntas pronominales): falling, rising and circumflex. The first is described as the ‘unmarked’ type of wh-question, the second is described as more affected, showing insecurity (more polite). The third also allows for emotive expression, showing some element of surprise, but can also show special ‘emphasis’. Quilis’ characterization of wh-questions in Puerto Rican Spanish is a gradual descent from the peak in the first half of the phrase to its final portion, and for this reason he points out their similarity to declarative utterances that show a gradual descent. Later, when comparing Puerto Rican to Mexican and Canarian Spanish, Quilis (1993) states that all three dialects present a falling intonation pattern for wh-questions. In the figures presented for Quilis’ Puerto Rican Spanish speakers, no circumflex movement is observed, rather the F0 falls throughout the utterance. However, Sosa’s (1999) example of a wh-question does not exhibit the gradual fall throughout the utterance for wh-questions reported by Quilis. After an utterance-initial rise (described by Sosa as H\(^*\)+H) no declination is observed, but rather the pitch remains high, to finally fall within the stressed nuclear syllable (like the ‘bridge contour’ mentioned in Section 3.1). This ‘suspension’ in declination is what Sosa maintains is the characteristic which distinguishes Puerto Rican Spanish from other dialects (e.g. Caracas Spanish) that exhibit a gradual fall throughout the utterance for wh-questions. This volume, however, reveals that F0 suspension for wh-questions is also found in Dominican and Canarian Spanish.

Nevertheless, the data presented here lend some support to some of the claims mentioned above. In support of Sosa’s argument, the wh-questions analysed here do not show any examples of the gradual fall reported by Quilis. The most typical nuclear configuration for wh-questions found in the database is the H+L\(^*\) pitch accent followed by a low boundary tone L\%, the same nuclear configuration that I have described for positive confirmation questions (though with different phonetic implementations). The H+L\(^*\) L\% contour fits in with Navarro Tomás’ circumflex description, since the pitch accent can be considered ‘rising-falling’. However, the contour does not follow the pragmatic restrictions described by Navarro Tomás, since it seems to be the default contour used for wh-questions in Puerto Rican Spanish (which for Navarro Tomás would be the gradual fall contour). Again, Puerto Rican Spanish resembles both Canarian and Dominican Spanish in its use of nuclear pitch accent for wh-questions. Like Dominican Spanish, Puerto Rican Spanish often times shows either no pitch accents or H\(^*\) pitch accents between the initial rise of the question and the nuclear pitch accent, resulting in a high plateau throughout the question until the final fall.

The prenuclear accent for Puerto Rican Spanish wh-questions is typically L\(^*\)+H. A pitch accent may or may not be found on the question word. Figure 17 shows the utterance ¿Dónde tú vives?, an example of a typical wh-question in Puerto Rican Spanish with two pitch accents: a L\(^*\)+H prenuclear pitch accent on the word dónde and a H\(^*\) on tú. Utterance-finally we find the H+L\(^*\) L\% nuclear configuration, which occurs in the last word, vives.

Rising contours were also also identified for wh-questions in the data, though they were much less common than the nuclear fall. A rising contour for wh-questions is described by Sosa (2003) for ‘reminder’ or ‘reprise’ wh-questions. Sosa discusses the use of rising contours for reprise questions in dialects like Colombian and Puerto Rican Spanish, pointing out that the speaker does not use a final rise for the wh-question to implicate politeness or mitigation, as might be expected. Rather, he characterizes the contour as implicating: ‘tell me again something you may have already told me’ (p. 240). The reprise wh-question, then,
reactivates previously asserted information.

Figure 18 shows the utterance ¿Qué dices que te dieron? ‘What did you say they served you?’ elicited for a context where the speaker asks for confirmation about what her interlocutor was served at a restaurant. In this situation, the speaker focuses on something that had already been said in the discourse, asking for a reactivation of what had already been said with the wh- question. I consider this a reprise wh- question. Sosa (2003) also documents the use of rising pitch for reprise questions in his Puerto Rican Spanish data. The data analysed here confirm Sosa’s claim. This intonational strategy seems to be common across dialects. Both Canarian Spanish and Venezuelan Andean Spanish present a rise for this type of question, though they differ in the point of onset of the rise in the question. In figure 19 the prenuclear pitch accent L*+H is found on the word dieron. A dip in F0 is found on the stressed syllable of the utterance-final word dieron followed by a high rise (HH%).

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

Wh- echo questions clarify a previously (and recently) uttered wh- question and, as Noh (1995) has argued for all echo questions, are metarepresentational. Hence wh- echo questions are more restricted than reprise wh- questions in terms of the type of utterance they respond to—the reprise wh- question responds to a prior utterance which can be of any type (statement, question, etc.) and can be located farther back in the discourse, while the wh- echo responds to a wh- question which is typically uttered in a prior turn. While speakers may opt for the typical H+L* L% wh- question contours for wh- echo questions too, the L+H* L% nuclear configuration used for yes-no echo questions may also be used. This is phonetically realized as a rise throughout the stressed syllable to a high peak within the nuclear stressed syllable followed by a fall to a low boundary. For the wh- echo question ¿Adónde voy? (Where am I going?) in figure 19, a L+>H* prenuclear pitch accent is produced on adónde with the high target produced in the posttonic syllable de followed by a pitch movement to the leading low tone in the L+¡H* pitch accent.

3.2.4.2. Rhetorical wh- questions

A variety of patterns can be found for rhetorical wh- questions. The first rhetorical wh-question pattern I will show presents the same nuclear configuration used for statements of the obvious, L+H* LM%, as shown in figure 7 for the question ¿Qué harían sin mí? ‘What would you (plural) do without me?’ This utterance was produced in a context where the speaker was told that she had asked her co-workers to perform a task before she left work, but when she gets back she discovers that they are still waiting for her to help them do it (i.e. they weren’t capable of performing the task without her). She then asks them rhetorically what they would do without her and therefore does not necessarily expect an answer to the question. The semantic similarity between this contour and the statement of the obvious is perhaps not so surprising, since it is in fact obvious in the context that the co-workers aren’t capable of doing the task without the speaker, i.e. it is obvious that without the speaker, the task would not be performed. It is also worth noting that other native speakers judged the speaker as sounding ‘ironic’ in this specific case. In figure 20, a L+>H* prenuclear accent is found on the accented syllable in harían with a rise throughout the syllable and a high peak in the posttonic. The nuclear pitch accent is a L+H* with a rise to a high peak realized within the syllable. The nuclear pitch accent is followed by a fall to a low
target and short rise to a mid boundary tone, resulting in the complex boundary tone LM% as shown in figure 20. This particular realization of the rhetorical wh- question is interpreted as ironic.

The rhetorical wh- question shown in figure 21 is quite interesting in that it exhibits a post-focal tonal reduction. Thus far, the most perceptually salient word of all the examples I have shown has been utterance-final, and therefore the nuclear pitch accent has been found on the very last word of the utterance. This is expected for Spanish (Hualde 2007, O’Rourke 2005). However, the example in figure 21 shows a retraction of nuclear pitch accent (Hualde, ibid). In the question ¿Qué harían sin mí?, we expect to find the nuclear pitch accent on the utterance-final word mí as in figure 20. However, the most perceptually salient pitch accent in this utterance, as well as the most dramatic pitch movement, is located on harían, not mí. The L+H* nuclear pitch accent is found on the nuclear accented syllable of harían with a subsequent low, flat F0 contour ending in a low boundary tone L%. There still seems to be prominence on the utterance final word mí but it is produced within a low and compressed tonal space. I have labelled the utterance-final word mí with a L* pitch accent. Tonal reduction is also found in wh- questions in Argentinian Spanish (this volume), for which case the authors also made the decision to label the utterance-final word with a L*. Willis (this volume) also shows evidence for a possible retracted pitch accent in a Dominican Spanish wh- question, likewise labelling the utterance-final word with L*.

**Figure 17:** Waveform, spectrogram and F0 trace for the information-seeking wh- question ¿Dónde tú vives? ‘Where do you live?’ produced with a L*+H prenuclear pitch accent and H* prenuclear pitch accent and followed by the H+L* L% nuclear configuration.
¿Qué dices que te dieron?

Figure 18: Waveform, spectrogram and F0 trace for the reprise wh- question ¿Qué dices que te dieron? ‘What did you say they served you?’ produced with a L*+H prenuclear pitch accent followed by the L* HH% nuclear configuration.

¿Adónde voy?

Figure 19: Waveform, spectrogram and F0 trace for the echo wh- question ¿Adónde voy? ‘Where am I going?’ produced with a L+>H* prenuclear pitch accent followed by the L+>H* L% nuclear configuration.
Figure 20: Waveform, spectrogram and F0 trace for the rhetorical wh-question ¿Qué harían sin mí? ‘What would you do without me?’ produced with a L+>H* prenuclear pitch accent followed by the L+H* LM% nuclear configuration.

Figure 21: Waveform, spectrogram and F0 trace for the rhetorical wh-question ¿Qué harían sin mí? ‘What would you do without me?’ produced with H* prenuclear pitch accent followed by a retracted L+H* nuclear pitch accent.
3.3. Imperatives: commands and requests

3.3.1. Commands

Jespersen (1954) defines an imperative as a brutal or humble request to the hearer to do something. The situation used to elicit figure 22 is one in which the speaker is asked to pretend to be the receptionist in a hotel and tells some guests to fill out a form. The target utterance is obviously a polite request, i.e. ‘humble’ in Jespersen’s terms. The contour found for this utterance was common for polite imperatives. In figure 22 we find L* on the penultimate, stressed syllable in the word formulario followed by a rise in the post-accented syllable to a mid boundary (M%) in the utterance Completen por favor este formulario.

3.3.2. Requests

Exhortative requests show a very specific intonation contour as well. In the utterance depicted in figure 23, ¡Ventel, the speaker tries to convince her interlocutor to accompany her to the movies. This utterance shows the typical intonation pattern used for exhortative requests, a flat low tone (L*) in the first syllable of vente, which is the stressed nuclear syllable (and which undergoes substantial lengthening) followed by a complex boundary tone that rises within the post-accented syllable and then falls. This is transcribed as HL%. This tune is phonetically identical to that of incredulous confirmation questions, though the phonetic implementation may differ. For instance, the tonic syllable in exhortative requests tends to be longer than that of incredulous confirmation questions.

3.4. Vocatives

A vocative calling contour not unlike those used in other languages as well as other dialects of Spanish is shown in figure 24. This utterance, ¡Marinal, is characterized by a L+H* pitch accent, which is followed by a slight fall resulting in a mid tone that is sustained until the end of the utterance. This sustained mid tone is labelled M%, based on the complex boundary tone proposed by Prieto and Estebas-Vilaplana (this volume) for Castilian Spanish, as well as the one proposed by Prieto (in press) for Catalan.

Another possible vocative call in Puerto Rican Spanish is shown in figure 25. This is noticeably different from the chant shown in figure 24 in terms of both the pitch accent and the boundary tones. This contour shows the L+H* HL% nuclear configuration, which is phonetically realized as a rise during the last accented syllable that continues into the following syllable, followed by a fall in pitch to a low level. Therefore in the utterance in figure 25 ¡Marina! we find a rise throughout the accented syllable -ri- that continues into the posttonic syllable -na and finally falls to a low boundary. This contour is more insistent than the contour shown in figure 24. An important distinction that should also be noted is that for the call in figure 24, listeners infer from the contour that the speaker does not know whether the interlocutor is close to her or not (like in a game of hide-and-seek). For the insistent contour in figure 25, the speaker knows her interlocutor is nearby. This is a fundamental distinction in how the two contours are inferred by speakers.
Figure 22: Waveform, spectrogram and F0 trace for the imperative Completen por favor este formulario ‘Please fill out this form’ produced with a L* nuclear pitch accent followed by M% boundary tone.

Figure 23: Waveform, spectrogram and F0 trace for the exhortative command ¡Vente! ‘Come!’ produced with the L* HL% nuclear pitch configuration.
Figure 24: Waveform, spectrogram and F0 trace for the stylized call ¡Marina! produced with the L+H* M% nuclear configuration.

Figure 25: Waveform, spectrogram and F0 trace for the insistent call ¡Marina! produced with the L+H* HL% nuclear configuration.
4. Conclusions

In this chapter I have laid out the most common tunes used in a corpus of data from two questionnaires. Looking at a wide range of utterance types allowed for the analysis of many different tune types, affording a more expanded depiction of Puerto Rican Spanish intonational phonology than has been available up until now. Intonational similarities between Canarian Spanish and Puerto Rican Spanish have previously been noted by Sosa (1999) and Quilis (1987, 1993). The analyses in this volume confirm shared features between these varieties, some of which are also shared with Dominican (Cibaeño) Spanish. For instance, all three dialects use final falls in declaratives, yes-no questions and wh-questions. They also show suspension of declination (downdrift) for broad focus questions produced with falls. Note that this suspension of declination does not occur in Argentinian Spanish (Gabriel et al. this volume), for example, a variety that also encodes yes-no questions with a low final boundary tone. A distinguishing characteristic of Puerto Rican Spanish accounted for here is the presence of a specific tune used only for confirmation questions when the speaker believes that the propositional content is true. This specific form-meaning pair was not found for Canarian or Dominican Spanish.

In prenuclear position, while Puerto Rican Spanish heavily favours L*+H, it is similar to Dominican Spanish in that for the same sentence type, prenuclear pitch accents may be focus-dependent (broad vs. narrow). Puerto Rican Spanish may distinguish between L*+H in prenuclear position for broad focus but L+<H* in the same position for narrow focus as previously shown by Willis (2003) for Dominican Spanish. The use of L+H* at the intermediate phrase boundary is very common in Puerto Rican Spanish and we might speculate that L+H* as an intermediate boundary marker might be used as an indexical cue for distinguishing Puerto Rican Spanish from varieties that are similar at the segmental and suprasegmental levels. Such intonational nuances between typologically related varieties provide a rich area to be explored in the way of both perception and production.

Table 3 summarizes the nuclear configurations common in Puerto Rican Spanish for each sentence type.

Table 3: Puerto Rican Spanish nuclear configurations by utterance type and their schematic representations

<table>
<thead>
<tr>
<th>Statements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad focus</td>
<td>H+L* L%</td>
</tr>
<tr>
<td>Biased statements</td>
<td></td>
</tr>
<tr>
<td>Narrow focus</td>
<td>H* L%</td>
</tr>
<tr>
<td></td>
<td>L+H* L%</td>
</tr>
<tr>
<td>Category</td>
<td>Example</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>Exclamative statements</strong></td>
<td>L* M%</td>
</tr>
<tr>
<td></td>
<td>L+H* L%</td>
</tr>
<tr>
<td><strong>Statements of the obvious</strong></td>
<td>L+H* LM%</td>
</tr>
<tr>
<td><strong>Questions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Yes-no questions</strong></td>
<td></td>
</tr>
<tr>
<td>Information-seeking yes-no</td>
<td>iH* L%</td>
</tr>
<tr>
<td>questions</td>
<td></td>
</tr>
<tr>
<td><strong>Biased yes-no questions</strong></td>
<td></td>
</tr>
<tr>
<td>Polite yes-no questions</td>
<td>iH* HH%</td>
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<tr>
<td>Echo yes-no questions</td>
<td>L+iH* L%</td>
</tr>
<tr>
<td>Counterexpectational echo yes-no</td>
<td>L* HL%</td>
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<tr>
<td>questions</td>
<td></td>
</tr>
<tr>
<td>Confirmation questions</td>
<td>H+L* L%</td>
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<tr>
<td>Tag questions</td>
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<tr>
<td><strong>Wh- questions</strong></td>
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<tr>
<td>Information-seeking wh-</td>
<td>H+L* L%</td>
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<tr>
<td>questions</td>
<td></td>
</tr>
<tr>
<td><strong>Biased wh- questions</strong></td>
<td></td>
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<tr>
<td>Echo wh- questions</td>
<td>L+iH* L%</td>
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<tr>
<td>Reprise wh- questions</td>
<td>L* H%</td>
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<tr>
<td>Rhetorical wh- questions</td>
<td>L+H* LM%</td>
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<td>(ironic)</td>
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### Imperatives: commands and requests

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<thead>
<tr>
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<th>Example</th>
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### Vocatives

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<td>Insistent call</td>
<td>( L^* H ^* HL% )</td>
<td><img src="image4.png" alt="Example" /></td>
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Puerto Rican Spanish Intonation


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Venezuelan Andean Spanish Intonation

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1. Introduction

Lying in western Venezuela, the state of Mérida is traversed by the eastern branch of the northern Andes and has an area of 11,300 km², which corresponds to approximately 1.2% of the national territory. The main economic activities of the region are agriculture and tourism. The city of Mérida itself has 300,000 inhabitants (2001 census) and constitutes a national cultural and university centre. The Universidad de Los Andes is a major source of employment in the region, specifically in the areas of teaching, research and services.

The structure of this chapter is as follows. Section 1 first offers an overview of past intonational research in Venezuelan Spanish and especially in Venezuelan Andean Spanish and then describes the methodological procedure used in the present study. Section 2 presents an inventory of pitch accents and boundary tones found in the Mérida dialect. Section 3 analyses the basic intonation contours found in the Mérida corpus. Finally, Section 4 summarises the nuclear patterns in the different sentence types.

The study of intonation does not have a long history in Venezuela and, furthermore, the rather scant research has been mostly oriented towards dialectology. The first study of the intonation of Venezuelan Spanish was published in the phonetics section of El habla de Caracas (Mosonyi 1971). A decade later, Obregón (1981) carried out a dialectal study in which he analysed the distribution of certain characteristic patterns (which he called construcciones entonativas) and which led him to propose a division into five dialectal areas: Mérida and Táchira (southwest), Maracaibo (northwest), Nueva Esparta and Sucre (east), Apure and Guárico (south) and the rest of the country (centre). Other important contributions are those by Sosa (1991, 1999), Chela Flores (1994, 2002), Mora (1996) and Díaz Campos and Tevis McGory (2002). Sosa (1991, 1996) analyses the intonation of several Latin American dialects, including the Venezuelan regions of Caracas and Maracaibo, but makes no reference to the Venezuelan Andes. He proposes for Caracas Spanish the tonal sequence L*+H L*+H H*

* First of all, we would like to thank our participants in Mérida for generously donating their time. Thanks go to the editors, Pilar Prieto and Paolo Roseano, for their enthusiasm and commitment to this project. Last but not least, we would like to thank our reviewers, Erin O‘Rourke and Erik Willis, for their insightful comments. All the errors that remain are, of course, ours.
L% for statements and the sequence %H *+H H* H+H* L% for absolute interrogatives. Chela Flores has also worked on Maracaibo Spanish (1994, 2002, and others). Mora (1996) proposes a dialectal prosodic division into five areas (Andes, Llanos, Centre, Southeast and Zulia). Díaz Campos and Tevis McGory (2002) examine eight Latin American dialects, among them Venezuelan Spanish (but excluding the Andean region) and note that the typical statement pattern is L*+H for prenuclear accents and L+H* for nuclear accents, and that L% is the most frequently occurring edge tone, a combination which is common to many Latin American dialects.

Studies on the intonation of Mérida Spanish are even more scarce. For instance, Mora (1993) analyses yes-no interrogatives and compares them with their declarative counterparts. Her main findings are that interrogatives i) begin at a higher level, ii) do not necessarily have a final rise, iii) tend to have a slightly higher amplitude and iv) do not necessarily have a longer nucleus. The crucial difference between interrogatives and declaratives appears to lie in the wider pitch excursions of interrogatives. Villamizar (1998) studies declarative utterances in rural Mérida speech and proposes three main nuclear configurations: pattern 1, characterised by a ‘circumflex’ nuclear accent; pattern 2, with a ‘low’ accent similar to Peninsular Spanish and pattern 3, with a rising accent.

More recent studies, such as the ones by the group AMPER (Atlas Multimedia de la Prosodia del Espacio Románico), tend to be based on fine-grained phonetic measurements of the productions of a small number of speakers (generally two) and are less concerned with issues of phonological transcription or analysis. However, despite the divergence in research goals and methods, some generalizations can be made. For instance, Mora et al. (2006) follow the AMPER methodology and compare SVO declarative sentences of different syntactic complexity to segmentally equivalent interrogatives. Interestingly, declaratives such as *El perico canta con paciencia* ‘The budgerigar sang with patience’ show a ‘low nucleus’\(^1\) similar to that of Peninsular and standard Venezuelan Spanish (Mora 1993, 1996) while declaratives with longer predicates such as *El perico canta con emoción sincera* ‘The budgerigar sang with genuine feeling’ tend to present a circumflex nuclear configuration similar to one of

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\(^1\) The nuclear accent of broad focus declarative sentences in many Spanish dialects tends to sound low and level, without evidence of tonal movement (at most the effect of declination). Prominence seems to be conveyed exclusively by their amplitude and duration. The phonological characterisation of such nuclei has proved difficult. There are two main approaches in the literature to the phonological classification of the so-called ‘low’ nuclear accents. One approach considers them actual low accentual targets, L*, and thus categorically distinct from peaked accents. This is the view taken in the analysis of German in Baumann et al. (2001), of Portuguese in Frota (1998) and of Estonian in Asu (2003). The other approach treats ‘low’ nuclei as downstepped and strongly lowered realizations of high targets, 'IH*'. This is the proposal adopted in Gussenhoven et al. (1999) for Dutch, in Grabe (1998) for German and in Estebas-Vilaplana (2009) for Catalan. Another possibility is H+L*, which has been proposed for different Spanish dialects (Argentina, Chile, Colombia, Venezuela, Guatemala, Puerto Rico, Mexico and Central Spain - Beckman et al. 2002), European Portuguese (Frota 1998) and Catalan (Astrup 2005).
the patterns observed by Villamizar in the rural speech in the Andean dialectal area. All
interrogatives, however, tend to have a circumflex nuclear configuration. Figure 1 shows examples of each type.

![Figure 1: F0 trace for the statements El perico cantaba con paciencia ‘The budgerigar sang with patience’, El perico cantaba con emoción sincera ‘The budgerigar sang with genuine feeling’ and the interrogative ¿El perico cantaba con emoción sincera? ‘Did the budgerigar sing with genuine feeling?’](image)

On the other hand, Méndez et al. (2008), also working within the AMPER framework, maintain that interrogatives always begin at a lower than average pitch and never have high final boundaries. They also claim that their nuclear peaks are aligned with the limits of the stressed syllable even when there is enough postnuclear segmental material, as in proparoxytones; in fact, only prenuclear peaks can show delay. They also note that the main difference between rural and urban speech is one of duration/tempo, rather than one of tonal choice. In general, urban speech has a faster tempo than rural speech, especially at the beginning of the utterance. They conclude, in line with Mora (1993), that the crucial difference between interrogatives and declaratives is one of pitch range: interrogatives display wider pitch excursions than declaratives. Indeed, Méndez (also AMPER, submitted) looks in more detail at the interaction of duration and scaling in interrogatives and declaratives in Mérida Spanish and finds that prenuclear peaks in interrogatives are higher and are also reached in less time.

Following the guidelines established for the present volume, three young female speakers of Venezuelan Andean Spanish were recorded by the second and third author. A corpus of utterances was elicited using the guided questionnaire employed to obtain data for all the dialects in this volume (see also Prieto and Roseano coords. 2009-2010). Participants were allowed to adapt the original stimuli lexically and syntactically so it reflected Venezuelan Andean usage if they felt the need to do so. Additionally, extra sentences were recorded separately to investigate details of tonal alignment. The utterances were analysed acoustically and instrumentally with Praat (Boersma and Weenink 2010). The first and second author then carried out independent intonational analyses for the utterances following the revised Sp_ToBI proposal (Beckman et al. 2002, Estebas-Vilaplana and Prieto 2008). The two analyses were compared, and any discrepancies were resolved by mutual agreement.
2. Venezuelan Andean Spanish intonational phonology

2.1. The pitch accents

The tonal inventory for Venezuelan Andean Spanish is generally in line with the proposal by Estebas-Vilaplana and Prieto (2008, this volume) for Castilian Spanish, although with some modifications. There are few differences between the pitch accent inventory that we propose for Venezuelan Andean Spanish and that proposed for Castilian Spanish, the principal one being the general lack of L*+H and H*+L in the former dialect. Thus, Venezuelan Andean Spanish has two monotonal (L* and H*) and three bitonal (L+H*, L+>H* and H+L*) pitch accents. Table 1 shows the inventory of pitch accents used in this description.

Table 1: Inventory of monotonal and bitonal pitch accents in Venezuelan Andean Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This accent is phonetically realized as a low plateau at the minimum of the speaker’s range.</td>
</tr>
<tr>
<td>H*</td>
<td>This accent is phonetically realized as a high plateau with no preceding F0 valley.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal pitch accents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L+H*</td>
<td>This accent is phonetically realized as a rising pitch movement during the accented syllable with the F0 peak located at the end of this syllable.</td>
</tr>
<tr>
<td>L+&gt;H*</td>
<td>This accent is phonetically realized as a rising pitch movement on the accented syllable with the F0 peak aligned with the post-accentual syllable.</td>
</tr>
<tr>
<td>H+L*</td>
<td>This accent is phonetically realized as a F0 fall within the accented syllable.</td>
</tr>
</tbody>
</table>

We transcribe downstep on and from the first affected tone using the downstep diacritic !, in line with Beckman et al. (2005), who argue that this method has the advantage of being theoretically-neutral since, as they contend, none of the competing theories about downstep (Pierrehumbert 1980: downstep is automatically triggered by HLH sequences; Beckman and Pierrehumbert 1986: downstep is triggered by specific pitch accents; Ladd 1990: downstep is phonological) is backed up by empirical evidence.
2.2. The boundary tones

There are four boundary tones in this variety: L%, M%, H% and %H. There may also be a bitonal one, HL%. Table 2 shows the inventory of boundary tones. We have included the HL% bitonal boundary tone for the sake of consistency with other dialects, although the evidence for this in Venezuelan Andean Spanish is not very strong. Additionally, we propose the introduction of an initial high boundary tone %H.

Table 2: Inventory of monotonal boundary tones in Venezuelan Andean Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
<td>L% is phonetically realized as a low sustained tone or a falling tone at the baseline of the speaker.</td>
</tr>
<tr>
<td>M%</td>
<td>M% is phonetically realized as a rising or falling movement to a target midpoint.</td>
</tr>
<tr>
<td>H%</td>
<td>H% is phonetically realized as a rising pitch movement coming from a low or high pitch accent.</td>
</tr>
<tr>
<td>%H</td>
<td>%H is phonetically realized as a high pitch at the beginning of the utterance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal boundary tones</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL%</td>
<td>HL% is phonetically realized as a F0 peak followed by a fall. It is very rare in the corpus, found only in one type of vocative.</td>
</tr>
</tbody>
</table>

3. Basic intonational patterns in Venezuelan Andean Spanish

In this section we examine the main intonation patterns found for the various sentence types in this dialect in the following order: statements, biased statements, questions (including yes-no and wh-), imperatives and vocatives.

3.1. Statements

3.1.1. Broad focus statements

As in many other dialectal varieties (see Castilian and Chilean Spanish this volume), broad focus statements are produced with delayed prenuclear peaks (L+>H*), high nuclear accents (H* or L+H*, which can be downstepped) and low boundary tones (L%).
Unlike in Castilian Spanish and other varieties, the nuclear accents of broad focus declaratives in Venezuelan Andean Spanish do indeed show clear evidence of tonal movement. Overall, nuclear accents typically show wider pitch excursions than in most other dialects. Figures 2, 3 and 4 show examples of nuclear accents in broad focus statements with different pragmatic nuances.

Figure 2 was elicited with a question about what Ana was saying. Therefore the first clause ‘Ana dice’ contains background information and the second clause ‘que se bebió una limonada’ contains the answer; the phrasing into two tonal units reflects this division. Figure 3 was elicited with a scenario designed to complement the standard corpus (Prieto and Roseano coords. 2009-2010), which describes how Juan goes for a stroll on a hot day, then sits in a sidewalk café and drinks a lemonade.

We see in both figures 2 and 3 that the last one or two syllables in the sentence are realized with a very flat pitch and weak intensity and, depending on the speaker, sentence-final syllables can also be reduced, laryngealized or devoiced. However, the nuclear accent receives a clear H* accent, which can be downstepped and lowered but which still remains perceptually high. The nuclear accent of Venezuelan Andean broad focus declaratives is never totally low as may be the case in other dialects.

In figure 4 we see yet another version of the sentence ‘bebe una limonada’ ‘S/he is drinking a lemonade’, this time elicited in reply to the question ‘What is the little girl doing?’, and which thus contains completely new information (but see Ladd 2008: chapter 6, on the theoretical debate about broad focus).

As we see in figure 4, the pitch is low on the initial pretonic syllable, then goes up throughout the tonic syllable and until the end of the following syllable, which is labelled as L+>H*. As for the final part of the contour, the pitch is low on the prenuclear syllable and then rises to the stressed syllable -na-, to then descend gradually until the end of the sentence. We analyse this nuclear accent as a non-downstepped H*. We propose the simplex label H* because the rise lacks any obvious L turning point (see examples with contrastive narrow focus, such as figure 5).

The nuclear accent of broad focus statements in this dialect is thus better analysed as a high tone, which can be a simple rise, with or without downstep, lH* or H*.

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

The nuclear accent of narrow focus statements differs from that of broad focus statements in the prominence of the nuclear accents, which are realized at a higher pitch than those of broad focus statements, as well as in the suspension of downstep.

Figure 5 shows the sentence No, de limones ‘No, of lemons’, elicited in response to the question ‘Do you want a kilogram of oranges?’ and thus with contrastive focus on limones.
Figure 2: Waveform, spectrogram and F0 trace for the broad focus statement Ana dice que se bebió una limonada ‘Ana says that she drank a lemonade’ produced with a !H* L% nuclear configuration.

Figure 3: Waveform, spectrogram and F0 trace for the broad focus statement Bebe una limonada ‘S/he is drinking a lemonade’ produced with a !H* L% nuclear configuration.
Figure 4: Waveform, spectrogram and F0 trace for the broad focus statement *Bebe* una *limonada* ‘*s/he is drinking a lemonade*’ produced with a *H*\(^*\)* L\(^%\) nuclear configuration.

Figure 5: Waveform, spectrogram and F0 trace for the narrow focus statement *No, de limones* ‘*No, of lemons*’ produced with a *L+H*\(^*\)* L\(^%\) nuclear configuration.
We note that contrastive narrow focus is expressed by: (i) the alignment of the nuclear peak within the stressed syllable *-mo*, in *limones*; (ii) the L turning point preceding the nuclear rise; and (iii) the reset of declination within the tonal unit containing the focused element, *de limones*.

Narrow focus correction statements are similar to contradiction statements. The most salient characteristics of contradiction statements are L+(>)H* prenuclear accents, downstepped simplex nuclear accents (IH*) and low final boundary tones (L%). We find the same nuclear tone and boundary tone in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume).

A good example of a contradiction statement is the sentence *¡Que no, que irán a Lima!* ‘No, they are going to Lima!’ (figure 6). The phrase-final configuration L+H*...L% is common to several other dialects, including Cantabrian (López-Bobo and Cuevas-Alonso), Chilean (Ortiz et al. this volume), Canarian (Cabrera Abreu and Vizcaíno Ortega this volume), Ecuadorian Andean (O'Rourke this volume), and Mexican Spanish (de-la-Mota et al. this volume). Venezuelan Andean Spanish also shares with Dominican Spanish (Willis this volume) the nuclear tone L+H* but not the boundary, which is simplex in our dialect but tends to be bitonal in Dominican.

3.1.2.2. Exclamative statements

Figure 7 shows the exclamative sentence *¡Qué olor a pan tan bueno!* ‘What a lovely aroma of bread!’; transcribed with a L+H* accent on *bueno*. We observe a high prenuclear accent (H*) in *qué*, downstepped high prenuclear accents, IH* in *olor* and *pan*, followed by a L+H* nuclear accent on *bueno* and a mid-level boundary tone M%. Dominican Spanish also has L+H* in this same example (Willis this volume). As for the final boundary, we would expect the final low to be lower than it actually is, since it in fact ends at a mid-point level. We thus analyse this boundary tone as M%, as in the case of Ecuadorian Andean (O'Rourke this volume) and Puerto Rican Spanish (Armstrong this volume).

Another possible pattern is the one we see in *¡Estoy helada!* ‘I’m freezing!’ in figure 8, with a low boundary tone. The prenuclear accent takes a rising shape, the usual L+H*. Then the pitch rises again on the nuclear accented vowel, which we analyse as iH*. The final boundary is low, L%.

3.1.2.3. Statements of the obvious

In the corpus, we have one example: *¡Sí, mujer, de Guillermo!* ‘Yes, woman, Guillermo’s [of course]!’, which is shown in figure 9.
Figure 6: Waveform and F0 trace for the contradiction statement ¡Que no, que irán a Lima! ‘No, they are going to Lima!’ produced with a !H* L% nuclear configuration.

Figure 7: Waveform, spectrogram and F0 trace for the exlamative statement ¡Qué olor a pan tan bueno! ‘What a lovely aroma of bread!’ produced with a L+H* M% nuclear configuration.
Figure 8: Waveform, spectrogram and F0 trace for the exclamative statement ¡Estoy helada! ‘I’m freezing!’ produced with a ¡H* L% nuclear configuration.

Figure 9: Waveform and F0 trace for the statement of the obvious ¡Si, mujer, de Guillermo! ‘Yes, woman, Guillermo’s [of course]!’ produced with a L+H* L% nuclear configuration.
This example is divided into three prosodic units (the second one marked only by a prosodic break, with no accompanying intonational cues, which is transcribed as level 2) and is made up of a series of downstepped accents, starting with the usual initial accent L+ (> ) H*. The most salient characteristic of this contour is the rather high onset (almost 270Hz in a female voice). As we will see, this high onset is one of the main intonational markers of uncertainty and certain types of pragmatically marked interrogation in Venezuelan Andean Spanish. Another important characteristic is the resetting of downstep throughout the last prosodic unit (de Guillermo), which is also typically found in other marked sentence types, as we have seen above. We find the same phrase-final configuration, L+ H* nuclear accent and L% boundary tone in Argentina (Gabriel et al. this volume), Ecuador (O'Rourke), and Chile (Ortiz et al. this volume). On the other hand, Castilian (Estebas-Vilaplana and Prieto this volume) has L+ H*...LM% as does Mexican (de-la-Mota et al. this volume), Canarian (Cabrera Abreu and Vizcaíno Ortega) and Puerto Rican Spanish (Armstrong this volume).

3.1.2.4. Uncertainty statements

Uncertainty statements, like statements of the obvious, start at a very high pitch, thus providing further evidence for the inclusion of a high initial boundary tone %H in the tonal inventory of Venezuelan Andean Spanish.

Figure 10 shows the example Puede que no le guste el regalo que le he comprado ‘S/he may not like the present I have bought him/her’, which was delivered in a rapid way and may denote shyness as well as uncertainty.

The contour contains two intonation units and starts with a rising accent with a delayed peak in pude (L+ > H*), followed by a downstepped bitonal accent (L+ H*) in guste, a downstepped high accent (H*) in regalo and a high boundary tone (H%). The second unit has a downstepped high nucleus (H*) in comprado and ends with M%, a mid boundary tone. Other dialects with this mid boundary tone in uncertainty statements are Canarian, (Cabrera Abreu and Vizcaíno Ortega this volume) Castilian (Estebas-Vilaplana and Prieto this volume) and Chilean Spanish (Ortiz et al. this volume).

3.2. Questions

3.2.1. Yes-no questions

Yes-no questions in Venezuelan Andean Spanish are characterised by a ‘circumflex’ nuclear accent L+ H* followed by a low final boundary tone L%. We recorded some extra questions to complement the standard corpus because our speakers interpreted yes-no questions such as ¿Tiene mermelada? (to a shop-keeper: ‘Have you got any
jam?’) and ¿Puedo entrar? ‘May I come in?’ as requests. We have chosen for comparison ¿Comes mandarinas? ‘Are you eating tangerines?’, an information-seeking yes-no question which is fully unambiguous for our speakers and which has similar metrical structure to ¿Tiene mermelada? ‘Have you got any jam?’ Thus our example and the example used in the standard corpus are fully comparable.

Figure 11 gives an example of an information-seeking yes-no question, ¿Comes mandarinas? ‘Are you eating tangerines?’ We analyse the nuclear accent of questions as L+¡H*. This ‘circumflex’ accent is similar to the nuclear pitch accent of Argentinian questions (Gabriel et al. this volume, figure 9, ¿Tiene mandarinas?), exclamatives and narrow focus statements, but different from that of Canarian Spanish interrogatives (Cabrera Abreu and Vizcaíno Ortega this volume), which lack a clear L target. Our ‘circumflex’ nuclear accent is also different from that of Mexican declaratives, which is much more reduced in scaling (de-la-Mota et al. this volume).

As we see in the figure, the nuclear accent is on -rí-, in mandarinas. The pitch is low on the pretonic syllable -da-, then rises throughout the stressed syllable -rí- (although to a lower level than the prenuclear accent, thus L+¡H*), to descend again to the end of the word (L%).

Comparing yes-no questions to segmentally equivalent statements, we can see that the prenuclear accents differ in scaling but not in alignment and thus should receive the same label, L+H*. The nuclear accents of questions and statements, however, are very different as the nuclear accent of questions shows a clear elbow at the onset of the stressed syllable and is thus better analysed as a L+H* bitonal accent, whereas the nuclear accent of statements lacks this L target and is thus analysed as (!)H*.

However, other patterns are also possible. In long sentences we may encounter some variation in patterns in prenuclear position. For instance, a long question ¿Puedes venir a la comida, si la hacemos el primer domingo de mayo?, ‘Will you be able to come to the meal if we have it on the first Sunday in May?’, would typically be uttered with an alternation of rises (L+>H*) and falls (H+L*) preceding the nuclear accent (L+¡H*), as shown in figure 12.

1 In Andean Venezuelan Spanish and in other language varieties, especially those tending towards use of deferential politeness, ‘Do you have the time?’ or ‘Have you got any jam?’ are indeed indirect requests, not simple yes-no questions. In relation to Andean Venezuelan Spanish, Álvarez (2000: 58) says: “Thus, an interrogative sentence at the syntactic level can become at the pragmatic level an indirect order: ‘Can you pass me the salt’, ‘Is there any coffee?’, ‘Have you not got up yet?’ Such questions will be understood as ‘Pass me the salt”, ‘Give me some coffee’ and ‘Get up’. The same, of course, applies to other languages, including English (e.g. Mey 1998: 142 ff.). [Our translation. “Así, una interrogación en el nivel sintáctico puede convertirse, en el nivel pragmático en una orden indirecta: ¿puedes pasarme la sal? ¿hay café? ¿no te has levantado todavía?. Entendiéndose, estos enunciados, como ‘pásame la sal’, ‘dame café’ y ‘levántate’, respectivamente” Álvarez (2000: 58)].
Figure 10: Waveform and F0 trace for the uncertainty statement Puede que no le guste el regalo que le he comprado ‘S/he may not like the present I have bought him/her’ produced with a !H* M% nuclear configuration.

Figure 11: Waveform, spectrogram and F0 trace for the yes-no question ¿Comes mandarinas? ‘Are you eating tangerines?’ produced with a L+!H* L% nuclear configuration.
Figure 12: Waveform, spectrogram and F0 trace for the yes-no question ¿Puedes venir a la comida, si la hacemos el primer domingo de mayo?, ‘Will you be able to come to the meal if we have it on the first Sunday in May?’ produced with a L+¡H* L% nuclear configuration.

Figure 13: Waveform, spectrogram and F0 trace for the disjunctive question ¿Quieres melón o helado? ‘Do you want melon or ice-cream?’ produced with a H+L* L% nuclear configuration.
Figure 13 shows an example of the disjunctive question ¿Quieres melón o helado? The two tones of the prenuclear accent L+›H* are realized on the word-initial stressed syllable of quieres. Then we notice a clear elbow at the onset of the stressed syllable of melón, which is followed by a rise throughout, in other words, a L+H* bitonal accent. The high boundary tone at the end of the first part of the disjunct is realized at a higher scaling because of the previous H* tone and is followed by a pause; we have thus given it the simplex label H% (figure 13). The second part of the disjunct receives a H+L* bitonal accent followed by a low tone L% (the slight rise at the end has no phonological value).

On the other hand, a yes-no question such as ‘May I come in?’ has in fact the same pragmatic effect as a request for permission to come in. Figure 14 shows the pitch trace for ¿Puedo entrar? ‘May I come in?’

This utterance sounds like a neutral request, quite cheerful and pleasant, but not at all overly polite or involved. As in figure 13, this sentence has been realized at a high pitch from the start, %H. We observe a rising prenuclear accent on pudo (L+›H*), a very high nuclear accent on entrar, iH*, and a low boundary tone, L%. An alternative analysis would be to treat the high initial pitch as an allotone of L+›H*, yet we prefer the %H analysis, as this boundary tone is already in the inventory.

Further evidence is provided by another example of a polite request, ¿Me podrías decir qué hora es?, ‘Could you tell me what time it is?’ (figure 15). This request was elicited with a scenario in which the speaker approaches an elderly person to ask the time. Such a scenario would involve a high social distance between the speaker and the addressee so that the tenor of the interaction would be quite formal to start with.

The utterance starts at a high pitch, %H, the first prenuclear accent, in podría, is a delayed peak (L+›H*), the second prenuclear accent is an upstepped peak (iH*), the nuclear accent, on es, is also an upstepped peak (iH*) which reaches over 450Hz, and the boundary tone is low (L%—note that the pitch descends even further but this is not shown in the pitch trace because of the final voiceless fricative). This request does indeed sound very polite, because of the higher initial pitch at the start of the utterance and also because of the cumulative scaling effects of the upstepped accents.
Figure 14: Waveform, spectrogram and F0 trace for the neutral requesting yes-no question ¿Puedo entrar? ‘May I come in?’ produced with a ¡H* L% nuclear configuration.

Figure 15: Waveform, spectrogram and F0 trace for the polite requesting yes-no question ¿Me podría decir qué hora es? ‘Could you tell me what time it is?’ produced with a ¡H* L% nuclear configuration.
3.2.2. Biased yes‐no questions

3.2.2.1. Echo yes‐no questions

Clarification questions such as ¿Dijiste que son las nueve? ‘Did you say it was nine o’clock?’ are also known as ‘echo questions’ and can be uttered with a H+L* nuclear accent followed by a L% boundary tone, as shown in figure 16, although other nuclear accents with different degrees of emphasis are also possible. The H+L* …L% configuration is similar to the pattern used in Dominican Spanish for most types of questions, including some of the echo yes‐no questions (Willis this volume).

A standard echo yes‐no question would not be very different from an unmarked wh‐ question, as we see in the figure. We observe that the pitch starts at a mid level in the speaker’s range (a pitch higher than the final low) The pitch then descends through the pretonic syllable di‐ in dijiste, rises on the stressed syllable ‐jis‐ until the end of the word, and then falls to reach the L target at the onset of son. We analyse this as a phonological L+H* where the two tones have been compressed phonetically. The nuclear accent is a phonological H+L* which has been similarly compressed by the convergence of two H tones in the monosyllable las. Finally, the tone falls until the end of the utterance. We thus label the two prenuclear accents as L+H*, the nuclear accent as H+L* and the final boundary tone as L%. (See further discussion about whether an initial boundary tone is necessary and if so, of which type, in Section 4).

Echo yes‐no questions can also receive a nuclear configuration similar to that of yes‐no questions with the pragmatic function of a request (figures 14 and 15). In figure 17, we see an example realized as a simple repetition of the original answer ¿Son las nueve? ‘It is nine?’ rather than introduced by a verb of saying such as dijiste or me preguntaste ‘did you ask’.

The question starts rather high. The prenuclear accent is a phonological L+H* which is compressed onto the accented syllable, the monosyllabic son. The pitch starts high, %H, the nuclear accent is high, H*, and the final boundary tone is low, L%. We interpret echo questions such as ¿Son las nueve? as implicit requests for confirmation or repetition. The speaker is requesting either a confirmation or a repetition. Thus, in our dialect at least, this second type of yes‐no echo questions has a pragmatic function and a tonal pattern which are indeed very similar to that of the requests for information or services that we saw in figures 14 and 15.

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2 There may be a difference between echo questions which are repetitions of a previous question such as ‘[Did you say] it was nine o’clock?’ and echo questions seeking clarification/confirmation of a statement ‘[Is it true that] it is nine o’clock?’ We will investigate this further in future work.
Figure 16: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Dijiste que son las nueve? ‘Did you say it was nine o’clock?’ produced with a H+L* L% nuclear configuration.

Figure 17: Waveform, spectrogram and F0 trace for the simple echo yes-no question ¿Son las nueve? ‘Is it nine o’clock?’ produced with a H* L% nuclear configuration.
Counterexpectational echo questions such as ¿Dijiste que no vas a venir? ‘Did you say that you weren’t coming?’ (figure 18) are also realized with this L+>H*...H* ...L% pattern. Counterexpectational questions such as the example in figure 18 receive a sequence of prenuclear late rising accents, L+>H*, a high nuclear tone, H*, and a low boundary tone, L%. Phonologically, these contours are very similar to the contours of echo questions that correspond to indirect requests for clarification or repetition.

3.2.2.2. Imperative yes-no questions

Imperative questions can be realized with a contour which is very similar to that of polite requests, as we see, for instance, in the case of ¿Se callan? and ¿Quieren callarse? ‘Would you please be quiet?’, which is shown in figure 19. We analyse this as %H followed by a prenuclear accent L+>H*, a nuclear accent iH* and a L% final boundary tone. Additional testing using an imperative form followed by unaccented clitics, ¿Quieren dámelo/dárnoslo? ‘Would you please give it to me/us?’ corroborated our analysis of the nuclear tone as iH*. Interestingly, this is the same pattern found in Canarian Spanish exclamatives (Cabrera Abreu and Vizcaíno Ortega this volume), although please note that %H does not occur in their inventory and thus the initial pitch levels are significantly different between the two varieties.

It is also possible to utter an imperative question with a downstepped rather than upstepped nucleus. This contour would sound sharper, more authoritative and in command of the situation.

3.2.2.3. Confirmation yes-no questions

Confirmation questions typically have the intonation contour of a yes-no or wh-question, followed by a confirmation tag such as eh, no, or verdad ‘right’. The confirmation tag is generally accented and ends in a H% boundary tone, as we see in figure 20. Venezuelan Andean Spanish shares this high boundary tone with Castilian Spanish (Estebas-Vilaplana and Prieto this volume).

3.2.3. Wh-questions

Information-seeking wh-questions typically have a falling bitonal nuclear accent H+L* followed by a low boundary tone. Figure 21 shows the example ¿De qué pueblo eres? ‘What village are you from?’

The prenuclear accents of information-seeking wh-questions are similar to those of yes-no questions in that they show a low tone on the pretonic syllable and a high tone on the stressed syllable L+>H* (but spreading onto any posttonic syllables). However, in the relatively frequent cases where the wh-word is initial in the sentence, as in ¿Cuántos limones quieres? ‘How many lemons do you want?’ in figure 22, both tones in the bitonal accent L+>H* are aligned with the stressed syllable of the wh-word, cuántos in this case, which we interpret as a case of tonal compression. We thus analyze the first prenuclear accent as L+>H*, the second prenuclear accent as H* (but it may be a phonological L+>H* tone, with the initial L lost in the tonal clash) and the nuclear accent as H+L* followed by L%, a low boundary tone.
Figure 18: Waveform, spectrogram and F0 trace for the counterexpectational echo question ¿Dijiste que no vas a venir? ‘Did you say that you weren’t coming?’ produced with a H* L% nuclear configuration.

Figure 19: Waveform, spectrogram and F0 trace for the imperative yes-no question ¿Quieren callarse? ‘Would you please be quiet?’ produced with a ¡H* L% nuclear configuration.
¿Vendrás a merendar, no?

Figure 20: Waveform, spectrogram and F0 trace for the confirmation yes-no question with a negative tag ¿Vendrás a merendar, no? ‘You’re coming for a snack, aren’t you?’ produced with a L+H* L- H* H% nuclear configuration.

¿De qué pueblo eres?

Figure 21: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿De qué pueblo eres? ‘What village are you from?’ produced with a H+L* L% nuclear configuration.
This tonal combination places emphasis on the wh-word. The utterance starts at a fairly high pitch, the steep rising prenuclear accent L+>H* reaches an even higher pitch, the two following accents are falling bitonal H+L* and the final boundary is low, L%. The nuclear configuration of wh-questions is similar to that of Puerto Rican Spanish (Armstrong this volume) but different from that of the other Caribbean dialect described in this volume, Dominican Spanish, where most wh-questions do not have a low final boundary tone (Willis this volume). (The Puerto Rican example in this volume, however, is not totally identical to ours as it shows no downstep and has a different prenuclear configuration.)

In this and similar cases of wh-questions (see for example figure 15), we do not propose the use of an initial high boundary tone label %H. As we mentioned above, in this dialect there is a clear tendency to compress the two tonal targets of L+>H* prenuclear accents (and perhaps also other tones as well, but we lack specific evidence so far). It is clear to us that L+>H* has an allotone in contexts such as the one above with scarce segmental material and/or tonal clashes. This allotone takes the shape that we observe in the pitch trace of figure 14: a level tone realized at a high pitch that rises towards the end.

3.2.4. Biased wh-questions

3.2.4.1. Echo wh-questions

An example of an echo wh-question is ¿Me preguntaste dónde voy? ‘Did you ask me where I was going?’ in figure 23.

The segmental composition of this example, with the three initial syllables in anacrusis and mostly voiced, allows us to examine in more detail the alignment of the initial prenuclear accent. We observe that the pitch starts at a mid level in the speaker’s range (a pitch slightly higher than the final low), neither high nor low. The pitch then descends to the onset of the pretonic syllable -gun- in preguntaste, rises on the stressed syllable -tas- until the end of the word, holds fairly steady on a plateau made up by consecutive Hs (L+>H* in preguntaste and H* in dónde and H+L* in voy) and then falls until the end of the utterance. We thus label the prenuclear accents as L+>H* and H*, the nuclear accent as H+L* and the final boundary tone as L%.

Echo wh-questions can also express surprise or incredulity, and this is generally realized through wider tonal excursions and a high tonal boundary. We see an example of a counterexpectational echo question, that is, an echo question conveying strong surprise and incredulity in ¿Qué dices que te dieron? ‘What did you say they served you?’ (figure 24).

We observe a low-high target associated with the wh-word (L+>H*), a peak on dices (H*) and a bitonal nuclear accent in dieron, L+H*, which is followed by a high boundary tone H%. The high boundary tone is realized at a very high F0, but we analyse it as a simplex boundary tone H% as it appears right after a high tone (the H* in L+H*), which triggers phonetic upscaling. Very interestingly, another dialect with circumflex question patterns, Canarian Spanish, also shows a high final boundary in counterexpectational echo wh-questions (Cabrera Abreu and Vizcaíno Ortega this volume).
Figure 22: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿Cuántos limones quieres? ‘How many lemons do you want?’ produced with a !H+L* L% nuclear configuration.

Figure 23: Waveform, spectrogram and F0 trace for the echo wh-question ¿Me preguntas dónde voy? ‘Did you ask me where I was going?’ produced with a H+L* L% nuclear configuration.
**Figure 24:** Waveform, spectrogram and F0 trace for the counterexpectational question ¿Qué dices que te dieron? ‘What did you say they served you?’ produced with a L+H* H% nuclear configuration.

**Figure 25:** Waveform, spectrogram and F0 trace for the imperative wh-question ¿Cuándo lo harás? ‘When are you going to do it?’ produced with a L+H* L% nuclear configuration.
3.2.4.2. Imperative wh- questions

The sentence ¿Cuándo lo harás? ‘When are you going to do it?’ (figure 25) is a good example of an imperative wh-question. The pitch starts high, %H, then descends slightly over the first stressed syllable and rises on the posttonic syllable, L+>H*, the nuclear accent is high but downstepped and preceded by a clear L turning point, a L+!H*, and this is then followed by a low boundary tone, L%.

3.3. Imperatives: commands and requests

3.3.1. Commands

A command such as ¡Ven aquí ahora mismo! can be uttered with different degrees of illocutionary force. A relatively mild example is given in figure 26. We see that even such a relatively short sentence is divided into two tonal units separated by a high tonal boundary. In the first tonal unit, the prenuclear accents are rising, L+>H*, and the following tonal boundary is also high, H%. We transcribe it as H% because it follows a H* pitch accent. As for the second unit, the prenuclear accent is low, L*, and the nuclear accent is high and downstepped, which we transcribe as !H*. Venezuelan Andean Spanish shares the !H* ...L% and H* ...L% configurations with Ecuadorian Andean Spanish, while it shares the L% with one of the examples presented in the description of Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) and all the analogous Dominican Spanish examples (Willis this volume).

A higher degree of illocutionary force is usually manifested by breaking the utterance into yet more tonal units. The example ¡Ven para acá ahora mismo! ‘Come here at once!’ is shown in figure 27. The sentence was spoken in a slow, deliberate manner. As for the contour, we observe a rather low pitch overall. The utterance is broken into three prosodic phrases and all the words are lengthened; emphasis here is conveyed mainly by rhythmic means and voice quality. Strong commands in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume) are also realized with a similar pattern (although their example is not phrased into separate intermediate phrases).

3.3.2. Requests

Requests are typically uttered with the pattern illustrated in figure 28 with Rellenen este formulario, por favor ‘Fill in this form, please’. The first prenuclear accent is the usual L+>H*. The second prenuclear accent is H+L* and the nuclear accent is a downstepped high tone !H*. Por favor is deaccented: it is uttered in a level tone, partially devoiced and also with creakiness.
Figure 26: Waveform, spectrogram and F0 trace for the command ¡Ven aquí ahora mismo! ‘Come here at once!’ produced with a !H* L% nuclear configuration.

Figure 27: Waveform, spectrogram and F0 trace for the strong command ¡Ven para acá ahora mismo! ‘Come here at once!’ produced with a H* L% nuclear configuration.
3.4. Vocatives

In Venezuelan Andean Spanish, unlike in Castilian Spanish, sentence-final vocatives are generally deaccented, as is also the case with polite expressions such as por favor. On the other hand, calls are uttered with a stylised pattern similar to that of Peninsular Spanish and many other languages. We see two realizations of the example (¡Marina!) in figures 29 and 30 respectively. Both examples were elicited with the same prompt: a scenario in which the speaker enters a house, sees no one and calls out the name of the person s/he is seeking one time (‘tentative call’) and then a second time (‘insistent call’). Figure 29 shows an example of a tentative call.

We notice a low target on the pretonic syllable and a high target on the tonic syllable (L+H*), followed by a mid boundary tone M%. Characteristically, the final syllable is also lengthened. We see this same L+H* M% configuration in Castilian (Estebas-Vilaplana and Prieto), Ecuadorian Andean (O’Rourke this volume), Puerto Rican (Armstrong this volume), Chilean (Ortiz et al. this volume) and Mexican Spanish (de-la-Mota el al. this volume).

Figure 30 shows an insistent call. The vocative is uttered here with a final boundary that ends low, and the call sounds more urgent.
Figure 29: Waveform, spectrogram and F0 trace for the tentative call ¡Marina! produced with a $L+H^* M\%$ nuclear configuration.

Figure 30: Waveform, spectrogram and F0 trace for the insistent call ¡Marina! produced with a $L+H^* HL\%$ nuclear configuration.
The pitch starts low and rises throughout the elongated stressed syllable -ri-, until the onset of the nucleus of the posttonic syllable -na, where it falls to the end of the utterance. The rise-fall movement over the posttonic syllable is analysed as a bitonal boundary tone, HL%.

It would also be possible to analyse this pattern as L+H* followed by a simplex L%. The appearance of movement towards the end of the word would be explained as peak delay caused by the extreme lengthening of the stressed vowel, -ri-, to which the length of the intrinsically long nasal in the following syllable is added.

We have analysed the final boundary as HL% (introducing the label in the inventory) for consistency with the analysis of other dialects seen in this volume, such as Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Puerto Rican Spanish (Armstrong this volume) and Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume).

4. Conclusions

The present study offers a first glimpse of the application of ToBI to the study of Venezuelan Andean Spanish as spoken in Mérida, based on the second author’s direct experience with this dialectal variety and the empirical data furnished by three speakers. Our goal is to offer an approach to intonational analysis from an AM perspective and contribute towards the design of a pan-Hispanic ToBI system.

Although further production and perception experiments will be needed before we can attempt a more comprehensive analysis of the intonation of this variety, we have thus far reached the following conclusions:

a) Broad focus declaratives are normally realized with high nuclear accents which are frequently downstepped and with low boundary tones: (!)H*...L%
b) Yes-no questions take ‘circumflex’ nuclear configurations, made up of a rising nuclear accent L+H* or L+iH* and a low boundary tone: L+(i)H*...L%
c) Wh- questions have bitonal falling nuclear accents which can be downstepped and low boundary tones: (!)H+L*...L%
d) Only surprised counterexpectational questions end in a high boundary tone, L+H*...H%
e) Polite requests, uncertainty statements and statements of the obvious tend to start with a very high pitch, for which we need a %H label in the inventory.

One of the most distinctive characteristics of Venezuelan Andean Spanish is the intonation of yes-no questions. As we have seen, yes-no questions differ from segmentally identical statements in that questions (i) have a higher pitch overall (a higher ‘key’), and (ii) have a bitonal nuclear accent L+H*, which can be optionally upstepped, while statements have a simplex H*. The pitch accent of statements is thus phonologically different from that of yes-no questions.

The nuclear pitch accent of yes-no questions in Venezuelan Andean Spanish is thus analysed as L+(i)H* and is similar to that of exclamative and narrow focus statements.
It is very similar phonetically to the nuclear pitch accent of Argentinian Spanish questions, exclamatives and narrow focus statements (Gabriel et al. this volume), but different from that of Canarian interrogatives (Cabrera Abreu and Vizcaíno Ortega this volume), which lack a clear L target. It is also different from the ‘circumflex’ nuclear accent found in some Mexican declaratives, which is much more reduced in scaling (de-la-Mota et al. this volume).

Our data corroborates previous observations in the literature (Mora 1993, 1996; Villamizar 1998) about the phonological differences between questions and statements, the variation found in interrogative patterns and the rarity of the final rise. Indeed, we have found that interrogatives mostly take a ‘circumflex’ or rising-falling pattern, typically L+>{i}H* ...L% (yes-no questions), H+L* ...L% (wh- questions and echo questions) or ¡H* ...L% (requests, and exhortative or imperative questions), and that only counterexpectational questions take a final rise L+H* H%. Counterexpectational questions are thus similar to counterexpectational and echo questions in other dialects, like Castilian Spanish (Escandell-Vidal 1998, Estebas-Vilaplana and Prieto this volume—however, it is worth pointing out that this rise in Castilian Spanish has a bitonal boundary tone L+H* LH%, in contrast to the monotonal one we have seen in Venezuelan Andean Spanish).

Unlike in other Spanish dialects, we have very limited evidence for the presence of complex tonal boundaries in our inventory as we have identified only one possible boundary tone of this sort, HL%, which occurs in vocative calls. We have found, though, several examples of high initial boundaries (%H), mostly in biased questions, particularly when they have the pragmatic force of a polite request.

Finally, another distinctive feature of Venezuelan Andean Spanish is the lack of evidence for L* nuclear accents in statements, as these generally have a downstepped high accent in nuclear position. Table 3 summarises the nuclear pitch configurations for the main sentence types in Mérida Spanish.

Table 3: Inventory of nuclear pitch configurations in Venezuelan Andean Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad focus statements</td>
</tr>
<tr>
<td>(i)H* L%</td>
</tr>
<tr>
<td>Biased statements</td>
</tr>
<tr>
<td>Narrow focus statements</td>
</tr>
<tr>
<td>L+H* L%</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Contradiction statements</td>
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<td>Exclamative statements</td>
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<td></td>
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<tr>
<td>Statements of the obvious</td>
</tr>
<tr>
<td>Uncertainty statements</td>
</tr>
<tr>
<td><strong>Questions</strong></td>
</tr>
<tr>
<td>Yes-no questions</td>
</tr>
<tr>
<td>Information-seeking yes-no questions</td>
</tr>
<tr>
<td>Requesting yes-no questions</td>
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<tr>
<td>Biased yes-no questions</td>
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<tr>
<td>Echo yes-no questions</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Counterexpectational yes-no questions</td>
</tr>
<tr>
<td>Imperative yes-no questions</td>
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<tr>
<td>Confirmation yes-no questions</td>
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</tbody>
</table>
As we have seen, the Spanish spoken in the Andean city of Mérida shares some tonal characteristics with both Ecuadorian Andean Spanish and Puerto Rican Caribbean Spanish. With Ecuadorian Andean Spanish, Mérida Spanish has in common the nucleus and tonal boundary of narrow focus statements and statements of the obvious. With Puerto Rican Spanish, Mérida Spanish shares the low boundary tone in echo and yes-no questions and the nuclear and boundary tone configuration of wh-questions. In other words, the commonality with the other Andean variety lies in a particular type of declarative and the commonality with the Caribbean variety in three types of interrogatives.

On the other hand, there are some very remarkable similarities with Canarian Spanish. This can be explained by the role played by the Canary Islanders in the conquest and colonisation of Venezuela, especially from Ojeda's second expedition.
conquest and colonisation of Venezuela, especially from Ojeda’s second expedition (1501) and thereafter, in the successive waves of immigration throughout the 19th and 20th centuries. It is true that in the case of the old Province of Mérida, according to the figures presented by Picón Parra (1988), Canary Islanders constituted just 2% of the first settlers, as opposed to 28% Castilians and 23% Andalusians. However, some centuries later, it becomes clear that Canarian features are borrowed through the immigration to the Andean region of Venezuelans from the Caribbean areas, especially from the centre. Indeed, the Spanish spoken in the coastal areas of Venezuela, its Caribbean region, is much permeated by Canarian features through the massive immigration of Canary Islanders to Venezuela between 1840 and 1945. This historical contact as well as modern-day migration flows between the Andean and Caribbean areas may explain the combination of dialectal tonal features that we have identified in the variety of Andean Venezuelan Spanish spoken in Mérida.
References


Ecuadorian Andean Spanish Intonation

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1. Introduction

The purpose of this chapter is to present the basic intonational patterns found in Ecuadorian Andean Spanish according to the methods previously discussed (this volume). Prior research on Ecuadorian Spanish intonation is relatively scarce in comparison to other Spanish varieties. However, the foundational work by Toscano Mateus (1953) on Ecuadorian Spanish does describe dialect zones within Ecuador as also showing distinctions in the use of intonation patterns. In addition, Toscano Mateus notes amongst gente rústica or ‘rural speakers’ a similarity in the use of intonation between Quechua and Spanish (1953: 42). Also, in her examination of Ecuadorian Spanish dialects that employ the fricative [z], Argüello (1978) provides an analysis of the intonation contours of several utterance types according to the height or levels reached (e.g. 1, 2, etc.) by employing the notation used within the Americanist tradition. While broad focus statements are characterized by a final drop in pitch, interrogatives show a final rise, including both yes-no questions and wh- questions such as ¿De dónde eres? ‘Where are you from?’ Specifically, Argüello indicates that “In the interrogatives formed with an interrogative pronoun, generally a suspension /→/ occurs and many times a final rise, the same as absolute interrogatives, especially in long phrases” (1978: 155-156, my translation).1 Another characteristic feature described by Argüello that is also found in the current data set is the extensive use of utterance-final devoicing: “This halting of phonation causes devoicing of the last unstressed vowel and many times of the whole syllable” (1978: 153, my translation).2 Other biased utterance types, such as some emphatic utterances and imperatives, are described as ending with the suspension of a mid-level tone (rather than a final fall or rise).

The present description of Ecuadorian Spanish intonation is based on the recordings of speakers from the Andean region, from Quito in particular. However, Ecuador itself can be divided linguistically into several dialect zones, including the coastal region, the extreme north-central region, the central highlands, the areas comprising the provinces of Cañar and Azuay, the extreme southern province of Loja and the Amazon as a final emerging dialect

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1 “En las interrogaciones formadas con pronombres interrogativos, generalmente ocurre suspensión /→/ y muchas veces se da la terminación ascendente propia de la interrogación absoluta, especialmente en frases largas” (Argüello 1978: 155-156).
2 “Este cese de la fonación causa el ensordecimiento de la última vocal inacentuada y muchas veces de toda la sílaba” (Argüello 1978: 153).
zone (Lipski 1994: 245-249; Toscano Mateus 1953: 41-42). Some characteristic features cited by Lipski (1994: 248-249) of Ecuadorian Spanish in the central highland region where Quito is located are: unstressed vowel reduction, especially in contact with /s/; nasal velarization word-finally; assimilation of rhotics word-initially and word-finally; maintenance of /\n/ as a phoneme pronounced as a palatoalveolar fricative [\v] (in contrast with /\y/); retention of /s/ syllable-finally; and sonorization of /s/ across word boundaries when followed by a vowel. Also, the labiodental fricative /f/ is often realized as [h\w] by Quechua-Spanish bilinguals. Further description of Spanish in Ecuador and the effects of language contact can be found in Quilis (1992), Büttner (1993), Haboud (1998) and Guion (2003), among others. The present analysis of Ecuadorian Andean Spanish intonation is therefore offered as a means to describe in more detail one of several Ecuadorian Spanish dialects and to offer a point of comparison with other dialects of Spanish spoken in the Andes (e.g. Venezuelan Andean Spanish, this volume), as well as with other non-Andean varieties of Spanish.

The structure of the remainder of this chapter is as follows. In section 2, a general overview of the pitch accents and boundary tones observed for Ecuadorian Andean Spanish is given. In section 3, a more detailed analysis of the intonation patterns found is provided, including an analysis of statements, yes-no questions and wh-questions. Both broad focus and biased utterances are considered. In addition, imperatives and vocatives are examined. In section 4, we offer a summary of the characteristic features of Ecuadorian Andean Spanish, including a listing of the nuclear configurations (final pitch accent and boundary tone) for each of the utterance types.

2. Ecuadorian Andean Spanish intonational phonology

In this section we present an inventory of the pitch accents and boundary tones observed in Ecuadorian Andean Spanish. For each item, a schematic configuration is provided along with the Sp_ToBI labeling which follows the notation system described in Beckman et al. (2002) for Spanish and later revised in Estebas-Vilaplana and Prieto (2008). A description of the tonal configuration along with the types of utterances in which these configurations appear is also given.

2.1. The pitch accents

The following pitch accents have been observed in Ecuadorian Andean Spanish. Table 1 includes monotonal and bitonal pitch accents.

Table 1: Inventory of monotonal and bitonal pitch accents in Ecuadorian Andean Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
</tr>
</tbody>
</table>
in yes-no questions, including information-seeking, echo, counterexpectational, invitation and confirmation yes-no questions, in wh- questions, including information-seeking, echo and irritated imperative wh- questions, and in commands and requests.

\[ H^* \]

This accent is phonetically realized as a high plateau with no preceding F0 valley. In the current data set, it is observed in prenuclear position in broad focus statements, statements of the obvious, uncertainty statements, information-seeking wh-questions, imperative wh- questions, commands and requests; in nuclear position it appears in exclamative statements and (irritated) imperative wh- questions.

**Bitonal pitch accents**

\[ L+H^* \]

This accent is phonetically realized as a rising pitch movement during the accented syllable with the F0 peak located at or before the end of this syllable. In prenuclear position, this accent is used in exclamative statements, statements of the obvious, uncertainty statements, disjunctive questions, imperative yes-no questions, echo wh- questions, and imperative wh- questions; in nuclear position this accent is found in narrow focus statements, contradiction statements, information-seeking, imperative and invitation yes-no questions, information-seeking wh- questions and vocatives.

\[ L+>H^* \]

This accent is phonetically realized as a rising pitch movement on the accented syllable with the F0 peak aligned with the posttonic syllable. It is attested in prenuclear position in broad focus statements, exclamative statements, contradiction statements; it appears also in information-seeking, echo, counterexpectational, imperative and invitation yes-no questions, and in commands.

\[ L^*+H \]

This accent is phonetically realized as a F0 valley on the accented syllable with a subsequent rise on the posttonic syllable. It is found in prenuclear position in yes-no questions, including information-seeking, counterexpectational, invitation and confirmation questions.

\[ H+L^* \]

This accent is phonetically realized as a F0 fall within the accented syllable. It is found in prenuclear position for imperative wh- questions and in nuclear position for commands.

### 2.2. The boundary tones

The following boundary tones have been observed in Ecuadorian Andean Spanish. Table 2 includes monotonal and bitonal boundary tones. It should be noted that final rises have been marked as HH%. In this data set, the height of HH% that is observed is phonetically lower than that found in other dialects of Spanish (e.g. Castilian, Chilean and Puerto Rican
Spanish, this volume), where speakers may show a sharper rise to the highest point of the speaking range. However, since the height of the high boundary tone in Ecuadorian Andean Spanish is relatively consistent, and it does not contrast with an even higher boundary tone in the same dialect, we have transcribed the high boundary tone at HH% in order to allow for cross-comparison between dialects.

Table 2: Inventory of monotonal and bitonal boundary tones in Ecuadorian Andean Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
<th>L%</th>
<th>M%</th>
</tr>
</thead>
<tbody>
<tr>
<td>L% is phonetically realized as a low sustained tone or a falling tone at the baseline of the speaker’s range. It is found at the end of broad focus statements, narrow focus statements, contradiction statements, statements of the obvious, uncertainty statements, disjunctive questions, invitation yes-no questions, irritated imperative wh- questions, commands and requests.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M% is phonetically realized as a rising or falling movement to a target mid point. It appears at the end of exclamative statements, information-seeking wh- questions, imperative wh- questions and vocatives.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bitonal boundary tones</th>
<th>HH%</th>
<th>HL%</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH% is phonetically realized as a rising pitch movement coming from a low or a high pitch accent. It is found at the end of information-seeking, imperative and confirmation yes-no questions, and information-seeking wh- questions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HL% is phonetically realized as a F0 followed by a fall. It appears in echo, counterexpectational and invitation yes-no questions, and in echo wh- questions.</td>
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</tr>
</tbody>
</table>

3. Basic intonational patterns in Ecuadorian Andean Spanish

In order to analyse Ecuadorian Andean Spanish intonation, recordings were made using a modification of the intonation guided questionnaire from Prieto (2001) adapted for the Atlas interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010). The speakers, one male and one female, were from Quito and were between 20-35 years of age at the time of the recording. In the questionnaire, the speakers were given a specific context and then asked to state how they would respond in a particular context or produce a target utterance. In addition to the 69 contexts from the original guided questionnaire, two more contexts intended to produce broad focus statements were included. A total of 71 contexts were presented; the current analysis is based on a combined total of 142 recorded utterances total from these two speakers. The data were analysed using the Praat acoustic analysis software (Boersma and Weenink 2010). As previously stated, the notation system used is the Sp_ToBI system (Beckman et al. 2002) and its revised version (Estebas-Vilaplana and Prieto 2008), which adopts the Autosegmental-Metrical (AM) approach to analyse intonation contours as a series of targets (Pierrehumbert 1980, among others).
3.1. Statements

3.1.1. Broad focus statements

In broad focus statements, a number of pitch accents appear in prenuclear position, which may depend in part on the amount of segmental material available for the tones to surface. In figure 1, we see that a late peak appears on the posttonic syllable in the first word in prenuclear position, *María*, giving the pitch accent L⁺→H⁺ (the stressed syllable is shown here as underlined). Next, the pitch remains high on the tonic syllable of the second word in prenuclear position, *come* ‘eats’, so that a H⁺ pitch accent may be postulated. Finally, in nuclear position, the accented syllable in *mandarinas* ‘tangerines’ appears to have a low target L⁺ since the low is maintained during this syllable. The utterance ends in a low fundamental frequency, which may be considered to have a low boundary tone L%. Note that in this example there was devoicing of the posttonic vowel so that at the end of the utterance voicing occurs only in the consonant n immediately following the stressed syllable. Utterance-final devoicing was typical of this data set, such that boundary tones were realized closer to the last stressed syllable. However, the notation is given at the end of the utterance.

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

For biased utterances with narrow focus and emphasis, a peak appears during the stressed syllable of the word receiving focus or emphasis. In the narrow focus statement in figure 2, the response *No, de limones* ‘No, of lemons’ is given to contrast *limones* ‘lemons’ with another option in a previous utterance. A low fundamental frequency (F0) is observed followed by a peak during the stressed syllable, giving a L+H⁺ pitch accent. Since the F0 then drops, a final low boundary tone L% is noted.

Similar to narrow focus correction statements are contradiction statements. In these statements, the utterance is an affirmation of what is considered to be correct. In figure 3, the speaker of this statement was given two location options and indicated that, of the two, Lima was the destination. The prenuclear pitch accent on the verb *vamos* ‘we are going’ is L⁺→H⁺ including a posttonic peak, while the element being confirmed *Lima* has a rise and peak during the tonic syllable L+H⁺.

3.1.2.2. Exclamative statements

In exclamative statements, such as in figure 4 ¡*Qué bien que huele el pan!* ‘The bread smells great!’!, the same L+H⁺ is observed for the word receiving most emphasis, in this case *bien* ‘great.’ The following word *huele* ‘smells’ shows a posttonic peak or L⁺→H⁺, while the last word in the utterance *pan* ‘bread’ maintains a high F0, so that H⁺ is given as the pitch accent. The last word in the utterance is monosyllabic, and in this case the F0 does not drop. Therefore a boundary tone M% is given. Examples of similar utterances with posttonic syllables for the word in nuclear position are needed to examine whether the speaker would still employ M% as a target or if, with more segmental material available, a fall would be observed.
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement María come mandarinas ‘Maria is eating tangerines’ produced with a L+>H* prenuclear accent and a L* nuclear accent followed by a L% boundary tone.

Figure 2: Waveform, spectrogram and F0 trace for the narrow focus statement No, de limones ‘No, of lemons’ produced with nuclear accent L+H* and L% boundary tone.
Figure 3: Waveform, spectrogram and F0 trace for the contradiction statement *No, nos vamos a Lima* 'No, we are going to Lima' produced with a L+H* nuclear accent and L% boundary tone.

Figure 4: Waveform, spectrogram and F0 trace for the exclamative statement *¡Qué bien que huele el pan!* 'The bread smells great!' produced with L+H* on the word being emphasized.
3.1.2.3. Statements of the obvious

Two types of biased statements present in the corpus which employ similar pitch accents are statements of the obvious and contradiction statements (previously described). For statements of the obvious, the pitch accent L+H* is observed with a peak present during the stressed syllable of the element considered to be obvious, such as Guillermo in figure 5. Phonetically, the peak is realized in the middle of the syllable as opposed to the end.\(^3\) The posttonic syllable drops to a low pitch at the end of the word, although there is no other intonational break or slowing at the end of the phrase, which is indicated by a break index of 2. This statement with the following affirmation pues ‘of course’ and the rhetorical question that follows end in a low L% boundary tone. Note that in this data set we do not see the LM% boundary tone observed in other varieties of Spanish. Further examination of statements of the obvious is needed for Ecuadorian Andean Spanish to determine if the LM% may also be employed in these contexts.

3.1.2.4. Uncertainty statements

Uncertainty statements are those uttered to express a certain degree of doubt on the part of the speaker. The statement that appears in figure 6 was produced in response to the context given that the speaker was asked to buy a gift for another person and the speaker was not sure if the purchased gift would be well received or liked. The first half of the utterance is informative, but the second half, including pero no sé ‘but I don’t know’ demonstrates the uncertainty. A prenuclear H* pitch accent appears on the verb followed by a low L* nuclear accent and L% boundary tone.

3.2. Questions

3.2.1. Yes-no questions

In information-seeking yes-no questions, the intended response is either an affirmation or a negation. Prenuclear accents appear to be bitonal, with the peak occurring after the offset of the stressed syllable for the first word in prenuclear position in figure 7, or L+>H*; the second prenuclear pitch accent demonstrates a relatively lower pitch throughout the stressed syllable followed by a rise or L*+H. The nuclear pitch accent in figure 7 also shows a low target or L* followed by a rise to the end of the utterance, giving a HH% boundary tone. This configuration is similar to contours observed for information-seeking yes-no questions in other Spanish varieties (e.g. Castilian Spanish and Cantabrian Spanish, this volume).

This same type of contour can be observed in information-seeking yes-no questions that are uttered with the phrase por favor ‘please’ which have the pragmatic function of a polite request. Both speakers produced similar contours for yes-no questions in which information was being sought. Figure 8 demonstrates this type of yes-no question, in which L* HH% can be observed in the first part of the question, while the second portion or phrase por favor, shows a higher pitch range and also ends in a high HH% boundary tone.

\(^3\) If these differences were phonological, the additional notation < could be added to the pitch accent to signify the earlier placement of the peak L+<H*. However, for the present time, these tonal configurations will be represented as L+H* since more work is needed to investigate the potential phonological nature of these distinctions.
Figure 5: Waveform, spectrogram and F0 trace for the statement of the obvious ¡De Guillermo, pues! ¿De quién más va a ser? ‘Guillermo’s [of course]! Who else’s would it be?’ produced with L+H* on the word considered to be obvious.

Figure 6: Waveform, spectrogram and F0 trace for the uncertainty statement Eh, compré esto pero no sé si le guste ‘Uh, I bought this but I’m not sure if s/he will like it’ produced with prenuclear H* pitch accents followed by a L* L% nuclear configuration.
Figure 7: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿Ya ha llegado María? ‘Has María arrived already?’ produced with a final HH% boundary tone.

Figure 8: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿Tiene mermelada, por favor? ‘Please, have you got any jam?’ produced with final HH% boundary tones.
There are other instances in which a high boundary tone is observed. In yes-no disjunctive questions, two or more options are given. In these examples, after the second-to-last option, a high HH- is used along with a break index level of 3 in order to indicate an intermediate phrase boundary. For the word melón ‘melon’ in figure 9, the pitch accent is L+H*, after which a HH- is given to indicate the high level obtained at the end of the intermediate phrase, as also observed in other dialects of Spanish (e.g. Castilian Spanish, among others, this volume). This type of disjunctive question ends in a nuclear configuration of L* followed by L%.

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

In echo yes-no questions, the speaker is repeating what s/he thinks was heard in order to verify if what was understood is correct (or not). The echo question in figure 10 shows a nuclear configuration with a low L* target during the stressed syllable and a boundary tone that begins high and then drops lower. The notation HL% is used since this configuration is similar in shape to other contours that end in an even lower pitch level; the difference is then considered to be part of the phonetic implementation (cf. figure 11).

Other yes-no questions that express incredulity can be considered counterexpectational yes-no questions. The example shown in figure 11 was produced as a response to the given context in which an adult observed that his/her son was shivering in a hot restaurant. Similar to the echo yes-no question, in this counterexpectational yes-no question the nuclear configuration is also L* followed by HL%. The pitch accent in prenuclear position is L*+H.

The bitonal boundary tone HL% is observed for several biased question types in Ecuadorian Andean Spanish and can also be compared to other dialects of Spanish. In Puerto Rican Spanish, for example, the nuclear configuration L* HL% is employed for incredulity echo questions. In Cantabrian Spanish, the nuclear configuration for yes-no echo questions H* HL% shares the same boundary tone. However, Venezuelan Andean Spanish employs a different nuclear configuration H+L* L% for the same question type.

An utterance that may be considered to express a greater degree of incredulity can be seen in the counterexpectational yes-no question in figure 12. The target levels of the boundary tone HL% seem to vary in height. (Note that in figures 10-12 the H target in the HL% boundary tone is higher than the peak in the previous pitch accents.) However, more data are needed to determine how many levels should be postulated for boundary tones and what notation would be appropriate to signify these differences. While counterexpectational yes-no questions demonstrate a L* HL% nuclear configuration in Ecuadorian Andean Spanish, the nuclear configuration for Venezuelan Andean Spanish is L+H* H%.

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4 Alternatively, this configuration could be considered HM%; however, the usage of HM% as phonologically distinct would need to be established in contrast to HL%.
Figure 9: Waveform, spectrogram and F0 trace for the disjunctive question ¿Qué prefieren? ¿Melón o helado? 'What do you prefer? Melon or ice cream?' produced with a HH- between question options and a L% boundary tone.

Figure 10: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Son las nueve? 'It is nine o’clock?' produced with a L* nuclear pitch accent and HL% boundary tone.
Figure 11: Waveform, spectrogram and F0 trace for the counterexpectational yes-no question ¿¡Tienes frío!? ‘You’re cold?’ produced with a HL% boundary tone.

Figure 12: Waveform, spectrogram and F0 trace for the counterexpectational yes-no question ¿Y te dieron carne de llama? ‘And they served you llama meat?’ produced with a L* nuclear pitch accent and HL% boundary tone.
3.2.2.2. Imperative yes-no questions

In other biased yes-no questions, a high H% or low L% boundary tone may be found or a bitonal HL% boundary tone may be observed. For example, in a typical imperative yes-no question, such as figure 13, a high boundary tone is found. The question in figure 13 was produced for the given context of a grandparent wanting grandchildren to stop making noise so s/he can watch the news. In this imperative yes-no question, the speaker also includes the tag por favor ‘please’ as well as some additional exhaling to express exasperation or laughter perhaps in order to soften the degree of insistence in the imperative. In this case, the pitch accent L+H* is used at the end of the first and second phrases, on collar ‘to become quiet’ and por favor ‘please’. Note that these words have word-final stress. The final boundary tone is a high HH%, which may not be realized as phonetically high as in other Spanish dialects. (Note that if we were to consider the portion that contains the exhalation as well, then the utterance would end in a low L% boundary tone.)

In the example in figure 14, the imperative yes-no question was uttered in an exhortative sense in order to convince the listener to agree to the request, i.e. as an invitation. While the prenuclear pitch accent L*+H is the same as those previously observed in other biased yes-no questions, the nuclear configuration is L+H* followed by a low boundary tone L%.

In figure 15, we see another yes-no question asked as an invitation. In this case, a bitonal pitch accent on the first prenuclear word is observed with the rise beginning during the stressed syllable but reaching the F0 maximum in the posttonic syllable, or L+>H*. In nuclear position, the low tone L* is maintained throughout the stressed syllable. At the end of the utterance, we see a higher level reached during the posttonic syllable which then drops, noted as HL% (with undershoot of the low portion of the bitonal boundary tone).

3.2.2.3. Confirmation yes-no questions

In confirmation questions, such as that illustrated in figure 16, the nuclear configuration is L* followed by a high boundary tone or HH%. The pitch accent in prenuclear position is L*+H, similar to other biased yes-no questions. This confirmation yes-no question was produced for the following context: Someone has come inside bundled up (with a warm coat) and the speaker knows that it is very cold outside. So s/he asks if the other person is cold (or not).

3.2.3. Wh- questions

In information-seeking pronominal or wh- questions the final contour in this data set shows a higher F0, which in some cases may be considered to correspond to a M% boundary tone, and in others, to a HH% boundary tone. In figure 17, the utterance begins with a high F0 or H* prenuclear pitch accent, and then drops until it rises again at the end of the question. Since the rise appears to take place during the last stressed syllable, the pitch accent is analysed as L+H*. The boundary tone is given as M% since the F0 does not rise even more or fall at the end. In figure 18, a prenuclear pitch accent of H* is given since the stressed syllable in cuánto ‘how much’ is higher than the beginning of the utterance. However, the F0 at the end of the word is even higher, suggesting a possible high intermediate phrase boundary tone or H-, even though there is no slowing or other juncture detected as indicated by the use of the break index of 2. The nuclear pitch accent appears to be a low L* target, while the end of the question ends in a higher level or HH%. Further examination of these types of contours is needed since in figure 17 the last word in the utterance is monosyllabic; other examples of information-seeking wh- questions with additional posttonic syllables are needed to corroborate these findings related to the final boundary tone. However, the data do support the observation by Argüello (1978) related to mid-level tones and final rises at the end of information-seeking wh- questions for this dialect.

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Figure 13: Waveform, spectrogram and F0 trace for imperative yes-no question ¿Se pueden callar, por favor? ‘Would you please be quiet?’ produced with a L+H* nuclear pitch accent and HH% boundary tone.

Figure 14: Waveform, spectrogram and F0 trace for the invitation yes-no question ¿Quieres venir? ‘Do you want to come?’ produced with a L+H* nuclear pitch accent and L% boundary tone.
Figure 15: Waveform, spectrogram and F0 trace for invitation yes-no question ¿Podrían venir todos? ‘Could everyone come?’ produced with a HL% boundary tone.

Figure 16: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Tienes frío? ‘Are you cold?’ produced with a HH% boundary tone.
Figure 17: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿Qué hora es? ‘What time is it?’ produced with a L+H* nuclear pitch accent and M% boundary tone.

Figure 18: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿Y hace cuánto llegaste? ‘And how long ago did you arrive?’ produced with a L* nuclear pitch accent and HH% boundary tone.
As previously indicated, the final contour in information-seeking wh- questions in Ecuadorian Andean Spanish is distinct from those described for other Spanish varieties (e.g. Castilian or Mexican Spanish this volume, among others) which show a fall instead of a rise. However, since these are information-seeking questions, the speakers in this study demonstrated additional request-like strategies, such as adding the phrases *disculpe* ‘pardon’ or *por favor* ‘please’. In this way, the speakers provide an ‘appropriate’ level of courtesy for the context provided, which in some cases was a presupposed chance conversation between strangers. In research on shop interactions in Quito and Madrid, Placencia (2004, 2005) examines request strategies and finds more preambles among Quito speakers, indicating an enhanced orientation to the interlocutor rather than the task (i.e. the shop transaction). In figure 19, we can see an example of a higher level at the end of a wh-question indicated here as M%. In these cases, the shape of the contours which include *por favor* ‘please’ may be used as an implied level of politeness even in wh- questions in which the phrase *por favor* itself is absent (see figure 7 for a yes-no question with usage of *por favor*).

### 3.2.4. Biased wh-questions

#### 3.2.4.1. Echo wh-questions

When low boundary tones are observed, they are often found in biased wh-questions, either as a simple L% or as part of a bitonal boundary tone HL%, such as in echo wh-questions and counterexpectational wh-questions. In echo questions in which the person is repeating what was heard as a comprehension check, the final contour appears to end in the mid or lower level of the speaker’s range. In figure 20, the question word receives a L+H* prenuclear pitch accent. The nuclear contour is considered to be L* followed by a bitonal boundary tone HL%. The final contour is similar to that found in echo yes-no questions, as seen in figure 10. Also, in some counterexpectational wh-questions, a bitonal boundary tone is observed with a very high level dropping to a mid or low level, which may depend on the degree to which a particular topic in question is not expected by the speaker.

#### 3.2.4.2. Imperative wh-questions

In this section both imperative wh-questions and irritated wh-questions are analysed. In figure 21, we see an imperative wh-question that was uttered for the given context of a parent asking a child when housework or other chores will be done, even though this is not the first time the child has been asked and the parent is somewhat annoyed. In the part of the utterance beginning with *cuándo mismo* ‘when finally’ a number of bitonal pitch accents are used in the portion that expresses a greater degree of insistence. The utterance ends with a H* nuclear pitch accent and mid-level M% final boundary tone.

The question shown in figure 22 can be considered an irritated wh-question. The question word received a high pitch level or H*. This peak is followed by a fall to a low target L* in the stressed syllable of the following word. The question ends in a low L% boundary tone.

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5 An alternate analysis would be to consider these also to be cases of HH% with undershoot of the high target. As previously stated, the relative final pitch height needs to be examined further to determine whether these distinctions appear only with certain pragmatic meanings or if instead they are more dependent upon local phonetic features.
Figure 19: Waveform, spectrogram and F0 trace for the information-seeking wh-question Disculpe, ¿qué horas tiene? ‘Pardon me, what time do you have?’ produced with a L* nuclear pitch accent and M% boundary tone.

Figure 20: Waveform, spectrogram and F0 trace for the echo wh-question ¿Qué adónde voy? ‘[You want to know] where am I going?’ produced with a L* nuclear pitch accent and HL% boundary tone.
Figure 21: Waveform, spectrogram and F0 trace for the imperative wh-question ¡¿Ya pues, Juan Fernando, cuándo mismo vas a hacer lo que te pedí?! ‘Alright already, Juan Fernando, when are you finally going to do what I asked you?!’ produced with a H* nuclear pitch accent and M% boundary tone.

Figure 22: Waveform, spectrogram and F0 trace for the irritated imperative wh-question Ay, ¿qué quieres? ‘Come on! What do you want?!’ produced with a L* nuclear pitch accent and L% boundary tone.
3.3. Imperatives: commands and requests

3.3.1. Commands

For the commands observed in this data set, the final tonal level is generally L%. The nuclear pitch accent is L* in figure 23 and also in the second command in figure 24. However, the first command in figure 23 shows a fall during the stressed syllable of the word in nuclear position, so a H+L* pitch accent is given. Stronger imperatives may show a different configuration, but these were not found in the recordings.

3.3.2. Requests

Requests in this data set tended to show final devoicing and other pharyngeal modifications, such as creak at the end of the utterance in order to soften usage of the imperative verb form, often appearing with the phrase por favor ‘please’ and one or more hesitations. In addition to final devoicing, figure 25 shows a low nuclear pitch accent L* and a L% final boundary tone. In this way, requests were similar to commands in terms of tonal configuration although other mechanisms described above were also used to differentiate between a command and a more gentle request.

3.4. Vocatives

The vocatives produced by the Quito speakers demonstrate a rise during the stressed syllable, or L+H*. In the posttonic syllable, the F0 drops slightly, as opposed to rising to a HH% tone. Given this drop in pitch and the cross-linguistic similarity with several other dialects (e.g. Castilian, Chilean and Venezuelan Andean Spanish, this volume), a M% boundary tone is noted. Figure 26 shows L+H* M% for the vocative ¡Andrea! which is used in the context of the speaker entering a house and calling for a person in order to produce a ‘tentative call’. In figure 27, this configuration also appears in a type of ‘sharp summons’ produced when the speaker is calling for a pet dog that has run off while s/he was walking it: ¡Bobi! ¡Bobi! The first iteration shows less of a drop between the peak and the following pitch, ending somewhat higher than the second iteration. Comparing the two instances of ¡Bobi!, the first may sound like a slightly more ‘insistent call’ than the second, which may seem slightly more resigned.
Figure 23: Waveform, spectrogram and F0 trace for the command ¡Ay! ¡Déjalos para mañana! ‘Come on! Leave it for tomorrow!’ produced with a L* nuclear pitch accent and L% boundary tone.

Figure 24: Waveform, spectrogram and F0 trace for the commands ¡No te alejes! ¡No juegues muy lejos! ‘Don’t go far! Don’t play very far away!’ produced with a L% boundary tone.
Figure 25: Waveform, spectrogram and F0 trace for the request *Eh, por favor, rellenen este formulario* ‘Uhm, please fill out this form’ produced with a L% boundary tone.

Figure 26: Waveform, spectrogram and F0 trace for the vocative *¡Andrea!* produced with a L+H* M% nuclear configuration.
Figure 27: Waveform, spectrogram and F0 trace for the vocatives ¡Bobí! ¡Bobí! produced with a L+H* M% nuclear configuration.

4. Conclusions

In the previous sections, the prenuclear and nuclear pitch accents have been described for different utterance types in Ecuadorian Andean Spanish, as well as the shape of the final contour. In table 3 below, a summary of the nuclear configuration which includes the last pitch accent and boundary tone is given for these utterances. Previous descriptions of Ecuadorian Spanish indicated the use of a mid or higher level in wh-questions as opposed to a drop in pitch, frequent utterance-final devoicing, along with a suspension in imperatives and other emphatic utterances (Argüello 1978). The present study supports these findings in that wh-questions were observed with a HH% boundary tone (or M% for utterances with a monosyllabic word in nuclear position). Broad focus statements were often devoiced after the tonic syllable in nuclear position. Since these utterances typically end in a fall, less additional segmental material may be needed (in contrast to questions and other biased utterances, which may show more pitch movement with the use of HH% or HL% boundary tones). Imperative yes-no questions were seen to end in a HH% boundary tone while imperative wh-questions ended in a M% boundary tone and commands in a L% boundary tone.

Additional observations can be made in comparison to other Spanish dialects. First, the high final boundary tone HH% in yes-no and wh-questions is not as high as is characteristic of other varieties. Second, the use of the bitonal HL% boundary tone is found to be used extensively in Ecuadorian Andean Spanish for several types of biased questions, including echo, counterexpectational, and invitation yes-no questions, and in echo wh-questions. Third, while there are similarities with Venezuelan Andean Spanish in the nuclear configuration of narrow focus statements, statements of the obvious and vocatives, Ecuadorian Andean Spanish differs from the former for several utterance types, including
yes-no questions, wh- questions, echo and counterexpectational questions. Additional data are needed to examine in greater detail the alignment of peaks in L+H* pitch accents and the interaction of voice quality with the realization of final boundary tones. Finally, research on Andean Spanish intonation in other regions is needed in order to determine if certain patterns are shared between varieties and the extent to which these patterns may be due to language contact.

**Table 3: Inventory of nuclear pitch configurations in Ecuadorian Andean Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Statements</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Broad focus statements</td>
<td>L* L%</td>
</tr>
<tr>
<td>Biased statements</td>
<td></td>
</tr>
<tr>
<td>Narrow focus statements, contradiction statements</td>
<td>L+H* L%</td>
</tr>
<tr>
<td>Exclamative statements</td>
<td>H* M%</td>
</tr>
<tr>
<td>Statements of the obvious, uncertainty statements</td>
<td>L* L%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions</th>
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<tbody>
<tr>
<td>Yes-no questions</td>
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<tr>
<td>Information-seeking yes-no questions</td>
<td>L* HH%</td>
</tr>
<tr>
<td>Biased yes-no questions</td>
<td></td>
</tr>
<tr>
<td>Echo yes-no questions, counterexpectational yes-no questions</td>
<td>L* HL%</td>
</tr>
<tr>
<td>Imperative yes-no questions</td>
<td>L+H* HH%</td>
</tr>
<tr>
<td>Invitation yes-no questions</td>
<td>L+H* L%</td>
</tr>
<tr>
<td></td>
<td>L* HL%</td>
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<tr>
<td>Category</td>
<td>Example</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Confirmation yes-no questions</td>
<td>L* HH%</td>
</tr>
<tr>
<td><strong>Wh- questions</strong></td>
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<td>Information-seeking wh-questions</td>
<td>L* M%</td>
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<td>L+H* M%</td>
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<tr>
<td></td>
<td>L* HH%</td>
</tr>
<tr>
<td><strong>Biased wh- questions</strong></td>
<td></td>
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<tr>
<td>Echo wh- questions</td>
<td>L* HL%</td>
</tr>
<tr>
<td>Imperative wh- questions</td>
<td>H* M%</td>
</tr>
<tr>
<td>Irritated imperative wh-questions</td>
<td>L* L%</td>
</tr>
<tr>
<td><strong>Imperatives: commands and requests</strong></td>
<td></td>
</tr>
<tr>
<td>Commands and requests</td>
<td>L* L%</td>
</tr>
<tr>
<td></td>
<td>H+L* L%</td>
</tr>
<tr>
<td><strong>Vocatives</strong></td>
<td></td>
</tr>
<tr>
<td>Vocatives and calling contours</td>
<td>L+H* M%</td>
</tr>
</tbody>
</table>
Ecuadorian Andean Spanish Intonation

References


Chilean Spanish Intonation

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1. Introduction

This chapter presents some of the most representative intonation patterns of the Spanish dialect spoken in Santiago, Chile. Chile is a narrow 4,200-kilometre-long strip of land extending down the Pacific Coast of Latin America, of which less than 300,000 square kilometres is habitable. Of the total population of 15 million, just over 8 million live in the capital area around the cities of Santiago, Valparaíso and Rancagua, while another 4 million are concentrated in the southern region from Concepción to Temuco. Traditionally, Chilean linguists have broken Chilean Spanish in four dialect areas mainly on the basis of lexical and segmental differences. The latest standard description (Wagner 1998, 2004), for example, includes 217 rural and urban locations, where 16% and 84% of the Chilean population is concentrated, respectively. We have chosen to describe the Santiago dialect because it is the most representative.

Intonation studies in Chile began in the 1950s coinciding with the development of phonology, when Silva Fuenzalida (1956-1957) reduced pitch contours to a finite number of pitch phonemes which, combined with stress and juncture phonemes, give rise to suprasegmental morphemes. Nothing much happened until Contreras (1976) put forward a theory to describe nuclear accent placement in connection with word order and information structure. A few years later, Silva Corvalán (1984) examined the intonation of OV, narrow focus constructions, and Urrutia (1988) investigated a Chilean southern dialect supported by spectrographic evidence.


\footnote{We thank, first of all, our informants. Thanks go as well to Eva Estebas-Vilaplana and Christoph Gabriel, and to the editors, Pilar Prieto and Paolo Roseano, who read and commented on a previous draft of this chapter. All the errors that remain are ours.}
hour corpus; this was, at the same time, the first attempt to conduct prosodic research within the Autosegmental-Metrical framework (Cid and Ortiz 1998, 2000, Cid and Poblete 1999, Cid et al. 2000) and the results do not differ much from those obtained in the present study. Rosas (2002) examined the ALEC corpus and described the intonation of 240 statements elicited from twelve, mostly regional speakers. Cepeda and Rosas (2007) analysed the configurations of justification adverbal clauses with a discursive politeness effect, and Pereira (2007) looked into the role of pitch and pause to disambiguate utterances with high attachment of relative clauses. More recently, Román, Cofré and Rosas (2008) compared double-peak prenuclear patterns in declaratives with single-peak prenuclear patterns in questions as part of the AMPER project.

A few studies have focused mainly on prominence and analysed, for instance, the reaccentuation of given information and the shifting of prenuclear and nuclear pitch accents to avoid prominence clashes (Ortiz 1994, 2000, 2003). More recent research has concentrated on the strategies used to solve accentual clashes (Atria 2009), patterns with one single peak being the preferred solution.

The chapter is organized as follows: section 2 contains the inventory of pitch accents and boundary tones found in the Santiago Chilean dialect; in section 3 we present and comment on the basic intonation contours found in the Chilean corpus, including statements, questions, commands and vocatives; and in section 4 we offer our conclusions.

2. Chilean Spanish intonational phonology

2.1. The pitch accents

Table 1 shows the inventory of pitch accents used in this description.

**Table 1: Inventory of monotonal and bitonal pitch accents in Chilean Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Pitch accents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monotonal pitch accents</strong></td>
<td></td>
</tr>
<tr>
<td>L*</td>
<td>This accent is phonetically realised as a low plateau at the minimum of the speaker’s range. In the present corpus, it is found in the nuclear position of wh- and echo questions, gentle requests and the last item of closed enumerations.</td>
</tr>
<tr>
<td>H*</td>
<td>This accent is phonetically realised as a high plateau with no preceding F0 valley. In our data, it is attested as one of the possible choices for nuclear position in invitational questions, open enumerations and calling contours followed by H%.</td>
</tr>
<tr>
<td><strong>Bitonal pitch accents</strong></td>
<td></td>
</tr>
<tr>
<td>L+H*</td>
<td>This accent is phonetically realised as a rising pitch movement during the accented syllable with the F0 peak located at the end of this syllable. It can be found in the nuclear position of narrow...</td>
</tr>
</tbody>
</table>
focus statements, statements of the obvious, wh- questions, neutral yes-no questions, counterexpectational and echo questions, commands and vocatives, among others. The downstepped version is attested in neutral statements, and the upstepped version, in emphatic and contradiction statements and invitational and rhetorical questions.

This accent is phonetically realised as a rising pitch movement on the accented syllable with the F0 peak usually slightly aligned with the postaccentual syllable. It is attested in the prenuclear position of broad focus statements, exclamative statements, commands, requests and questions of all types.

This accent is phonetically realised as a F0 fall within the accented syllable. It is attested in nuclear position in yes-no questions and echo questions (with a rising contour); in questions seeking confirmation and in disjunctive questions (with a falling contour). The downstepped version is found in broad focus statements.

### 2.2. The boundary tones

**Table 2:** Inventory of monotonal and bitonal boundary tones in Chilean Spanish and their schematic representations

#### Monotonal boundary tones

<table>
<thead>
<tr>
<th>Accent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
<td>L% is phonetically realised as a low sustained tone or a falling tone at the baseline of the speaker. It is found at the end of broad and narrow focus statements, commands, wh- questions, invitational and rhetorical questions, yes-no questions and vocatives.</td>
</tr>
<tr>
<td>M%</td>
<td>M% is phonetically realised as a rising or falling movement to a target mid point. It is attested in uncertainty statements, echo and imperative questions, calling vocatives, greetings and courtesy adverbials.</td>
</tr>
<tr>
<td>H%</td>
<td>H% is phonetically realised as a rising pitch movement coming from a low or a high pitch accent. It is found in gentle requests, invitations and uncertainty statements.</td>
</tr>
</tbody>
</table>

#### Bitonal boundary tones

<table>
<thead>
<tr>
<th>Accent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH%</td>
<td>HH% is phonetically realised as a sharp rise at the end of the phrase usually attaining the highest level of the speaker’s range. It is found in questions of various types.</td>
</tr>
<tr>
<td>LH%</td>
<td>LH% is phonetically realised as a F0 valley followed by a rise. It is attested in counterexpectational questions.</td>
</tr>
</tbody>
</table>
3. Basic intonational patterns in Chilean Spanish

Following the guidelines established for the present volume, a total of 69 utterances (plus another 6 which helped us corroborate initial findings) were recorded by 5 Santiago Chilean Spanish speakers (2 women and 3 men) between 30 and 65 years old, which yielded a total of 375 configurations. The recordings were analysed separately by the three researchers and the results were compared with consensus then being reached on any initially differing analyses. It is worth noting that some of the recordings were analysed more than once and that, on the whole, there was not much inter-researcher variation in the preliminary analysis and intonational marking. The 69 utterances were obtained by means of a guided questionnaire based on Prieto (1991) consisting of various contexts and situations which elicited semi-spontaneous answers, although the questionnaire was modified both lexically and syntactically in order to reflect Chilean usage. The basic version of this questionnaire can be found in Prieto and Roseano (coords. 2009-2010). A few more sentence types were added mainly to ascertain the existence of the prenuclear accent L*+H and the status of final vocatives. The collected utterances were classified into statements, questions (wh-, yes-no, etc.), commands, requests and vocatives. In the case of the first two categories, both marked and unmarked versions were considered, as well as meanings associated with attitudinal factors which convey more or less subtle overtones, such as factual, exclamatory and disapproving declaratives, invitational and critical questions, etc.

Our theoretical framework conforms to the revised Sp_T0Bl proposal by Estebas-Vilaplana and Prieto (2008) developed for Castilian Spanish. With respect to the earlier model by Beckman et al. (2002), this basically entails the incorporation of new pitch accents L* and L*+H, thus yielding an inventory of two monotonal (L* and H*) and four bitonal pitch accents (L+H*, L+>H*, L*+H and H+L*), as well as bitonal boundary tones, to make up a total of four, i.e. two rises (HH% and LH%), a fall (HL%) and a mid stylised tone (M%). One of the main aims of this chapter is to determine the extent to which the new (Castilian Spanish) proposal conforms to the description of the Santiago Chilean dialect. The utterances were acoustically analysed with Praat (Boersma and Weenink 2010).

In this section we examine the main intonation patterns found for the various sentence types in the Santiago Chilean dialect in the following order: 3.1 statements; 3.2 biased statements; 3.3 questions (including yes-no and wh-); 3.4 commands; and 3.5 vocatives.

3.1. Statements

3.1.1. Broad focus statements

Broad focus statements are typically produced with L+>H* prenuclear accents and with L+!H* or, less frequently, !H+L* as nuclear accents, followed by L%. That is, as in Castilian Spanish and other dialects, prenuclear accents are consistently produced with a rise throughout the stressed syllable and a peak in the postaccented syllable. It is worth noting, however, that the delayed peak is not as late as in Castilian. The difference between the highest point in the prenuclear accent and the delayed peak may often be as low as 5Hz. The
other proposed prenuclear accent, L*+H, which underlines the auditory perception of a delayed peak, was not found in the present corpus. Unlike Castilian and other Spanish dialects, Santiago Chilean Spanish does not have monotonal L* nuclear accents in broad focus declaratives. Indeed, the most frequent nuclear accent is a rise aligned with the stressed syllable and downstepped to the previous accent, which conveys an involved attitude on the part of the speaker. The other possibility is a fall within the nuclear syllable, which signals more factual and therefore less enthusiastic information. This is also the type of nuclear accent found in the last items of closed enumerations. We therefore transcribe the typical nuclear accents of Santiago broad focus statements as either L+H*, after a previous H* accent (as is also reported for Mexican Spanish by de-la-Mota et al. this volume) or !H+L*, as we can see in figures 1 and 2. The latter implies less emotional involvement.

3.1.2. Biased statements

The nuclear accent used in biased statements differs from that of broad focus statements in the relative prominence of the F0 peak. This higher peak can be transcribed either as L+H* (without the downstep diacritic) or as L+¡H* (with an upstep diacritic). This transcription allows us to distinguish among three levels of prominence, namely L+¡H*, L+H* and L+¡H*.

3.1.2.1. Narrow focus statements

Contrastive narrow focus can also be expressed with a L+H* nuclear accent. Figure 3 shows the sentence *No, de limones* ‘No, of lemons’, elicited in response to ‘Do you want a kilogram of oranges?’ by a male speaker. Both accents have been realised on an extra high pitch, which we transcribe simply as L+H*, bearing in mind that the targets represent high F0 values. Similar patterns are attested in Ecuadorian (see O’Rourke this volume), Castilian (see Estebas-Vilaplana and Prieto this volume) and Mexican Spanish (see de-la-Mota et al. this volume).

Narrow focus contradiction statements are similar to correction statements. The nuclear configuration used in emphatic statements (L+¡H*) is also used in example 4, the contradiction statement ¡*No, se van a Lima!* ‘No, they’re going to Lima!’, with which a speaker amicably but firmly contradicts information wrongly assumed by a friend. The rendering is relatively slow and the presence of three pitch accents gives it a deliberate flavour.
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Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement Bebe una limonada ‘S/he is drinking lemonade’ produced with a L+>H* prenuclear accent and L+!H* nuclear accent followed by a L% boundary tone.

Figure 2: Waveform, spectrogram and F0 trace for the broad focus statement María come mandarinas ‘Maria is eating tangerines’ produced with L+>H* and !H* prenuclear accents and a !H+L* nuclear accent followed by a L% boundary tone.
**Figure 3:** Waveform, spectrogram and F0 trace for the narrow focus statement *No, de limones* ‘No, of lemons’ produced with two identical $L+H^* \, L\%$ nuclear configurations.

**Figure 4:** Waveform, spectrogram and F0 trace for the contradiction statement *¡No, se van a Lima!* ‘No, they’re going to Lima!’ produced with a $L+iH^* \, L\%$ nuclear configuration.
3.1.2.2. Exclamative statements

The higher degree of emphasis can be seen in the exclamative statement ¡Què frío más horrible! ‘It’s dreadfully cold!’, which is transcribed with a L+iH* nuclear accent on horrible followed by a L% boundary tone, as shown in figure 5.

3.1.2.3. Statements of the obvious

The meaning conveyed by this sort of statement is obviousness. The speaker is expressing surprise (perhaps ironic) while answering an interlocutor’s question, believing that this answer is self-evident. Figure 6 displays the intonation contour of the sentence ¡Sí, mujer, de Guillermo! ‘Yes [she’s pregnant] by Guillermo [of course]!’ consisting of similar L+H* prenuclear accents and a L+iH* nuclear accent with a low boundary tone L%. (Note this configuration is also reported for Venezuelan Andean Spanish by Astruc et al. this volume.)

3.1.2.4. Uncertainty statements

As in other dialects, uncertainty statements take a M% boundary tone. The speaker has her doubts about a present she has bought and produces a type of configuration whose meaning can be associated with a self-doubting attitude. From a discourse point of view, this type of pattern consists of two intonational phrases, the first of which conveys the new information and the second of which conveys givenness, with a relatively stable plateau in between. The two intonational phrases seen in example in figure 7, Puede que no le guste el regalo que le compré ‘S/he may not like the present I have bought him/her’, have no metrical break. The first has a L+>H* H% nuclear pattern to explain the dip on guste, which signals the new information, while the second, associated with background information, takes a H* M% configuration.

3.2. Questions

3.2.1. Yes-no questions

As usual in other dialects, yes-no questions offer more variety than statements. To begin with, prenuclear accents are of two types, H+L* and L+>H*, whereas the prenuclear accent of statements is L+>H*. We find three main nuclear configurations: H+L*, i.e. a step-down to the nuclear syllable; L+H*, i.e. a rise within the nuclear syllable; and L* before the final high target. Finally, the boundary tones can vary between L% and HH%. Figure 8 gives an example of the information-seeking yes-no question ¿Ya llegó María? ‘Has Maria arrived yet?’, with two prenuclear accents, L+H* and H+L*, the latter starting a distinct dip before the final rise L+H* HH%. Here it is worth pointing out that the target of this type of final rise is not as high as in other Spanish dialects, like Castilian (Estebas-Vilaplana and Prieto this volume) and Mexican Spanish (de-la-Mota et al. this volume). In fact, the Mexican realisation of HH% is, in comparison, extremely high. In general, the meanings associated with these configurations involve genuine interest on the part of the speaker.
Figure 5: Waveform, spectrogram and F0 trace for the exclamative statement ¡Qué frío más horrible! ‘It’s dreadfully cold!’ produced with a L+iH* nuclear pitch accent followed by a L% boundary tone.

Figure 6: Waveform, spectrogram and F0 trace for the statement of the obvious ¡Sí, mujer, de Guillermo! ‘Yes [she’s pregnant] by Guillermo [of course]!’ produced with two L+H* prenuclear accents and a L+iH* L% nuclear configuration.
Figure 7: Waveform, spectrogram and F0 trace for the uncertainty statement Puede que no le guste el regalo que le compré ‘S/he may not like the present I have bought him/her’ produced with two intonational phrases, the first with a L+H* configuration and the second with H* M%.

Figure 8: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿Ya llegó María? ‘Has Maria arrived yet?’ produced with a L+H* HH% nuclear configuration.
It is difficult to find totally neutral yes-no questions in our corpus, as most questions appear to have nuances of politeness or some other pragmatic overtone. For instance, questions such as ¿Tiene hora? ‘Have you got the time?’, ¿Tiene mermelada? ‘Have you got any jam?’, ¿Puedo entrar? ‘May I come in?’ were interpreted as requests with greater or lesser degrees of formality and/or deferentiality.

Gentle requests are exemplified in figures 9 and 10. The first is ¿Tiene mermelada? ‘Have you got any jam?’ and the second, ¿Tiene hora? ‘Have you got the time?’. The first takes a H+L* prenuclear accent and a L+H* nuclear accent with a high target, a configuration which simply carries a meaning of politeness. In the second example, on the other hand, a pleading nuance is added to politeness, suggested by the L* L% nuclear configuration in which L* is realised with a markedly long syllable. This pattern is very common in indirect speech acts such as commands of the type *Ven ‘Come’ with a begging overtone, that is, ‘I beg you to come’.

Figure 11 shows a version of a disjunctive question, in which the first phrase rises to HH- while the second falls to L%. This makes the meaning more pointed but still friendly, suggested by the voice quality the speaker uses, which extends over the whole utterance: a labial setting implying a permanent half-smile (Laver 1994: 398).

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

Echo questions have a pattern similar to information-seeking yes-no questions, except that the boundary tone has a higher target: a nuclear accent L* followed by a HH% boundary. Phonetically speaking, the realisation of this type of boundary is higher than that of ordinary yes-no questions. Figure 12 illustrates ¿Dijiste que son las nueve? ‘Did you say it was nine o’clock?’ The nuclear dip preceding the final rise reinforces the effect of surprised disbelief or incredulity. By contrast, a shallower dip and weaker rise would turn the question into a neutral echo question.

A counterexpectational yes-no question expressing marked incredulity, ¿Tienes frio?! ‘You’re cold?!’, is produced with a bitonal boundary tone LH%, which is not normally found in other sentence types in the Santiago Chilean dialect and is illustrated in figure 13. The nuclear configuration is L+H* LH%.

3.2.2.2. Imperative yes-no questions

Another example of an indirect speech act is a yes-no question used to express a command. In our corpus, the imperative yes-no question ¿Quieren callarse? ‘Would you please be quiet?’ was produced with a H* prenuclear and a L+H* M% nuclear pattern (figure 14).

Questions with an invitational nuance consist of a characteristic steady rise (H* HH%), as exemplified in figure 15, where the boundary tone has a noticeably high target. The same pattern would turn a polite question, like that in 10, into a much more neutral yes-no question, deprived of the polite overtone.
Figure 9: Waveform, spectrogram and F0 trace for the polite yes-no question ¿Tiene mermelada? ‘Have you got any jam?’ produced with a L+H* HH% nuclear configuration.

Figure 10: Waveform, spectrogram and F0 trace for the polite yes-no question with a pleading nuance ¿Tiene hora? ‘Have you got the time?’ produced with a L* L% nuclear configuration.
Figure 11: Waveform, spectrogram and F0 trace for the disjunctive question ¿Quieren melón o helado? ‘Would you like melon or ice cream?’ the first part of which is produced with a L+H* HH- and the second with a H+L* L% nuclear configuration.

Figures 12: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Dijiste que son las nueve? ‘Did you say it was nine o’clock?’ produced with a L* HH% nuclear configuration.
Figure 13: Waveform, spectrogram and F0 trace for the counterexpectational yes-no question "¿Tienes frío?! 'You’re cold?!' produced with a L+H* LH% nuclear configuration.

Figure 14: Waveform, spectrogram and F0 trace for the imperative yes-no question ¿Quieren callarse? 'Would you please be quiet?' produced with a L+H* M% configuration.
3.2.2.3. Confirmation yes-no questions

A yes-no question expecting confirmation, ¿Verdad que vas a venir? ‘You are coming, aren’t you?’, was said in our corpus with a nuclear pattern similar to that in example 2, a version of a broad focus statement, that is, a final fall involving a H+L* nuclear accent and a L% boundary tone. The main difference lies in the high plateau reached in the question between the prenuclear and the nuclear accents, as shown in figure 16.

3.2.3. Wh- questions

As in other Spanish dialects, wh- questions can take either a falling or a rising nuclear pattern. A question such as ¿Qué hora es? ‘What time is it?’, for example, will take a rise if the speaker asks an open, more neutral question, whereas a more urgent meaning is conveyed with a fall, that is, when the speaker’s course of action depends on how early or late it is. In figure 17, the information-seeking wh- question ¿De dónde vienes? ‘Where do you come from?’ displays a L+H* prenuclear and a L* HH% nuclear configuration which, phonetically speaking, has a relatively mild rise compared with other samples in our corpus. The relatively high key conveys a neutral meaning.

A different type of wh- question is shown in figure 18, where we see a L+H* prenuclear configuration and a L* L% nuclear pattern. This suggests a more serious, urgent overtone.

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

With echo questions speakers repeat the information received either because they have not heard and ask for repetition or because they need to have it clear in their mind before giving an answer. A neutral echo wh- question is exemplified in figure 19, where ¿Dónde voy? ‘Where am I going?’ is said with a L+H* prenuclear and a L* HH% nuclear configuration.

A similar high-pitched boundary tone can be seen in the next biased wh- question used to convey incredulity. The early dip of the prenuclear accent and the high-pitched boundary tone reinforce the emphatic meaning of the counterexpectational echo wh- question displayed in figure 20 ¿Qué dices que te dieron? ‘What do you say they gave you?’

3.2.4.2. Imperative wh- questions

An example of an imperative wh- question, with which the speaker urges the listener to carry out a neglected task, is shown in figure 21, ¿Cuándo lo vas a hacer? ‘When are you going to do it?’ realised with a L+H* prenuclear and a L* L% nuclear pattern.

The same pleading nuance in example 10 (¿Tiene hora?) is present in the following wh-question, figure 22, with an invitation flavour, ¿Por qué no vienen? ‘Why don’t you come?’, in which there is again a falling nuclear contour L+iH* L% with syllable lengthening.
Figure 15: Waveform, spectrogram and F0 trace for the invitation yes-no question ¿Quieren caramelo[s]? ‘Would you like some sweets?’ produced with a $jH^* HH%$ nuclear configuration.

Figure 16: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Verdad que vas a venir? ‘You are coming, aren’t you?’ produced with a $H^* L%$ nuclear configuration.
Figure 17: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿De dónde vienes? ‘Where do you come from?’ produced with a L* HH% nuclear configuration.

Figure 18: Waveform, spectrogram and F0 trace for the urgent wh-question ¿De dónde vienes? ‘Where do you come from?’ produced with a L* L% nuclear configuration.
Figure 19: Waveform, spectrogram and F0 trace for the neutral echo wh-question ¿Dónde voy? ‘Where am I going?’ produced with a L * HH% nuclear configuration.

Figure 20: Waveform, spectrogram and F0 trace for the counterexpectational wh-question ¿Qué dices que te dieron? ‘What do you say they served you?’ produced with a L+H* HH% nuclear configuration.
Figure 21: Waveform, spectrogram and F0 trace for the imperative wh-question ¿Cuándo lo vas a hacer? ‘When are you going to do it?’ produced with a L* L% nuclear configuration.

Figure 22: Waveform, spectrogram and F0 trace for the invitation wh-question ¿Por qué no vienen? ‘Why don’t you come?’, produced with a L+H* L% nuclear configuration.
3.2.4.3. Rhetorical wh- questions

Rhetorical questions are those which do not expect an answer and are used either because this is self-evident or when speakers themselves provide it. In the present corpus, an example of the first type, ¿Qué harías sin mí? ‘What would you do without me?’, was produced with two L+>H* prenuclear accents followed by a L+¡H* L% nuclear pattern, as presented in figure 23. The teasing, smug attitude this question conveys is reinforced by a brisk, clipped rendering of the nuclear syllable (mi).

3.3. Commands and requests

3.3.1. Commands

Strong illocutionary force is associated with the rising-falling nuclear configuration L+iH* L%. In the following example, there is also a profusion of rising prenuclear accents L+H* which prepare the ground, so to speak, for the falling nuclear accent. This can be seen in the command ¡Ven para acá ahora mismo! ‘Come here at once!’, figure 24.

3.3.2. Requests

A similar pattern to that described in figure 2 for a neutral statement, i.e. a L+>H* prenuclear accent and a ¡H+L* L% nuclear configuration, is found in the neutral request Llenen este formulario ‘Fill in this form’. Softened, more invitational commands and gentle requests are obtained in various ways, such as by moving the H target of the first, prenuclear accent, to a higher register and/or by using a M% boundary tone. Another option involves the addition of a falling or rising courtesy adverbial such as por favor ‘please’, which is generally unaccented and appended to the main clause or may take a rise ending in a M% boundary tone. A similar contour is attested in Venezuelan Andean Spanish (Astruc et al. this volume). The first of these options is illustrated in figure 25.

Finally, in figure 26 we illustrate an insistent cajoling request with which the speaker intends to win her interlocutor’s trust. Yo, ven, hombre ‘Come on, come with us, man’ consists of three rising pitch accents, the nuclear accent occurring on the vocative that concludes the utterance. In the Chilean dialect, sentence-final accented vocatives are associated with a weighty pragmatic meaning.
Figure 23: *Waveform, spectrogram and F0 trace for the rhetorical wh-question ¿Qué harían sin mí? ‘What would you do without me?’ produced with a L+¡H* L% nuclear configuration.*

Figure 24: *Waveform, spectrogram and F0 trace for the command ¡Ven para acá ahora mismo! ‘Come here at once!’ produced with a L+iH* L% nuclear configuration.*
Figure 25: Waveform, spectrogram and F0 trace for the request Llenen este formulario, por favor ‘Fill in this form, please’ produced with a L+H* M% nuclear configuration.

Figure 26: Waveform, spectrogram and F0 trace for the gentle request Ya, ven, hombre ‘Come on, come with us, man’ produced with a L+iH* L% nuclear configuration.
3.4. Vocatives

As pointed out previously (Ortiz 1994), vocatives are normally accented in utterance-initial position in Chilean Spanish. In final position, however, the accentuation of vocatives depends on the illocutionary force of the speech act. We can safely distinguish, then, between marked and unmarked final vocatives. To Chilean ears, an accented vocative, which is typical of other Spanish dialects in all situations (Castilian Spanish, for example) would sound definitely exaggerated in the case illustrated in figure 27, elicited by the context ‘You say hello to somebody you see every day at work’. This is the unmarked form of address and the result is a single pitch accent (L*+H HH%) on hola and a deaccented final vocative which merely completes the rise. The accented vocative hombre seen in example 26 sounds emotionally involved. An unaccented vocative, which is also possible here, would sound less enthusiastic.

Vocatives can also be used as tentative calls. Figure 28, ¡Marinal, shows one of the possible versions of this: the calling contour commonly known as the stylised tone, which is a sustained mid pitch L+H* M%. The same configuration is also reported by O’Rourke et al. with respect to Ecuadorian Andean Spanish (this volume) and is also found in Castilian (Estebas-Vilaplana and Prieto this volume) and Mexican Spanish (de-la-Mota et al. this volume).

4. Conclusions

The following main conclusions may be drawn from the above description:

a) There are a number of coincidences between the Chilean and Castilian Spanish pitch accent and boundary tone inventories. This is the case of the monotonal H* and L* and the bitonal L+H*, L+>H* and H+L* accents. It is also true of the monotonal H%, L% and M% and the bitonal HH% and LH% boundary tones.

b) There is very little evidence, however, of the existence of L*+H and no evidence of the boundary tone HL%.

c) L+H* and its upstepped version L+¡H* are the most frequent nuclear pitch accents, whereas H+L* is the least frequent. As to boundary tones, the bitonal variety is of rare occurrence.

d) L+>H* is often realised with very little peak delay compared with other Spanish dialects; L+H* is not an unusual alternative in prenuclear position.

e) Nuclear syllable lengthening may contribute significantly to softening commands and turning certain yes-no questions, and even statements, into indirect speech acts involving a pleading attitude.

f) Unmarked, final vocatives used simply to address an interlocutor, as opposed to tentative calls or calling from over a distance, are unaccented and merely appended to a preceding nuclear accent.
Figure 27: Waveform, spectrogram and F0 trace for the unmarked form of address, utterance-final vocative in Hola, Mario ‘Hello, Mario’ produced with a L*+H HH% nuclear configuration.

Figure 28: Waveform, spectrogram and F0 trace for the vocative ¡Marina! used as a tentative call, produced with a L+H* M% nuclear configuration.
Some of the most frequent intonation contours for a variety of sentence types occurring in Santiago Chilean Spanish have been described in this chapter. The following chart contains a summary of the nuclear pitch configurations (final pitch accent and boundary tones). These have been organized according to the different sentence types.

**Table 3: Inventory of nuclear pitch configurations in Chilean Spanish and their schematic representations**

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<td>IH*L%</td>
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<td>Biased statements</td>
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<td>Statements of the obvious</td>
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<td>Uncertainty statements</td>
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<td>Questions</td>
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### Imperatives: commands and requests

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### Vocatives

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Argentinian Spanish Intonation

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1. Introduction

Argentinian Spanish intonation has been the focus of intensive research, at least since the second half of the 20\textsuperscript{th} century. Overall, this research has centred around one variety, i.e. Buenos Aires or ‘porteño’ Spanish, and on one type of sentence, namely declaratives, with a particular emphasis on broad focus declaratives. We also draw on this tradition in concentrating on porteño Spanish only; we nevertheless extend the database by considering sentence types and utterances other than declaratives.

Early auditory descriptions observed that Buenos Aires Spanish declaratives differed from those found in other Argentinian Spanish varieties in terms of the absence of bitonal accents, the small difference in pitch between stressed and unstressed syllables and the steep final fall (Fontanella de Weinberg 1966, 1980). As opposed to Buenos Aires Spanish, Córdoba Spanish is characterised by longer pretonic or tonic syllables associated with a tonal change within the same lengthened syllable (Fontanella de Weinberg 1971, Vidal de Battini 1964). A more comprehensive, albeit less detailed description of Argentinian Spanish varieties can be found in Vidal de Battini (1964), where the author points out that North-Eastern Argentinian Spanish differs from Buenos Aires Spanish by the absence of a fall in declaratives and that in Western and Central varieties, such as those spoken in the provinces of Mendoza and San Juan, pitch accents are characterised by their height and the length of the stressed syllable. Crucially, Vidal de Battini is the first linguist to observe that Buenos

\textsuperscript{*} A preliminary version of this chapter was presented at the 4\textsuperscript{th} \textit{Sp_ToBI Workshop: Transcription of Intonation of the Spanish Language} (Phonetics and Phonology in Iberia, Las Palmas de Gran Canaria, June 2009). We are grateful to the audience for fruitful discussions and useful commentaries. We would like to thank Bettiana Blázquez, Alejandra Dabrowski, Marcela Fuentes, Erin O’Rourke, Héctor Ortiz, Pilar Prieto, Paolo Roseano, Rafèu Sicel-Bazin and Mónica Vázquez for detailed and helpful comments on an earlier version of this chapter. Our study was mainly carried out as part of the research project H9 ‘The Intonation of Spanish in Argentina’, which forms part of the Collaborative Research Centre 538 ‘Multilingualism’, hosted by the University of Hamburg, Germany. We would like to thank the German Research Foundation (DFG) and the University of Hamburg for their substantial support. We would also like to express our gratitude to our student assistants Ricardo Fruth, Elena Kireva, Nina Nanula, Mariela Rodríguez Arguedas, Natividad Schlegel and Claudia Teichmann, as well as to our local organizing team in Buenos Aires, María Eugenia Pérez Ibáñez and Juliana Codino, for their essential assistance. It goes without saying that all errors remain ours.
Aires Spanish intonation had changed around the turn of the 20th century due to contact with Italian (for a non-linguistic perspective on that issue see Borges 1944).

Recent instrumental work within the Autosegmental-Metrical (AM) model of intonation (e.g. Pierrehumbert 1980, Ladd 1996) has largely confirmed the findings of these previous studies. All studies consistently report that the peak in prenuclear accents is overwhelmingly located within the stressed syllable (Toledo 2000, Colantoni and Gurlekian 2004, Gabriel 2006, Labastia 2006, Enbe 2009, Gabriel, Feldhausen and Pešková 2009), and that the final contour is characterised by a steep fall (Kaisse 2001, Colantoni and Gurlekian 2004). Broad focus declaratives differ from narrow focus ones in the alignment and height of the F0 peak, which happens earlier for the latter (Barjam 2004, Gabriel 2006, Gabriel et al. 2009). Narrow focus utterances, however, deserve further study because contradictory findings have been reported. For example, while the aforementioned authors found differences in peak alignment between broad and narrow focus, Toledo (1989) considers that intensity is a more reliable cue for focus than peak alignment.

Several recent studies (Barjam 2004, Enbe and Tobin 2008, Enbe 2009, Lee, Martinez-Gil, and Beckman 2010) have also looked at the intonational patterns of absolute and wh-questions. These studies, however, usually treat these two classes of questions as a whole and do not make clear distinctions between subtypes. Regarding the former type of questions, authors agree that they start with an initial rise (Sosa 1999, Barjam 2004), but different types of final contours have been reported. Sosa (1999) observes that Buenos Aires yes-no questions end with a high boundary tone, whereas Barjam (2004) reports a low boundary tone. Lee (2010) finds both patterns and suggests that both the high and the low boundary tone can be used in absolute interrogatives (i.e. yes-no questions). Furthermore, she argues that for those speakers who generally produce absolute interrogatives with low boundary tones, the presence of the final rise may be a case of truncation, since the H tone is present only in examples that finish with an oxytonic word (see also Toledo and Gurlekian 2009 for a similar assumption). In addition, Lee et al. (2010) investigate different types of yes-no questions and argue that the main difference between certain subtypes such as (pragmatically neutral) information-seeking and (pragmatically marked) presumptive interrogatives lies in the global pitch range effect, the latter displaying a larger pitch range than the former.

Differences in the final contour of wh-questions have also been reported. According to Barjam (2004), this type of question is characterised by deaccenting in nuclear position and a final falling contour, whereas Enbe and Tobin (2008) report variation between falling, rising and falling-rising contours. In their study, in which sociolinguistic variables such as age and gender are controlled, women overwhelmingly prefer rising contours, followed by the group of younger males. For older males, on the other hand, circumflex contours are the most frequent pattern. For all groups, falling contours are the least frequent pattern, which is a striking difference when compared to Barjam’s results.

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1 This variation, however, deserves further sociolinguistic investigation given the different patterns found by Enbe and Tobin (2008) for wh-questions.
Very little is known about the intonational contours of exclamative statements. To our knowledge, the only instrumental study describing this type of utterance is the work by Enbe and Tobin (2008). This study, however, analyses one sentence consisting of only one word (gol, ‘goal’). Results indicate that most of the speakers produce a falling contour.

Although these experimental descriptions have focused on Buenos Aires Spanish, there have been several instrumental analyses of other Argentinian Spanish varieties (Colantoni 2005, 2011). These studies reported clear differences in broad focus declaratives among several varieties, including Buenos Aires, North-Eastern, Western and Central Argentinian Spanish. The main dialectal differences seem to be in the alignment of the trailing tone and the slope. Western Argentinian Spanish shows the highest proportion of low tones aligned within the syllable, whereas North-Eastern Argentinian Spanish shows the smallest. In terms of durational differences, the former variety exhibits the strongest tendency for lengthening of the stressed syllable, whereas Buenos Aires Spanish shows more final lengthening. Interestingly, other recent studies show that variation is not limited to the geographical domain. Indeed, different contour patterns have been reported for Buenos Aires Spanish declaratives, questions and commands depending on the variables of gender and age (Enbe and Tobin 2008, Enbe 2009).

In summary, previous studies coincide in the description of nuclear and prenuclear accents in Buenos Aires Spanish broad focus declaratives, but fewer studies have analysed the contrast between broad and narrow focus declaratives. As for questions in general, it is not clear whether the differences reported could be attributed to different methodologies (i.e. different subtypes of yes-no questions or wh- questions being elicited) or if instead the differences are the result of sociolinguistic variation. Finally, exclamative statements are a relatively unexplored territory. Other remaining issues involve the role that contact with Italian has played in shaping Buenos Aires intonation (Vidal de Battini 1964, Colantoni and Gurlekian 2004, Feldhausen, Gabriel and Pešková 2010, Gabriel, Feldhausen and Pešková 2011), and the role played by duration (see Kaisse 2001) in accounting for some of the differences observed between Buenos Aires Spanish and other Spanish varieties.

Our goal here is not to extend the empirical coverage in the description of Argentinian varieties but to offer a more comprehensive analysis of Buenos Aires Spanish intonation, which will include a variety of utterance types. As such, our claim is to fill the gap in the description of declaratives, different types of questions and exclamative statements. The chapter is organized as follows. In section 2 we present the tonal inventory of Buenos Aires Spanish. Section 3 is devoted to the basic intonational patterns of this variety. We then concentrate in turn on statements (section 3.1), questions (section 3.2), imperatives (section 3.3) and vocatives (section 3.4). Concluding remarks and an overview of the nuclear configurations are given in section 4.

2. Argentinian Spanish intonational phonology

The aim of this section is to present the inventory of pitch accents (section 2.1) and boundary tones (section 2.2) found in Buenos Aires Spanish. We propose a notation which is consistent with the Sp_ToBI labels suggested in Beckman, Díaz-Campos, McGory and Morgan (2002) and revised in Estebas-Vilaplana and Prieto (2009) as well as in the online
training materials for Spanish ToBI labelling made available by Aguilar, de-la-Mota and Prieto (2009). In the subsequent section (3), we will provide the reader with specific examples of the most common tonal patterns in Buenos Aires Spanish taken from our empirical data.

2.1. The pitch accents

Estebas-Vilaplana and Prieto (2009) and Aguilar et al. (2009) propose two monotonal and four bitonal pitch accents (L*, H* and L+H*, L+>H*, L*+H, H+L*, respectively) for Spanish. Their analysis is based on the varieties spoken in Madrid, Sevilla and Mexico City. Our data show that five of these six pitch accents, i.e. L*, H*, L+(i)H*, L+>H* and H+L*, can also be assumed for Buenos Aires Spanish. Nevertheless, they are not sufficient for describing all the tonal movements that occur in this variety. We therefore propose a supplementary tritonal accent (namely L+H*+L) in addition to the pitch accents suggested in Estebas-Vilaplana and Prieto (2009) and Aguilar et al. (2009). As will be shown in detail in section 3.1.2., the shape of some porteño accents requires the introduction of such a tritonal unit, involving two low (L) tonal targets besides a H* target in order to account for the fact that the contour rises and falls within the limits of the metrically strong syllable.

As already pointed out in section 1, earlier AM-based descriptions (Barjam 2004, Colantoni and Gurlekian 2004, Gabriel 2006) of the porteño intonational system have shown that this variety is characterised by prenuclear accents realized as a rising accent with an ‘early’ pitch peak within the accented syllable (L+H*). This realization contrasts significantly with the one found in Castilian Spanish: Hualde (2002, 2003) shows that L+H* is the typical nuclear accent in Castilian Spanish, while prenuclear accents usually surface as rising accents which reach their F0 peak in the posttonic syllable (traditionally labelled as L*+H and dubbed ‘late’ peaks). This pitch accent realization is labelled L+>H* in recent studies (see Estebas-Vilaplana and Prieto 2009, this volume, and Aguilar et al. 2009), and we adopt this labelling for our purposes. Furthermore, Buenos Aires Spanish also exhibits a falling pitch accent H+L*, which has also been proposed in Beckman et al. (2002) for the description of Castilian Spanish and which constitutes, together with a low boundary tone (L%), the unmarked final nuclear contour in Buenos Aires Spanish broad focus declaratives.

Table 1 summarizes the pitch accents we assume for the analysis of Buenos Aires Spanish.

Table 1: Inventory of monotonal and bitonal pitch accents in Argentinian Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>This pitch accent is realized as a low plateau at the low level of the speaker’s range. It typically occurs as a nuclear accent in broad focus statements, alternating with H+L* (see below). It is also found in the post-wh sequence of wh- questions.</td>
</tr>
<tr>
<td>H*</td>
<td>This pitch accent surfaces as a high plateau without any preceding F0 valley. It occasionally occurs as a prenuclear accent in different sentence types, in most cases at the very beginning of the utterance.</td>
</tr>
</tbody>
</table>
Argentinian Spanish Intonation

**Bitonal pitch accents**

<table>
<thead>
<tr>
<th>Accent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L+H*</td>
<td>This pitch accent is realized as a rising F0 movement during the metrically strong syllable with the F0 peak located at its end. It typically occurs in prenuclear position in statements as well as in questions. It is also realized in nuclear position in vocatives and yes-no questions with final oxytonic words, among others.</td>
</tr>
<tr>
<td>L+ıH*</td>
<td>This pitch accent is realized as a rising F0 movement during the metrically strong syllable with an upstepped F0 peak located at its end. It typically occurs in nuclear position in different types of yes-no questions.</td>
</tr>
<tr>
<td>L+H*</td>
<td>This pitch accent is realized as a rising F0 movement during the metrically strong syllable with its F0 peak aligned with the posttonic syllable. It occasionally occurs in prenuclear positions of different sentence types.</td>
</tr>
<tr>
<td>H+L*</td>
<td>This pitch accent surfaces as a F0 fall within the temporal limits of the metrically strong syllable. In our data it occurs as a nuclear accent in broad focus statements and commands.</td>
</tr>
</tbody>
</table>

**Tritonal pitch accent**

<table>
<thead>
<tr>
<th>Accent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L+H*+L</td>
<td>This pitch accent displays a rising-falling pattern within the metrically strong syllable. It typically occurs in nuclear position and in utterances with a contrastive or emphatic reading.</td>
</tr>
</tbody>
</table>

2.2. The boundary tones

Two issues have been discussed extensively in the recent literature on intonational phonology: First, how many levels should be assumed in the prosodic hierarchy with respect to prosodic boundaries? More precisely, is there an intermediate phrasal (ip) level below the IP level? Second, how complex are boundary tones and how many tonal levels (low, mid, high) does their representation necessarily involve? Given that an exhaustive discussion of these general questions would undeniably go far beyond the scope of the present chapter, we confine ourselves to referring to Estebas-Vilaplana and Prieto’s (this volume) concise description of the current state of the art and concentrate on tonally marked boundaries in Buenos Aires Spanish. Besides the statements on final F0 contours made in general studies on porteño intonation (e.g. Sosa 1999, Barjam 2004), very little work has been done on the realization of tonal boundaries in this variety of Spanish. While Gabriel et al. (2011) deal with the realization of intermediate phrasal boundaries (break index 3) and address speakers’ phrasing decisions in different types of broad focus SVO declaratives, the focus here lies on detecting possibly contrasting nuclear configurations and determining their

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2 Kaisse (2001) constitutes an exception in explicitly addressing the so-called ‘long fall’, a special contour occurring immediately before the very last boundary in an utterance. In addition, Toledo (2008) and Gurlekian and Toledo (2009) investigate the influence of prosodic boundaries on the realization of preceding pitch accents.
specific pragmatic meaning. We therefore concentrate on the tonal movements occurring at the very end of the utterance (break index 4). Table 2 summarizes the boundary tones we assume for the present analysis, i.e. three monotonal and one bitonal.3

The different nuclear configurations (usually called tonemas in the Spanish tradition), which are characteristic of different sentence and clause types as well as special pragmatic readings, arise from the potential combinations of a given boundary tone T% with a preceding pitch accent (see section 3 for a detailed description of the various possible combinations).

Table 2: Inventory of monotonal and bitonal boundary tones in Argentinian Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal boundary tones</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L%</td>
<td>The final contour is characterised by a low sustained or falling tone at the speaker’s baseline. It occurs at the end of all kinds of neutral and biased declaratives, questions, imperatives and vocatives.</td>
</tr>
<tr>
<td>M%</td>
<td>The final contour is characterised by a slightly rising or falling F0 movement towards a mid target. It is attested, for example, in uncertainty statements, counterexpectational echo wh- questions and certain types of vocatives such as tentative calls.</td>
</tr>
<tr>
<td>H%</td>
<td>The final contour is characterised by a more or less rising F0 movement after a H or L pitch accent. It typically occurs in questions ending in oxytonic words.</td>
</tr>
<tr>
<td>Bitonal boundary tone</td>
<td></td>
</tr>
<tr>
<td>HL%</td>
<td>The final contour is characterised by a F0 peak with a subsequent fall. In our data, it constitutes the typical final boundary tone in different types of yes-no questions, in vocatives and in requests.</td>
</tr>
</tbody>
</table>

3. Basic intonational patterns in Argentinian Spanish

This section is devoted to presenting the basic intonational tunes for a variety of sentences in Buenos Aires Spanish. The recordings analysed were made during a field trip to Argentina in November and December 2008. Our methodology is based on the guided questionnaire used by Prieto and colleagues for their comprehensive investigation of Catalan intonation (see Prieto 2001: 374-378, Prieto and Cabré 2010). Using this inductive method the interviewer presents a series of situations to the subjects and then asks them to react appropriately. Our Argentinian adaptation of the guided questionnaire slightly differs from the original version and consists of 48 situations altogether. It can be found in the Atlas

3 It is worth pointing out that Feldhausen et al. (2010) and Gabriel et al. (2011) report on a further complex boundary tone in Buenos Aires Spanish, namely LH, which occurs in sentence-internal position in their data (break index 3). In the data analysed for the present study, it was not found at break index 4.
interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010). Whereas 25 native speakers of porteño Spanish were recorded in total, this chapter presents only the most representative examples from our corpus. Perceptual and acoustic analyses of the utterances were carried out by using Praat (Boersma and Weenink 2010).

3.1. Statements

3.1.1. Broad focus statements

The typical prenuclear accent of a statement with a broad focus intonation is a L+H* pitch accent (e.g. on gajo ‘segment’ in figure 1). Both the rising trajectory and the F0 peak of this accent are realized within the accented syllable. The nuclear accent in this sentence type surfaces either as a low pitch accent L* (figure 1) or as a falling accent H+L* (figure 2). Both nuclear accents are followed by a L% boundary tone. In both figures, the nuclear accent is located on the penultimate syllable of mandarina ‘tangerine’. In figure 1, the F0 contour does not show any significant pitch movement on -ri- but is part of the progressive fall beginning after the last prenuclear accent L+H* located on the penultimate syllable of gajo.

In addition, the example given in figure 1 displays a break index 3 boundary of the type H- between the gerund and the object.

In figure 2, by contrast, the pitch contour on the metrically strong syllable of mandarinas slightly rises at the beginning, then falls throughout the rest of the tonic syllable, and is perceived as a falling accent (H+L*).

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

The typical nuclear accent of statements with a contrastively focused constituent in clause-final position has a clear F0 peak in the centre of the accented syllable. The peak is preceded and followed by a valley, i.e. the F0 contour rises and falls within the metrically strong syllable. We describe this tonal movement by means of the tritonal pitch accent L+H*+L. An example is given in figure 3 for the utterance No, ¡Naranjas! ‘No, oranges’, in which the word naranjas constitutes the correction of a wrongly interpreted item. The contour rises from a low target at the beginning of the syllable -ran-, reaches its peak in the centre of the vowel and then falls to a low target at the end of the syllable. In order to clearly illustrate the rise and fall within one syllable we integrated a syllabic tier in figure 3 (a syllabic tier is also given in figures 5, 6 and 12 for the same purpose). After L+H*+L in figure 3, the contour remains low on the posttonic syllable and merges into the final low boundary tone L%. The steep fall after the peak indicates that there is a low target at the end of the stressed syllable, which provides strong evidence for a nuclear configuration L+H*+L L% instead of L+H* L%. Assuming the latter, the phonetic interpolation between H* and L% would simply cause a soft fall throughout the posttonic syllable (as can be seen in figure 30 for the sharp summons). Interestingly, the first intonation unit (no) is produced with exactly the same nuclear configuration (L+H*+L L%).
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement Está agarrando un gajo de mandarina ‘She is grabbing a segment of tangerine’ produced with typical L+H* prenuclear accents, a phrase-internal boundary of the type H-, and a L* nuclear accent followed by a L% boundary tone.

Figure 2: Waveform and F0 trace for the broad focus statement Está comiendo mandarinas ‘She is eating tangerines’ produced with H* and L+H* prenuclear accents, and a H+L* nuclear accent followed by a L% boundary tone.
Figure 3: Waveform, spectrogram and F0 trace for the narrow focus statement No, ¡Naranjas! 'No, oranges!' produced with a L+H*+L L% nuclear configuration.

Figure 4: Waveform, spectrogram and F0 trace for a contradiction statement ¡No, se van a vivir a San Juan! 'No, they are going to live in San Juan!' realized with L+H* prenuclear pitch accents and an (upstepped) L+iH*+L L% nuclear configuration.
Contradiction statements are similar to the narrow focus statements just described. Thus, it comes as no surprise that contradiction statements are also generally produced with a tritonal L+H*+L nuclear accent followed by a low boundary tone (L%). This is shown in figure 4, which depicts the utterance ¡No, se van a vivir a San Juan! ‘No, they are going to live in San Juan!’ Regarding the surfacing of the prenuclear accent as a L+H* tone, the statement under discussion patterns with all other utterance types in porteño Spanish. Again, the first intonational unit, the negation particle no, likewise bears the tritonal pitch accent (L+H*+L).

As will be shown in the next two sections, the L+H*+L L% nuclear configuration is not limited to narrow focus and contradiction statements, but also occurs in exclamatives and statements of the obvious.

3.1.2.2. Exclamative statements

Exclamative statements are realized with the same nuclear configuration used in narrow focus statements. Figure 5 shows the exclamative statement ¡Mmm! ¡Qué ricas medialunas! ‘Mmm! What delicious croissants!’, where the nuclear accent L+H*+L is used to express emphasis. The tritonal accent is located on the stressed syllable of medialunas, followed by a L% low boundary tone. The prenuclear accent on ricas is L+H*, the typical prenuclear accent in porteño Spanish. The rise within the tonic syllable is clearly visible in the syllabic tier. The contour falls on -cas (though the voiceless obstruent [k] causes a local perturbation). Again, the first intonation unit (¡Mmm!) exhibits the same nuclear configuration as the second one.

3.1.2.3. Statements of the obvious

The next example, figure 6, represents a statement which refers to the upcoming wedding of a mutual friend of the interlocutors. The speaker here provides the (obvious) information that this friend will marry his or her boyfriend Manuel, in reply to the question ¿Con quién se va a casar? ‘Whom is s/he going to marry?’ As is the case for narrow focus statements and exclamative statements, the nuclear configuration consists of a tritonal L+H*+L pitch accent followed by a L% low boundary tone. This nuclear contour contrasts with the contour found in Mexican and Puerto Rican Spanish, where nuclear L+H* is followed by the complex boundary tone LM% (see de-la-Mota, Butragueño and Prieto this volume, Armstrong this volume).

3.1.2.4. Uncertainty statements

The intonation of uncertainty statements can involve a L* nuclear accent followed by a M% boundary tone which is phonetically manifested as a rise to a mid target. This is illustrated in figure 7 for the utterance Yo no sé si le va a gustar eso ‘I don’t know if s/he is going to like that.’

As can be seen, all prenuclear accents in the subordinate clause (si le va a gustar eso) are realized as L* low tones, while the pitch accent on the word yo ‘I’ is realized as a H* without any initial dip. Uncertainty statements also have a final M% boundary tone in Castilian Spanish (Estebas-Vilaplana and Prieto this volume) and Chilean Spanish (Ortiz, Fuentes and Astruc this volume).
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Figure 5: Waveform, spectrogram and F0 trace for the exclamative statement ¡Mmm! ¡Qué ricas medialunas! 'Mmm! What delicious croissants!' produced with a prenuclear L+H* pitch accent and a L+H*+L nuclear accent followed by a L% boundary tone.

Figure 6: Waveform, spectrogram and F0 trace for a statement of the obvious ¡Con Manuel! 'With Manuel!' produced with a nuclear L+H*+L accent followed by a L% boundary tone.
Figure 7: Waveform, spectrogram and F0 trace for the uncertainty statement *Yo no sé si le va a gustar eso* ‘I don’t know if s/he is going to like that’ produced with a $L^*$ nuclear accent followed by a $M\%$ boundary tone.

Figure 8: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿*Tiene mandarinas?* ‘Have you got any tangerines?’ produced with a $L+H^*$ prenuclear accent and an (upstepped) $L+H^*$ nuclear accent followed by a $HL\%$ boundary tone.
Figure 9: Waveform, spectrogram and FO trace for the information-seeking yes-no question Mandarinas, ¿tenés? ‘Have you got any tangerines?’ produced with an (upstepped) L+¡H* nuclear accent followed by a H% boundary tone (underlyingly HL%).

Figure 10: Waveform, spectrogram and FO trace for the echo yes-no question ¿Es la una? ‘It’s one o’clock?’ produced with an (upstepped) L+¡H nuclear accent followed by a HL% boundary tone.
3.2. Questions

3.2.1. Yes-no questions

Information-seeking yes-no questions have a characteristic rising accent in nuclear position. The most frequent pattern is an upstepped L+¡H* pitch accent, as illustrated in figures 8 and 9.

As opposed to Castilian Spanish, this type of question is regularly produced with a falling contour, as shown in figure 8. However, a few examples of H boundary tones were found, but only in utterances ending with oxytonic words (see figure 9). Following Lee (2010), we assume that this is just the manifestation of an underlying boundary tone, which is labelled HL%, and that this surface realization is an instance of truncation, given the lack of space to realize the fall (see also Toledo and Gurlekian 2009).

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

Following Iwata (2003), echo yes-no questions (in his terminology: ‘pure echo’ questions, 2003: 186) are interrogatives that involve repetition of a preceding utterance or part thereof. In figure 10 the speaker was just told the time, but she is not sure she has understood it correctly and therefore asks again by repeating the preceding utterance. The example illustrates the most frequent realization of echo yes-no questions in Buenos Aires Spanish, involving an (upstepped) L+¡H* rising accent in nuclear position and a HL% falling boundary tone.

In the example depicted in figure 11, the speaker only repeats a part of the preceding utterance, namely [a: la una], which is located in preverbal position. Note that the focused constituent receives the highest F0 prominence and thus overrides the series of upstepped pitch accents which is otherwise characteristic of Buenos Aires question contours.

Counterexpectational yes-no questions that express surprise also show an early peak alignment in prenuclear position with the peak aligned within the second half of the stressed syllable. The same holds for the early peak alignment of nuclear accent, i.e. the peak is consistently located in the centre of the stressed syllable followed by a low target (L+¡H*+L). We have seen in section 3.1 that this tritonal pitch accent occurs in utterances with a contrastive or emphatic reading. It is no wonder, thus, that it also occurs in questions which have a nuance of surprise. Counterexpectational questions may be additionally marked by the introduction of the exclamatory qué ‘what’, which constitutes a prosodic phrase on its own.

Although a HL% final boundary tone is the most frequent one in this type of question, high boundary tones are also observed, depending on the stress pattern of the final word in the utterance (with oxytonic words triggering surfacing of the boundary tone as H%). However, Lee et al. (2010) show that the realization of the final boundary tone also depends on durational cues; i.e. in the presence of final lengthening a falling final contour is preferred.
3.2.2.2. Imperative yes-no questions

Yes-no questions are also used to express commands. The corresponding contour is realized as a L+¡H* nuclear accent and a HL% boundary tone. Figure 13 illustrates a typical example, in which the speaker demands that her children adjust the volume of the television.

The contour of polite invitation or request yes-no questions resembles the one usually produced for the other types of yes-no question, i.e. a L+H* nuclear accent followed by a HL% boundary tone. Note, however, that here no upstepping is at play. The example given in figure 14 is uttered in a context in which the speaker asks his friend to have a beer with him.

3.2.2.3. Confirmation yes-no questions

An example of a confirmation yes-no question is given in figure 15. In the present context, the addressee of the utterance (Juan) is asked to confirm his promise to come for dinner. As in other yes-no questions (for example, see figures 8 and 10), the nuclear accent is realized as an upstepped L¡H* followed by a final boundary tone, which surfaces as HL%.

![Waveform, spectrogram and F0 trace for the echo yes-no question](image)

**Figure 11**: Waveform, spectrogram and F0 trace for the echo yes-no question ¿La una me dijiste? ‘One o’clock, you said?’ produced with a L+H* nuclear accent followed by a HL% boundary tone.
¿Qué, todavía tienes hambre?

Figure 12: Waveform, spectrogram and F0 trace for the counterexpectational yes–no question ¿Qué, todavía tienes hambre? ‘What? You’re still hungry?!’ produced with an (upstepped) L+¡H*+L nuclear accent followed by a L% boundary tone.

Che, ¿pueden bajar la tele?

Figure 13: Waveform, spectrogram and F0 trace for the imperative yes–no question Che, ¿pueden bajar la tele? ‘Would you please turn down the television?’ produced with a L+¡H* nuclear accent on tele followed by a HL% boundary tone.
**Figure 14:** Waveform, spectrogram and F0 trace for the invitation yes-no question *Juan. Eh ¿tomamos una cerveza?* ‘Juan, hey, shall we have a beer?’ produced with a $L+>H^*$ prenuclear and $L+H^*$ nuclear accent followed by a HL% boundary tone.

**Figure 15:** Waveform, spectrogram and F0 trace for the confirmation yes-no question *Juan, ¿venís a cenar esta noche?* ‘Juan, are you coming for a dinner tonight?’ produced with a $L+iH^*$ nuclear accent followed by a HL% boundary tone.
3.2.3. Wh- questions

Information-seeking wh- questions show a consistent realization across speakers, independently of both the wh- word and the stress pattern of the last word in the utterance. In all cases, the question begins with a rising or high accent and ends in a nuclear fall (L* L%). This pattern is illustrated in figure 16, where the highest peak is associated with the wh-word qué ‘what’ and is followed by a falling contour.

Although we have analysed the nuclear accent as L*, this utterance can also be interpreted as a case of deaccenting (see Barjam 2004), since no significant tonal movements are observed after the wh-word. An additional example of the same pattern is provided in figure 17. Here, the wh-question is introduced by a different wh-word (quién ‘who’), but the F0 contour is similar to the one in figure 16 (note that the voiceless plosive [t] in paquete ‘parcel’ causes a local perturbation in figure 17).

Our results are thus consistent with those reported by Barjam (2004) but are radically different from those obtained by Enbe and Tobin (2008), who found that falling contours were the least common for all groups of speakers in their corpus. Several explanations can be suggested to account for the different results. First, our examples were elicited within a given context, which was not the case in Enbe and Tobin’s study. Second, neither of the studies controlled for sociolinguistic variables, such as education or social class, and it may well be the case that social classes differ in their selection of intonational contours.

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

Echo wh- questions differ from the echo yes-no questions dealt with in section 3.2.2.1 in so far as they include a wh-expression. Regarding its intonational shape, this type of question is similar to the interrogatives discussed so far in also displaying an upstepped nuclear pitch accent. In figure 18, which represents the utterance ¿Me preguntaste adónde iba? ‘Did you ask me where I was going?’, the higher pitch level of the upstepped rising accent (L+H*) on the verb iba is clearly visible. The contour ends in a falling boundary tone HL%.

Figure 19 illustrates a case of a counterexpectational wh-question. In the context that preceded this question, it was mentioned that somebody had been served a cat for dinner at a restaurant, to which the speaker’s reaction is the question ¿Qué te sirvieron? ‘What did they serve you?!’ This type of question in Buenos Aires Spanish typically ends in L+H* M%.

3.2.4.2. Imperative wh- questions

Wh-questions can also have an imperative nuance, namely when the speaker not only demands an answer but also expects the addressee to react in some way. An example of this type of question is given in figure 20. The utterance ¿Cuándo vas a hacerlo? ‘When will you do it?’ is produced with the typical contour of information-seeking wh-questions, where the wh-word is realized with a very high pitch, while the following material displays a flat contour, consisting of a series of low pitch accents and a low boundary tone.
Another type of imperative wh-question, which pragmatically differs from the former one in displaying a nuance of irritation, is illustrated in figure 21. The context used for eliciting the utterance is characterised by the fact that the speaker feels irritated at a nightly phone call. The corresponding utterance ¿Qué quiere? ‘What do you want?’ is produced with a contour comparable to the one in figure 20: The initial wh-word is realized with a high pitch followed by a L* nuclear accent and a L% boundary tone.

3.2.4.3. Rhetorical wh-questions

The last type of questions we analyse here is rhetorical wh-questions. Figure 22 displays an example of a simple rhetorical wh-question with the characteristic nuclear configuration of Buenos Aires Spanish, i.e. a falling or low accent (here: L*), followed by a low boundary tone. Note that this example exhibits the same pattern as the information-seeking wh-questions analysed in section 3.2.3., but there are possible differences in pitch range, since the peak is higher in the rhetorical wh-question than in the information-seeking wh-question.

If the rhetorical wh-question has an exhortative nuance, as illustrated in figure 23, the low boundary tone is preceded by an (upstepped) L+iH*+L nuclear accent. Moreover, this example shows two clear instances of our rising-falling pattern, one on the wh-word and another in nuclear position on the item tranquilo ‘in peace’.

Figure 16: Waveform, spectrogram and F0 trace for the information-seeking wh-question ¿Qué le va a decir al gasista cuando vuelva? ‘What are you going to tell the gasman when he gets back?’ produced with a L* nuclear accent followed by a L% boundary tone.
Figure 17: Waveform, spectrogram and F0 trace for the information-seeking wh-question Miguelito, ¿quién trajo el paquete este? 'Miguelito, who brought this parcel?' produced with a L* nuclear accent followed by a L% boundary tone.

Figure 18: Waveform, spectrogram and F0 trace for the neutral echo wh-question ¿Me preguntaste adónde iba? 'Did you ask me where I was going?' produced with a L+H* prenuclear accent and an (upstepped) L+iH* nuclear accent followed by a HL% boundary tone.
Figure 19: Waveform, spectrogram and F0 trace for the counterexpectational wh-question ¿Qué te sirvieron? ‘What did they serve you?!’ produced with a H* prenuclear accent and an (upstepped) L+H* nuclear accent followed by a M% boundary tone.

Figure 20: Waveform, spectrogram and F0 trace for the imperative wh-question ¿Cuándo vas a hacerlo? ‘When are you going to do it?’ produced with a L* nuclear accent followed by a L% boundary tone.
Figure 21: Waveform, spectrogram and F0 trace for the irritated imperative question ¿Qué quiere? ‘What do you want?’ produced with a L* nuclear accent followed by a L% boundary tone.

Figure 22: Waveform, spectrogram and F0 trace for the rhetorical wh- question ¿Qué harían sin mí? ‘What would they do without me?’ produced with a H* accent on the wh- word and a L* nuclear accent followed by a L% boundary tone.
3.3. Imperatives: commands and requests

Imperative utterances are directive speech acts intended to get the hearer to perform the action expressed in the proposition. They vary in strength from mild or gentle requests to rather strong commands. Polite directives can be expressed by questions, while more direct commands are usually characterised by the use of the imperative mood. In this section, we describe the intonation patterns most frequently used for different types of directives.

3.3.1. Commands

Commands typically exhibit a H+L* L% nuclear configuration. An example of a command can be found in figure 24, in which the speaker is calling a child who is about to cross a very busy street.

3.3.2. Requests

A common nuclear configuration for requests can be found in figure 25. This utterance consists of a series of three L+H*+L accents followed by a L% boundary tone. This tritonal accent makes the utterance sound like an insistent, cajoling request through which the speaker is trying to get the hearer to accept an invitation. Another feature of this utterance
consists of the fact that the vowels in the tonic syllables are considerably lengthened, which makes it sound even more emphatic.

In certain situations requests are formal rather than intimate or cajoling. This is typical of the communicative situation between a receptionist and a guest at the front desk of a hotel. Figure 26 depicts the receptionist’s request Por favor, *completén el formulario* ‘Would you please fill in the form’, which is produced with a L* L% nuclear configuration.

An alternative way of uttering a polite request is represented in figure 27. In this case, the directrice speech is indirectly performed through a (yes-no) question. The tonal configuration regularly associated with this type of request is the same as in (imperative) yes-no questions, i.e. the nuclear L+¡H* pitch accent is followed by the complex boundary tone HL%. It is also interesting to note the very high target in the first prenuclear pitch accent L+H*, which helps to make the utterance sound very polite.

3.4. Vocatives

Vocatives are utterances used to call someone’s attention, especially when the addressee is some distance away. Like in many European languages (Ladd 1996: 136-139), the ‘calling contour’ used for vocatives in Buenos Aires Spanish usually involves a fairly high tone on the nuclear syllable, and a step down to a lower level. In AM terms, this contour can be analysed as a L+H* pitch accent followed by a M% boundary tone. An example can be seen in figure 28. Here, the speaker has just entered the house of his friend Natalia and is calling her. This type of vocative is labelled ‘tentative call’.

A different contour is produced when a vocative expression is realized in a more insistent manner. In the situation used for eliciting the utterance depicted in figure 29, the speaker’s friend, Natalia, has not shown any reaction to the first attempt to call her, and the speaker repeats his vocative utterance more insistently. In such ‘insistent calls’, the nuclear accent typically surfaces as a L+H* tone and is followed by a complex HL% boundary tone.

A sharp summons, finally, is a directive speech act which attempts to get the addressee to stop doing something. This type of vocative is usually produced with a L+H* L% configuration, which makes it sound like a rebuke or reprimand. In the context used to elicit the utterance represented in figure 30, the speaker calls a child who has suddenly run off and is about to cross a busy street.
Figure 24: Waveform, spectrogram and F0 trace for the command ¡Natalia, vení para acá! ‘Natalia, come over here!’ uttered with a H+L* nuclear accent and a L% boundary tone.

Figure 25: Waveform, spectrogram and F0 trace for the cajoling request ¡Dale! ¡Vení! ¡Ponele buena onda! ‘Come on, come with us! Bring good vibes!’ produced with a L+H*+L L% nuclear configuration.
Figure 26: Waveform, spectrogram and F0 trace for the request Por favor, completen el formulario ‘Would you please fill in the form’ produced with a L* L% nuclear configuration.

Figure 27: Waveform, spectrogram and F0 trace for the request ¿Me podés completar este formulario? ‘Would you fill in this form?’ produced with a L+H* HL% nuclear configuration.
**Figure 28:** Waveform, spectrogram and F0 trace for the tentative call ¡Natalia! uttered with the typical nuclear configuration L+H* M%.

**Figure 29:** Waveform, spectrogram and F0 trace for the insistent call ¡Natalia! uttered with a L+H* nuclear pitch accent followed by a complex HL% boundary tone.
Figure 30: Waveform, spectrogram and F0 trace for the sharp summons ¡Natalia! produced with a L+H* nuclear pitch accent followed by a L% boundary tone.

4. Conclusions

The goal of this chapter consisted in analysing the intonational tunes of basic utterance types in Buenos Aires Spanish. The labels we proposed are consistent with the annotation guidelines suggested by Beckman et al. (2002), Estebas-Vilaplana and Prieto (2009), and Aguilar et al. (2009). We nevertheless introduced some additional labels necessary for the description of certain tonal particularities of the variety discussed here.

In order to account for the striking rising-falling pattern within the metrically strong syllable that typically occurs in utterances with a contrastive or emphatic reading we proposed a tritonal accent L+H*+L, which is not attested in other Spanish varieties (see this volume). Only Ecuadorian Andean Spanish seems to display a comparable pitch movement: In that variety, statements of the obvious are marked by means of a F0 peak usually located towards the middle of the stressed syllable (see O’Rourke this volume).

Nuclear accents typically surface as falling tones (HL*) in porteño Spanish. In contrast, nearly all other Spanish varieties analysed in this volume use a rising tonal movement (L+H*) as a nuclear accent, which, in turn, commonly occurs in Buenos Aires Spanish in prenuclear position. Again, it is the Ecuadorian variety which partly patterns with porteño in allowing prenuclear accents to surface as L+H*, although this use is limited to certain biased statements and questions (see O’Rourke this volume). The typical prenuclear accent in most varieties (such as Castilian, Mexican, Chilean, Canarian and Ecuadorian Andean Spanish; see this volume) is L>H*. This pitch accent, which surfaces as a rising tonal movement with a delayed peak, is only rarely attested in porteño Spanish. L+H*, in turn, also occurs in nuclear
position in Buenos Aires Spanish, but only in vocatives and, in its upstepped version (L+¡H*), in different types of yes-no questions. Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume) also displays an upstepped L+¡H* nuclear accent in certain yes-no questions. However, while the nuclear accent in Buenos Aires Spanish is mainly followed by (H)L%, Cantabrian Spanish boundary tones are typically realized as (H)M%.

Table 3 summarizes the nuclear configurations (combinations of the very last pitch accent in an utterance and the subsequent boundary tone) found in our data and discussed in the previous section. Recall that the final boundary tone surfaces as H% if (and only if) the last word of the utterance has oxytonic stress (see section 3.2.1).

**Table 3: Inventory of nuclear pitch configurations in Argentinian Spanish and their schematic representations**

<table>
<thead>
<tr>
<th>Statements</th>
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<tbody>
<tr>
<td>Broad focus statements</td>
<td>L* L%</td>
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<td></td>
<td>H+L* L%</td>
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</tbody>
</table>

<table>
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<tr>
<th>Biased statements</th>
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<tbody>
<tr>
<td>Narrow focus statements</td>
<td>L+H*+L L%</td>
</tr>
<tr>
<td>Contradiction statements</td>
<td>L+H*+L L%</td>
</tr>
<tr>
<td>Exclamative statements</td>
<td>L+H*+L L%</td>
</tr>
<tr>
<td>Statements of the obvious</td>
<td>L+H*+L L%</td>
</tr>
<tr>
<td>Uncertainty statements</td>
<td>L * M%</td>
</tr>
</tbody>
</table>

<p>| Yes-no questions                    |          |
| Information-seeking yes-no questions| L+¡H* HL%|</p>
<table>
<thead>
<tr>
<th><strong>Biased yes-no questions</strong></th>
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<tbody>
<tr>
<td>Echo yes-no questions</td>
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<tr>
<td>Counterexpectational echo yes-no questions</td>
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<tr>
<td>Imperative yes-no questions</td>
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<td>Confirmation yes-no questions</td>
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<th><strong>Wh-questions</strong></th>
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<tr>
<td>Information-seeking wh-questions</td>
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<th><strong>Biased wh-questions</strong></th>
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<tr>
<td>Echo wh-questions</td>
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<tr>
<td>Counterexpectational echo wh-questions</td>
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<tr>
<td>Imperative wh-questions</td>
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<tr>
<td>Rhetorical wh-questions</td>
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<tr>
<th><strong>Imperatives: commands and requests</strong></th>
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<tbody>
<tr>
<td>Commands</td>
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<tr>
<td>Requests</td>
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</tbody>
</table>
### Vocatives

<table>
<thead>
<tr>
<th></th>
<th>L+H* M%</th>
<th>L+H* HL%</th>
<th>L+H* L%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tentative call</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Insistent call</td>
<td><img src="image4.png" alt="Diagram" /></td>
<td><img src="image5.png" alt="Diagram" /></td>
<td><img src="image6.png" alt="Diagram" /></td>
</tr>
<tr>
<td>Sharp summons</td>
<td><img src="image7.png" alt="Diagram" /></td>
<td><img src="image8.png" alt="Diagram" /></td>
<td><img src="image9.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>
References


1. Introduction

The goal of this chapter is to describe the basic intonational tunes found in Central Mexican Spanish and specifically the variety of Mexican Spanish spoken in the Distrito Federal (or México DF) and to present the inventory of nuclear pitch accents and boundary tones found in this Spanish variety using the Sp_ToBI labelling conventions proposed by Beckman et al. (2002), Face and Prieto 2007 and later Estebas-Vilaplana and Prieto (2008). Although there is prosodic diversity in Mexican Spanish, this article will focus on the variety spoken in Mexico DF, whose metropolitan area is inhabited by about twenty million people (almost one-fifth of the population of the country). By establishing a labelled dataset of Central Mexican Spanish utterances which includes the main intonation contours of this variety we will allow for further crossdialectal comparison among the tunes of several varieties.

Previous studies on Mexican Spanish intonation have described a variety of intonation contours from a phonetic and a phonological point of view (see Matluck 1951, Kvavic 1974, 1979, Sosa 1999, Prieto et al. 1995, Ávila 2003, Ávila in press, Beckman et al. 2002, Martín Butragueño 2003a, 2003b, 2004, 2005, 2006a, 2006c, Velázquez 2008a, 2008b, and others; see Martín Butragueño 2006b for a review). One of the most peculiar intonation contours found in Mexican Spanish is the so-called ‘circumflex’ nuclear configuration, a contour characterized by a particular rising-falling movement. These contours were described as early as Matluck (1951), later discussed by Quilis (1993) and Sosa (1999) and have been recently analysed in depth in Martín Butragueño’s work (2004, 2006a, in press). However, little attempt has been made to provide an inventory of all the pitch accents and boundary tones of the dialect, an inventory which must include a characterization of the F0 contours used for different pragmatic meanings (yet see Martín Butragueño 2006a, the DIME project in López 2005, work on interrogatives and requests by Ávila 2003 and Orozco 2008, 2010, work on adverbs by Mora in press, and analyses of extrapredicative themes and discourse

* The authors are indebted to the speakers Karla Yazmin Camacho Riquenes, Itzel Moreno Vite and Mercedes Orestano Sánchez for their participation in the interview, with particular thanks to Itzel Moreno Vite for her help with conducting the interviews and interpreting the meanings of the utterances. We are also indebted to Valeria Arana, Laura Colantoni, Ingo Feldhausen, Christoph Gabriel, Leopoldo Labastía, Su-Ar Lee, Andrea Pešková, Paolo Roseano and Erik Willis for their comments on a previous version of this chapter. This study likewise benefited greatly from useful comments and questions received at the 4th Sp_ToBI Workshop: Transcription of Intonation of the Spanish Language (Las Palmas de Gran Canaria, June 2009). This research has been funded by projects Gisasso FFI2008-04982-C003-02, FFI2009-07648/FILO and CONSOLIDER-INGENIO 2010 Programme CSD2007-00012 (both awarded by the Spanish Ministerio de Ciencia e Innovación) and by project 2009 SGR 701 (awarded by the Generalitat de Catalunya).
markers by Martín Butragueño 2003a, 2008). In this chapter we would like to provide a further contribution to the description of Mexican Spanish intonation by examining new empirical data and typical tunes of several sentence types within the tenets of the Sp_ToBI framework in the Autosegmental-Metrical (AM) approach to intonational analysis (see Hualde 2003 and Sosa 2003 for a review).

The chapter is organized as follows. Section 2 describes the proposed pitch accents and boundary tones found in Mexican Spanish, section 3 presents the basic intonation contours for a variety of sentence types and, finally, the last section concludes with a summary of the main findings and a chart of the basic nuclear configurations or tonemas.

2. Mexican Spanish intonational phonology

2.1. The pitch accents

The analysis of the elicited sentences in our corpus of Mexican Spanish was carried out using the Sp_ToBI labelling system. The inventory of pitch accents and boundary tones is based on the proposals put forth in Face and Prieto (2007) and Estebas-Vilaplana and Prieto (2008).

Table 1 summarizes the inventory of possible pitch accents that have been observed in our corpus of Mexican Spanish. A schematic representation and description of the corresponding contours and the utterances where they are commonly found is also included.

Table 1: Inventory of monotonal and bitonal pitch accents in Mexican Spanish and their schematic representations

<table>
<thead>
<tr>
<th>Monotonal pitch accents</th>
<th>Bitonal pitch accents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong></td>
<td>This accent is phonetically realized as a low plateau at the minimum of the speaker’s range. In our corpus, it is found in the nuclear position of broad focus statements, contradiction statements, information-seeking yes-no questions, echo yes-no questions, imperative yes-no questions, polite invitation or request yes-no questions, echo wh- questions and vocatives.</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>This accent is phonetically realized as a high plateau with no preceding F0 valley. In our data, it is attested in prenuclear position in broad focus statements, contradiction statements, confirmation yes-no questions, wh- questions and invitation wh-questions.</td>
</tr>
<tr>
<td><strong>L+H</strong></td>
<td>This accent is phonetically realized as a rising pitch movement during the accented syllable with the F0 peak located at the end of this syllable. It is commonly found in the nuclear position of broad and narrow focus statements, exclamative statements, statements of the obvious, wh- questions, echo wh- questions, exclamative wh- questions, imperative wh- questions, commands, gentle requests and vocatives.</td>
</tr>
</tbody>
</table>
L+>H* This accent is phonetically realized as a rising pitch movement on the accented syllable with the F0 peak aligned with the postaccentual syllable. In our corpus it is attested in the prenuclear position of broad focus statements, exclamative statements and imperative yes-no questions.

L*+H This accent is phonetically realized as a F0 valley on the accented syllable with a subsequent rise on the postaccentual syllable. In our corpus, it is attested in the prenuclear position of counterexpectational echo yes-no questions and echo wh-questions.

H+L* This accent is phonetically realized as a F0 fall within the accented syllable. In our data, this accent is found in prenuclear position in imperative wh-questions.

2.2. The boundary tones

Table 2 below shows the inventory of attested boundary tones found at the end of nuclear configurations. It is assumed that some final pitch movements can be better described by means of bitonal boundary tones (i.e. with two tonal targets). The mid tone M% proposed by Beckman et al. (2002) as a possible boundary for Sp_ToBI is also considered useful to describe the nuclear configurations in our corpus.

Table 2: Inventory of monotonal and bitonal boundary tones in Mexican Spanish and their schematic representations

Monotonal boundary tones

L% L% is phonetically realized as a low sustained tone or a falling tone at the baseline of the speaker. It is attested at the end of broad and narrow focus statements, exclamative statements, exclamative wh-questions, imperative wh-questions, commands and vocatives.

M% M% is phonetically realized as a rising or falling movement to a target mid point. It is found in exhortative wh-questions, uncertainty statements and vocatives.

H% H% is phonetically realized as a rising pitch movement coming from a low or high pitch accent. It is attested in confirmation-seeking yes-no questions.

Bitonal boundary tones

HH% HH% is phonetically realized as a sharp rise at the end of the phrase usually attaining the highest level of the speaker’s range. It is typical of polite invitations and request yes-no questions.
3. Basic intonational patterns in Mexican Spanish

As in all other chapters, the elicitation of the data was conducted in semi-spontaneous fashion through a guided questionnaire based on that proposed by Prieto (2001) and adapted for the Atlas interactivo de la entonación del español (Prieto and Roseano coords. 2009-2010). In this methodology the subject is presented with a series of situations, each intended to elicit a particular type of utterance by an inductive method. The questionnaire is designed to evoke everyday situations in which a wide range of intonation contours are naturally produced, contours that are otherwise difficult to produce in laboratory conditions. For instance, the speakers have to produce an utterance as a response to prompts like: ‘You enter the house of a friend of yours, Marina, to pick her up. But once inside, you can’t see her. Call out her name to see if she is there’ or ‘You have never been so cold in all your life. What do you say?’ The guided questionnaire elicits a variety of sentence types (statements, yes-no questions, wh- questions, imperatives) that convey different pragmatic meanings (incredulity, confirmation, obviousness, etc.).

Three female native speakers from México DF aged 27 and 28 were recorded in a soundproofed room at the Universitat Autònoma de Barcelona using a PMD660 Marantz professional portable digital recorder and a Rode NTG2 condenser microphone. The three speakers were young urban women with a Master’s-level university education. The guided questionnaires were administered by a native speaker of the dialect (Ixtel Moreno) and one of the authors. A total of 207 sentences were obtained and an acoustic and perceptual analysis was carried out in order to apply the ToBI annotation. The results of the analysis were compared in Mexico with the production of a female Spanish speaker from México DF aged 15 responding to a control interview. For each sentence, waveforms, pitch tracks and wideband spectrograms were displayed with Praat speech analysis software (Boersma and Weenink 2010) and then annotated manually using the Sp_ToBI labelling conventions, which are based on the first Sp_ToBI proposal (Beckman et al. 2002) as well as its revised version (Face and Prieto 2007, Estebas-Vilaplana and Prieto 2008).

This section describes the basic nuclear configurations found in Mexican Spanish within the Sp_ToBI framework. We consider broad and narrow focus statements, yes-no questions, wh- questions, imperatives and vocatives. Some of the non-neutral (biased) intonation patterns related to the elicited meanings and nuances obtained from the questionnaires are also discussed and exemplified with new empirical data. This is done, for instance, with contradiction statements, statements of the obvious and invitation questions, among others.
3.1. Statements

3.1.1. Broad focus statements

Figure 1 shows the waveform, spectrogram and F0 pitch track of the broad focus statement *Ana tomó limonada* ‘Ana had lemonade’ produced with L+>H* prenuclear pitch accent followed by a L* L% nuclear configuration (see Quilis 1993: 456, Prieto, Van Santen and Hirschberg 1995, Sosa 1999: 195). The final low nuclear configuration in broad focus statements is quite common in other dialectal varieties of Spanish. For example, it has been found in Argentinian Spanish (Gabriel et al. this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Ecuadorian Andean Spanish (O’Rourke this volume), and Venezuelan Andean Spanish (Astruc et al. this volume). Yet as we will see below, this is not the most frequent pattern found in Mexican Spanish spontaneous speech.

Prenuclear L+>H* rising pitch accents in Mexican Spanish have been studied in depth by Prieto, van Santen and Hirschberg (1995), Prieto, Shih and Nibert (1996) and Prieto (1998). Their results reveal that the L F0 valley is aligned near the onset of the stressed syllable and that the peak location depends on the position of the syllable within the utterance. In prenuclear accents the peak is not temporally aligned with the accented syllable but rather displaced forward. Although the rise starts at the beginning of the stressed syllable, it usually ends in the posttonic syllable (though the position depends on the right-hand prosodic environment). This delayed peak can be analysed as a L+>H* pitch accent (Face and Prieto 2007). These findings are also consistent with results from Castilian Spanish (Navarro Tomás 1944, Listerri, Machuca, de-la-Mota, Riera and Ríos 2003, de-la-Mota 1995, 1997, 2005, Face 1999, 2003). Moreover, there is a progressive lowering in broad focus sentences, also called downstep, whereby each peak usually falls to a lower F0 value than the preceding one.

Mexican Spanish also presents broad focus statements with a so-called circumflex final pattern, which may also be present in other sentences. The circumflex pattern consists of a variety of contours with a rising pitch accent associated with the nuclear accented syllable followed by a sharp fall at the edge. Sosa (1999: 189) remarks that in Mexican Spanish this configuration can be related to statements without a particular narrow focus. In his analysis of Puebla Mexican Spanish, Willis (2005) found that speakers used both patterns (circumflex and downward) in all contexts, although there were individual preferences. Quilis (1993: 456) points out that this nuclear configuration is also attested in Canarian and Puerto Rican Spanish.

The most common and prototypical cases of statement intonation previously found by Martín Butragueño (2004) in his analysis of sociolinguistic interviews end in circumflex configurations such as L+iH* L% and L+H* L% (with a smaller rising). There are also other possible configurations, namely L+iH* L- H%\(^1\), the absence of a fall after the tonal peak

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\(^1\) Note that the label L-H% describes an edge with two boundary tones, one from the intermediate phrase and the next from the intonational phrase. In the most recent revisions of Sp_ToBI it is argued that this complexity can be avoided and therefore just one complex boundary tone LH% is proposed at the end of intonational phrases.
C. de-la-Mota, P. Martín Butragueño, P. Prieto

(shown as M%, H%, H-) and several other different patterns, most of them downward L* L%. The prototypical pitch accent of a circumflex is considered to be L+iH*, which is usually followed by a lowering in the boundary tone. Other similar configurations which can be closer or less close to the prototypical configuration (and which may be genetically related variants of same theme) can also be perceived as circumflex. Some of the circumflex patterns described by Martín Butragueño for Mexican Spanish with data from sociolinguistic interviews, however, were not attested in the corpus we used here. Remember that the three subjects who participated in our interview were young urban women with higher education, and this might explain the differences found in circumflex configurations. Some configurations, such as L+iH* L- H%, might be less common among women, among speakers from a high social status and in formal speech (see Martín Butragueño 2004: 30 and 2006a: 28 for discussion). Taking into account data from men and women with different sociolinguistic profiles and ages, Martín Butragueño (in press) shows that there are social differences in the use of intonational patterns in Mexican Spanish and possibly a diachronic change in progress.

In our corpus of semi-spontaneous interviews, the use of circumflex configurations was attested in both broad and narrow focus statements (among other types of sentences). Figure 2 shows the L+H* L% pattern observed in broad focus statements. The final contour is a combination of a rising pitch accent with the peak aligned at the end of the stressed syllable followed by a falling movement to the L% edge tone. A similar pattern has also been attested in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), Dominican Spanish (Willis, this volume) and Chilean Spanish (Ortiz et al. this volume).

As we will see below, similar circumflex movements have been found in other utterances. Pragmatic correlates like focal interpretation, information status and speaker commitment (among other factors) are related to the variety of circumflex contours, which can be slight or very steep. Circumflexes are particularly relevant from the pragmatic and sociolinguistic perspective and the variation found in Mexican Spanish can be understood as the effect of a series of factors in variationist terms.

3.1.2. Biased statements

3.1.2.1. Narrow focus statements

In Castilian Spanish, words in narrow contrastive focus are highlighted by using a pitch accent where the peak is reached earlier within the syllable than in broad focus statements without a particular emphasis. Moreover, the pitch excursion is wide, so there is a difference in pitch scaling, and there is also a longer duration and higher intensity (de-la-Mota 1995, 1997, Face 2002, Cabrera Abreu and García Lecumberri 2003). The pragmatic-informative value of these utterances can thus be distinguished by using such intonational cues. This circumflex movement has also been related to emphasis marking in Spanish (Navarro 1944: 164, Quilis 1993, Machuca and de-la-Mota 2006, de-la-Mota and Rodero to appear, and others).
Figure 1: Waveform, spectrogram and F0 trace for the broad focus statement Ana tomó limonada
‘Ana had lemonade’ produced with a L* L% nuclear configuration.

Figure 2: Waveform, spectrogram and F0 trace for the broad focus statement A pesar de la lluvia,
pues fui al médico ‘I went to the doctor’s despite the rain’ produced with a L+H* L% nuclear configuration.
Figure 3: Waveform, spectrogram and F0 trace for the narrow focus statement *No, de limones* 'No, I want lemons' produced with a L+H* L% nuclear configuration.

Figure 4: Waveform, spectrogram and F0 trace for the contradiction statement *Yo estoy segura que se van a ir a Lima* 'I am sure that they are going to Lima' produced with a L* HL% nuclear configuration.
In Mexican Spanish when the highlighted element is in final position the nuclear configuration is also L+H* L% (see figure 3). This configuration is likewise used in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Chilean Spanish (Ortiz et al. this volume), Ecuadorian Andean Spanish (O’Rourke, this volume), Puerto Rican Spanish (Armstrong, this volume) and Venezuelan Andean Spanish (Astruc et al. this volume). The peak associated with the last pitch accent is located before the end of the stressed syllable, usually aligned at the end, and then falls to a minimum in the speaker’s range. The focused element also seems to have a longer duration and higher intensity, since, as expected, the complexity of the movement is triggering longer durations (see Kim and Avelino 2003 and Martín Butragueño 2004 for Mexican Spanish). Some variation involving scaling can be found among realizations, probably due to differences in the degree of emphasis.

There are some similarities between narrow focus correction statements and contradiction statements like No, se van a ir a Lima ‘No, they are going to Lima’. In categorical statements without an explicit contradiction or negation, the speaker strongly indicates that there can be no reservations about what is said, since it is known for certain. Figure 4 shows the waveform, spectrogram and F0 contour of the categorical statement Yo estoy segura que se van a ir a Lima ‘I am sure that they are going to Lima’ realized with a L* HL% nuclear configuration. The low tone is temporally aligned with the stressed syllable, which is followed by a HL% edge movement realized in the posttonic syllable. Realizations with the peak aligned at the end of the accented syllable are also possible in Mexican Spanish, since there is a degree of variation due to subtle differences in meaning (see Estebas-Vilaplana and Prieto this volume about Castilian Spanish).

3.1.2.2. Exclamative statements

The nuclear L+H* L% circumflex contour can also be found in exclamatives. Scaling differences due to the degree of emphasis mentioned above for sentences with narrow focus are also present in exclamatives. Figure 5 illustrates a contour with a L+H* prenuclear accent followed by a L+H* L% configuration. This nuclear contour is also found for exclamative sentences in Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Chilean Spanish (Ortiz et al. this volume) and Puerto Rican Spanish (Armstrong this volume).

3.1.2.3. Statements of the obvious

Figure 6 shows the waveform, spectrogram and F0 pitch track of the statement of the obvious [¿Cómo que de quién?] Pues... ¡de Guillermo! ‘Guillermo’s [of course]!’ produced with a L+H* LM% nuclear configuration. This nuclear configuration expresses a strong conviction on the part of the speaker and is phonetically realized by a rising pitch accent associated with the accented syllable followed by a complex LM% boundary tone configuration. The motivation behind positing a LM% configuration is that some Spanish dialects have a contrast between the L+H* LM%, which expresses a statement of the obvious meaning, and the L+H* LH% nuclear configuration, which expresses an insistent echo question. This type of pitch configuration has also been found in Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume) and Puerto Rican Spanish (Armstrong this volume).
Figure 5: Waveform, spectrogram and F0 trace for the exclamative statement ¡Qué ricas enchiladas! ‘What tasty enchiladas!’ produced with a L+H* L% nuclear configuration.

Figure 6: Waveform, spectrogram and F0 trace for the statement of the obvious [¿Cómo que de quién?] Pues... ¡de Guillermo! ‘Guillermo’s [of course]!’ produced with a L+H* LM% nuclear configuration.
3.1.2.4. Uncertainty statements

Sentences indicating some lack of sureness on the speaker’s part like *Es posible que no le guste mi regalo* ‘S/he may not like my present’ in figure 7 show the nuclear configuration L+IH* M%, like in many other Spanish dialects. On the other hand, uncertainty can also be expressed linguistically by means of grammatical structures or lexical items (*Es posible ‘It is possible’) and by prosodic lengthenings (the vocalic end of *regalo* ‘gift’).

3.2. Questions

3.2.1. Yes-no questions

Information-seeking yes-no questions in Mexican Spanish are usually produced with a high rise at the end of the utterance (Ávila 2003). Figure 8 shows the waveform, spectrogram and F0 contour of the information-seeking yes-no question ¿*Tiene mermelada*? ‘Have you got jam?’, produced with a L* LH% nuclear pitch configuration. The last pitch accent is realized with a local pitch minimum L*. This low tone continues into the posttonic syllable and then rises dramatically at the end of the utterance. Thus the sentence-final syllable must be especially long in order to contain the two targets belonging to the boundary tone LH%. Quilis (1993: 471), Sosa (1999: 200-202) and Ávila (2003) have also reported a higher and longer final rise in Mexican yes-no questions, a phenomenon which seems to be specific to this Spanish variety.

Prenuclear pitch accents in questions are produced with a rising pitch accent, either L*+ H or L+>H*. These patterns have also been found in Castilian Spanish (Sosa 1999, Cantero 2002, Martínez Celdrán, Fernández Planas and Fullana Rivera 2003). The pitch accent with the H peak aligned with the posttonic syllable in questions has been identified as L+>H* by de-la-Mota (2009). See also Ecuadorian Andean Spanish (O’Rourke this volume), Argentinian Spanish (Gabriel et al. this volume), Canarian Spanish (Cabrera Abreu and Vizcaíno Ortega this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Chilean Spanish (Ortiz et al. this volume) and Venezuelan Andean Spanish (Astruc et al. this volume).

3.2.2. Biased yes-no questions

3.2.2.1. Echo yes-no questions

The nuclear configuration L* LH% is also attested in echo questions in Mexican Spanish, when the speaker is repeating the time information and asking if it has been correctly understood. This is the case of *¿Las nueve?* ‘[At] nine?’ in Figure 9. One of the features that characterize these echo questions is the extreme height of the final boundary tone H%.

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2 This complex boundary tone was proposed for Spanish by Díaz Campos and Tevis (2002), who analysed on the basis of a text read aloud by speakers of eight Spanish dialects. They found that LH% boundary tones are often related in discourse to continuative-non-final situations, as is the case in Mexican Spanish.
Figure 7: Waveform, spectrogram and F0 trace for the uncertainty statement Es posible que no le guste mi regalo ‘S/he may not like my present’ produced with a L+IH* M% nuclear configuration.

Figure 8: Waveform, spectrogram and F0 trace for the information-seeking yes-no question ¿Tiene mermelada? ‘Have you got jam?’ produced with a L* LH% nuclear configuration.
Counterexpectational yes-no questions show incredulity and surprise about something that has happened or that has been stated earlier in the conversation. This incredulity meaning is conveyed in the prenuclear accent by a low pitch aligned with the accented syllable and followed by a rise, i.e. by a L*+H prenuclear pitch accent. This contour is quite similar to the pattern found at the end of the utterance. The phonetic difference between information-seeking on one hand and echo and counterexpectational yes-no questions on the other lies in the duration and pitch height of the boundary tones, which have higher values in echo questions. This is, for instance, the case of the sentence *¿Tienes frío?* ‘You’re cold!’ shown in figure 10.

Figures 8 and 10 illustrate two types of interrogative sentences as uttered by the same speaker (an information-seeking question and a counterexpectational echo question) that use the same nuclear configuration L* LH%. Crucially, the utterance-final posttonic syllable rises to 590 Hz in the information-seeking question (figure 8) but to 674 Hz (84 Hz more) in the echo question (figure 10). There is also a significant difference in duration. The duration of the utterance-final vowel [o] in the echo question (figure 10) is 298 ms., while the duration of the final vowel [a] in the information-seeking question (figure 8) is just 216 ms. This is particularly relevant since [a] is considered to have a longer intrinsic duration than [o].

### 3.2.2.2. Imperative yes-no questions

Yes-no questions can also be used to express commands. Again, among other possible realizations, the imperative yes-no question contour can be realized as a L* LH% nuclear pitch configuration, that is, a low pitch accent followed by a final LH% rise. Crucially, figure 11 shows that the highest peak in the imperative yes-no question *¿Se pueden callar?* ‘Would you please be quiet?’ is associated with the prenuclear L+>H* pitch accent. The F0 reaches 561 Hz in the syllable -den but just 496 Hz (65 Hz less) at the end of the utterance.

Polite invitation or request yes-no questions are used to offer something to the listener and are expressed by means of a different intonation contour (see Escandell-Vidal 1999, 2002, and Thorson et al. 2009 for Castilian Spanish). Figure 12 shows the waveform, spectrogram and F0 contour of the invitation yes-no question *¿Quieren caramelos?* ‘Do you want some sweets?’ produced with a L* HH% nuclear configuration, which consists of a low tone during the stressed syllable followed by a high rise in the posttonic.³

Although in Mexican Spanish both invitation and information-seeking yes-no questions end in a high rise, the starting point of this rise seems to be important for distinguishing between the two meanings. While an early rise in L* HH% seems to indicate the invitation meaning, a late rise L* LH% is used for information-seeking questions. Interestingly, a similar kind of contrast has been found in Castilian Spanish (see Escandell-Vidal 1996, 1999, Thorson et al. 2009, Estebas-Vilaplana and Prieto this volume). In this variety, invitation yes-no questions show a L+H* HH% contour, with an early rise which starts at the beginning of the stressed syllable, while the ‘later’ alignment is found in information-seeking yes-no questions, with a L* HH% configuration.

³ Regarding the potential contrastive differences found in Castilian Spanish between H%, showing a weak rise, and HH%, with a higher pitch excursion, see Estebas-Vilaplana and Prieto (2008).
Figure 9: Waveform, spectrogram and F0 trace for the echo yes-no question ¿Las nueve? ‘[At] nine?’ produced with a L* LH% nuclear configuration.

Figure 10: Waveform, spectrogram and F0 trace for the counterexpectational echo question ¿Tienes frío?! ‘You’re cold?!’ produced with a L* LH% nuclear configuration.
Figure 11: Waveform, spectrogram and F0 trace for the imperative yes-no question ¿Se pueden callar? ‘Would you please be quiet?’ produced with a L* LH% nuclear configuration.

Figure 12: Waveform, spectrogram and F0 trace for the invitation yes-no question ¿Quieren caramelos? ‘Do you want some sweets?’ produced with a L* HH% nuclear configuration.
Figure 13 shows a schematic F0 representation of the types of nuclear configurations found in invitation yes-no questions and information-seeking yes-no questions, in both Castilian (Estebas-Vilaplana and Prieto this volume) and Mexican Spanish. The diagram shows that the same configuration, in this case $L^* HH\%$, can be attested in both varieties but may be used for different meanings. Further perceptual experiments should be able to elucidate whether there is a categorical phonological contrast between these two types of contours.

$$L+H^* HH\%$$  
$$L^* HH\%$$  
$$L^* LH\%$$

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<thead>
<tr>
<th>Mexican Spanish</th>
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<td>information-seeking yes-no questions</td>
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<td>information-seeking yes-no questions</td>
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**Figure 13:** Schematic F0 representation of the types of nuclear configurations found in invitation yes-no questions and information-seeking yes-no questions in Castilian and Mexican Spanish.

### 3.2.2.3. Confirmation yes-no questions

In our corpus, confirmation-seeking sentences are elicited with a situation that prompts the speaker to ask for a confirmation of something that he or she already knows. In this specific case, the speaker is trying to confirm whether the listener really is going to have dinner with her, by asking ¿Entonces sí vienes a cenar? ‘So you are coming to dinner, then?’ As can be seen in figure 14, the pitch rises at the edge, though it does not reach as high in the speaker’s range as it can in some other types of questions. For this reason the nuclear configuration chosen is $L^* H\%$. The sentences in figures 8, 10 and 14, uttered by the same speaker, can be compared to illustrate this phenomenon. The final boundary tone reaches a very high value in the counterexpectational echo yes-no question (674 Hz, figure 10), only a moderately high value in the information-seeking question (590 Hz, figure 8) and a still lower value in the confirmation yes-no question (473 Hz, figure 14).
3.2.3. Wh- questions

As has been noted in previous studies, there is great variability in wh- questions in Spanish varieties, including Mexican Spanish, since rising, falling and rising-falling patterns have all been found (Quilis 1993, Sosa 1999, Ávila 2003, Orozco 2008, 2010). In this study, the most common F0 contour found in wh- questions was produced with a circumflex contour L+H* HL% (fig. 15). This nuclear pitch configuration consists of a F0 rise associated with the last stressed syllable which continues during the onset of the following syllable. After the peak, the pitch falls to a low that is realized a bit higher than the initial low and which probably indicates politeness. A similar pitch contour can be found in Chilean Spanish (Ortiz et al. this volume).

Other circumflex configurations have also been attested in biased wh- questions. Exclamative and imperative wh- questions are similar, since the nuclear configuration L+H* L% can be used.

3.2.4. Biased wh- questions

3.2.4.1. Echo wh- questions

The echo wh- question ¿Que adónde voy? ‘You’re asking me where I’m going?’ in figure 16 acts as a kind of comprehension or perception check for an utterance which precedes it in the discourse. It shows a L*+H prenuclear accent followed by the unmarked L* LH% nuclear configuration. The last accented syllable starts low and then the pitch rises to a very high target edge.

Counterexpectational wh- questions such as that in figure 17 are similar to other emphatic constructions like narrow focus statements, where the L+H* L% configuration is also used. The rising pitch accent L+H*, which can be realized with different degrees of emphasis, is associated with the final stressed syllable, and the boundary tone is low.

3.2.4.2. Imperative wh- questions

When the speaker produces an interrogative but is trying to induce an action on the part of the listener as a result, the utterance can be considered a sort of command. This is the case of the sentence Oye, ¿y cuándo me vas a colgar los cuadros? ‘Listen, so when are you going to hang up the paintings?’ in figure 18. The nuclear configuration is phonetically realized as a rising pitch movement with a peak in the accented syllable followed by a fall to a low boundary tone in the posttonic.

Figure 19 shows the waveform, spectrogram and F0 pitch track of the invitation wh-question Pero, ¿por qué no van a venir? ‘Why aren’t you going to come?’ produced by the same speaker with a L+íH* M% nuclear configuration in an exhortative context (trying to cajole some friends). Presumably, the final M% tone in this configuration indicates the invitation function. In some invitation realizations, the end of the utterance can be lowered further in the speakers’ range, with a drop in the local pitch register and even a creaky voice to mark the plea.
Figure 14: Waveform, spectrogram and F0 trace for the confirmation yes-no question ¿Entonces sí vienes a cenar? ‘So you are coming to dinner, then?’ produced with a $L^* H%$ nuclear configuration.

Figure 15: Waveform, spectrogram and F0 trace for the information-seeking wh- question ¿Y tú de qué pueblo vienes? ‘And you, whereabouts are you from?’ produced with a $L+H^* HL%$ nuclear configuration.
**Figure 16:** Waveform, spectrogram and F0 trace for the echo wh-question ¿Qué adónde voy? "You’re asking me where I’m going?" produced with a L* LH% nuclear configuration.

**Figure 17:** Waveform, spectrogram and F0 trace for the counterexpectational wh-question ¡Oh! ¿Y a qué hora llegaste? "So what time did you arrive?" produced with a L+H* L% nuclear configuration.
Figure 18: Waveform, spectrogram and F0 trace for the imperative wh-question Oye, ¿y cuándo me vas a colgar los cuadros? ‘Listen, so when are you going to hang up the paintings?’ produced with a $L+H^*$ $L\%$ nuclear configuration.

Figure 19: Waveform, spectrogram and F0 trace for the invitation wh-question Pero, ¿por qué no van a venir? ‘Why aren’t you going to come?’ produced with a $L+iH^*$ $M\%$ nuclear configuration.
3.3. Imperatives: commands and requests

Although imperative utterances are understood as directive speech acts in which the speaker seeks to induce the listener to do something, speakers can use different degrees of strength to express their objective, with utterances ranging from strong commands to gentle requests where the speaker uses a soft cajoling intonation. In Mexican Spanish, both commands and requests are produced with circumflex patterns, but they employ different types of boundary tones (see also Orozco 2008, 2010). While in commands the falling movement triggered by the low boundary tone starts during the accented syllable, requests are produced using a bitonal HL% boundary tone, where the high tone is still associated with the posttonic syllable.

3.3.1. Commands

As in other Spanish dialects (see Ortiz et al. this volume for Chilean Spanish, for example), the nuclear configuration used to express commands is L+H* L% (sometimes produced with an emphatic upstepped accent). This is exemplified in figure 20 with the utterance ¡Ven aquí ahorita mismo! ‘Come here right now!’. Similar pitch contours are found in Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Chilean Spanish (Ortiz et al. this volume) and Venezuelan Andean Spanish (Astruc et al. this volume).

3.3.2. Requests

Requests communicate a softer illocutionary strength than commands and are commonly produced with a L+H* HL% tonal configuration. This is illustrated in figure 21 with the insistent request ¡Ay, ya! Vamos al cine, [no seas payaso] ‘Come on, [don’t be an idiot,] let’s go to the cinema!’ The circumflex movement can appear at the end of both the intermediate (L+H* HL-) and intonational phrase boundaries (L+H* HL%). In this pitch configuration, the high tone at the end of the stressed syllable ci- is kept high during the onset of the posttonic syllable -ne and then the pitch falls till the end of the intermediate phrase. This pattern is similar to the pitch contours found in Argentinian Spanish (Gabriel et al. this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume) and Chilean Spanish (Ortiz et al. this volume).

3.4. Vocatives

As is well known, vocatives are used to call to someone, commonly out of sight, by trying to catch his or her attention. The ‘spoken chant’ or ‘stylised vocative chant’ typically consists of a high tone associated with the stressed syllable followed by a mid tone associated with the posttonic syllables. This final sustained mid tone is widely used in vocatives in languages like English (Ladd 1978), Dutch (Gussenhoven 1993), French (Fagyal 1997), Portuguese (Frota in press) and Catalan (Prieto in press), and it is also found in Mexican Spanish. However, as expected, within this utterance type different contours can be used to convey subtle differences in meaning. The following three cases are instances of the same utterance, namely the proper name Marjina, used as a vocative. This vocative is produced with a L+H* or a L* pitch accent and followed by one of two types of boundary tones, namely M% or HL%, depending on the intended meaning. The last syllable is clearly lengthened. These contours are described below.
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Figure 20: Waveform, spectrogram and F0 trace for the command ¡Ven aquí ahorita mismo! ‘Come here right now!’ produced with a L+iH* L% nuclear configuration.

Figure 21: Waveform, spectrogram and F0 trace for the request ¡Ay, ya! Vamos al cine, no seas payaso ‘Come on, don’t be an idiot, let’s go to the cinema!’ produced with a L+H* HL- nuclear configuration.
When demanding attention gently and softly to someone who is not necessarily out of sight or far away it is common to use a contour which is usually called ‘vocative chant’. This tentative call is used when entering a house and calling. In this case, after a rise, the peak is located right at the onset of the postonic syllable, which is followed by a pitch level that is sustained until the end of the utterance. This is exemplified in figure 22 with the vocative ¡Marina!

The nuclear configuration L+H* M% has also been attested for vocatives in other Spanish varieties like Argentinian Spanish (Gabriel et al. this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Chilean Spanish (Ortiz et al. this volume), Ecuadorian Andean Spanish (O’Rourke this volume), Puerto Rican Spanish (Armstrong this volume) and Venezuelan Andean Spanish (Astruc et al. this volume).

Vocatives are also used when trying to get the attention of someone who will probably have difficulty hearing us because of distance or who has not answered a first call. In Mexican Spanish, the nuclear rising pitch accent of these sorts of insistent calling vocatives starts with the accented syllable, rises fast, ends in a high plateau which spreads across the posttonic lengthened syllable and finally sinks downward at the very end to a low level. This L+H* HL% contour is exemplified in figure 23.

The pattern L+H* HL% found in Mexican Spanish is similar to the one attested in Argentinian Spanish (Gabriel et al. this volume), Canarian Sapnish (Cabrera Abreu and Vizcaíno Ortega this volume), Castilian Spanish (Estebas-Vilaplana and Prieto this volume), Cantabrian Spanish (López-Bobo and Cuevas-Alonso this volume), Dominican Spanish (Willis this volume), Puerto Rican Spanish (Armstrong this volume) and Venezuelan Andean Spanish (Astruc et al. this volume).

Vocatives can also be used as insistent requests or recriminations, with a nuance of admonition, in situations where a soft call would be inappropriate. Such recriminating vocatives in Mexican Spanish are related to a L* HL% tonal configuration. The pitch rises gradually to a high level which is achieved late, during the last vowel. Then there is a final fall to the speaker’s minimum range. Figure 24 shows this contour in the sequence ¡Marina!

Finally, request vocatives can also be produced with a L+H* L% nuclear configuration with other associated meanings, such as admonition. Although the nuclear pitch accent is the same as in other vocative types, the low, long, flat ending might conceivably be responsible for the admonitory content. This utterance type is shown in figure 25.

It would be of interest to undertake perceptual tests in order to demonstrate that the abovementioned changes in the nuclear and boundary tone regions of the nuclear configuration lead to such meaning contrasts in vocatives.
Figure 22: Waveform, spectrogram and F0 trace for the tentative call ¡Marina! produced with a L+H* M% nuclear configuration.

Figure 23: Waveform, spectrogram and F0 trace for the insistent calling vocative ¡Marina! produced with a L+H* HL% nuclear configuration.
Figure 24: Waveform, spectrogram and F0 trace for the recriminatory vocative ¡Marina! produced with a L* HL% nuclear configuration.

Figure 25: Waveform, spectrogram and F0 trace for the admonitory vocative ¡Marina! produced with a L+H* L% nuclear configuration.
4. Conclusions

This chapter has presented a set of intonation contours that commonly occur in the variety of Mexican Spanish spoken in México DF. The description of the attested configurations represents a further contribution to the analysis of the intonation of this variety using semi-spontaneous elicited speech. Our analysis has shown that the intonational contrasts found in Mexican Spanish can be adequately described using the standard Sp_ToBI labelling conventions. Providing a unified account of Mexican Spanish intonation within the Sp_ToBI framework is useful because it captures the relevant empirically observed patterns attested so far and allows for further comparison between Mexican Spanish intonation contours and the intonation contours produced in other Spanish varieties. The main findings can be summarized as follows.

Though circumflex configurations exist in other varieties of Spanish, as is the case of the very common L+H* L% contour, they have a wider pragmatic scope in this variety. In Mexican Spanish, ‘circumflex’ nuclear configurations are also used in broad focus statements and wh-questions, namely L+H* L%, L+H* HL%, L+H* M% and L+H* LM%. We understand that there is ‘the prototypical circumflex configuration’ that is realized through a series of tonal configurations which are related to several factors and which differ progressively from the prototype. Broad focus sentences, however, can also be produced with a L* L% contour, the common tonal pattern across dialects.

Information-seeking yes-no questions in this variety are produced as L* LH%, with a long and very high final rise, and invitation yes-no questions as L* HH%. A similar alignment contrast has been described for Castilian Spanish, namely L* HH% versus L+H* HH% (see Escandell-Vidal 1996, 1999, Thorson et al. 2009, and Estebas-Vilaplana and Prieto this volume). This is a clear case of a specific dialect marking the contrast between utterance types through differences in alignment. Moreover, the same kind of contour can be implemented with different duration and pitch range to convey different meanings. This is the case with information-seeking, counterexpectational echo and confirmation yes-no questions, which are all produced with a L* LH% configuration. However, the final high target in counterexpectational echo yes-no questions is higher than in information-seeking yes-no questions, which in turn end higher than confirmation yes-no questions.

The contrast between a command and a request is expressed in Mexican Spanish through a different nuclear pitch configuration, namely L+H* L% for the expression of a command and L+H* HL% for the expression of a request, together with durational cues. In addition, a potential contrast was found in the nuclear pitch accent and height of boundary tones in vocatives, which might be linked to different meanings. It would be useful to undertake perceptual experiments to test the effects of tonal alignment and tonal scaling on the expression of different discourse meanings as well as to analyse in depth the variety of contrastive pitch configurations present in the dialect, and their respective pragmatic meanings.

Finally, a summary of all the main nuclear pitch configurations with their corresponding sentence types found is presented in table 3. These results provide ample reconfirmation that nuclear pitch contours can be used to convey a variety of meanings.
Table 3: Inventory of nuclear pitch configurations in Mexican Spanish and their schematic representations

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Appendix

Example of guided questionnaire
Version adapted for Ecuadorian Andean Spanish

1. DECLARATIVAS

1.1. Neutra

Oraciones de una unidad tonal

1. Mira el dibujo y di lo que hace la niña.

2. Mira el dibujo y di lo que hace la mujer.

3. Ana te está contando que ayer se bebió una limonada. En este momento llega otro amigo y te pregunta qué dice Ana.

Oraciones de más de una unidad tonal

4. Mira el dibujo y di qué hace María.

5. Mira el dibujo y di lo que ves.

6. Mira el dibujo y di qué hace la señora morena.

**Enumeraciones**

7. Di los días de la semana.

8. Di lo que has comido para almorzar

**Elementos periféricos (dislocaciones, vocativos, elementos parentéticos, aposiciones)**

9. Imaginate que acabas de conocer a alguien de Otavalo y resulta que tú habías vivido allí muchos años. ¿Cómo se lo dirías?

10. Estás en casa con tu hija, María, que está mirando la tele. Dile que sales un momento a merendar.

11. Estás enfermo y esta mañana tuviste que ir al médico. Di que has ido a pesar de la lluvia.

12. Conoces a dos chicas que se llaman Marina, una rubia y otra morena. Di que hoy has visto a la morena.

**1.2. No neutra**

**Focalización contrastiva**

13. Vas al mercado a comprar frutas y la frutería es un poco sorda. No te oyó bien, y, después de decirle que querías un quilo de limones, ella te pregunta si son mandarinas, lo que quieres. Dile que no, que lo que quieres son limones.

**Énfasis**

14. Entras en una panadería y notas un olor a pan muy bueno. Díselo a la panadera.
Declarativa categórica

15. Una amiga y tú están hablando de unos amigos que se van de viaje. Tú sabes segura que irán a Lima pero tu amiga piensa, también bastante segura, que irán a Buenos Aires. Dile, seguro, que no, que irán a Lima.

Declarativa dubitativa

16. Te encargaron comprar un regalo para alguien que no conoces mucho y te preocupa no hacer una buena compra. Dile a la persona que te hizo el encargo que quizás no le guste el regalo que compraste.

Declarativa de obviedad

17. 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?

Declarativa exclamativa

18. Te invitan a comer sopa es la mejor que has comido en tu vida, estás encantado. ¿Qué dices?

19. Es la vez en tu vida que has tenido más frío. ¿Qué dices?

2. INTERROGATIVAS ABSOLUTAS

2.1. Neutra

Oraciones de una unidad

20. Entras en una tienda y le preguntas a un empleado si tiene mermelada.

21. Estás en la calle y pides la hora.

22. Pide permiso para entrar en la sala donde te espera el médico.
Oraciones de más de una unidad

23. Llamas por teléfono a casa de una amiga que se llama María pero no está. Más tarde llamas de nuevo pero ella no contesta el teléfono. ¿Cómo preguntas si ya ha llegado?

24. Organízate una comida y has decidido cambiar la fecha para que todos los invitados puedan ir. Pregunta si van a poder venir si la comida es el primer domingo de mayo.

La disyunción

25. Para postre tienes melón y helado. Pregunta a los invitados si quieren melón o helado.

26. Tu hijo quiere visitar a su tío y tú quieres acompañarlo. Pregúntale si va a ir hoy o mañana.

Enumeraciones

27. Vas a comprar limones para tu madre pero no sabes cuántos quiere. Pregunta si son tres, cuatro, cinco o seis.

Elementos periféricos

28. Estás buscando a María pero no la encuentras. Vés a alguien que la conoce y después de hablar un poco sobre ella le preguntas si la ha visto.

2.2 No neutra

Focalización y énfasis

29. Estás hablando de María con alguien y oyes que entra una persona. Pregunta si es María la persona que está entrando.

Preguntas exclamativas

30. El electricista tenía que venir a las 10 pero has tenido que ir a comprar y tu hija se ha quedado esperándolo. Al llegar de la compra, el electricista aún no ha venido. Sorprendida preguntas si aún no ha llegado.

Preguntas confirmatorias

32. Juan ha dicho que iba a venir a merendar pero quieres confirmarlo. ¿Qué le dices a Juan? (Busca confirmación)

33. Antes de ir a trabajar tu hermano dijo que no se sentía muy bien. Al volver, lo encuentras en la cama temblando de frío. Ves que no se encuentra bien, pero se lo preguntas sabiendo cuál va a ser la respuesta. (Cercano a la negación, *eh o verdad* en posición final)

34. Tienes muchas ganas de que alguien venga a una cena que organizaste. Se lo pides de manera que no pueda decir que no. (Cercano a la afirmación, *eh o verdad* en posición inicial)

35. Sabes que afuera hace mucho frío. Entra alguien bien abrigado y le preguntas si tiene frío. (Carácter hipotético, margen para responder sí o no)

Preguntas imperativas

36. Tus nietos hacen mucho ruido y no te dejan oír las noticias (en la televisión/radio). Les pides que se callen. (Ruego-orden)

37. No te hacen caso y esta vez lo pides más enfadada. (Orden)

38. Le preguntas a un amigo si quiere venir a tomar una limonada contigo. (Invitación)

39. Pide a tus sobrinos si quieren caramelos. (Invitación)

40. Organizas una fiesta en tu casa y tienes muchas ganas que un compañero tuyo vaya. Pídeles si quiere venir. (Intención exhortativa: me gustaría mucho que vinieras...)

41. Necesitas subir tres pisos porque te has dejado el bolso arriba. Vas con un niño pequeño y para ganar tiempo lo dejas abajo. Dile que no se mueva. (Ruego-orden, con partícula *eh*)

42. Necesitas tranquilidad pero estás en medio de mucho ruido y bulla. Pide si alguna vez habrás tranquilidad en este hogar.
3. INTERROGATIVAS PARCIALES

3.1. Neutra

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43. Pide qué hora es.

44. Pide la hora a una persona mayor.

45. Has subido a un sitio de interés histórico a pie (por ejemplo, El Panecillo). Cuando llegas arriba te encuentras con un compañero y le pides cuando ha llegado.

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46. Ves que María se está yendo. Pregúntale dónde y cuándo va a volver. (Coordinación)

47. La vecina te cuenta que vino un señor a revisar la instalación del gas y que no le dejó entrar porque no tenía suficiente dinero en casa para pagarle. El le dijo que volvería mañana. Pregúntale qué le va a decir si vuelve. (Subordinación)

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48. Encuentras un paquete en tu casa y le preguntas a tu hijo, Mario, quién ha traído esto. (Posición final, vocativo)

3.2. No neutra

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49. Tu primo te cuenta que el avión que venía de Guayaquil llegó con cuatro horas de retraso. Pregúntale, sorprendido, a qué hora terminó llegando.

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50. A las dos de la mañana llaman a la puerta. Estás dormido y te despiertan. Pregúntate quién será a estas horas.
### Preguntas imperativas

51. Le pides a tu hijo que te haga unos arreglos en la casa y no estás seguro de que lo vaya a hacer, ya que no es la primera vez que se lo pides. Pregúntale, medio enojado, cuándo lo va a hacer. (Orden)

52. Tienes ganas de que unos amigos vengan a comer a tu casa. Medio suplicando (porque ya te han dicho que no pueden venir) les preguntas por qué no vienen. (Invitación, ruego)

53. Alguien te tira de la camisa un par de veces, pero cuando te das vuelta no ves a nadie. Finalmente, a la tercera vez, ves que es un conocido tuyo muy pesado y hablador que siempre que te ve no te deja ir. Dile qué quiere. (Queja leve o protesta)

### Preguntas retóricas

54. Le habías dicho a la gente que trabaja contigo que hicieran una cosa, pero cuando llegas descubres que no la hicieron porque te estaban esperando. Pregúntales qué harían sin ti.

### 4. INTERROGATIVAS REITERATIVAS

#### 4.1. Neutra

### Preguntas reiterativas absolutas

55. Has invitado a un amigo al cine y te ha dicho que no puede venir. Te parece que no lo has entendido bien. Se lo pidas para aclararlo.

56. Te dicen la hora, pero no oíste bien. Piensas que te han dicho que son las nueve. Vuelve preguntar.

### Preguntas reiterativas parciales

57. Te han preguntado dónde vas, pero no estás seguro si entendiste bien la pregunta. Averigua si es eso lo que te habían preguntado.

### Oraciones de más de una unidad tonal

58. Te preguntaron dónde vas y cuándo vas a volver. Pero no sabes si entendiste bien. Pregunta si es esto lo que te dijeron.
La disyunción

59. Te han pedido por dónde has llegado pero tú no sabes si te han pedido esto o si te han pedido por dónde has entrado. Averigua si te preguntaron una cosa o la otra.

Elementos periféricos

60. Te comentan que una compañera tuya, Marina, quiere ir al baile y tú sabes que no le gusta ir al baile. No te lo crees y preguntas si es efectivamente Marina la que quiere ir.

4.2 No neutra

Focalización y énfasis

61. Te dicen que un compañero tuyo, Mario, se presenta para alcalde. No lo crees y lo vuelves a preguntar.

Preguntas reiterativas exclamativas

62. Tu vecina te cuenta que fue a un restaurante turístico a comer y pidió carne de llama. No lo puedes creer. Pregunta qué le dieron (muy sorprendida)

5. ORACIONES IMPERATIVAS

5.1. Órdenes

63. Imagina que trabajas en la recepción de un hotel y entra una pareja que quiere una habitación. Diles que llenen un formulario.

64. Ves que están un poco distraídos y no lo completan. Díselo otra vez (con más insistencia).

65. Estás en el parque con tu nieta, María, y se te escapa. Dile que venga, que no se aleje tanto de ti.

66. Salen del parque y se vuelven a escapar. Dile que venga (con más insistencia).

67. Ahora están en la calle donde pasan carros y se vuelven a escapar. Tú estás muy nerviosa y le dices, enfadada, que venga y que no se separe de ti (con mucha más insistencia).

68. Estás paseando al perro, Bobi, y se te escapa. Llamalo.
5.2. Ruegos

69. Quieres ir al cenar con un amigo. Te dice que tiene trabajo pero tú sabes que el trabajo lo puede dejar. ¿Cómo lo harías para convencerlo?

70. Parece que quiere ir pero te dice que no. Insiste a ver si lo puedes convencer.

6. VOCATIVOS

71. Entras en la casa de una amiga tuya, Marina, pero al entrar no la ves. Llámala.
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