When Theory and Reality Collide: Exploring Chilean Spanish Intonational Plateaus

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Dedication

Para

Carmen, Nicolás y Ayelén

Ka antv, tañi fotvm ñi fotvm pvrapayan
-Kallfvkura

Abstract

The current theoretical framework used to describe Spanish intonation, or the Autosegmental Metrical theory (AM), asserts that in any given utterance stressed words have their own individual high or low tones, each independent of the last (Pierrehumbert 1980). When mapped in Spanish, this intonation exhibits a rhythmic "rising and falling" pattern. Recently, Rogers (2013) documented an intonation pattern in Chilean Spanish not previously seen in any other variety of Spanish that cannot be adequately explained by AM. This pattern is described as a "plateau" that consists of two portions: a low-tonal portion, or "valley" and a high-tonal portion, or "plateau". In both portions all the content is realized at the same relative tonal level. In other words, every word spoken in the low-tonal portion is maintained at the same low tonal level with little to no variation among traditionally stressed words, and words spoken in the high-tonal, "plateau" portion are maintained at the same high tonal level with little to no variation among traditionally stressed words. Likewise, each portion can extend or contract to include a wide variety of content. That all the respective words in these plateau patterns belong to the same singular low- or high-tonal levels stands in contrast to the rhythmic, "rising and falling" pattern that is widely acknowledged in applications of AM to Spanish intonation.

In addition to its contrast with AM more broadly, these plateau patterns present two further, more nuanced challenges to the current understanding of Spanish intonation. First, one of the cognitive/linguistic roles that intonation contributes to in human language is the parsing of an utterance into smaller "chunks", or portions, of information (D'Imperio et al. 2005, Ladd 2008 among others). This division of information is regulated by specific rules (Gussenhoven 2004, Ladd 2008). These rules

have been used to construct what is known as the Prosodic Hierarchy wherein an utterance can be divided into smaller phrases and parts. Each level of the Hierarchy governs all the levels below it and is simultaneously governed by those levels above it (Gussenhoven 2004). Of particular interest to the current dissertation are the levels of Intonational Phrases (IPs) and Phonlogical Phrases (PPhs). Studies on Spanish intonation have suggested that the absolute limit for content words in a PPh is four, with the ideal number frequently being two (e.g. Prieto 2006, Rao 2007). These limits are thought to be determined by cognitive processes and the intended meaning that a speaker attaches to a given utterance (Christophe et. al 2004). Chilean Spanish intonational plateaus frequently push and exceed these previously established thresholds.

Second, the different subsyestems that make up language do not work in isolation; rather, they frequently work collectively to create unique meanings. One of these subsystems that often works with intonation is syntax (e.g. Price, et al. 1991, Frazier et al. 2004). The data show that the Chilean Spanish plateau patterns create nuanced challenges for analyzing the intonation-syntax interaction. Specifically, because of the sheer amount of information that speakers can include in both the low and high portions of these patterns, for speakers of Chilean Spanish the intonation-syntax interaction potentially plays a different organizational role in conveying meaning than in other varieties of Spanish.

The current dissertation examines these theoretical problems using natural speech data from 40 speakers hailing from 3 different regions of Chile: Santiago, Concepción, and Temuco. Through analyses of the prosodic and syntactic behaviors of the plateau patterns, it is demonstrated that the theoretical frameworks AM and the Prosodic

Hierarchy cannnot adequately account for all of the data. As a result, significant modifications are proposed to allow the current AM and Prosodic Hierarchy frameworks account for all the Chilean Spanish intonational plateau data. Specifically, it is proposed that to satisfactorily account for all of the data, any theoretical approach must first seek to describe the patterns from a more speaker-centered pragmatic angle while acknowledging that tonal events can be extended to contain a varying amount of traditionally stressed and unstressed content. While such an approach does not discard the phonological origins of the patterns, it asserts that pragmatics and the communicative intentions of speakers are the principal motivators for the realization of the Chilean Spanish intonational plateau patterns, with phonological factors assuming a secondary role.

Finally, barring an *ex nihilo* explanation, the lack of intonational plateau patterns in any other dialect of Spanish is suggestive of an outside origin for the Chilean Spanish plateaus. One possible explanation is that these patterns came into Chilean Spanish via contact with another language. Studies have shown how intonation in other Spanish dialects has been influenced by contact with other languages (O'Rourke 2005, Colantoni 2011 among others). These scholars further suggest that intonation is one of the aspects of language most easily influenced by contact with other languages. Chilean Spanish has made contact with several Amerindian languages for decades, the principal of which has been Mapudungun, the language of the Mapuche people. The present dissertation analyzes Mapudungun interviews conducted by Smeets (2008) and documents similar intonational plateau patterns in Mapudungun intonation. The data demonstrate that Mapudungun intonational plateaus and Chilean Spanish intonational plateaus behave very similarly at different prosodic, syntactic, and pragmatic levels. Thus, it is also

proposed that contact with Mapudungun is the best possible source for the emergence of these unique intonational patterns in Chilean Spanish.

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Chapter 1
Introduction

1.1 Introduction

During the last 15 years, studies on Spanish intonational phonology have seen a surge in popularity. Consequently, much has been learned about the phonological and phonetic properties of the intonation of various Spanish varieties. However, despite the many advances that have been made, certain varieties have garnered more attention than others, and as a result, while much is known about the intonation of certain dialects, there is simultaneously a dearth of information with respect to lesser-studied varieties. One of these varieties is Chilean Spanish.

Linguistic studies on Chilean Spanish date back as far as the late 19th century. However, when compared to other more well-known varieties of Spanish, Chilean Spanish as a whole is relatively understudied. Despite this comparative lack of knowledge of Chilean Spanish, existing studies show a high level of variability that distinguishes it from other dialects.

Chilean intonational phonology has been examined to an even lesser degree than its segmental phonology. Most existing studies have reported that Chilean intonation, while showing slight differences, generally reflects the prosodic traits reported for other dialects of Spanish. Likewise, the majority of these studies have examined more controlled, laboratory-produced, speech samples. With respect to lab speech and intonation, Face (2003) states "[l]ab speech is essential to understanding intonation. There are so many intertwining factors in spontaneous speech that can affect the intonation of an utterance…[b]y creating carefully constructed experiments…the

researcher can control the many variables and determine how each affects the intonation pattern" (p.116). However, while the understanding of what laboratory studies provide is valuable, because of all of the different "intertwining" factors that make up more natural, spontaneous speech, the generalizability of intonational lab data is limited and cannot be assumed to yield definite and systematic representations of how intonation consistently manifests itself in everyday, natural speech.

A recent study on Chilean intonation, Rogers (2013), used data from three different speech types, including spontaneous speech, and demonstrates the existence of an intonational phenomenon in Chilean Spanish previously unreported in any of the existing literature on the intonational properties of other dialects of Spanish. He refers to this pattern as intonational valleys and plateaus, or a "hat" pattern. Figure 1.1 illustrates a typical example of a Chilean intonational plateau.

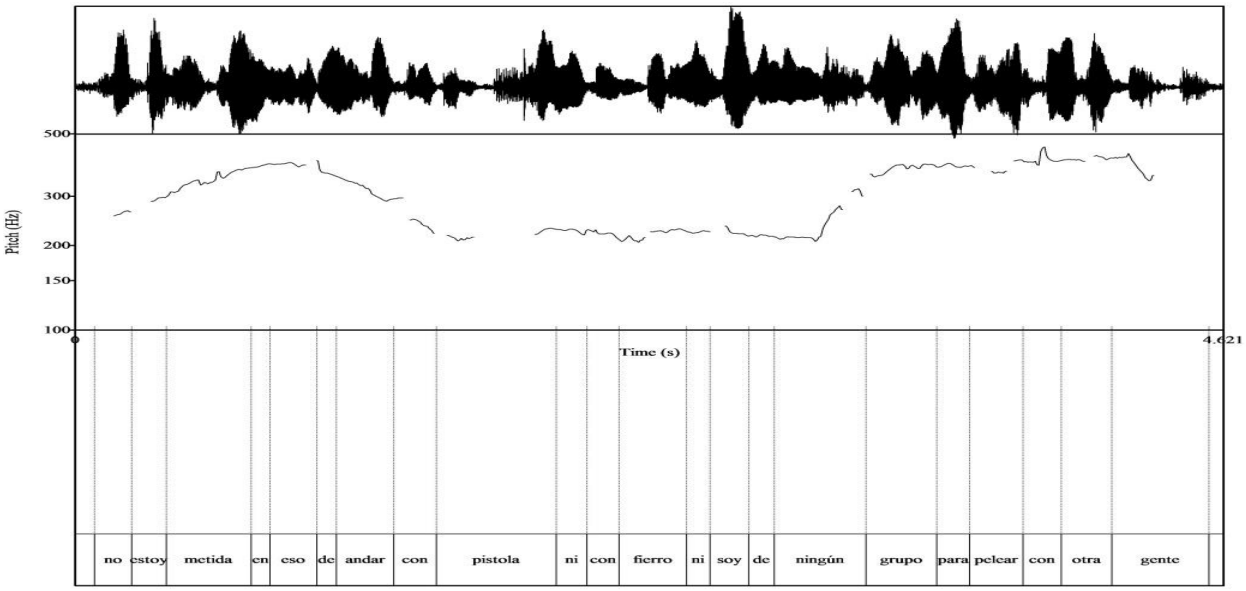

Figure 1.1: Example of a Chilean intonational valley and plateau taken from a female speaker from Concepción. (*I'm not into that whole thing of walking around with a pistol or a gun, nor do I belong to any group that goes around picking fights*) (From Rogers 2013, p. 183).

The example in Figure 1.1 shows both an extended intonational valley and a rise into a sustained intonational plateau. Both the valleys and plateaus can extend over a varying amount of content. Rogers (2013) shows that each portion can extend or shorten to include from a few syllables to several words. Additionally, these patterns, while being documented in all three speech styles of the study, were more common in more spontaneous, less controlled speech, thus highlighting the need to analyze more natural speech to fully understand the prosody of a given speech community. Likewise, Rogers illustrates how these patterns and their prosodic behavior are problematic for current intonational phonological theory.

The goal of the current dissertation is to provide a more detailed understanding of Chilean intonational valleys and plateaus. In order to do so, the phonological properties, behaviors, and components of both the valleys and the plateaus from within various theoretical frameworks of intonational phonology are investigated, as well as the potential theoretical challenges that they present. Also, due to the lack of intonational plateaus in all other literature on Spanish intonation, the possible origins of the Chilean Spanish plateau are investigated.

1.2 Theoretical challenges

The current dissertation examines various prosodic properties of Chilean intonational valleys and plateaus using only spontaneous speech. This is because spontaneous speech is not artificially controlled and therefore is considered to be more representative of common, everyday speech. As previously discussed, Rogers (2013)

demonstrates that these intonational patterns present theoretical challenges for the intonational phonological framework currently used to analyze and describe Spanish intonation (and intonation in general).

The first challenge that the Chilean valleys and plateaus present is how intonational events are defined within the current Autosegmental Metrical (AM from here on) theory (Pierrehumbert 1980). The basic premise of the AM theory is that there are tones that independently associate with strong points on a metrical tier. Figure 1.2, adapted from Face (2002), demonstrates how AM describes the manifestation of tonal events on the intonational contour. The bottom tier, consisting of syllables represented with lowercase "s", is the metrical tier. Stressed syllables are represented as capital "S". The curved line represents the intonational contour with the tonal tier situated at the top. The tonal tier consists of phonological units, or tonal events, called pitch accents, represented in Figure 1.2 as "T". While both pitch accents and stressed syllables are considered phonologically independent units, they associate with one another along a given intonational contour. The intervening phonetic material between tonal events is considered to be phonologically unspecified. In other words, the material between tonal events is understood to exist solely at the phonetic level as interpolation between phonological events. Thus, an intonational contour is a chain of independent tonal events, connected by interpolated phonetic material. According to AM, no pitch accent, or tonal event, extends to multiple metrical points. The problem that Chilean intonational valleys and plateaus create for the notion of independent association of pitch accents to metrically strong units is that both valleys and plateaus show the tendency to often extend over the span of many words. This behavior of both portions casts doubt on the notion

that valleys and plateaus are chains of independent tonal events connected by interpolated phonetic material. In fact, they appear to act as single, extended tonal events, a notion which AM currently has no protocol for dealing with. Figure 1.3 is another example of a tonal valley and plateau from Rogers (2013).

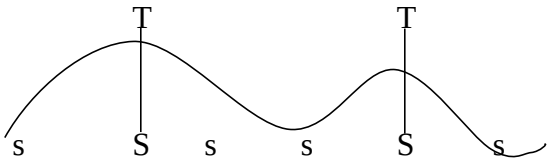

Figure 1.2: AM representation of tonal events associating independently to stressed syllables (adapted from Face 2002).

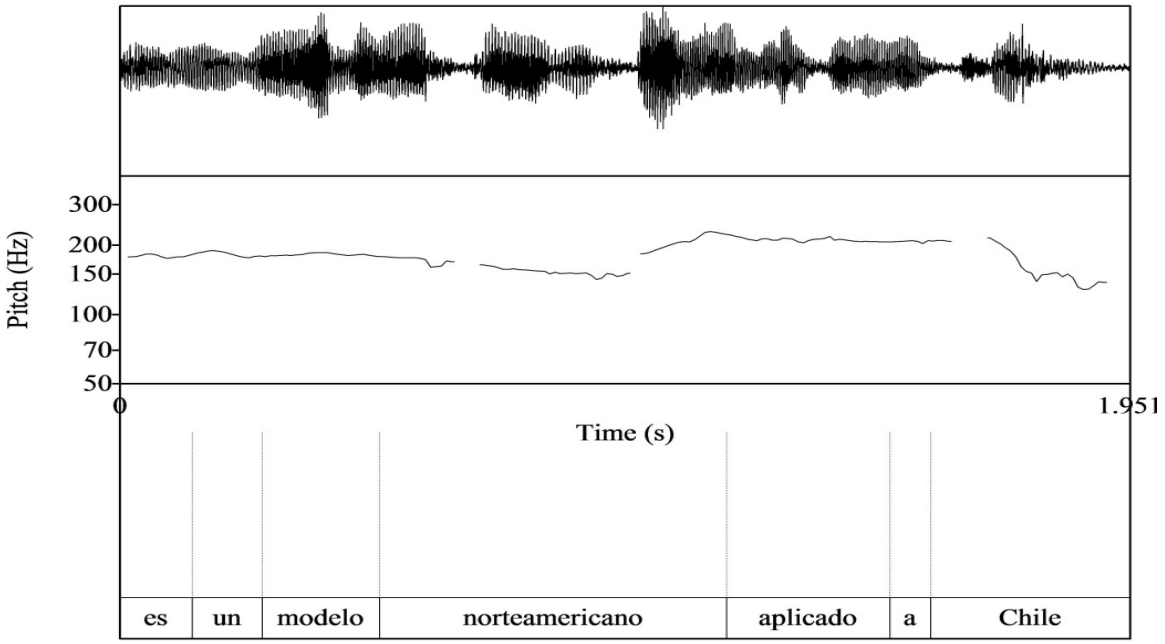

Figure 1.3: Chilean Spanish plateau and valley from Rogers (2013, p. 180) (*It's a North American model applied to Chile*.)

The Chilean intonational valleys and plateaus also present problems for the current Prosodic Hierarchy and how it asserts that constituents, particularly prosodic words (PWs) and Phonological Phrases, are organized within an utterance. Figure 1.4 lists the constituents of the Prosodic Hierarchy and how they are organized with respect to one another.

U	Utterance
IP	Intonational Phrase (i.e. Major Phrase)
PPh	Phonological Phrase (i.e. Minor Phrase)
PW	Prosodic Word
F	Foot
σ	Syllable

Figure1.4: Prosodic Hierarchy as constituted with Prosodic Phonology (Gussenhoven 2004, Ladd 2008)

PWs have generally been limited to 2-4 per PPh (Prieto 2006, Rao 2007). The apparent absolute limit is 4 with the results pointing to 2 being ideal. However, Chilean intonational valleys and plateaus can extend beyond the threshold of 4. Rogers (2013) shows examples of plateaus and valleys with 5 or 6 PWs. Likewise, this has implications for the length threshold of PPhs and the pragmatic function of both portions as well.

While not mentioned in Rogers (2013), an additional area of interest that Chilean valleys and plateaus create for Prosodic Phonology is their behavior with respect to the syntax-prosody interface. Currently, the relationship between where plateaus and valleys occur on the intonational contour and traditional syntactic phrase boundaries is unknown and merits further examination.

Finally, as previously mentioned, similar intonational patterns and behaviors have not been reported in any other variety of Spanish. If intonational plateaus do not manifest themselves in the known intonational phonology of Spanish, as current knowledge and available data appear to indicate, then barring an *ex nihilo* explanation, their origins within Chilean Spanish must lie outside of Spanish. One possibility is that they are the result of earlier contact between Chilean Spanish and another language spoken in Chile. Preliminary data from Smeets (2008) show similar plateau contours in Mapudungun, the most prevalent indigenous language spoken in Chile.

The current dissertation seeks to answer the following research questions related to Chilean intonational plateaus and valleys.

RQ1: What are the PW thresholds for both the valley and plateau portions of Chilean "hat" patterns? What are the implications of these thresholds for PPh length and the Prosodic Hierarchy?

RQ2: Are the rises and falls on the sustained high portions triggered at syntactic phrase boundaries? What are the preliminary implications of these patterns for the syntax-prosody interface?

RQ3: Is current Autosegmental Metrical phonology able to satisfactorily describe Chilean intonational valleys and plateaus?

RQ4: Is there evidence that the Chilean Spanish "plateau" pattern is the result of contact with Mapudungun?

1.3 Organization of the dissertation

The current dissertation is organized in the following manner. Chapter 2 provides a review of the literature on the theoretical, linguistic, and historical background of intonation in general and Chilean intonation in particular, and describes several theoretical frameworks that are most commonly used to describe and analyze intonation. Chapter 3 describes the methodology and gives background information on the participants. Chapter 4 presents more generalized results which document the quantity of tokens extracted and their specific categorizations within the data. Results specific to each research question are given along with the corresponding discussions in their respective chapters. Chapter 5 provides results and analyses couched in the Prosodic Hierarchy framework. Chapter 6 examines the syntactic results and their theoretical implications for the syntax-prosody interface. Chapter 7 discusses the various ways that the Chilean Spanish plateau contours are problematic for the AM theory of intonation, as well as proposes several modifications to account for the data. Chapter 8 presents evidence for the Chilean Spanish plateau contours having their origins in Mapudungun and finally, Chapter 9 summarizes the discussions for all four research questions, lays out the contributions and limitations of the current study, and provides future directions for related research.

Chapter 2

Theoretical, linguistic, and historical background of Chilean Spanish intonation

2.1 Difficulties defining intonation

Navarro Tomas (1944) affirmed that every phrase or utterance, depending on the specific meaning attributed to it, has a specific, corresponding intonational contour. While it is generally accepted that intonation plays a role in language (e.g. Bollinger 1978), it has been more difficult to define it and its exact role in human discourse. Ladd (2008) states "Research on intonation has long been characterised by a number of unresolved basic issues and fundamental differences of approach" (p.1). Quilis (1999) asserts that intonation is one of the most difficult features of human language because "its various forms, its various functions [and] its more or less direct influence on meaning and on the characterization of the speaker, make it a field of study that presents no shortage of difficulties" (p.409, translation mine). Gussenhoven (2004) agrees, stating that there is no succinct way to satisfactorily describe what intonation is nor its function. This is because "There are so many aspects to consider: people use it to express their feelings; it encodes the information structure of the sentence; it appears to have different phonetic forms in different segmental conditions…and so on" (p.50). Thus, it comes as no surprise that over the years, the concept of intonation has been defined differently by different researchers.

While not an extensive summary of all the proposed definitions of intonation, following are a few:

- Quilis (1999) defined intonation as "The linguistically meaningful, socially representative, and individually expressive sentence-level function of the fundamental frequency (F0)" (p.410, translation mine).
- Gussenhoven (2004) defined intonation as the use of pitch variations to communicate meaning within discourse, along with emotional and attitudinal information.
- Hualde (2005) asserted that intonation is "The use of pitch for pragmatic or discourse purposes" (p.254).
- Ladd (2008) defines intonation as "the use of *suprasegmental* phonetic features to convey 'postlexical' or *sentence-level* pragmatic meanings in a *linguistically structured* way" (p.4, italics in original). According to Ladd, *suprasegmental* makes reference to phonetic features such as fundamental frequency (F0), intensity, and duration, *sentence-level* refers to the use of intonation to indicate certain meanings over the duration of an entire phrase or utterance, and *linguistically structured* means that intonation is organized and structured in categories that share distinct, contrastive relationships.

Despite the differences in each of these definitions, a common thread in all of the previous definitions of intonation, is the notion that it is a mechanism that is used to communicate some type of meaning. This meaning can be purely linguistic, it can serve pragmatic or discourse-related purposes and, according to some, it can even have sociolinguistic implications. Due to its level of detail, and the relevance of linguistic structure and suprasegmental and sentence-level features to the data of the current

investigation, the present dissertation adopts Ladd's (2008) definition as its principal explanation of intonation.

2.2 Intonation and grammar

There has been debate as to what the role of intonation is in communicating linguistic meaning, and if it has a function within a language's grammar or not. For example, Cutler (1977) argues that any meaning that intonation conveys is wholly dependent on its context and therefore has no representation or place within a language's phonology or grammar. However, additional studies (e.g. Pierrehumbert 1980, Beckman and Pierrehumbert 1986, Face 2002, 2007, Gussenhoven 2004, Ladd 2008, among numerous others) have refuted this claim and argue that intonation does indeed have structure that communicates linguistic meaning.

Gussenhoven (2004) noted that an adequate point of departure when trying to determine the linguistic status of intonation, is to ask whether intonation is part of a language's grammar or if it is an independent system that imposes itself on the grammar for expressive purposes. If it is simply an independent system that is used for purely expressive purposes, then, according to Gussenhoven, it is nothing but a mechanism of animal communication where the urgency or importance of a message is determined by the intensity of the intonational cues throughout a given utterance. For intonation to be considered part of grammar, according to Gussenhoven, it must exhibit arbitrariness, discreteness, and duality. Arbitrariness refers to the idea that there is nothing inherent in the relationship between linguistic form and actual meaning. For example, while it could

be argued that certain onomatopoeic words contradict this assumption, it would seem that the meaning of the majority of words does not share a direct relationship with their form. Discreteness is defined as a property that indicates that linguistic forms, such as the English plural morpheme "-s", are either present or not, and cannot therefore be partially absent or partially present. Finally, duality is the idea that both phonological elements and meaningful elements have their own levels of organization. An example Gussenhoven gives is the syllable [tækt] in the word "contact". Although in isolation it serves as the phonological form of the word "tact", by attaching itself to the previous syllable [kɑn], it forms the word "contact" without creating any relationship in meaning between the words "contact" and "tact". The difficulty in determining intonation's relationship to grammar, according to Gussenhoven, is that in some cases, it shows a lack of all three of the aforementioned features, while in others, it exhibits all three.

Gussenhoven (2004) indicated that intonation shows a lack of arbitrariness in many languages when certain emotional reactions, such as melancholy, are frequently associated with low pitch. In other words, the form is associated with the emotion.

In some languages intonation also lacks discreteness. For example, in English and Dutch, intonation can also be used gradiently to express different levels of emphasis, with perceived emphasis correlating with peak height. Several studies in Spanish (e.g. Lee, Martinez-Gil and Beckman 2010, Face 2011) show this same lack of discreteness. Lee, Martínez-Gil and Beckman showed that in Buenos Aires Spanish, peak height indicates a difference between information questions and presumptive questions, with higher peaks being used to indicate presumptive questions. Face demonstrated that in Castillian Spanish, prenuclear (i.e. non-phrase-final) peak height is key in perceiving

broad or narrow focus, with narrow focus being more prevalently perceived as peak height increases.

Finally, Gussenhoven argued that it is very difficult to determine whether intonation shows duality. While it is generally accepted that varying pitch movements are used to convey different messages such as focus, surprise, incredulity, etc., he argues that it is a difficult task determining what the structure is, let alone if intonation is structured in such a way that duality can be said to exist.

Despite these difficulties, Gussenhoven (2004) showed that there are also times where intonation appears to meet all three criteria. Certain contours in different languages are used to indicate different pragmatic meanings. For example, in many Spanish dialects, absolute interrogatives generally rise at the end. However, in other dialects of Spanish, such as Dominican and Cuban (see Sosa 1999, Willis 2003, Alvord 2006), absolute interrogatives are characterized by a final fall. These differences indicate that the different shapes of the contours have an arbitrary relationship with their meaning. In other words, there is no inherent connection between a final rise or fall and the concept of an absolute interrogative.

Gussenhoven (2004) also argued that discrete relationships do in fact exist between different contours. For example, in most dialects of Spanish, if the final rise of an absolute interrogative is replaced by a fall, the utterance would most likely be interpreted as a broad focus declarative, rather than an interrogative. Thus, while prenuclear peaks are phonologically similar in these cases, the nuclear portions of these two patterns create different meanings. This is indicative of discreetness, because in these dialects the nuclear portions are what categorically distinguish two different

utterance types. A declarative cannot become gradually interrogative nor can an interrogative gradually become declarative. Simply put, one or the other nuclear portion is either present or not.

Finally, Gussenhoven asserts that duality in intonation is evidenced in the prenuclear peaks associated with certain contours. For example, in the case of a narrow focus statement in Spanish, there is a very discernible difference between the high prenuclear peak and the lower nuclear peak. This distinction between both portions is part of what creates the perception of narrow focus. Likewise, that same high prenuclear peak has been shown to be present in absolute interrogatives. Despite the same, high prenuclear peak being present in two different types of utterances, there is no meaning-based relationship created between narrow focus statements and absolute interrogatives by the high prenuclear peaks in Spanish, thus illustrating that in given contexts, certain intonational patterns, or parts of intonational patterns, have different levels of phonological and meaning-based organization.

2.3 Autosegmental Metrical Theory of intonation

2.3.1 Theoretical Overview

Based on Gussenhoven's (2004) criteria, it would appear that intonation does indeed have some place within the grammar of a language. The most prominent and widely-used theory to phonologically describe intonation and its relationship to grammar is the Autosegmental Metrical (AM) theory. According to Ladd (2008) AM theory has

its roots in three main works: Liberman (1975), Bruce (1977), and especially Pierrehumbert (1980).

As the name indicates, the theory is based in both autosegmental and metrical phonology. Pierrehumbert (1980) indicated that basic AM theory has three different components. First, it allows for the generation of sequences comprised of high tones (H), low tones (L), and in some languages, such as Yoruba (see Ladd 2008), mid tones (M). The second element is the metrical aspect of the theory. The metrical "grid", as Pierrehumbert refers to it, indicates which minimal tone-bearing units in an utterance are strong (i.e., perceptually prominent or salient) and which ones are not. The associations of metrically strong points to pitch accents are also known as tonal events. Likewise, tonal events exist in the form of boundary and phrase tones, which serve to indicate boundaries between smaller phrases in the same major phrase, and between major phrases. The final element consists of the rules that "assign phonetic values to tones and construct the F0 contour between one tone and the next" (p.11). Ladd (2008) reiterates this point, stating that "a tonal structure is a string of local events with certain points in the segmental string" (p.44). In other words, a tonal contour consists of phonologically autonomous associations between pitch accents and strong metrical points that are connected by phonologically unspecified phonetic material. Likewise, speakers can make use of phrase and boundary tones, which associate with the edges of smaller phrases and larger utterances, to divide the lexical content of a contour into informationally driven portions of different sizes.

AM theory makes use of several tones that at times combine with one another. First, tones that associate at metrically strong points are called pitch accents. Pitch

accents can be monotonal and represented as either H* or L*, or they can be a bitonal combination (e.g. L+H*, L*+H). In the case of both monotonal and bitonal pitch accents, only one tone ever phonologically associates with a point on the metrical grid. This association is indicated by the use of a star (*). Tones at the end, and in some languages, the beginning, of utterances are referred to as boundary tones written as H% or L% and, like pitch accents, can also be bitonal. Finally, AM also allows for utterances to be divided into smaller phrases. Phrase tones, H- and L-, are used to mark the boundaries between phrases within the same utterance.

2.3.2 AM and Spanish

In Spanish, stressed syllables are considered to be "strong" metrical points, while unstressed syllables are "weak" metrical points. Most words, with the exception of function words such as prepositions, conjunctions, definite and indefinite articles, and clitics, are considered to have a stressed syllable with pitch accents that associate with strong points on the metrical tier. Spanish pitch accents are commonly referred to as prenuclear and nuclear pitch accents. Hualde (2003) states that normally in Spanish the accented syllable of the final word of a phrase or utterance is perceived as the most prominent and therefore its corresponding pitch accent is referred to as the nuclear pitch accent. All preceding pitch accents are consequently referred to as prenuclear pitch accents.

The pitch accent inventory in Spanish has been deliberated and revised on several occasions. One of the first researchers to attempt to apply the AM model to Spanish

intonational phonology was Sosa (1999). Through his analysis he proposed the following pitch accent inventory for Spanish: H*, L*, H*+L, H+L*, L*+H, L+H*, H*+H, and H+H*.

Beckman, Diaz-Campos, McGory and Morgan (2002) examined the application of AM to Spanish and proposed a slightly different repertoire of pitch accents. First, they advocated for the existence of an early rising accent consisting of a valley at the onset of the stressed syllable which then rises through the syllable and peaks within the same syllable or very close to its offset. They elected to represent this pitch accent as L+H*, associating the H tone with the metrically strong unit because it generally peaks within the same syllable. Second, they proposed a late rising accent, written as L*+H, consisting of a valley that can also begin at the onset of the metrically strong syllable and then rising and peaking in the following syllable. Third, the authors affirmed the existence of a falling accent, H+L*.

Pitch accent association in Spanish has been debated as well. While determining the association of monotonal pitch accents is a simple task, Spanish frequently makes use of bitonal pitch accents. Early on, it was generally accepted that the phonetic alignment of a pitch accent with relation to the syllable it corresponded to determined association (e.g. Hualde 2003). In other words, if a syllable had a bitonal pitch accent, such as L+H, and the peak was within the stressed syllable, the accent would be transcribed as L+H*. If the peak occurred within the following syllable, the pitch accent would be represented as L*+H due to the low tone being the putative prominent tone in the stressed syllable. However, posterior investigations refute this notion.

Several subsequent discoveries call into question the L+H* and L*+H distinction. Willis (2003) found both late rising and early rising pitch accents in Dominican Spanish,

but he also reports a pitch accent where the rise didn't begin until near the offset of the syllable. In other words, the low tone extended rather flatly throughout the stressed syllable and then the rise and peak both occurred after the offset. While it could be argued that this is just a different phonetic realization of the L*+H accent, Willis showed that the traditional late rise and the Dominican late rising pitch accent both exist in Dominican Spanish, but contrast in meaning and therefore must be phonologically different.

Prieto (2004) proposed the same contrast between L*+H and L+H*. However, to account for the Dominican late-rising pitch accent, she proposes a phonological feature called "delayed peak". The use of "delayed peak" describes the phonetic alignment of the H tone allowing for the H tone to associate with the syllable, despite the fact that the L tone extends for virtually the entire syllable. The resulting three-way contrast was therefore as follows: L*+H for a postonic rise, L+H* for a rise that peaks within the tonic syllable and L+H*[delayed peak] for a tonal rise that peaks late.

Face and Prieto (2007) further revised the Spanish pitch accent inventory due to inadequacies in fitting the model to Castilian Spanish data. In doing so, they also account for the three different rising pitch accents documented by Willis (2003). First, they propose a change in terminology. They assert that early and late rising accents should be referred to as early and late peak accents due to the fact that the peak alignment is the distinguishing feature of the pitch accents. Second, they state that previous general protocol was to have late-rising prenuclear pitch accents and late rising nuclear pitch accents. However, Castilian data has both in complementary distribution in prenuclear position, with the late peak indicating broad focus and the early peak indicating contrastive focus. Next, the

authors challenge the notion of the starredness of pitch accents. They assert that with the late peak and early peak pitch accents, the association of the L tone in the late peak to the stressed syllable can be confusing because the L tone alignment in the early peak is virtually the same. This issue is further complicated by the fact that the authors show documentation of both pitch accents being perceived as high by native Castilian Spanish speakers. If both are perceived as associating the H tone to the metrically strong unit, then both should be written as L+H*. However, this is theoretically impossible due to the fact that they communicate distinct meanings in prenuclear position.

To account for these issues, Face and Prieto (2007) indicate that starredness should be associated with the tone that is perceived as strong. As a result, they propose three different pitch accents. The first, represented as L*+H is the pitch accent documented by Willis (2003) in his data. The other two pitch accents are both technically L+H*, but the early peak is said to have secondary association with the stressed syllable. This is possible because it can simultaneously associate with a higher constituent similar to an accentual phrase (a level of phonological organization marked at both ends by boundary tones that can contain one to several words situated above PPhs and below IPs (Elordieta 2003, Gussenhoven 2004)), and a lower one. According to the authors, this dual association with the metrically strong syllable is what allows for contrastive, or narrow, focus to be communicated. The fact that the late peak only has singular association with the stressed syllable is assumed to be the reason for its use in broad focus conditions.

Estebas and Prieto (2008) revised the Spanish pitch accent system yet again. One of the main revisions was yet another change to the three pitch accents already discussed. The Dominican pitch accent remained represented as L*+H, reflecting the general

consensus that the L tone is the specific tone that associates with the stressed syllable. They opted to represent the dual association that distinguished the other two pitch accents as L+H* and L+>H*. The first pitch accent is the early peak accent used in Castilian narrow focus. The starredness of the H tone reflects that it is seen as associated with the metrically strong unit. The authors introduce the use of the symbol ">" to distinguish between the two accents. The ">" symbol indicates that the peak is aligned later in the second pitch accent. Likewise, the starredness of the H tones accounts for the data that shows that speakers perceive both H tones as strong.[1] Table 2.1 and Figure 2.1 explain and illustrate the current pitch accent inventory proposed for Spanish. It must also be noted that the use of the convention "¡" is to indicate the phenomenon of downstep, where each subsequent tonal peak is lower than the preceding peak.

Pitch accent	Corresponding F0 movement in/near stressed syllables
L*	F0 is flat and realized at the lower threshold of a speaker's pitch range.
H*	F0 is realized as a high plateau with no preceding dip.
L+(¡)H*	F0 begins as a low valley before the stressed syllable and begins to rise at the onset of the stressed syllable and peaks within the same syllable.
L+>H*	F0 begins as a valley aligned to the onset of the stressed syllable, rises through the entire duration of the stressed syllable, and peaks in the following syllable.
L*+H	F0 extends for the entire stressed syllable as a low valley, rises through the posttonic syllable, and peaking at the end.
H+L*	F0 falls through the stressed syllable, with the beginning and the end of the fall aligned respectively with the onset and the offset of the syllable.

Table 2.1: Current Spanish pitch accent inventory as proposed by Estebas and Prieto (2008)

[1] While this allows for the distinction of all three pitch accents, Face (2011) questions whether L+H* and L+>H* are really phonologically different, or if what causes their different perceptions is not due to other factors like pitch scaling.

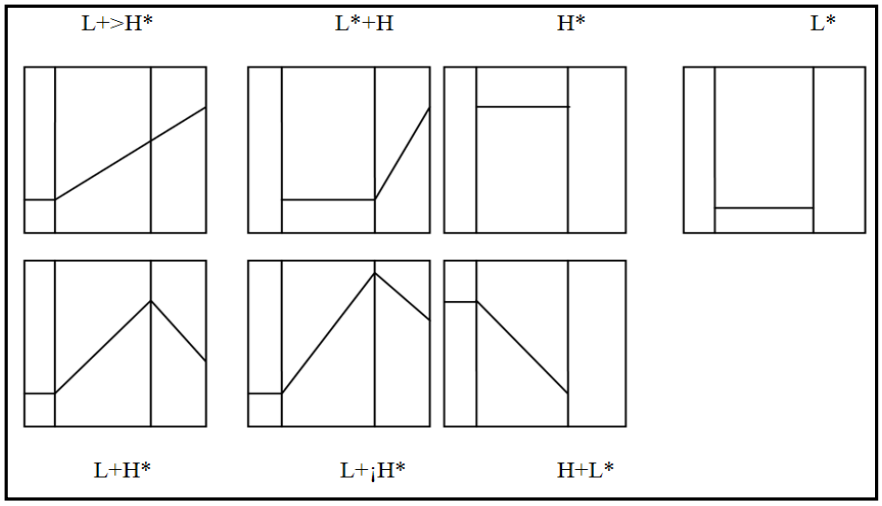

Figure 2.1: Illustrations of proposed Spanish pitch accent inventory

Spanish boundary tones, while garnering less debate, have been revised several times as well. Sosa (1999) originally postulated that Spanish had only two boundary tones, H% and L%. While simplistic, his analysis is unique because it also proposed that certain utterances could begin with H% as well. Beckman et al. (2002) posteriorly agreed with Sosa, indicating that H% and L% were the only two boundary tones in Spanish. In the most recent revision, Estebas and Prieto (2008) propose three monotonal boundary tones (L%, M%, H%), three bitonal boundary tones (HH%, LH%, and HL%), and one tritonal boundary tone (LHL%). Finally, phrase tones have the unique function of dividing utterances into smaller parts, or phrases (Nibert 1999, D'Imperio et al. 2005, Ladd 2008) and are represented as L- and H-. The existence of phrasal tones in Spanish has not been without debate. Authors, such as Sosa (1999), have argued that the structure of Spanish prosody does not allow for phrase tones because tone-bearing units in Spanish associate with syllables, while phrase tones do not directly associate with a given syllable. However, other studies (e.g. Nibert 1999, D'Imperio et al. 2005, Rao 2007) have shown that phrase tones are used to communicate specific meanings in different

varieties of Spanish that otherwise would remain ambiguous. While there is still a degree of debate, it is generally accepted that phrase tones exist in the phonological inventory of Spanish intonation. Figure 2.2 is a hypothetical representation of how AM is used to describe Spanish intonational patterns.

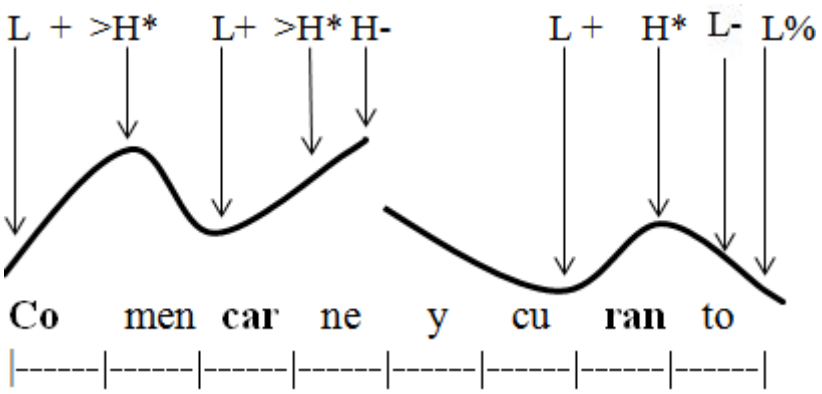

Figure 2.2: Hypothetical example of AM application to Spanish (*They are eating meat and curanto*)

The two prenuclear accents begin with L tones near the onset of each tonic syllable. Both begin to rise while still within the tonic syllable and peak in the following syllables. The H tones both associate with the stressed syllables in bold. Following is a H- phrase tone that splits the utterance into two smaller chunks. The nuclear pitch accent begins as the prenuclear pitch accents, but instead of peaking in the following syllable, it peaks within the stressed syllable with the H tone being the starred tone. The prenuclear and nuclear accents, while both having H tones associated with the corresponding stressed syllables, are phonologically differentiated from one another with the use of the symbol ">" in the prenuclear pitch accents. The utterance then lowers into a low phrase tone and ends on a low boundary tone.

2.4 Prosodic Phonology

Prosodic Phonology overlaps with the linguistic and extralinguistic realms of human communication. One of the cognitive/linguistic roles that prosody plays in human language is to parse an utterance into smaller "chunks", or portions, of information (D'Imperio et al. 2005, Ladd 2008). Studies have shown that this division of information is regulated by specific organizational and hierarchical rules. The current dissertation uses the Prosodic Hierarchy as laid out in Gussenhoven (2004). This hierarchy consists of six main levels. At the top of the hierarchy is the Utterance tier (U), which governs the entire utterance. Below the U node is the Intonational Phrase tier (IP). The IP tier is the main level of phrasing. An additional level of phrasing is governed by the IP and is called the Phonological Phrase (PPh). PPhs are similar to what AM calls intermediate phrases (ips) (Rao 2010) or what Ladd refers to as prosodic phrases (Ladd 2008). At the IP and the PPh levels is where it has been proposed that the information "chunking" previously mentioned occurs. For example:

2a. I bought red bricks and paint

The above utterance could theoretically be divided into two PPhs that would indicate slightly different meanings. The first reading is the following:

2b. U[IP[PPh[I bought] PPh[red bricks and paint]]]

The Prosodic Hierarchy would postulate that the above reading indicates that both the bricks and the paint were red. The second reading gives a different meaning:

2c. U[IP[PPh[I bought] PPh[red bricks] PPh[and paint]]]

According to the way the information in 2c is organized, it is asserted that only the color of the bricks is specified, and the color of the paint is unknown.

Below the PPh level is level of phonological or prosodic word (PW). In Spanish, a PW is generally assumed to be a stressed word. Many times stressed words in Spanish are content words, but pragmatic and semantic demands can allow typically unstressed function words to be stressed at times. Rao (2010) states that in Spanish a lexical item is categorized as a PW if it shows prosodic salience. What this means is that the F0 is generally required to rise throughout some portion of the stressed syllable of a lexical item. It must be noted that such is not the case in all varieties of Spanish (e.g. Willis 2003). However, while some studies have correlated pitch with stress (e.g. Quilis 1971), other studies have documented deaccenting, especially in more natural speech (Face 2003, Rao 2009), where there is little to no tonal movement in stressed syllables. Based on these findings, it is clear that stress alone cannot be used to determine if a word is prosodic or not. Other studies have shown that duration plays a varying role in indicating stress (Quilis 1971, Ortega-Llebaria 2006). Therefore, it can be argued that a PW also undergoes durational effects for it to be perceived as stressed, with pitch playing a possible secondary role.

Below the PW level is the level of foot. A foot has been said to be an abstract phonological unit that ideally is made of two syllables, one strong and one weak. The strong syllable correlates with the stress of a word while the weak syllable receives no stress (Gussenhoven 2004). Feet have not been widely used in Spanish prosodic phonology, and many times are not even considered. In fact, they can appear at times to be a purely theory-internal construct to deal with certain cases that might not fit into the

hierarchy if they were not implemented before the syllable level. Consequently, the level of foot will not be mentioned further. Following, is the level of the syllable. Finally, two additional levels, the segmental and tonal levels, while not belonging to the Prosodic Hierarchy, do associate to it in different ways. In other words, segments combine to form syllables, to which tones associate. Figure 2.3, from Barjam (2004), illustrates how the current Prosodic Hierarchy for Spanish is constructed.

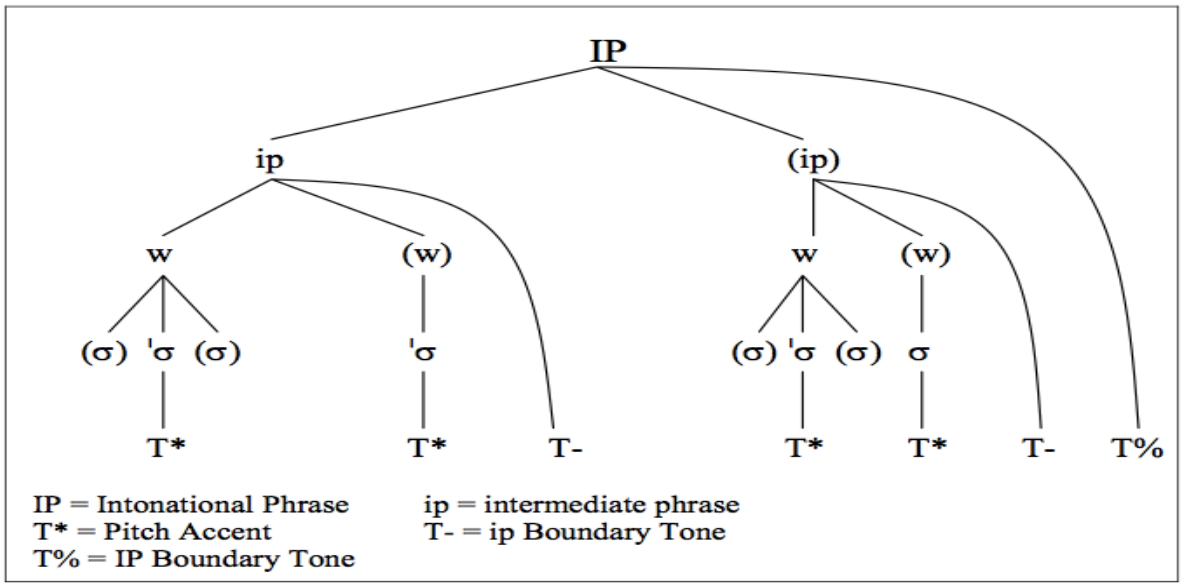

Figure 2.3: Prosodic Hierarchy from Barjam (2004, p. 18).

The current Prosodic Hierarchy is rooted in what Ladd (2008) refers to as the Strict Layer Hypothesis (SLH). The SLH is a hierarchy wherein each progressive level dominates or governs all nodes or levels below it and is simultaneously dominated by all the levels above it. It is impossible in this hierarchy for a lower constituent to dominate a higher ranked constituent. Likewise, when there are multiple nodes on the same level, these nodes cannot dominate one another. According to Ladd, this implies that the Prosodic Hierarchy has a fixed depth. What this means is that a prosodic tree in the SLH

framework can only have as many levels as there are distinct classes of prosodic domains. As a result, one positive notion of the SLH (and by association the current Prosodic Hierarchy), is that it can show a possible reason as to why there are sometimes syntactic and prosodic disagreements, since prosodic domains and structure differ from syntactic domains and structure. This is not to say that there is not agreement between syntax and prosody, for there frequently is; however, the theory still must give a reason as to why incongruences arise at times.

With specific regards to the PPh and IP levels, two of the levels of most interest to the current dissertation, Ladd (2008) asserts that it has long been a difficult task defining what exactly a PPh is and how it is manifested. Generally, several different signals of PPh boundaries have been accepted such as pauses (of different lengths), F0 rise/fall, pitch reset, and final lengthening. Ladd notes that the confusion regarding PPhs is based on incomplete theoretical approaches and methodologies. One of the difficulties for PPhs and defining when and where they occur is that PPhs have been assumed to have several linguistic functions that can range in complexity, all the while occupying rather simplistic syntactic structures. Therefore, assumptions are made about the communicative intentions of speakers based on simplistic models and conventions. If the researcher hears an audible pause, break, rise etc. in an area of the syntactic structure where it is simultaneously syntactically expected and semantically well-formed or coherent, a prosodic boundary is said to be in that location. However, if the exact same phenomenon occurs where there are incongruences with the syntactic and/or semantic structures or expectations, then no prosodic boundary is deemed necessary and the break in the message is deemed a simple hesitation or production error. Likewise, if nothing occurs where a boundary is expected,

then the researcher could simply opt to conjecture that there is in fact an underlying prosodic boundary in that place that is phonetically unspecified.

Ladd further questions the universality of a prosodic model of fixed depth because of what he calls boundary strength. Boundary strength refers to speakers perceiving certain phrase boundaries as stronger or more salient than others. These differences are indicated by means such as greater F0 rises and/or longer pauses preceding the formation of a new prosodic phrase. The SLH, according to Ladd, can only account for different boundary types by different levels, and if different boundaries are perceived as more salient than others, as Ladd's studies have shown, then it might seem erroneous to classify all PPhs on the same level. However, the solution that Ladd proposes still leaves the classification of PPhs a bit ambiguous, since the difference between an IP and a PPh is determined by the relative strength of a perceived boundary cue. Simultaneously, his analysis raises the possibility that prosodic structure and boundary placement might either be gradient or at least deeper than proposed. However, he offers no set way to analyze and categorize boundary strength, and leaves it open to future research. Thus, despite the fact that Ladd states that the SLH, which heavily reflects the current Prosodic Hierarchy, seems to be more purposefully and theoretically crafted to specifically avoid the conflict of lower layers dominating higher layers, it is one of the more widely used hierarchies that is used to describe prosodic phrasing.

2.5 Domain properties and acoustic correlates

Different acoustic correlates have been associated with the different levels of the Prosodic Hierarchy. Relatively little has been said about the acoustic correlates of the U level. Based on the theoretical framework of the Prosodic Hierarchy, it could be assumed that because U dominates all of the other domains, the acoustic correlates of all the other levels are necessarily connected to U in that their combination acts as a series of crucial building blocks for the construction of the entire U. Likewise, not many correlates have been associated directly with the syllable domain. Generally, syllables are seen as stressed and unstressed, and as previously stated, correlates such as pitch and duration are associated with having some role in the perception and realization of stress. The segmental level deals with the phonemes that make up syllables and words, and the tone level deals with the specific tones that associate with the higher levels.

Generally, acoustic correlates are mostly associated with the IP and PPh levels, and to a lesser extent the PW domain. Therefore, it is acceptable to talk about these three levels together. Price, Ostendorf, and Shattuck-Hufnagel (1991) analyze how prosody can untangle ambiguities generated at the syntactic level in English. They do not make any specific mention of the PH; however, their results can be interpreted from within the specific PH framework. The authors found that prosody and syntax, while at times related, are not identical. They say "speakers have more choice in phrasing, and prosodic boundaries need not correlate perfectly with syntactic ones, though they often do." (p.2966). In order to investigate this, the authors created sentences that were segmentally identical, but syntactically different. This was done to control for any possible

disambiguation mechanisms that could be employed on a segmental level. They created 35 sentence pairs for a total of 70 utterances that were produced by one speaker. Each listener performed two sessions of the perceptual component of the experiment. Half of the participants listened to the first member of each pair first, and the other half listened to the second member first. In the second session each participant listened to the member of the pairs that they had not heard the previous session. Their results indicate several things. First, the ability and degree to which the sentence pairs were able to be disambiguated using strictly prosodic cues was gradient. Second, clause boundaries, which they define as boundaries of phrases that have both a subject and a predicate present, correlated at a high frequency with major prosodic boundaries. The most frequent cues were syllable-final lengthening, a pause, and/or a boundary tone such as H% or L%. In fact, syllables that preceded major prosodic boundaries often had the longest durations. Finally, they conclude that the same syntactic structure could be linked to multiple prosodic boundaries, indicating, as previously stated, that prosody and syntax are not identical.

Based on Price et al.'s (1991) results, several potential correlations can be made with the PH. First, a major prosodic boundary, as defined by the authors, from within the PH, is an IP. Therefore, an IP boundary can be indicated through final-lengthening, pauses and/or boundary tones. They also state that while intonation is important as a cue for disambiguating, duration and pauses were more important, and by themselves provided enough information to disambiguate and/or to break up the utterances according to a phrasal hierarchy. Thus, while boundary tones can indicate breaks in phrases, the pauses and duration are more indicative of the phrasal hierarchy. Second, when they affirm that multiple prosodic boundaries were associated with the same syntactic structures, it can be

postulated that, depending on what the speaker is attempting to communicate, a syntactic constituent or constituents, can be associated with an IP or a PPh. Third, the longer the duration of the phrase final stressed syllable, the greater the association with an IP. The authors simply state that longer durations indicated the presence of a more major boundary. Thus, it could possibly be postulated that lengthening to a lesser extent can occur between PPhs and as duration increases, the perception of an IP increases as well.

Christophe, Peperkamp, Pallier, Block, and Mehler (2004) specifically examined the PPh and PW levels in order to determine in which, if either, of these domains lexical access occurs. They agree with Ladd (2008) that prosody breaks up speech into smaller units and further perceive that it is precisely in this manner that speakers perceive speech. In other words, speakers are conscious of speech strings or an utterance being divided up into smaller, more cognitively manageable and retainable portions. The specific language that they analyzed was French.

In order to determine whether lexical access occurs on the PPh or PW level of the PH, the authors made sentence pairs with lexical ambiguities within PPhs and between PWs. Below is the example that they give. PPhs are in brackets.

> 2d. [Le livre] [racontait l'histoire] [d'un grand *chat grin*cheux] [qui avait mordu un factuer] (the book told the story of a big grumpy cat who had bitten a mailman)
>
> 2e. [Le livre] [racontait l'histoire] [d'un grand *chat dro*gue] [qui dormait tut le temps] (the book told the story of a big doped cat who was sleeping all the time) (p.525)

They state that in 2d, the participants still could not distinguish between *chat grincheux* (grumpy cat) and the French word *chagrin* (sorrow) after the first two syllables. However,

in 1b, there is no ambiguity because *chad* is not a French word. Therefore, as can be seen, the ambiguity crosses PW boundaries and is contained within the PPh domain. The authors found that in 2d the participants were significantly slower at lexical identification than in 2e. This indicated that the cues at PW boundaries were not enough for the listeners to disambiguate 2d. In 2e, however, where there was no ambiguity across PW boundaries, the participants were much more successful at identifying the correct word.

In a second experiment, Christophe et al. (2004) placed the target word at the end of a PPh. What they found was that reaction time improved, indicating that PPh boundaries are possibly interpreted as occurring at the end of words, further suggesting that lexical access occurs at the PPh level of the PH. They hypothesize that several cues that they observed could potentially aid in lexical identification, namely lower pitch at the PPh boundary than at the PW boundary, along with less coarticulation at PPh boundaries than at PW boundaries.

A third experiment found that the participants were seriously inhibited when identifying word initial phonemes when a possible competitor word, like in 2d, crossed PW boundaries within a PPh. They assert that this points to the activation of multiple lexical candidates across PW boundaries when the number of lexical possibilities increases. A fourth and final experiment confirmed the results of the second experiment in that PPh boundaries are available early in processing and limit lexical activation.

Based on Christophe et al.'s (2004) results, several assumptions can be made for at least French that very likely could apply to other languages, especially Romance languages. First, the chunking of information into smaller units has a cognitive purpose. The authors show that the PPh level can be used to restrict the activation of multiple lexical candidates

in situations of lexical ambiguity and allow for the access and identification of the correct candidate. Second, the results lend credence to the psychological reality of the PH structure in that they show the reality of PW boundaries and PPh boundaries in the cognitive interface of speakers.

Frazier, Clifton, and Carlson (2004) tested five previously proposed prosodic phrasing constraints for English. The first was called Generalized Wrap (GW), which is based on the original Wrap constraint as proposed by Truckenbrodt (1995). This constraint states that prosody should not break up syntactic constituents. They illustrate this with the following example (p.6).

2f. (Every girl laughed)(who was smiling)

2g. (Every girl)(laughed who was smiling)

According to GW, 2g is preferred because it does not split the verb phrase that dominates the Compliment Phrase "who was smiling" like 2f.

The second constraint was the Semantic Coherence Constraint (SCC), which prohibits the formation of semantically incoherent groups. The third constraint, Balance, prefers syntactic constituents that are more or less the same size. The fourth constraint is called Integration. This constraint states that the larger the syntactic constituent becomes, the greater the probability that a prosodic boundary will follow. The fifth constraint, which could be called "Long Distance Integration", has to do with the length of the upcoming constituent and asserts that prosodic breaks, or boundaries, should be used before an upcoming long constituent.

The results overwhelmingly favored the SCC and the fifth constraint (length of upcoming constituent). The results also indicate that Balance had little to no bearing on

the placement of prosodic boundaries. The authors state that from within an OT-based grammar, Balance, at least in English, would have to be ranked beneath the other four constraints. They interpret the preference for SCC and the length of upcoming constituents to mean that English prosodic boundaries, or breaks, are not constrained by syntactic rules against breaking up constituents. Rather, according to the authors, there seem to be constraints on the grouping of PWs and, more broadly, on the grouping of PWs into what are considered semantically coherent groups.

Frazier, Carlson, and Clifton (2006) argue that prosody is central to language comprehension as a cognitive mechanism. They postulate that prosodic phrasing helps speakers retain different and "distinct" lexical and linguistic elements in their memory. For their study they investigated prosodic phrasing specifically in English. They conclude that boundary size (i.e. hierarchical organization of prosodic phrasing) correlated with the syntactically hierarchical ranking of given constituents. When applying Frazier et al.'s (2006) results to those of Christophe et al. (1991), it could be postulated that PPh boundaries not only aid in the access and activation of lexical items, they might also play a certain role in the retention of certain lexical items.

Lin and Fon (2011) studied pitch reset in Taiwanese Mandarin, which is a language with lexical tone. Based on their experiments, they arrived at several conclusions. First, speakers were able to recognize pitch reset as the indication of a boundary. The greater the degree of pitch reset, the greater the speed with which they were able to detect and indicate the presence of a boundary. A second experiment found that greater pitch reset also correlated with the perception of the utterance belonging to a higher ranked prosodic domain. This can be interpreted in a similar way to the duration results presented in Price

et al. (1991) in that greater pitch reset can possibly correlate with higher ranking prosodic domains. The authors conclude that speakers of at least Taiwanese Mandarin use pitch reset as a mechanism for determining the hierarchical ranking of prosodic boundaries.

In summary, from the lowest domain of the PH (excluding the segmental and tone tiers), to the highest duration and pitch are generally associated with syllabic saliency or stress. Christophe et. al (2004) showed that at least in French, several acoustic correlates were attributed to PWs, namely greater coarticulation and higher overall pitch at PW boundaries than at PPh boundaries. Likewise, Frazier et al. (2004) showed that PW boundaries are not enough to limit multiple lexical activations in cases of lexical ambiguity in French, and thus conclude that lexical access cannot be performed at the PW domain. The PPh shares many similar acoustic correlates with the IP domain. It has been stated, though, that many of these are realized to a lesser extent at the PPh level. For example, Price, et al. (1991) said that the greater the duration of phrase final syllables, generally, the greater the prosodic domain associated to the phrase. This can imply that shorter durations of phrase-final syllables can possibly indicate the end of PPhs. Lin and Fon (2011) show that pitch reset is gradient as well, and just as is the case with duration, or lengthening, greater pitch reset is associated with higher prosodic domains, while lesser pitch reset is associated more with the PPh level. PPhs are also proposed to be the domain of lexical access by Christophe et al. (2004) due to the apparent ability of their participants to disambiguate lexical items in French based on PPh cues. The IP level is also indicated by many of the same correlates (i.e. pitch reset, duration of lengthening, boundary tones), along with pauses, which also associate with higher prosodic domains as they increase in size. Finally, the U level, which dominates all levels, has not had any specific correlates

directly associated with it, but according to the PH framework, by virtue of dominating all other domains, the acoustic correlates that associate with the lower domains can be considered prosodic building blocks that, together, form U.

2.6 Intonational phrasing and Spanish: One or two levels?

One debate that has arisen in the study of Spanish prosody is whether a second level of phrasing exists in Spanish. Some authors, such as Sosa (1999) argued against the existence of the PPh domain in Spanish, considering it superfluous. His justification was that in Spanish, all of the underlying tonal units can only associate with syllables. He states that the fact that phrase tones are not directly associated with a syllable, means that they do not fit into an analysis of Spanish. Likewise, according to Sosa, the nuclear position of Spanish is more or less set, and no more than three unstressed syllables can follow the final stressed syllable. Therefore, any phrase tone between the final stressed syllable and the boundary tone would not be capable of producing any meaningful contrasts.

Despite Sosa's initial arguments against two-levels of phrasing in Spanish, most research after his initial claims has argued in favor of the PPh level in Spanish. One of the most prominent studies to argue for PPhs in Spanish was Nibert (1999), who carried out a perception experiment in which she presented her participants with syntactic minimal pairs. The difference between the three possibilities was marked purely through prosodic means. For example:

2h.[[lilas] [y lirios amarillos]]- "lilacs and yellow irises"
H- L-L%

2i. [[lilas y lirios] [amarillos]]- "yellow lilacs and yellow irises"
H- L-L%
2j. [[lilas y lirios amarillos]]- ambiguous control contour
L-L% (p.232)

As can be seen, in the absence of intonational cues, all three examples are syntactically identical. However, the phrase tones used essentially parse the utterances up into different chunks, making clear that there are in fact syntactical differences. This different parsing of constituents potentially communicates different meaning, as can be seen in the translations. 2h separates the noun phrase (NP) "lilas" from the rest of the sentence, therefore only making it possible that the adjectival phrase is governed by the noun phrase "lilas". The second meaning is wide scoped and separates the two NPs from the AP. This separation makes it so the AP modifies both NPs. The final example is ambiguous because it could potentially be interpreted as narrow-scoped, like 2h, or wide-scoped, like 2i.

The results of her perception experiment showed that her participants overwhelmingly perceived the different meanings indicated by the H- tone in 2h and 2i. However, she found that 2j wasn't as ambiguous to the listeners as she had hypothesized. Most listeners attributed the same wide-scoped meaning in 2i to 2j. She hypothesizes that this could be due to syntactic symmetry (i.e. the AP modifies both "lilas" and "lirios" instead of only modifying one or the other). In the absence of prosodic cues to indicate phrasing, the listeners opt for a syntactically symmetric interpretation, which in this case ends up being the wide-scoped interpretation. This interpretation fits with the general notion of prosodic chunking. Because nothing is divided at the PPh level, the listeners perceive the utterance as one IP with a single PPh, as opposed to an IP consisting of

multiple PPhs. A second experiment confirmed these results. These results also show how phrase tones are used in Spanish to disambiguate meaning.

At this point in the current dissertation, what is important to take from Nibert (1999) is that there is potential empirical and perceptual evidence that two different levels of phrasing exist in Spanish.[2] While Sosa (1999) is partially right that phrase tones do not associate to syllables in the same way pitch accents do, Nibert shows that in the Prosodic Hierarchy, phrase tones are associated primarily with the PPh level and the PW level (p. 231). Because of the structure of the PH, the association of phrase tones, through its relationship with these two higher tiers, shows a connection to the syllable tier. Her results also show the role of prosodic phrasing within IP structure with respect to chunking information and communicating different meanings that would otherwise be impossible to communicate with just the pitch accents and boundary tones of the IP level. This is illustrated in her vague example shown in 2j. Without the use of an inter-phrasal H- tone, the default was for the wide-focus example.

2.7 Acoustic Correlates within the Prosodic Hierarchy in Spanish

The two levels of the PH that have been shown to have the most acoustic correlates are the IP, PPh, and PW levels. In Spanish, the U level, as was postulated for the previously discussed languages, through its dominance over all the lower tiers, appears to be composed of the acoustic cues that associate with its lower levels. The syllable tier, which is the smallest unit in the Prosodic Hierarchy (Rao 2007), has been shown in studies such

[2] It must be noted, that the H- in Nibert (1999) could be interpreted as simply H%, consequently supporting the argument for a single level of phrasing in Spanish.

as Quilis (1971) to use a combination of F0 fluctuation and syllable and segment duration to highlight stress. Ortega-Llebaria (2006) demonstrated that stress and accent are different. According to Ortega-Llebaria, intensity can also play a role in marking stress in Spanish, while Quilis (1971) completely discounts intensity as a factor contributing to Spanish stress.

Pitch has been shown to also have an association with the PW tier due to the fact that PWs are said to show a rise in the fundamental frequency throughout a stressed syllable (Rao 2007). In the Spanish tradition, PWs are usually content words, while function words generally lack stress, except in marked cases of focus (Zubizarreta 1998, 1999). However, as Ortega-Llebaria (2006) shows, sometimes syllables that are perceived as stressed show no visible F0 rise. Therefore, syllable duration appears to also associate with the PW tier and serve as a correlate that can classify a word as a PW in the absence of F0 movement.

Rao (2007) examined principally the PPh level in Limeño Spanish. What he found was that the final lengthening of preboundary syllables was the most notable cue of prosodic phrasing. This correlates with what has been analyzed in other languages such as English and French (see Christophe et al. 2004, Frazier et al. 2004, Ladd 2008). He also noted that speakers had a tendency to limit the PW content of a PPh to 1-3 words, although he says that it is possible that more PWs could be contained within a PPh in situations of increased syntactic branching.

Frota, D'Imperio, Elorieta, Prieto, and Vigário (2007) examine the phonetic and phonological properties of intonational phrasing in several Romance languages. What they found was that the dominant phrase tone across all 5 languages analyzed was H-. The F0 scaling of H- was strongly regulated by the type of nuclear pitch accent that the speakers

chose. The H- tone was higher after accents such as L*+H and L+H*, which end in a rise, than it was for falling accents H+L* and H*+L. The authors interpret the greater H- tone height after rising accents as an upstep into the end of the phrase triggered by the nuclear rise. Likewise, while some of the languages, such as European Portuguese and Italian, showed a relationship between phrase length and the general scaling of the H- tone, Spanish, along with Catalan, showed that this scaling had no relationship with phrase length. Finally, Spanish showed a correlation between the height of H- and the utterance initial F0 height.

Toledo (2007) analyzed the influence of the PPh H- boundary tone on the preceding nuclear pitch accent in Peninsular Spanish. Specifically, he examines how H- influences the alignment of the final tone in nuclear bitonal pitch accents. If the nuclear pitch accent is L+H*, then the phonological association with the PW is shifted to the L tone as the H tone secondarily associates with H-. Furthermore, according to Toledo, the late alignment of the H tone in the nuclear syllable is due to it being embedded in the phrase tone. This changes how the pitch accent should be labeled in these instances, and he argues that these pitch accents should be L*+H and not L+H*, justifying it by pointing out the fact that the L tone extends throughout the stressed syllable of the PW. The same phenomenon occurs when the nuclear tone is H+L* before a L- boundary tone. The nuclear L tone embeds itself in the L- tone, and the phonological association with the PW is then shifted to the H tone. He notes that this happens with words with antepenultimate and penultimate stress only. Words with final stress do not undergo this phenomenon of phonological association shift and secondary association because the H or L tone remains in the stressed syllable.

As was mentioned previously, at times F0 traces through expected PWs, or words normally bearing a pitch accent, are absent or suppressed to a relative low. This is known as deaccenting. Rao (2009) investigated some of the possible factors that contribute to the process of deaccenting in spontaneous speech. With specific relation to the PH, he found several patterns. First, he found that words with fewer syllables tended to be deaccented more than their multisyllabic counterparts. Within the PH, this could either apply to just the syllable tier, or it could apply to the syllable tier associatively through the higher ranking PW and PPh tiers. He also noted that there was a correlation between the position of words within PPhs: words that were in medial position within a PPh were more often deaccented, words in PPh final position were the least deaccented, and words in PPh initial position fell in the middle of the deaccenting scale. He states that this tendency to deaccent words in PPh medial and initial positions supports the Nuclear Stress Rule because it supports the notion that the most important information a speaker is trying to convey should come in final position. Another possible explanation, based on Toledo (2007), is that the nuclear accent of the PPh final words interacts with the following phrase tone, therefore making its deaccenting more difficult due to the double associations with the stressed nuclear syllable and the following phrase tone. Thus, the lack of secondary association in the two other PPh positions could possibly increase their propensity toward deaccenting.

In another study, Rao (2010) studies how phonetic cues are used to divide an IP up at the PPh level of the PH using data from three varieties of Spanish. The varieties he concentrates on are Ecuadorian, Cuban, and Peninsular Spanish. All three dialects showed final lengthening before a boundary and before a pause in the PW, PPh, and IP domains, with the greatest amount of lengthening occurring before a pause. He posits that this could

be due to pragmatic factors, such as a strategy to make up for a loss in saliency through a reduction of fundamental frequency and intensity at the ends of phrases. Also, this supposed pragmatic instrument could be used to increase the amount of time needed to plan and articulate upcoming ideas.

Even though all pauses showed a relationship with final lengthening, Rao found that the shorter pauses (400 ms or less) at PPh boundaries showed a tendency to correlate with even greater final lengthening. He postulates that this increased final lengthening indicates that the speaker plans to continue his or her idea, and that they are therefore not done speaking. This notion is supported by the finding that longer pauses correlated with F0 reduction and a lesser degree of final lengthening. According to Rao, this combination of acoustic correlates indicates the termination of an idea, and a supposition that the speaker has finished speaking, at least temporarily. Finally, based on the gradience shown between acoustic cues at PPh and IP boundaries, the author concludes that, at least in Spanish, the distance between PPh and IP boundaries on the PH hierarchy might not be as great as previously assumed.

With specific regards to Porteño Spanish, Gabriel, Feldhausen, and Pešková (2011) document the use of several intonational cues at PPh junctures, namely continuation rises, sustained pitch, pitch reset, pre-boundary upstep, sustained hat contours, and complex boundaries with a dip. When compared to Peninsular Spanish and Italian, the results show some similarities and some differences. Porteño Spanish shows an equal preference for continuation rises and sustained pitch (42% vs. 32%). Peninsular Spanish heavily prefers continuation rises to sustained pitch (88% vs. 12%). This is also demonstrated by Elordieta, Frota, Prieto, and Vigário (2003). With regards to pre-boundary lengthening,

Porteño Spanish falls more in line with Peninsular Spanish (41% vs. 40%) whereas it is obligatory (100%) in Italian. There is also evidence that in more spontaneous speech, Porteño phrasing patterns follow those of Italian more than in scripted speech.

2.8 Syntax and Prosodic Phrasing in Spanish

As can be seen from the results of Nibert (1999) for Spanish, and cross linguistically (see Frazier et al. 2004, Price et al. 1991), syntax plays a varying role with prosody and prosodic phrasing. While Nibert (1999) shows a relationship between prosodic phrasing and syntactically symmetrical divisions of constituents within the PH structure, a second possible interpretation of Nibert's (1999) results might not have so much to do with syntax as with semantics. As previously discussed, Price et al.(1991) and Frazier et al (2004) all found that syntactic structure and prosodic structure did not always correlate exactly, and therefore were not identical. Frazier et al. (2004) specifically concluded that in English, the strongest determiner of prosodic boundary placement was the division of information or constituents into semantically well-formed or coherent constituents. It is possible that the default meaning for Nibert's (1999) ambiguous 2j was assigned in an effort to place the constituents into a general, or wide scoped, semantically coherent grouping. If this was the case, then Spanish prefers semantically coherent groupings of information that are not governed by syntactic rules, just as Frazier et al. (2004) showed with English.

Elordieta et al. (2003) studied the effects and relationships of the length of syntactic constituents and their branchingness on prosodic phrasing in various Romance languages. Branchingness refers to the complexity of a constituent. A non-branching object, for

example, is a simple NP (*Alababa* ***la mula***). A branching object can be a NP that dominates a PP or an AP. (*Alababa* (np) ***la mula*** (pp) ***de Juanita***). Specifically, for Spanish, Elordieta et al. conclude that the most common prosodic phrasing in Peninsular Spanish was (S)(VO), which means that the subject was frequently placed in its own PPh while the verb and object were grouped into their own PPh. While there were some cases of (S)(V)(O) and (SV)(O) grouping in different cases of object branching, the overwhelming tendency for Spanish was to produce the (S)(VO) grouping. They note that in cases of branching objects the (S)(VO) parsing becomes absolute. Likewise, the break between the two PPhs was often signaled by a continuation rise. The continuation rise was also frequently followed by final lengthening, and a few times by a pause.

D'Imperio, Elordieta, Frota, Prieto, and Vigário (2005) also investigated the effect of syntax on Romance prosodic phrasing. Similar to Elordieta et al. (2003), they found that Peninsular Spanish showed a very strong preference for (S)(VO) parsing of PPhs, especially in cases of branching subjects. This preference for (S)(VO) phrasing applied to almost all syntactic conditions except for when the object constituents contained a proper name. They state that this is a case where these constituents are prosodically branched but not syntactically branched. In these cases, (SVO), (S)(V)(O) and (SV)(O) phrasings were present. The authors postulated that this could be a result of the speakers making a purposeful attempt at making the object more intonationally salient through alternative PPh phrasing patterns and mechanisms. In other words, they state that there is a higher likelihood for confusion to occur if a proper noun is not properly phrased than with a normal noun. Therefore, the authors postulate, more cognitive time or care is needed for the retrieval of proper nouns. This explains the rise in the (S)(V)(O) and (SV)(O) phrasings

in the cases of proper nouns. It indicates that the speaker could have been giving themselves more time by separating the object from the other constituents. With the (S)(V)(O) phrasing, the speaker theoretically gives him/herself even more time by placing each constituent in its own PPh.

D'Imperio et al. (2005) also note, similar to Elordieta et al. (2003), that in Peninsular Spanish, PPh boundaries were frequently indicated through continuation rises followed by final lengthening. Pauses also were documented with the continuation rises, but at a much lower frequency. Finally, of the Romance languages investigated in their study, Spanish was the only one not to show a general "one-to-one" mapping of prosodic branching onto parallel syntactic branching patterns. This supports the previous findings of English and French, which showed that prosody and syntax, while they do interact, are not identical, and sometimes behave differently from one another.

Rao (2007), in his analysis of Limeño Spanish, noted several phrasing patterns. He also notes that the patterns depended on the number of PWs per phrase. Speakers tended to group simple NPs, APs, and PPs into one PPh when the PPh only had 2 PWs. He found that this was the case 90% of the time. When there were three PWs in a PPh, phrases with NP or VP heads with objects acting as complements, the overwhelming tendency was for the speakers to place the first two PWs in one phrase and the third in its own PPh. (SVO) groupings with three PWs showed the same tendency. Other patterns were relatively infrequent. When 4 and 5 PWs were added to the IP, the speakers showed a very strong tendency to divide them into two different groups. This shows an ideal preference for 2 PWs per PPh, with the possibility in some cases of 3 PWs.

Gabriel et al. (2011) show that prosodic phrasing in Porteño Spanish shares features with both Peninsular Spanish and Italian. Porteño Spanish and Peninsular Spanish show a high percentage of (S)(VO) grouping (Peninsular > Porteño), while the preference in Italian is (SVO). However, Porteño Spanish shows (SVO) phrasing, and while its frequency (26%) is much lower than Italian's (91%), it is still notably higher than in Peninsular Spanish (7%). Interestingly, when the sentences had prosodically branching objects, the frequency of (S)(VO) in Porteño Spanish was higher than for Peninsular Spanish. D'Imperio et al. (2005) found several different phrasings ((SVO) (S)(V)(O) and (SV)(O)) in these conditions for Peninsular Spanish. Gabriel et al. (2011) state that the (S)(VO) phrasing for branching subjects in Porteño Spanish does not appear to be exceptional or marked, while the opposite appears to be true for Peninsular Spanish. With respect to prosodic groupings in the branching subject conditions, both Peninsular Spanish and Neapolitan Italian show (S)(VO) to be the most common grouping. This same pattern played out in the corresponding Porteño Spanish data.

What must be noted for Gabriel et al.'s (2011) results for Porteño Spanish is that they show that prosodic phrasing may not be static across different varieties of Spanish. This would imply that while one Spanish dialect shows one phrasing pattern to be the most common, it is possible that under the same conditions a different dialect would divide phrases differently.

2.9 Chilean Spanish Intonation

Chilean Spanish intonation has been relatively understudied. Several studies have examined intonational phenomena such as vocatives, orders and petitions, and tonal clash, the interaction of intonation and word order, and the pragmatic functions of intonation (Cid and Ortiz 1998, Véliz 2001, Atria 2009, Fuentes 2012, Silva-Corvalán 1983, Cepeda 1997, 2001). The main body of studies has made several attempts to identify and phonologically describe the tonal units and pitch accents of Chilean Spanish intonation using AM.

Ortiz, and Saavedra (1999), examined the prosodic behavior of information-seeking questions in educated Santiaguino speech and sought to transcribe this behavior using Pierrehumbert's (1980) AM theory and the Tones and Break Indices (ToBI) transcription system. In all, they analyzed 156 interrogative utterances from semi-spontaneous and laboratory speech samples. First, they state that their results agree with those of previous authors of other varieties of Spanish in that a rising contour was most associated with information-seeking questions. However, their results also document behavior that strays from the norm, such as suspended low tones across multiple words. Additionally, with respect to the placement of the nuclear accent in Chilean Spanish, their data corroborate those of Cid and Ortiz (1998) showing that in this variety the nuclear accent is frequently realized in words at or near the beginning of an utterance, and not near the end, where new information is traditionally located. Finally, they propose a tonal inventory, illustrated in table 2.2, for both partial and full information-seeking questions.

Partial	Full
!H*L-L%	!H*H-H%
H*L-L%	L*L-H%
L*L-H%	H+L* H-H%
!H*H-H%	L+H* H-H%
L*H-H%	H*L-L%
H*H-H%	H+L* H-L%

Table 2.2: Tonal inventory for partial and full information-seeking questions in Chilean Spanish as proposed by Cid et al. (1999)

Ortiz and Saavedra (1999) analyzed the intonation and prosodic properties of non-information seeking questions in more spontaneous Santiago speech. Additionally, they also sought to analyze this behavior from within AM and ToBI. Among their findings, they reported that their corpus showed a strong preference for non-information-seeking wh-questions and an overall tendency for these questions to tonally descend throughout the entirety of their duration instead of rising at the end. Also, Ortiz (1999) and Cid, Ortiz, Poblete, Pons and Samaniego (2000) used ToBI and AM to describe general Chilean intonation.

Ortiz (2003) examined semi-spontaneous and spontaneous speech of educated speakers from Santiago, partly in the context of broad focus declaratives. His data indicate that in the specific variety that his participants spoke the most common pitch accent, especially in prenuclear position, was H*+L. He describes this preference for H*+L as one of the distinguishing features of the specific variety of Chilean Spanish that he observed. He reports that one of the more notable phonetic characteristics of H*+L in the Santiago dialect is the low tone, which instead of dropping dramatically, many times drops only slightly. He further indicates that H+L* is so uniquely Chilean that the L*+H

pitch accent observed in other varieties is a major factor in identifying an individual in Chile as a foreigner.

Toledo and Astruc (2008) investigated rising tonal accents in the speech of Santiago, Chile. Among their findings, they report that intermediate phrases that end in H* have a secondary association with the following phrase accent if that accent is H-. In other words, the H* associates with the final tonic syllable of the phrase and the phrase tone. They refer to this final tonal sequence of utterance-internal PPhs as a toneme, which they represent as L+H*H- and posit that this toneme indicates semantic continuity. Utterance final PPhs and IPs are represented by the toneme L+H*L-L% and, according to the authors, are indicative of semantic finality or conclusiveness.

Ortiz, Fuentes, and Astruc (2010) present the most detailed and recent description of Chilean Spanish based on the SP-ToBI and AM conventions found in Estebas and Prieto (2008). They report the existence of two main monotonal and three bitonal pitch accents in Chilean Spanish namely: L*, H*, L+H*, L+>H*, and H+L*. They make no mention of the H*+L pitch accent reported by Ortiz (2003). This omission is not explained, despite the fact that Ortiz asserted that H*+L was the most common prenuclear pitch accent in his data and that it was one of the distinguishing features of Santiago, Chile Spanish. Their results report that L+H* and L+>H* are the two most common pitch accents and that, depending on the type of utterance, L+H* has three different levels of prominence: L+!H*, L+H*, and L+¡H*. The L+H* realization was found in nuclear position of narrow focus statements of the obvious as well as in a number of different interrogative contexts. The downstepped version was found in neutral statements, while the upstepped version manifested itself in contradiction and

emphatic statements, as well as in invitational and rhetorical questions. The results did not point to any different level of prominence for L+>H* but the authors do report that the peak delay was not nearly as obvious as it has been found to be in Castilian Spanish. With regards to boundary tones, their results found three monotonal and two bitonal boundary tones: L%, M%, H%, LH%, and HH%. The advantage of this study is that it forms part of a larger project examining the intonational behavior exhibited by different varieties of Spanish. As a result, the basic methodology was very similar to that of the other studies that made up the project, thus allowing for more dependable cross-dialectal comparisons of different varieties with Chilean Spanish.

Rogers (2013) documents and analyzes a previously under documented intonational plateau pattern that, at least in his data, has proven to be fairly frequent. This pattern was first, albeit briefly, reported as a strictly vocative contour by Cid and Ortiz (1998). However, their analysis is limited to a brief description of the pattern, and no further attempt is made to understand or further analyze its phonetic behavior or its phonological function. Rogers, who finds plateaus in contexts other than vocatives, shows that the pattern begins with a low valley in which all of the phonetic content is realized at the same low intonational level. This valley can be as short as two or three syllables, or it can extend for multiple, prosodic and non-prosodic words. The valley ends in a sudden rise on the stressed syllable of the final valley-internal word. The rise continues to a higher pitch level, apparently dictated by the speaker. At this point, the speaker extends the high F0 for anywhere between two or three syllables to multiple, prosodic and non-prosodic words. During this time, all plateau-internal phonetic material

is realized at the same high intonational level. Finally, the plateau ends in a sudden F0 drop on either the final stressed syllable of the plateau or the final syllable.

These intonational valleys and plateaus present challenges to both AM and Prosodic Phonology. While Rogers (2013) reports that the overall frequency of these patterns varies from speaker to speaker, he has documented their production in the speech of many speakers from various different linguistic and sociolinguistic backgrounds. Therefore, the valley and plateau cannot be written off as infrequent anomalies or the idiolectal peculiarities of a few speakers.

Rogers (2013) offers two AM centered descriptions that he ultimately deems unsatisfying. First, he suggests that each portion could simply be a chain of phonologically unspecified, or phonetically interpolated, low or high pitch accents associated to each stressed syllable. The second solution suggests that each portion only has two pitch accents, one at each extreme, and the medial sections of each portion are simply interpolated, or deaccented relative to their respective tonal levels. The final analyses he presents steps outside of the AM framework and proposes that both valley and plateau are single tonal events that each extend for the duration of their phonetic content. He notes that the challenge that this presents to AM lies in how the theory defines tonal events. The current theoretical framework treats each pitch accent that associates with a metrically strong unit as an individual, independent tonal event. Yet, Rogers' data seems to indicate that the plateaus and their preceding valleys may behave as single units. In other words, the respective low and high tonal events span all the prosodic and non-prosodic material contained within both the valleys and the plateaus.

The data in Rogers (2013) also offer an initial challenge to Prosodic Phonology and the Prosodic Hierarchy. Studies have generally agreed that in Spanish the number of permissible PWs in a PPh is between 2 and 4 (Prieto 2006, Rao 2006, 2007), with 4 being the limit and 2 the ideal PW content. However, the contours documented by Rogers show that both portions, especially the plateau, can contain from 1-6 PWs, which falls outside of both the maximum and minimum PW thresholds for Spanish PPhs. Figure 2.4 shows an example of a small valley followed by a large plateau. The plateau contains 6 PWs.

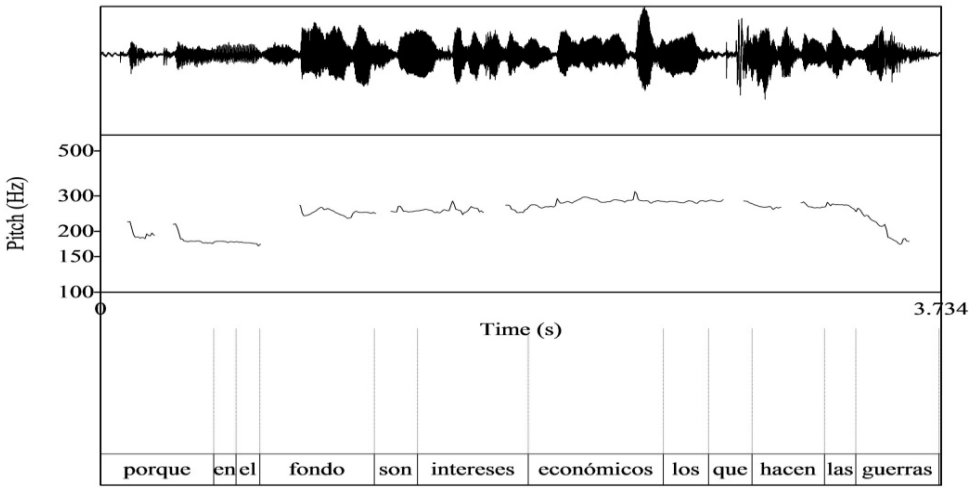

Figure 2.4: Short valley and prolonged plateau (from Rogers 2013, p.79)

A final problem that the valleys and plateaus present is with respect to their origins. As previously mentioned, only one previous study, Cid and Ortiz (1998), makes any mention of plateaus in Chilean Spanish, and they do so strictly in the context of vocatives. The plateaus and valleys Rogers (2013) presents are not taken strictly from vocative statements. Gabriel et al. (2011) report brief, intonational plateaus in controlled Argentine Porteño declaratives. These plateaus were generally only observed to last for

the duration of the prosodic word that initiated the rise into the plateau. One example the authors present shows a plateau beginning in one prosodic word and extending halfway through the following word. However, these plateaus were observed in utterance-internal position, not in utterance-final position as was the case with the Chilean Spanish plateaus. Likewise, while the Chilean Spanish plateaus generally fell on the final tonic syllable, the Porteño examples all fell sometime after their final tonic syllable. The lack of intonational valleys combined with plateaus in Spanish, barring an *ex nihilo* explanation, is suggestive of an outside origin for the Chilean Spanish plateaus.

While much work has been done on language contact and structures such as lexicon, syntax, morphology, and phonology, relatively little has been done on intonation's role in language contact. Even less has been done on intonational contact and Spanish. This might be due in part to the fact that intonation has been argued to be extralinguistic. Intonation can work with grammatical constraints, and often does to indicate things such as new information. However, it does not always work congruently within a given grammar. Ocampo (2003b), for example, shows that prosodic prominence does not always correlate perfectly with focus or new information. Intonation can also indicate things that the grammar alone cannot, such as sarcasm, disappointment, surprise, submissiveness, power, etc.

2.10 Intonational Behavior in Situations of Language Contact

What follows is a discussion and analysis of the few studies that have been done on Spanish intonation in contact with other dialects and languages. Colantoni and

Gurlekian (2004) and Colantoni (2011) examined Buenos Aires Spanish (BAS) and the influence of Neapolitan Italian on the broad focus declaratives (BFD) of the region. Specifically, both studies examine prenuclear and nuclear peak form and alignment. Spanish BFDs have prenuclear peaks aligned in the postonic syllable, and downstepped L+H* nuclear peaks that align within the stressed syllable. According to the authors, Neapolitan Italian, the variety that was most prevalent in Buenos Aires after the influx of Italian immigrants, aligns prenuclear peaks within the tonic syllable and has a notable nuclear fall. Many varieties of Spanish align prenuclear peaks within stressed syllables to mark contrastive focus.

Colantoni and Gurlekian (2004) found that the prenuclear peaks of Buenos Aires Spanish BFDs were very often aligned within the stressed syllable. They concluded that in BAS, speakers gradually disassociated the contrastive focus meaning of early aligned peaks that is part of the matrix of many dialects of Spanish, and reinterpreted it as a marker of broad focus. The authors also found that speakers of BAS show the same nuclear fall that is common in Neapolitan Italian. They concluded that this feature is also a result of contact with Italian.

The authors offer interesting and convincing evidence of contact induced change in BAS declaratives. Most convincing is the fact that aligning prenuclear peaks within the stressed syllable is used in other Spanish varieties to communicate a different pragmatic meaning. This shows a clear divergence in BAS from what is considered a norm for the intonational system of many documented varieties of Spanish. However, while the evidence appears to be strong, any hypothesis regarding the nature and process

of the change must accept that the lack of documentation of the putative contact-induced prosodic change prevents any definitive conclusions from being made.

O'Rourke (2005) studied the influence of Quechua on Lima and Cuzco Spanish in Peru. In this study, O'Rourke, similar to previous studies, examined peak alignment of prenuclear peaks in BFDs of read Cuzco Quechua, Cuzco Spanish (spoken by bilingual Spanish-Quechua speakers), and monolingual Limeño Spanish. Her analysis of Cuzco Quechua intonation shows that in Quechua BFDs, prenuclear peaks align within the stressed syllable. The resulting hypothesis is that if there is evidence of intonational contact from Quechua in either of the two varieties of Peruvian Spanish that she analyzed, Spanish BFDs would show intrasyllabic alignment of prenuclear peaks. Her results demonstrate that Lima monolinguals, and some Cuzco bilinguals, showed alignment of BFD prenuclear peaks at the end of or after the stressed syllable, which coincides with most documented dialects of Spanish. However, for the majority of Cuzco speakers, the prenuclear BFD peaks were aligned in stressed syllables, suggesting influence from contact with Quechua.

O'Rourke also investigated downstepping in BFDs. Downstepping is considered fairly common for Spanish BFDs, and she observed it in most Quechua BFDs as well. However, the Quechua speakers also showed a tendency to upstep nuclear peaks or produce multiple peaks at the same height. O'Rourke recognizes that this issue could be more related to the typology of Quechua and states that the issue needs to be better studied. Notwithstanding, she found that some individuals from both cities produced upstepped peaks in BFDs, with the Cuzco bilinguals producing the greatest amount of upstepped peaks in BFDs. The fact that some participants who were in closer proximity

with Quechua and who spoke it on a more regular basis, exhibited a pattern similar to what was observed in Quechua, lends some support to the notion of contact induced prosodic change in at least the Spanish of the participants from Cuzco.

The results of O'Rourke's study show the apparently more malleable nature of intonation in language contact scenarios. Her results convincingly show a degree of influence from Quechua on the Spanish of those with greater knowledge and exposure to Quechua. She also shows, as well as other studies such as Romera and Elordieta (2013), that the intonation of a minority language can impose or integrate itself into the intonation of the majority language more readily than other linguistic features such as syntax and morphology.

Alvord (2006) studied absolute interrogative intonation in three immigrant groups of Miami-Cubans. The situation in Miami is unique due to the large and diverse Hispanic population that lives alongside the local native English-speaking population. Hence, it could be said that Miami-Cubans are simultaneously in various dialect contact situations, along with language contact with English. In many varieties of Spanish, absolute interrogatives end in a final rise. While this pattern also exists in Caribbean Spanish, one intonational characteristic unique to Caribbean Spanish is that absolute interrogatives can also end in a fall. Alvord analyzes how this dichotomy plays out across all three immigrant groups. He found that immigrant groups 1 and 3 favored the falling pattern, while the second generation favored the rising pattern. This finding is curious, because according to Alvord, if a change had occurred in the second immigrant group's absolute interrogative intonation, it would have been expected to carry over to the third immigrant group as well.

Alvord also examined social factors and their relationship to the favoring of either of the two patterns. He found that the social networks of his participants were the main factor that favored one pattern or the other. Those who associated more with Cubans at work generally favored the falling pattern. Those who associated more with other Hispanics and native English speakers strongly favored the rising pattern. While he refrains from making any definitive statement on the cause of these patterns, he states that the contact Miami-Cuban Spanish has with other dialects of Spanish and English cannot be discounted. He says that the change is part contact-induced and part dialect leveling.

Alvord's data show the complex nature of contact linguistics and prosody. It is impossible to conclude anything definitive from his data due to the various contact situations that occur between Cuban Spanish, English, and the other Spanish dialects of the region. Nevertheless, the results appear to indicate that cross-dialectal and cross-linguistic contact have helped initiate certain changes. Likewise, similar to the previously cited studies, they show that prosody is potentially very transferrable.

Hualde and Schwegler (2008) examined the possible effects of Spanish on the intonation of Palenquero. While this study does not look at Spanish intonation, it does look at Spanish as the source language for intonational contact-induced change in Palenquero. Palenquero is a language spoken in Colombia that has at times been called the closest thing to a Spanish-based creole. It is mainly spoken by people of African descent who are also the descendants of slaves. The recordings the authors use are from the 1980s and are of older speakers of Palenquero. More recently it has been noted that the younger generations have limited fluency in Palenquero and prefer Spanish.

It has been hypothesized that the first speakers of Palenquero were speakers of various Bantu languages who at very best spoke Spanish as an L2. Due to a lack of records it has been hotly debated whether Palenquero is the vestige of a Spanish-based creole, or if it is still a creole in its current form. With regards to intonation, Hualde and Schwegler (2008) conclude that speakers of Palenquero appear to have reinterpreted Spanish intonation as a feature of the overall pronunciation of lexical items: "[G]iven the appropriate circumstances, sentence level intonation may become reinterpreted as a tone melody associated with an individual word." (p.37). In other words, just as much as phonemes are seen as critical to the correct pronunciation of a word, Palenquero speakers appear to perceive H* tones on stressed syllables as additional integral parts of these lexical components. Whereas Spanish broad focus declaratives (BFDs) tend to have L+H* pitch accents in prenuclear and nuclear positions that are downstepped from the previous peaks, Palenquero realizes each stressed syllable in BFDs and interrogatives with level H* tones. They point out that the Spanish of Equatorial Guinea, where most speakers have a Bantu language as their first language, shows similarities, such as very little declination and more ups and downs in pitch. This is crucial since it points to some variety of a Bantu language or languages being the potential source language from which Palenquero sprung.

Hualde and Schwegler demonstrate with limited data that Spanish intonation could have had an effect on the intonation of Palenquero. They also show that other African languages that have come into contact with Spanish exhibit similar intonational features, strengthening the case for contact-induced change. However, with the lack of data, it is impossible to determine to what degree Palenquero intonation is the result of

contact with Spanish, and how much of it is the result of contact with other, presumably African, languages.

Simonet (2011) focuses on utterance final, or nuclear, pitch accents of Catalan and Spanish declaratives in Majorcan Spanish. As mentioned by Romera and Elordieta (2013), Spanish nuclear accents in declaratives are described as L+H*, while those of Catalan are of the H+L* variety. This means that the target in Spanish is H, while the target in Catalan is L. Simonet found that Spanish-dominant speakers showed evidence of a target change from the Spanish H to the more Catalan L. However, the Catalan dominant speakers showed more evidence of maintenance of their native L target. It must also be noted that his data show that the incorporation of L targets is a gradient process with some participants showing more evidence of L targets than others.

2.11 Chilean Spanish-Mapudungun Contact

The German linguist, Rodolfo Lenz, dedicated most of his life to studying Mapudungun and Chilean Spanish. He notes that many of the phonetic phenomena of Chilean Spanish most likely have their roots in Mapudungun (Alonso 1940). Alonso (1953) refers to Lenz' theory as the dehispanization and subsequent araucanization of Chilean Spanish. While largely rejecting Lenz's assertions, Alonso himself cedes that tone is one possible vestige of Mapudungun that entered Chilean Spanish. To date there have been no studies examining this possibility. In fact, to my knowledge, until very recently, there have been no language contact studies at all on Mapudungun and Chilean Spanish.

Mapudungun is an agglutinating, indigenous language in Chile spoken by the Mapuche people, or "people of the land" (*mapu*-land, *che*-people). There are varying estimates as to how many of those making up the Mapuche population speak Mapudungun. According to Zúñiga (2000), the most conservative estimates place the number of speakers around 200,000, with general consensus being that the most fluent speakers are the elderly who populate the rural areas of the country. According to the 2002 Census, 604,349, or 87.3%, of people who identified with an ethnic group identified themselves as having some level of Mapuche origin. In 2010, according to limited census data, that percentage dropped slightly to 84.11%. A total of 356,652, or 59%, of those who identify themselves as Mapuche live in central and southern Chile between the Bío-Bío and Araucanía regions of the country (2002 Chilean Census).

Very little has been done on Mapudungun prosody and even less on its intonation. It is a largely undocumented language when compared to other South American Amerindian languages. Most prosodic studies only briefly mention stress. For example, Mapudungun is similar to Spanish in that it does not use tone to communicate lexical meaning. It is different from Spanish in that prosodic accent is not always used to distinguish words. For example, the word "kofke" *bread* is pronounced both "*kofKE"* and "*KOFke*" without any change in meaning. However, the accent can vary between the penultimate and final syllable in some words, depending on the syntactic and semantic context, with slight changes to meaning occurring as well. For example, *fachi pukém* means "this winter" and *fachi púkem* means "this winter that passed". Likewise, *chádi* (salt) would be the pronunciation in a declarative but *chadí* would be the pronunciation in an interrogative context. Hence:

2k. *Fachi pukém küdawmean lafken püle* (This winter I will go and work by the sea.)
Fachi púkem miawmen Santiago waria mew (This winter I went to the city of Santiago)
2l. *Ngelay chadí tachi ruka mew? (*There's no salt in the house?)
Ngillamean chádi fewla (I will go buy salt now.) (Zúñiga 2000)

Additionally, according to Zúñiga (2000), stress also tends to be attracted to certain syllables depending on whether they are open or closed. He also states that it is important to note that the following rules are not rigid.

1. Stress tends to fall on the final or penultimate syllable
2. Closed syllables attract stress
3. The final syllable of di-syllabic words attracts stress if both syllables are open or if both are closed
4. In polysyllabic words, stress tends to fall on the penultimate syllable if neither of the final two syllables is closed.
5. Polysyllabic words have a secondary accent generally in the first or second syllable, if one is closed, it attracts the stress.
6. The deictic morpheme –fi attracts stress in verbs.

While there have been no language contact studies regarding Chilean Spanish intonation and Mapudungun intonation, several recent studies convincingly support Lenz's assertion of Mapudungun's influence on Chilean Spanish. Sadowsky (2013) studied the Spanish vowel systems of 61 speakers from the region of Concepción, and the Mapudungun vowel systems of 10 bilingual Mapudungun-Spanish speakers from Isla Huapi. In total he analyzed 6,547 vowel productions. His results have several implications. First, both the male and female Spanish vowel spaces were more centralized than any of the vowel spaces reported in previous vowel studies on Spanish (e.g. Quilis and Esgueva 1983). As a result, he concludes that Chilean vowels are phonetically not the same vowels as those used in other varieties of Spanish. Second, he shows that Mapudungun has a very similar vowel space and shape to that of the Spanish

vowel space produced by his Chilean Spanish speakers. Thus, while the Chilean Spanish vowel system is phonologically Spanish in that it only has 5 vowel phonemes, phonetically, it is Mapudungun. Third, to further prove this point, he calculates the articulatory and acoustic space of both vowel spaces as compared to those of similar studies on Spain, Peru, and Argentina, and shows that the Chilean Spanish and Mapudungun vowel spaces are almost identical. He concludes that it appears that Chilean Spanish at some point went through a process of "rephonetization" due to the influence of Mapudungun. Figures 2.5 and 2.6 show the female and male Spanish vowel spaces (dark) overlaid with the respective female and male Mapudungun vowel spaces (light), respectively.

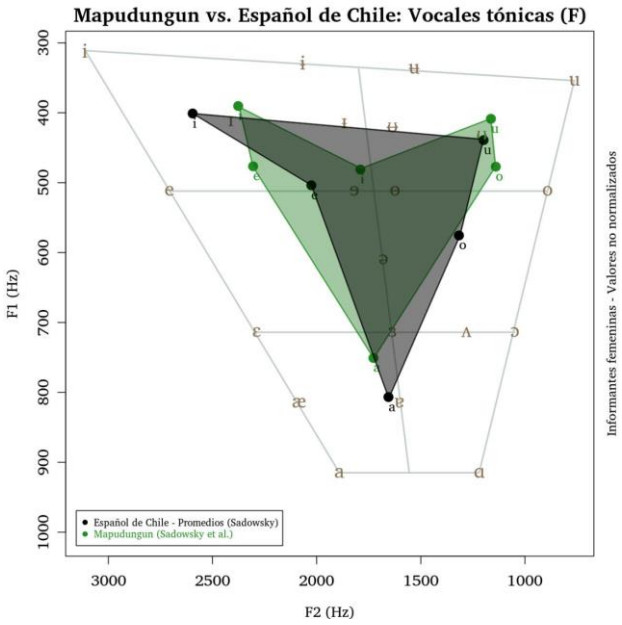

Figure 2.5: Female Mapudungun and Female Chilean Spanish vowel spaces (from Sadowsky 2013)

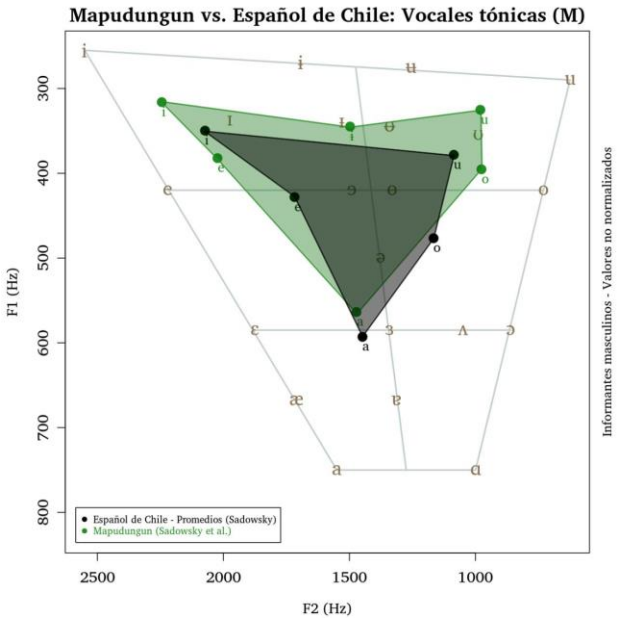

Figure 2.5: Male Mapudungun and Male Chilean Spanish vowel spaces (from Sadowsky 2013)

Sadowsky and Aninao (2013) examined grammatical number disagreement in the monolingual Spanish of adolescents and young adults of Mapuche descent in the southern Chilean province of Cautín in the Araucanía Region. The reason that they opt to specifically study number disagreement is because Mapudungun does not always mark number to indicate verbal or adjectival agreement. They state that in Mapudungun the third person plural verbal morpheme is optional. Likewise, with sequences of determiners and nouns where the determiner can also act as an adjective (e.g. ordinals), it only marks adjectives/determiners as plural, while leaving the corresponding nouns in singular form. Their results showed that 89% of their informants produced similar number disagreement in their Spanish, demonstrating that number disagreement is a fundamental part of the variety of Spanish spoken by monolingual Spanish speakers in that specific region. Furthermore, they conclude that the variety of Chilean Spanish their informants speak is "systematically different from other varieties of Spanish", as it has

been deeply influenced by Mapudungun, drawing comparisons with African American Vernacular English.

If, in fact, Mapudungun has had an influence on both the phonology and the morphosyntax of Chilean Spanish, which are systems considered to be relatively stable in situations of language contact (see Thomason and Kaufman 1988, Silva Corvalán 1994, Van Coetsem 2000), then given the previously discussed permeability of intonation, there is a very real possibility that evidence of language contact with Mapudungun can also be found in the intonation of Chilean Spanish. While Mapudungun intonation has not been studied, it is an agglutinating language, and other agglutinating Amerindian languages such as Guaraní and K'iche' (see Cooper and Tonhauser 2011 and Yasavul 2013) have been shown to have intonational plateaus. Thus, context might not be so much of a trigger as the stressing or deaccenting of specific particles and morphemes that the speaker chooses to use. For example, in Mapudungun verb usage, the root comes first, followed by 32 potential slots that only admit certain particles (Smeets 2008). With what little is known on Mapudungun stress and prosody, it could be that certain particles do not attract stress, causing the speaker to maintain the same pitch level until reaching a stress-attracting element. The principle of extension could apply to Chilean Spanish since the L tone of the valley and the H tone of the plateau can extend to several non-prosodic and prosodic words. However, context could be a trigger, and speakers could maintain high tonal levels over material designated as communicatively important, whether said content is traditionally stressed or not. Nevertheless, Mapudungun intonation must be studied in much more detail to make this determination. Likewise, due to the lack of studies on Mapudungun intonational phonology, there is no guarantee

that the English-inspired AM model (even though it has been applied to a variety of languages) is adequate for describing how the Mapuche people use intonation when speaking Mapudungun. Finally, even if AM is able to describe Mapudungun intonation, due to the vast typological differences between Spanish and Mapudungun, it is highly likely that any AM application to Mapudungun would differ greatly from how AM and, by extension, Sp_ToBI, are currently used to analyze Spanish intonation.

Chapter 3
Methodology

3.1 Research Questions

In Chapter 1 it was stated that the following four research questions guided the current dissertation:

> RQ1: What are the prosodic word (PW) thresholds for both the valley and plateau portions of the Chilean "hat" patterns? What are the implications of these thresholds for PPh length and the Prosodic Hierarchy?
>
> RQ2: Are the rises and falls on the sustained high portions triggered at syntactic phrase boundaries? What are the preliminary implications of these patterns for the syntax-prosody interface?
>
> RQ3: Is current Autosegmental Metrical (AM) phonology able to satisfactorily describe the Chilean intonational valleys and plateaus?
>
> RQ4: Is there evidence that the Chilean Spanish "plateau" pattern is the result of contact with Mapudungun?

3.2 Participants

The data for the current dissertation comes from a corpus of 40 sociolinguistic interviews conducted in the region in and around the city of Concepción, in Chile's Bío-

Bío Region, and the southern Araucanía Region. Additionally, one speaker was from Lebu, also part of the Bío-Bío Region, but had recently moved to Concepción, and another speaker was raised in Laja, also part of the Bío-Bío Region, but had recently moved to Concepción to pursue his university studies. Specifically, speakers from Concepción came from downtown Concepción and the nearby neighborhoods, called *poblaciones*, of La Villa San Pedro, Hualpén, La Villa San Pedro, Lomas Coloradas, Talcahuano, Candelaria, Boca Sur, and Michaihue. In all, 32 interviews were conducted with individuals from the province of Concepción. Six additional interviews of university students were conducted at La Universidad de la Frontera (UFRO) in Temuco, located in the Araucanía Region. Of the university students, 4 were from in and around the city of Temuco, and 2 were from Santiago. Figure 3.1 illustrates the location of the three main cities that speakers hailed from, and Figure 3.2 shows the location of all of the different *poblaciones* from which the participants in Concepción came.

Figure 3.1: Map of Chile indicating the location of the regions that speakers hailed from (Courtesy of Google Maps© 2016)

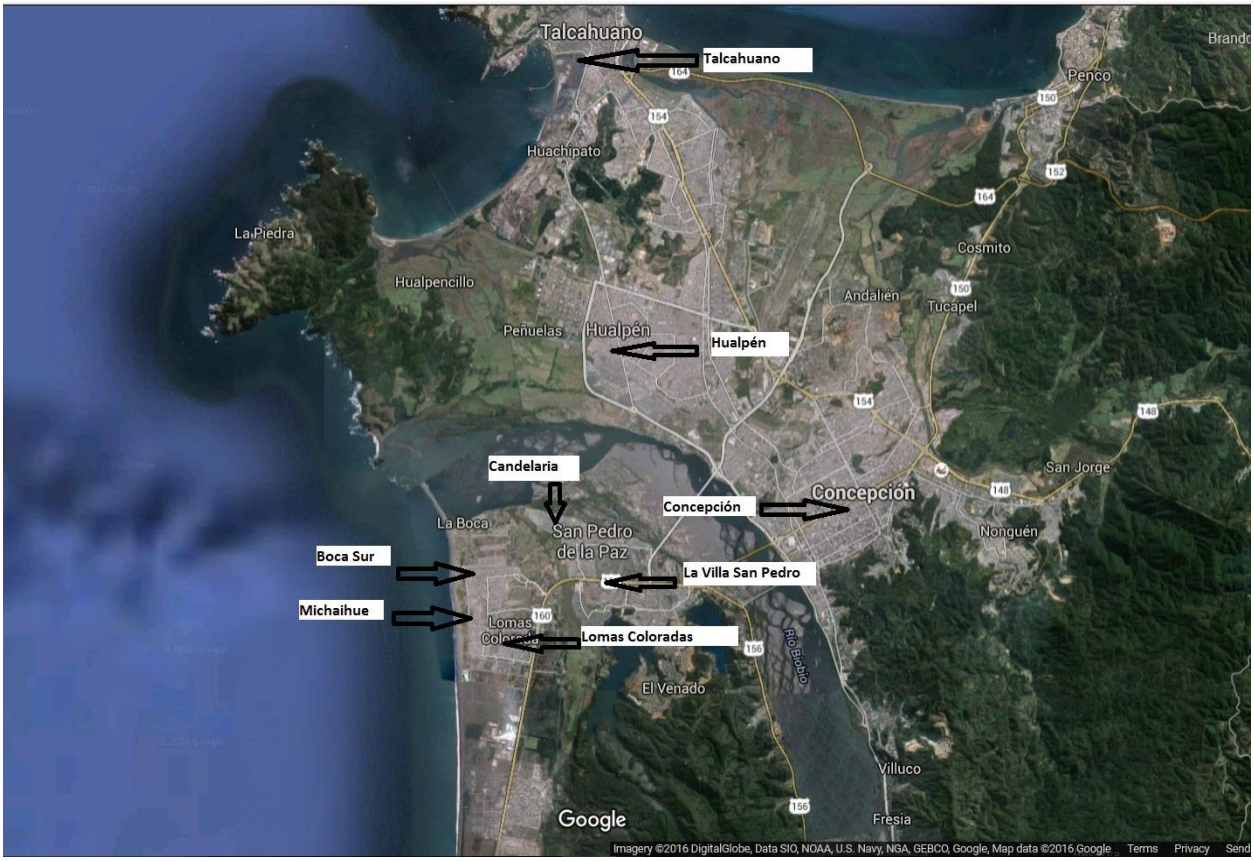

Figure 3.2: Map of the Province of Concepción indicating the neighborhoods that participants were from (Courtesy of Google Maps© 2016)

Before the interviews, all participants filled out a questionnaire eliciting basic background data such as gender, age, and neighborhood of residence. The interviews were carried out in most of the participants' homes or the homes of friends and/or family of the participants. Three were realized in an office in the neighborhood recreation center in Candelaria, and six more participants were recorded in quiet offices or classrooms in local church buildings. All participants from the Concepción region were the family members, friends, or the friends of friends or family members of the author. The interviews realized at UFRO were all carried out in a recording room on the university's campus. Participants were all university students or employees and grew up in and

around Temuco, with the exception of two, who grew up in Santiago but were recently in Temuco to study at UFRO.

3.3 Instruments and Methods

The interviews were designed to be as casual and spontaneous as possible with the end goal of obtaining the most natural speech sample possible from each speaker. Each interview lasted at least 15 minutes with some exceeding 30 minutes. All recordings were made using a Marantz PMD660 digital recorder and a head mounted microphone. Of the 40 participants, 20 were female and 20 were male. Speakers ranged from ages 18-55 and were from a variety of socioeconomic strata that ranged from low to upper-middle class. All interviews were analyzed as .wav files using the acoustic software program Praat (Boersma and Weenink 2012).

Due to the relationship between syntax and prosody, RQs 1 and 2, which focus on the PW content in valleys and plateaus and the relationship of portions of these patterns to syntactic boundaries, respectively, overlapped at times. To examine the second RQ, PWs in both the valley and sustained high portions were counted. In Spanish a prosodic word has a stressed syllable. Such words are generally considered to be content words. Words such as conjunctions, prepositions, clitics, and articles are function words and considered to be unstressed. Thus, a given valley or plateau could have had up to 10 or more total words, but not all were labeled as PWs. Additionally, the total word count for every valley and sustained high portion was recorded too. Once all PWs were counted, it was possible to attempt to examine whether the tokens were smaller PPhs governed by

one larger IP, if they were a single IP, or if they were separate IPs. Additionally, separate mixed model random effects analyses were run to see if there were any significant differences for average PW content and average total word content between any of the 6 types of plateau contours and no significant differences were found.

To address the second RQ, the initial junctures of all the rises and falls were marked to determine if both portions consistently began on major or minor constituent boundaries. During the data analysis it was common for rises and falls to contain multiple constituents. These cases were documented as well because of the extensive theoretical problems they created. However, every rise and fall in the data initiated a single, or part of a single, syntactic constituent or juncture.

No quantitative analyses were done for the third RQ, since it was primarily theoretical. Instead, various behaviors observed in the data, including in the chapters on the Prosodic Hierarchy and syntax, were discussed along with the problems they pose for the AM theoretical framework. Posteriorly, based on the data, potential modifications were proposed and tested with the data.

The fourth RQ deals with whether the plateaus and valleys are the result of contact between Chilean Spanish and Mapudungun. In order to address this question, spontaneous recordings of interviews in Mapudungun were taken from Smeets (2008). Similar to the Spanish interviews, all the Mapudungun interviews were analyzed as .wav files in Praat (Boersma and Weenink 2012). In order to establish or refute a link between Mapudungun and the "hat" patterns in Chilean Spanish, a number of similar prosodic behaviors were compared and contrasted. Likewise, based on the interviews in both

languages, the pragmatic contexts in which each language's plateaus and valleys occurred were also compared cross-linguistically.

Chapter 4
Results

4.1 Contour Variation and Classification

In all, 530 plateau contours were identified and extracted from the interviews analyzed, for an average of just over 13 plateaus per speaker. The corpus used for the current investigation was much more robust than that used in Rogers (2013), and along with the contours that I describe in that study, in the present study I identified 5 additional categories of the plateau patterns that the participants produced with varying levels of consistency. These differences were rooted in the behavior and shape of the sustained high portion of each contour. What follows are descriptions of each pattern and the criteria used to identify each one.

4.1.1 Type 1 Contours

Type 1 contours are the same patterns I describe in Rogers (2013) and were the most common realizations, making up 57.2% of all productions (303 of 530). As previously stated, Type 1 contours may or may not be preceded by a low, tonal valley and begin on a sharp rise that can extend for the duration of one stressed syllable, or for several words, both prosodic and non-prosodic. Upon reaching the target high tonal level, their length varies significantly, sometimes extending for as few as 1-3 syllables, and as much as 11 PWs and a number of non-PWs. Finally, Type 1 plateaus end in a drop on the final stressed syllable of the corresponding utterance. In my 2013 study I labeled the pitch accent

for this drop as H+L*. Figures 4.1 and 4.2 are examples of Type 1 contours from the current data set.

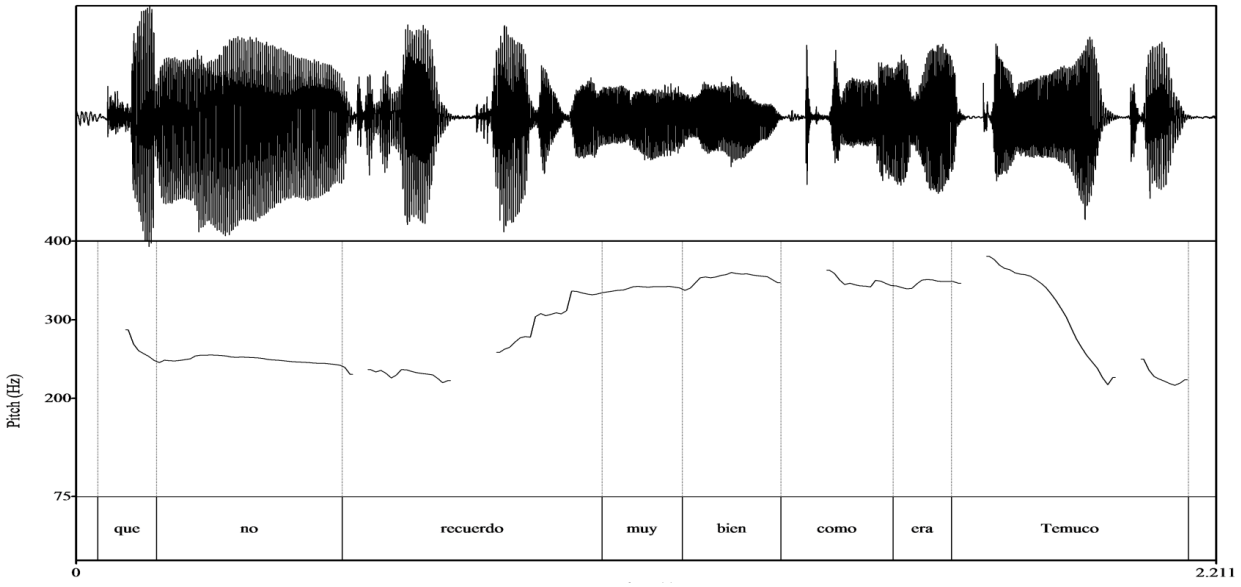

Figure 4.1: Example of Type 1 contour (*I don't remember really well what Temuco was like*)

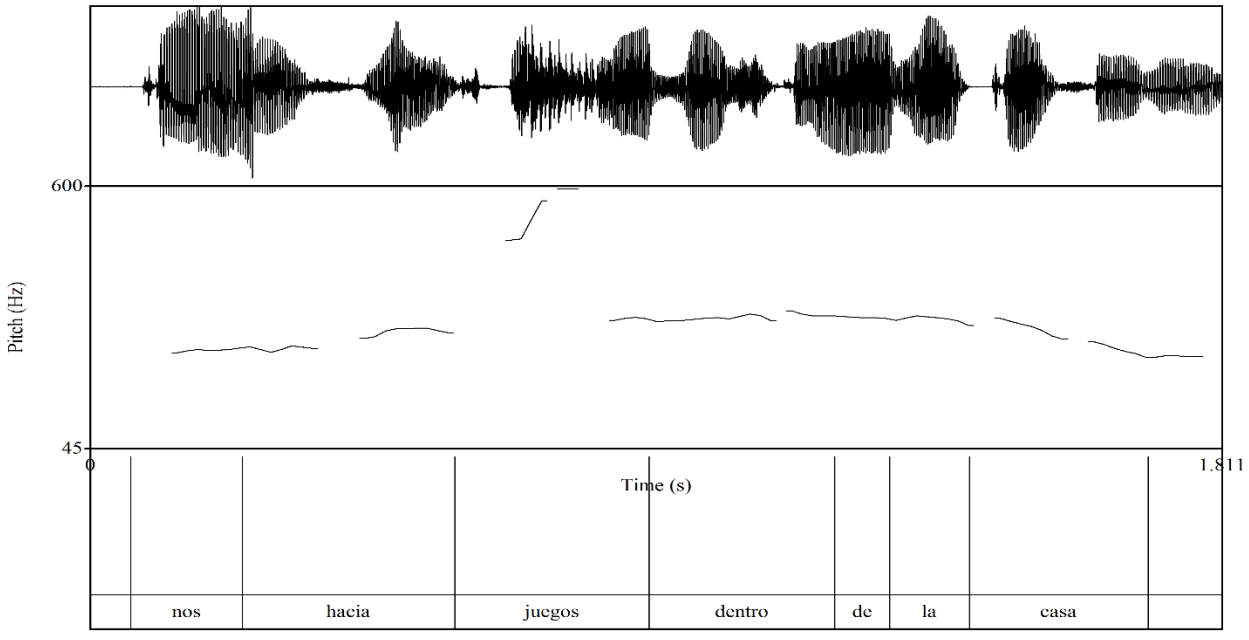

Figure 4.2: Example of Type 1 contour (...*she played with us indoors*)

4.1.2 Type 2 Contours

Type 2 contours are very similar to Type 1 contours with the only difference being the realization of the final fall. Both begin on the sharp rise that may or may not originate in a preceding low valley and both can contain a varying amount of prosodic and non-prosodic content in their respective high portions. However, Type 2 plateau contours maintain the high tonal portion until their absolute final syllable, which was always unstressed in the data, instead of dropping on the final stressed syllable. Type 2 productions only made up 6.6% of all tokens analyzed (35 of 530). Figures 4.3 and 4.4 illustrate Type 2 contours from the current data.

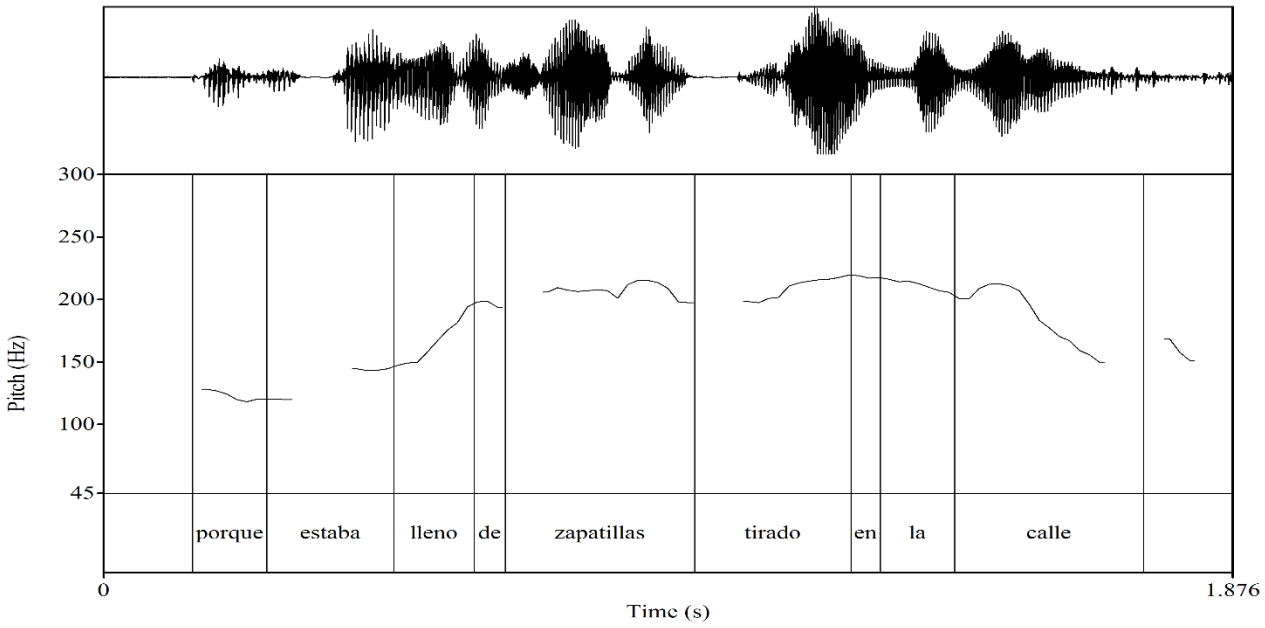

Figure 4.3: Example of Type 2 contour (*because there were a bunch of shoes lying in the street*) Note: the speaker does in fact say "tirado".

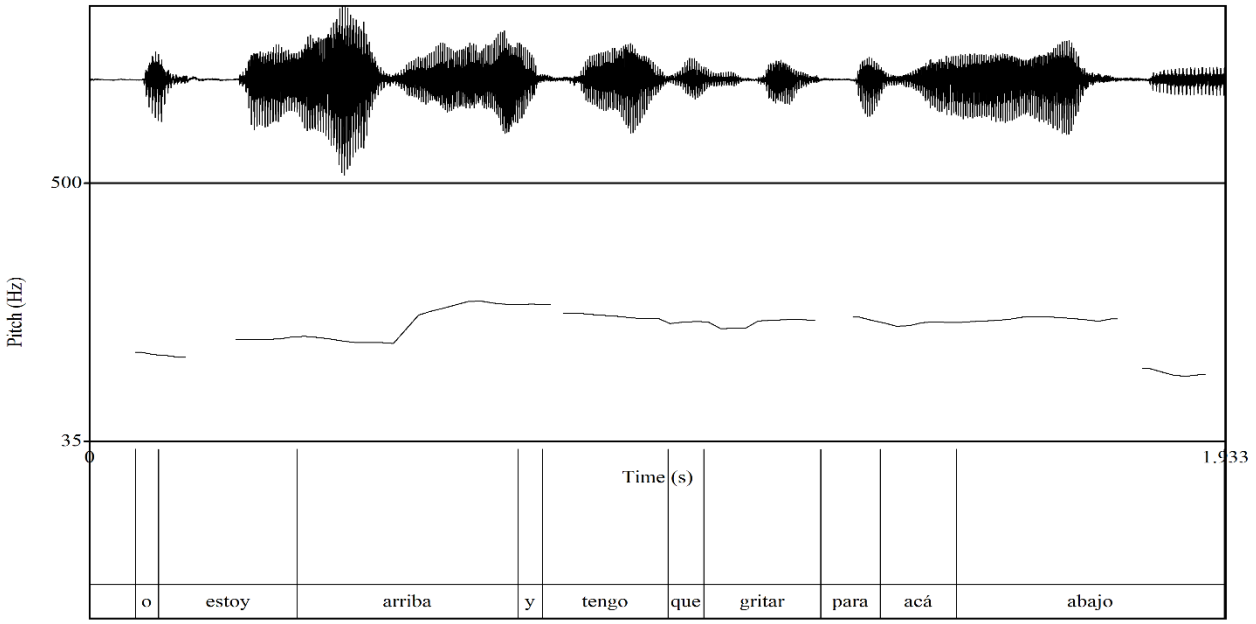

Figure 4.4: Example of Type 2 contour (*...or I'm upstairs and I have to yell downstairs...*)

4.1.3 Type 3 contours

Type 3 plateau patterns are similar to both the Type 1 and Type 2 classifications with regards to how they begin and their high portions. Where Type 3 productions deviate from Type 1 and Type 2 productions is that they end at a high tonal level and never drop, as illustrated in Figures 4.5 and 4.6. Type 3 patterns were produced most frequently at utterance-internal junctures. In all, 2.8% of all tokens (15 of 530) were classified as Type 3.

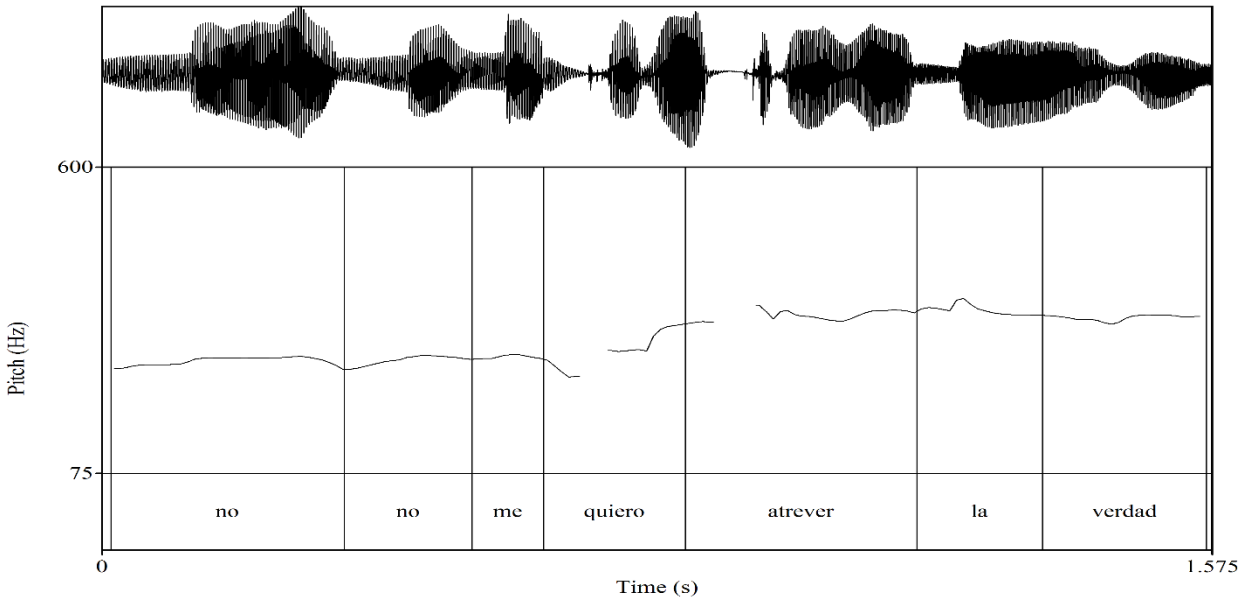

Figure 4.5: Example of a Type 3 contour (*I don't, don't dare, to be honest*)

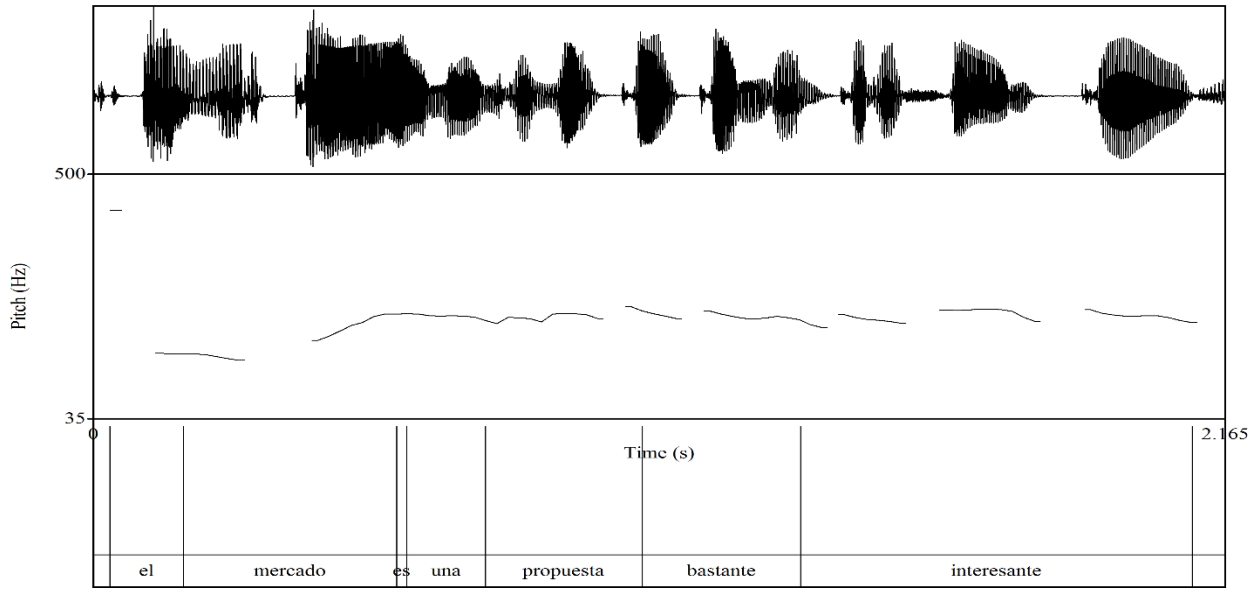

Figure 4.6: Example of a Type 3 contour (*...marketing is a very interesting possibility*)

4.1.4 Type 4 Contours

Type 4 contours differed from Types 1-3 in their final drops and made up 14.5% of all tokens (77 of 530). Whereas the final drops of previously described plateaus contained

a limited number of syllables from the same word, the final drop on Type 4 contours contained a number of syllables to several prosodic and non-prosodic words, as seen in Figures 4.7 and 4.8.

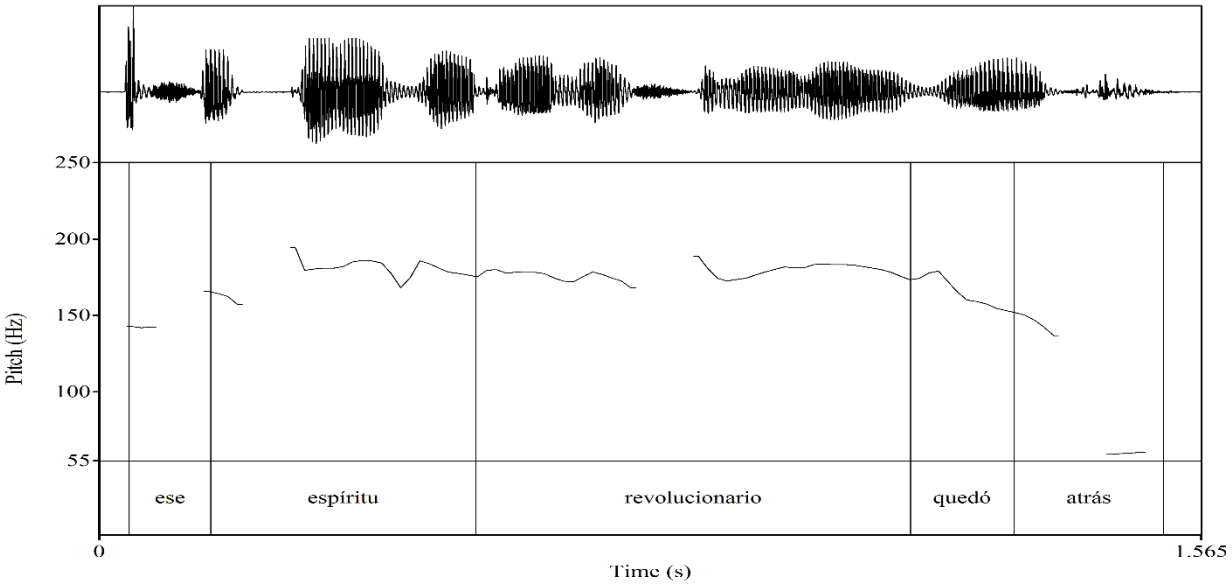

Figure 4.7: Example of a Type 4 contour (*...that revolutionary spirit is a thing of the past*)

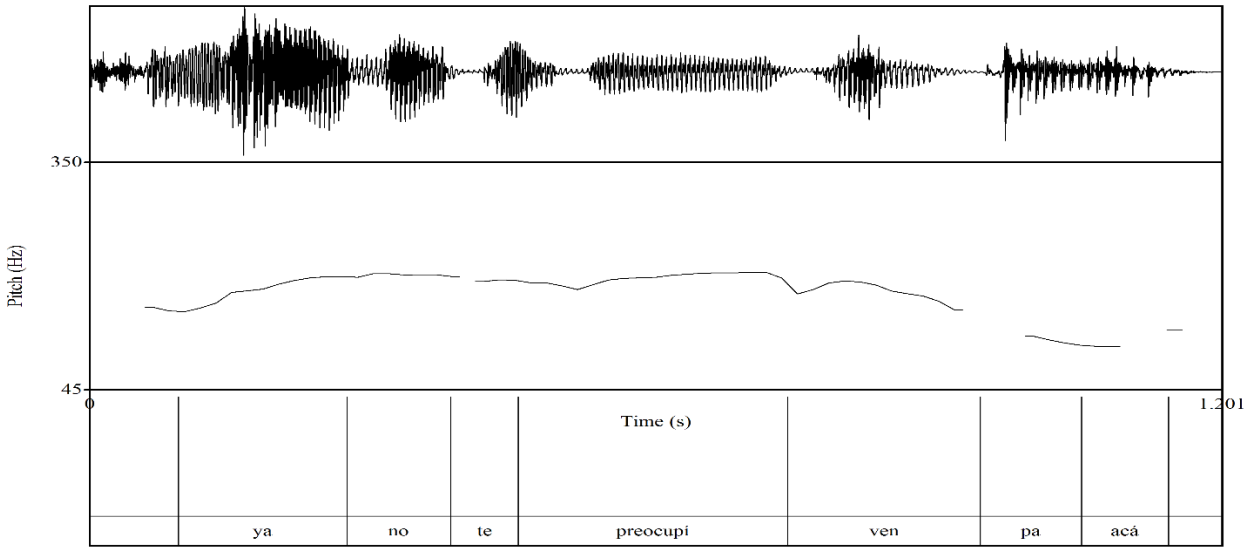

Figure 4.8: Example of a Type 4 contour (*No worries. Come on over.*)

4.1.5 Type 5 contours

Type 5 patterns showed a gradual downward slant toward a final drop in the high portion, similar to plateaus documented in German by Féry (1993) and Barker (2005), and made up 3.7 % (20 of 530) of all tokens. Despite the gradual decline in the intonational contour toward the end of a phrase or utterance, the extensively documented trend of Spanish downstepping (e.g. Face 2007, Willis 2004, among others) did not occur, as shown in Figures 4.9 and 4.10.

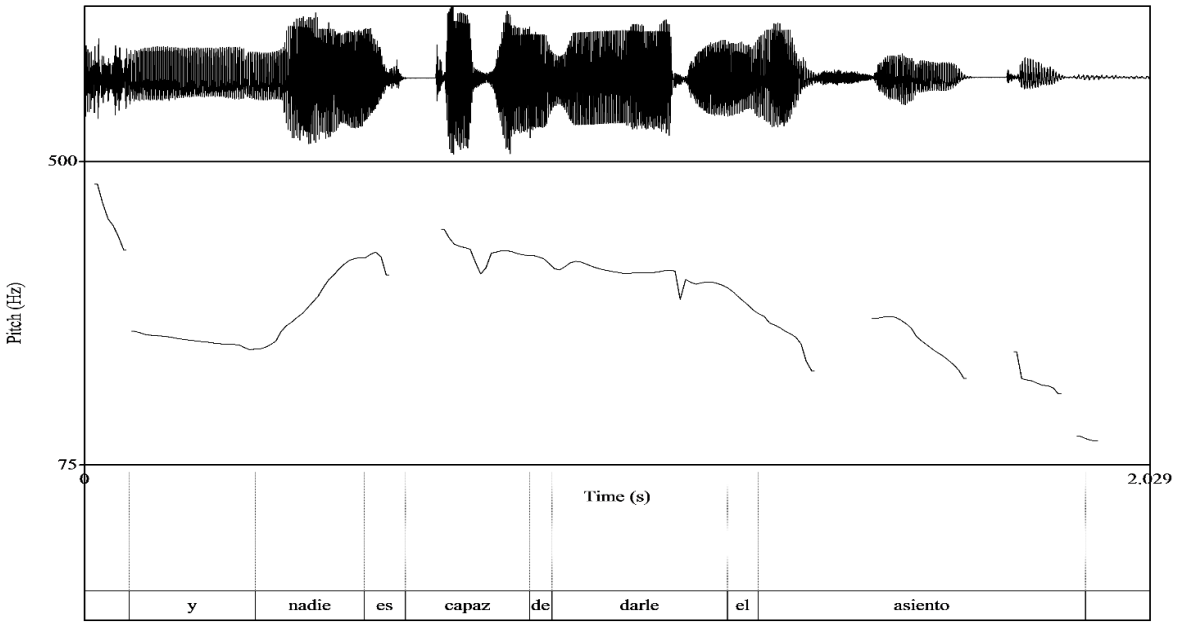

Figure 4.9: Example of a Type 5 contour (*...and no one makes an attempt to give up their seat.*)

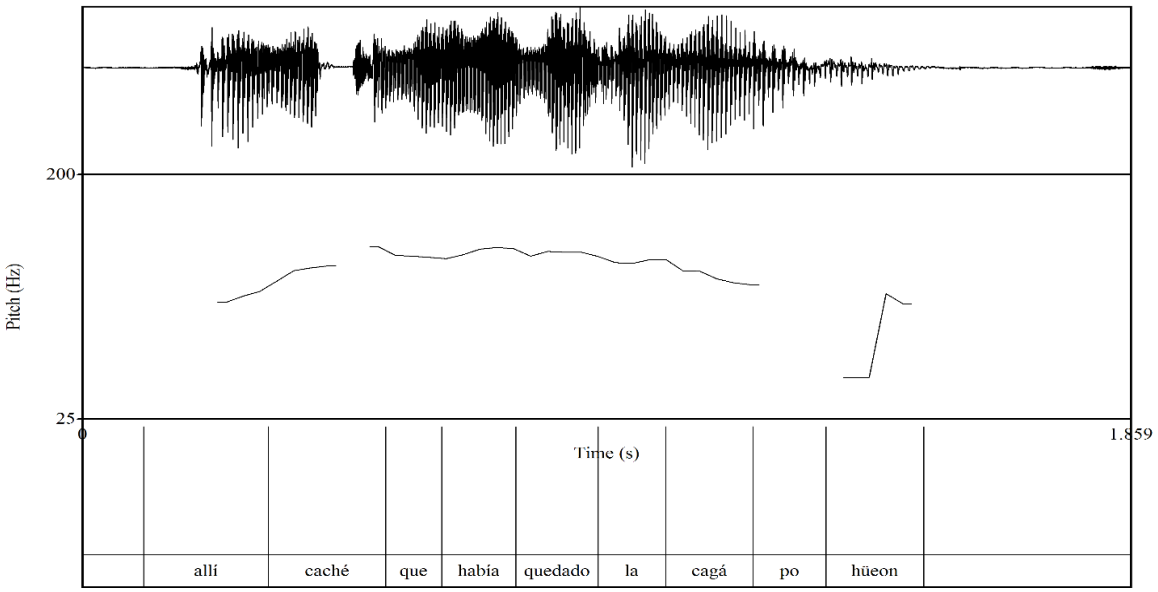

Figure 4.10: Example of a Type 5 contour (*...there I realized that things were pretty fucked up, dude*)

4.1.6 Type 6 contours

Like all of the previously mentioned classifications, Type 6 plateau contours may or may not be preceded by a valley. However, they stand out from other patterns because of the nature of their final portions. The final stressed syllable of Type 6 contours actually rises above all the previous high tonal content. After the rise on the final stressed syllable, a fall occurs on the remaining unstressed syllables until the end of the utterance. Figures 4.11 and 4.12 illustrate examples of Type 6 contours. In all, 15.3% of all productions (81 of 530) were categorized as Type 6.

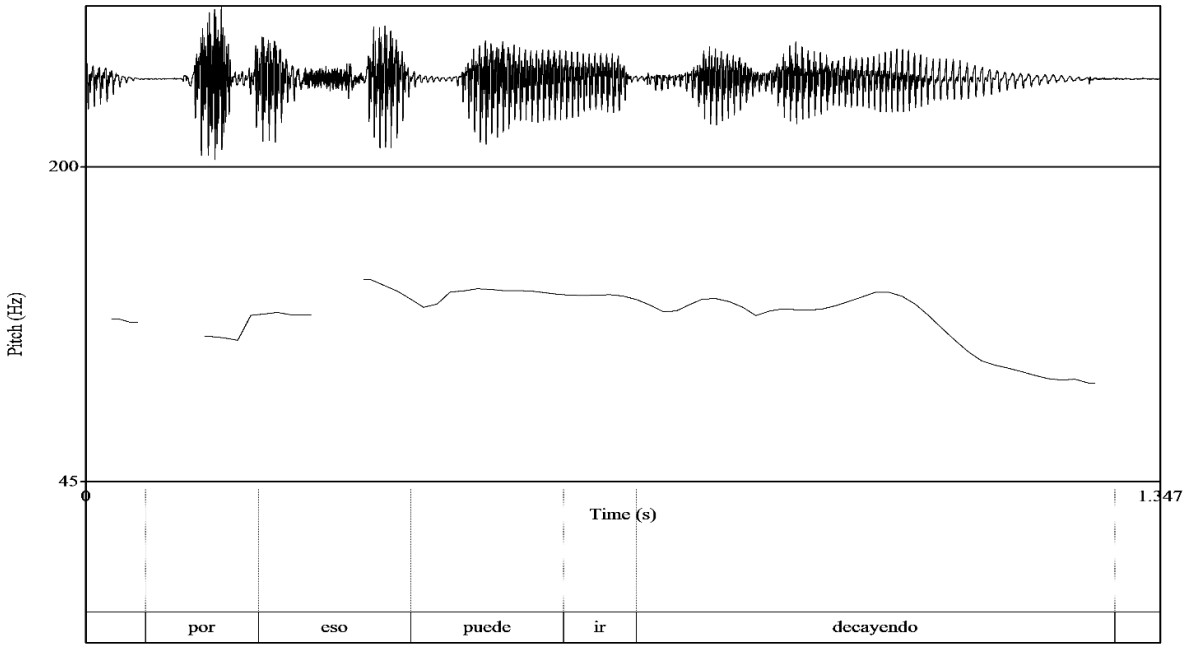

Figure 4.11: Example of a Type 6 contour (*...that's why it can get worse*)

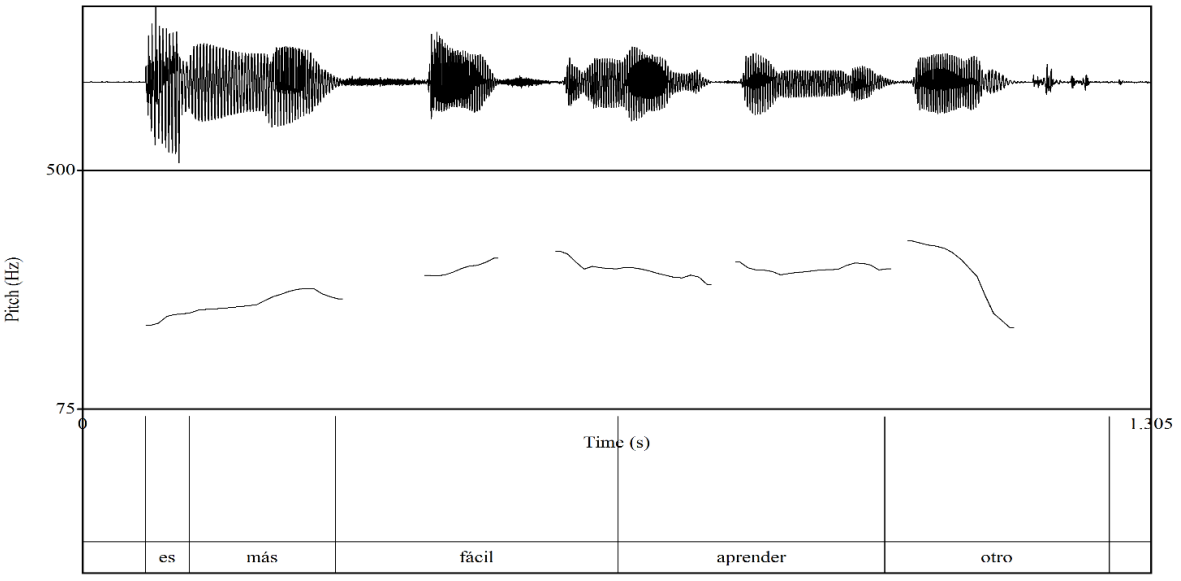

Figure 4.12: Example of a Type 6 contour (*It's easier to learn another one (language)*)

4.1.7. Type 7 subcategorization

Finally, contours that did not occur in utterance-final position and instead were produced at an utterance-internal juncture were sub-categorized as Type 7 patterns. As was the case with the Type 6 productions, Type 7 plateaus were also given a second categorization based on how they ended. Figures 4.13 and 4.14 show Type 7 plateaus with Type 1 endings and the content that follows, to illustrate that it occurs at an utterance-internal juncture.

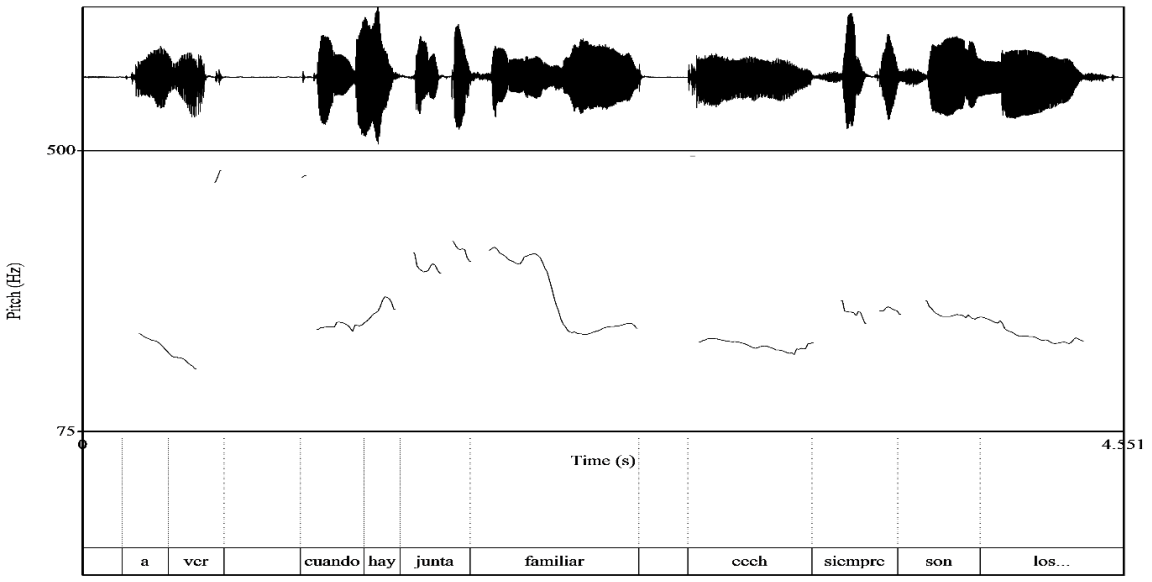

Figure 4.13: Example of a Type 7 subcategorized contour (*let's see, when there is a family get-together eeeh, it's always the...*)

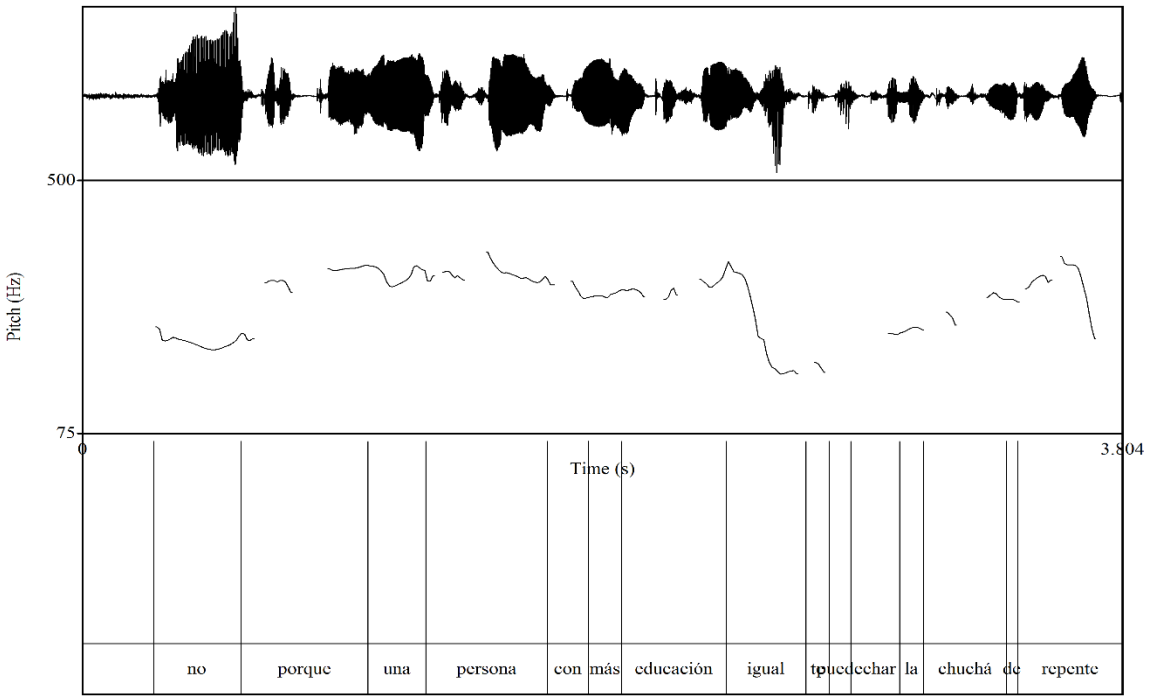

Figure 4.14: Example of a Type 7 subcategorized contour (*No, because someone with more education can talk shit to you as well.*)

4.1.8 Type 8 subcategorization

In a number of cases speakers broke up or interrupted the high portion of a contour through various means such as taking a breath, stuttering, or pausing. However, despite these interruptions, no pitch reset occurred and the speakers continued to maintain themselves at the same high tonal level after the interruption, until finishing the entire idea that they had originally intended to communicate through the high portion of the contour. These types of productions were subcategorized as Type 8 patterns. Additionally, Type 8 subcategorizations were further categorized based on how they ended. In other words, if a broken plateau ended by dropping on the last stressed syllable it was considered a Type 8 contour with a Type 1 ending. If the drop occurred on the absolute final syllable it was

categorized as a Type 8 contour with a Type 2 ending etc. Figure 4.15 shows a Type 8 contour with a Type 4 ending and Figure 4.16 shows another Type 8 with a Type 1 ending.

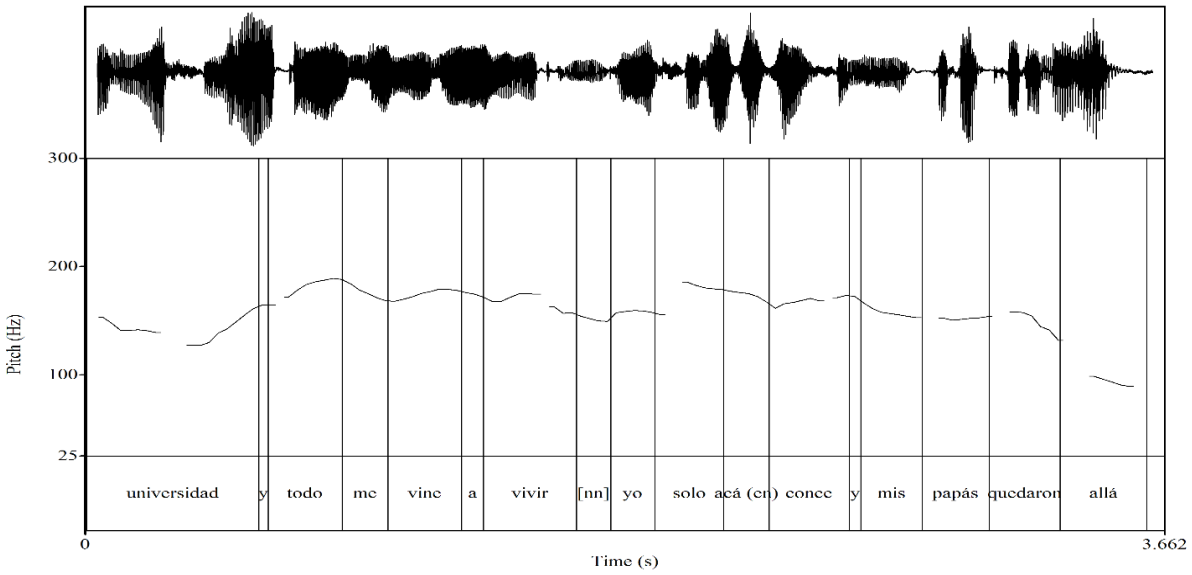

Figure 4.15: Example of a Type 8 subcategorized contour with a Type 4 ending (*…university and everything, I came here mm to Concepción to live on my own and my parents stayed behind.*)

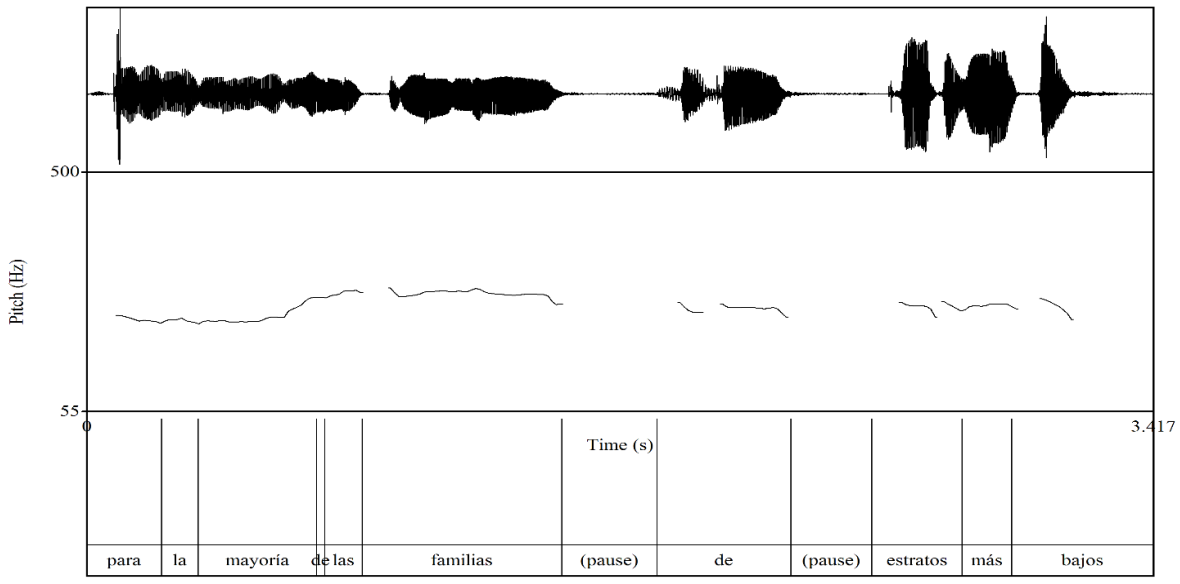

Figure 4.16: Example of a Type 8 subcategorized contour with a Type 2 ending (*...for the majority [pause] of [pause] lower income families.*)

4.2 Research Question-Specific Results

As previously mentioned, because of the highly qualitative nature of the current dissertation, numbers, percentages, and statistical results, such as PW counts, total word counts, and syntactic patterns, will be included in the corresponding discussion sections for each of the four research questions that guided the study.

Chapter 5
Chilean Spanish Intonational Plateau Contours and the Prosodic Hierarchy

RQ1: What are the prosodic word (PW) thresholds for both the valley and plateau portions of the Chilean "hat" patterns? What are the implications of these thresholds for PPh length and the Prosodic Hierarchy?

5.1 Extended Low and High Portions

In Rogers (2013), most of the examples that were used showed that both the extended low and high portions were present to differing degrees. While I gave an example of a low portion that only lasts a syllable and another example from controlled speech that has no valley, the general sense is that both portions generally are produced together. However, as previously mentioned, the data set used for this initial study was much less robust than the corpus that the current data was taken from, and while the low and high portions were frequently produced together, the data was suggestive of differing pragmatic roles and levels of communicative importance for both portions.

5.1.1 Extended Low Non-Prosodic and Prosodic Word Thresholds

The data indicated that while in just over 2/3 of the cases analyzed, a low tonal valley was present preceding the extended high portion, the size of the valleys were very diminutive when compared to the high plateaus. The overall average word count for the valleys was 1.34 words. In 32.5% of the cases (172 of 530) there was no low portion even observed, and speakers began the rise immediately on one or more words. In another 33.8% (179/530), the valleys were observed to only consist of 1 word. The total

word threshold for the low portions was 0-8 words. Figures 5.1 and 5.2 show contours with no valleys and Figures 5.3 and 5.4 illustrate cases of one-word low tonal portions.

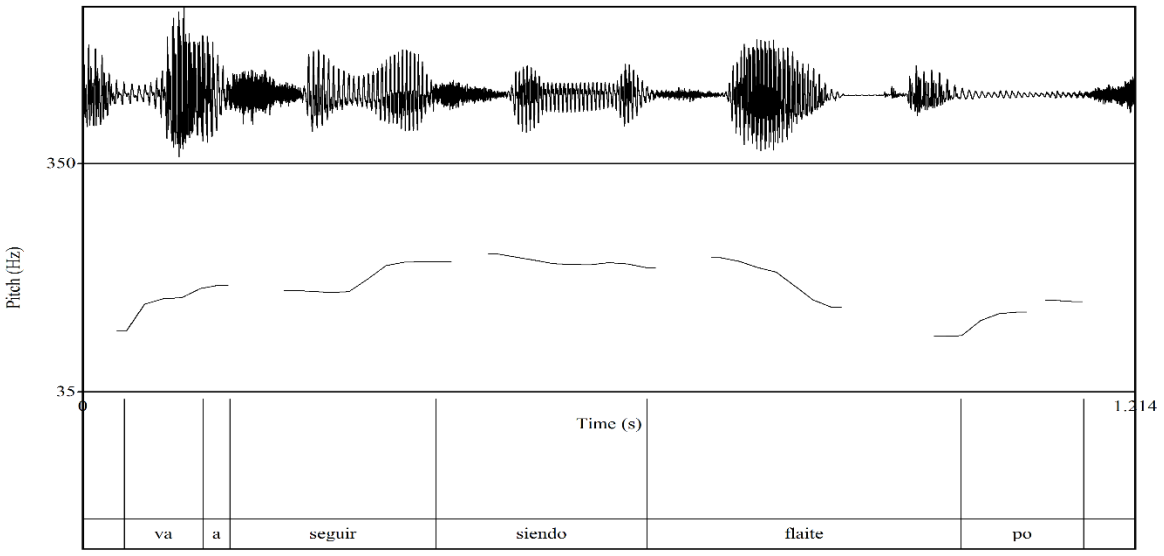

Figure 5.1: Example of a contour with no preceding valley (*...and they'll still be flaite*)

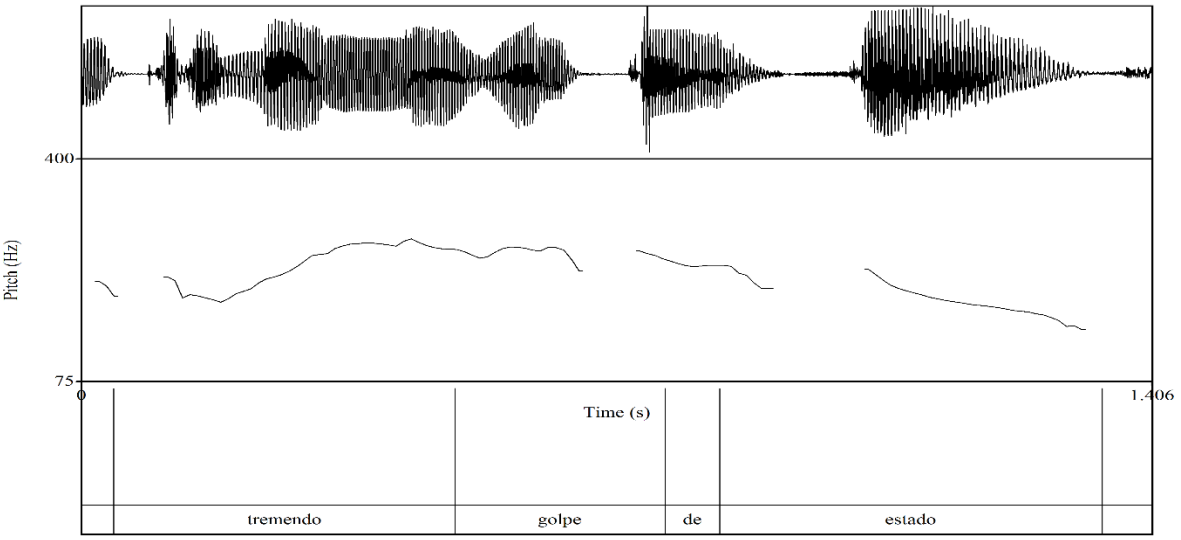

Figure 5.2: Example of a contour with no preceding valley (*a tremendous coup d'etat*)

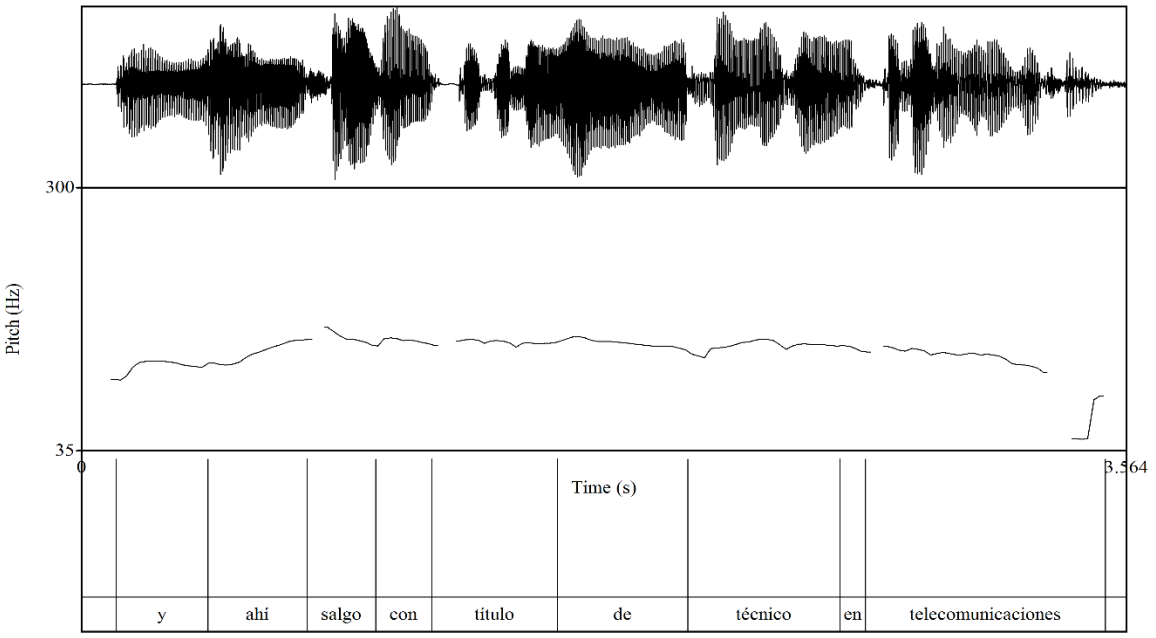

Figure 5.3: Example of a contour with a one-word valley (*...and from there I finish with a technical degree in telecommunications*)

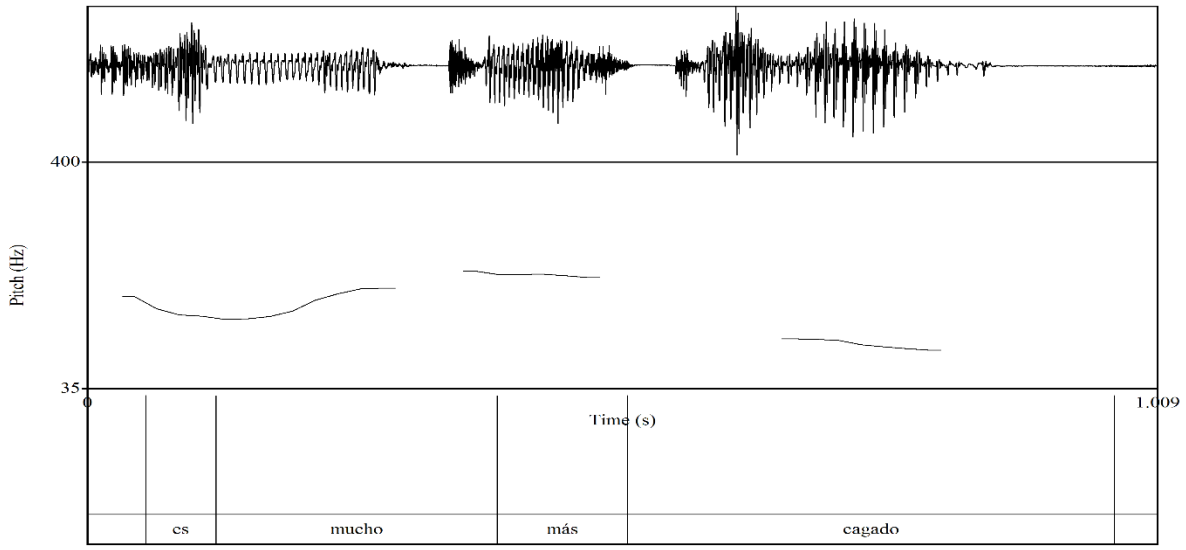

Figure 5.4: An example of a contour with a one-word valley (*...it's a lot shittier.)*

With respect to the PW content in the valleys, the overall average was very low: 0.59 PWs per valley. In 61.3% of the tokens (325 of 530), there were no valley-internal

PWs, and all of the traditional prosodic material was found in following high portions. The overall PW thresholds for the valleys ranged from 0 to 6 PWs. Figure 5.5 shows an example of a contour with a valley containing 6 PWs.

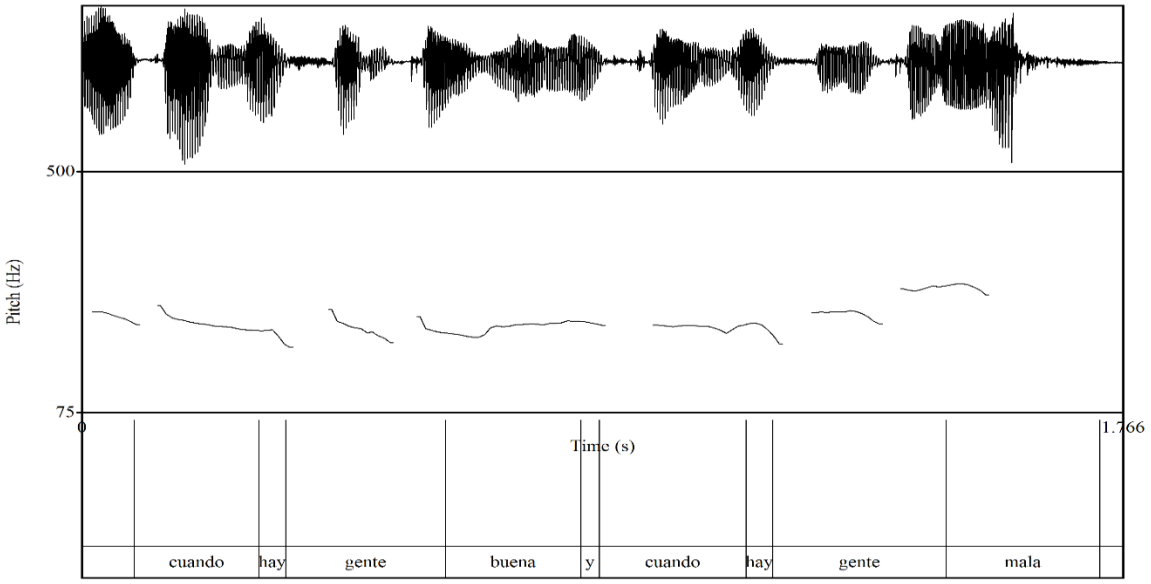

Figure 5.5: A valley with 6 PWs (*...when there are good people and when there are bad people*)

Separate mixed model random effects analyses were run to see if there were any significant differences for average PW content ($F(1, 113.915)=56.909$, $p=.091$) and average total word content ($F(1, 127.410)=125.641$, $p=.276$) between any of the 6 types of plateau contours and no significant differences were found. Table 5.1 gives the averages for both measurements by contour categorization.

Contour type	*Average valley PW content*	*Average total valley word content*
1	0.561	1.313
2	0.417	1.282
3	0.840	1.623
4	0.726	1.398
5	0.146	0.551
6	0.550	1.353

Table 5.1: Average PW and overall word content for the valley portions

Despite the diminished role and presence of the valleys in the data, it is not enough to definitively assert that they are completely devoid of meaning or function at all times. Previous studies in Spanish (Face 2003, Rao 2006) have shown that rises are indicative of more communicative importance. This would imply that the plateaus have more communicative importance than the valleys, which would certainly appear to be the case based on the general diminutive presence of the valleys. However, it is possible that a rise preceded by a valley can be interpreted as being even more salient based on the tonal contrast between the low and high material. Thus, valleys could play the perceptual and, depending on their thematic content, pragmatic role of further highlighting the content of the following extended high portions. This possibility will be discussed in more detail in Chapters 5 and 6.

5.1.2 Extended High Non-Prosodic and Prosodic Word Thresholds

The overall average word count for the high tonal portions was 5.19 words and the overall PW average was 3.43. The overall word content threshold was 2 to 16 words and the PW threshold was 1-11. Figure 5.6 shows an example of a plateau with 16 total words, 11 of which are PWs, and the contour in Figure 5.7 is an example of a high portion with 10 PWs.

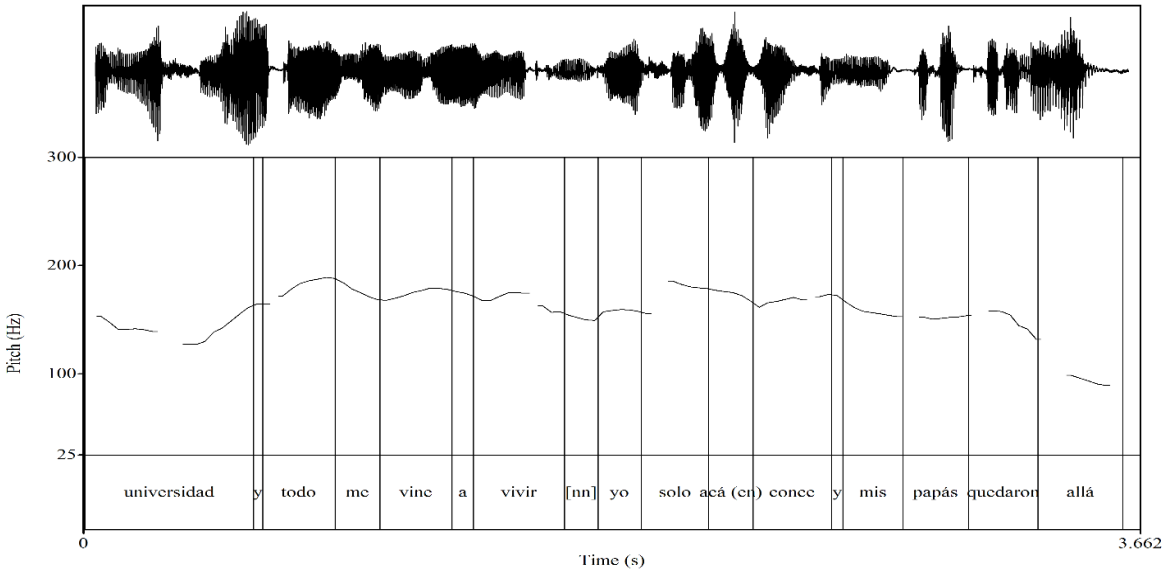

Figure 5.6: Contour with 11 PWs in sustained high portion (*…university and everything, I came here mm to Concepción to live on my own and my parents stayed behind.*)

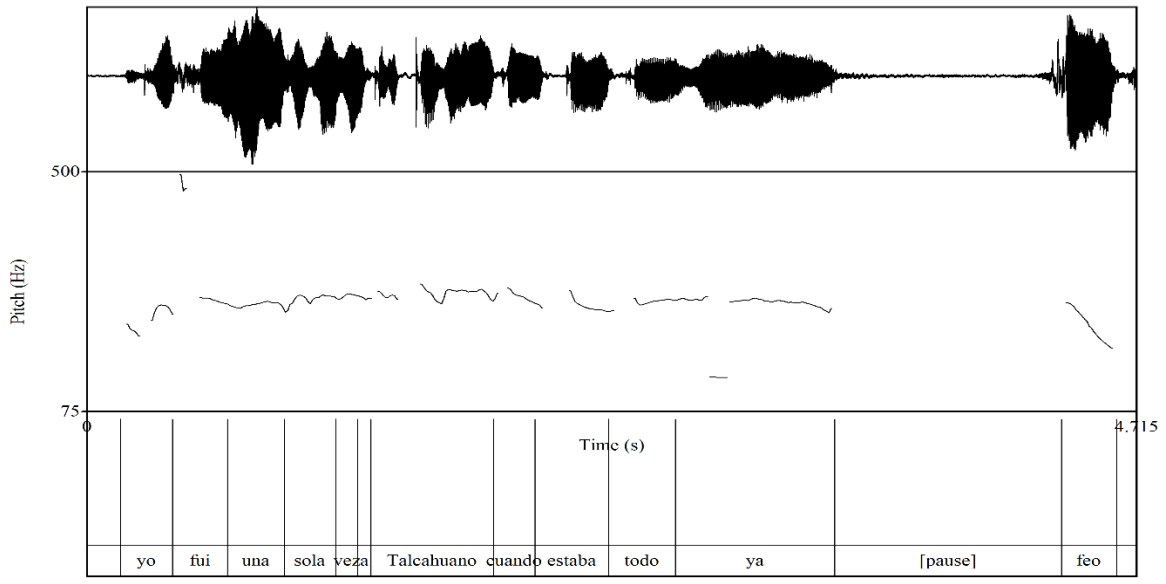

Figure 5.7: Contour with 10 PWs in sustained high portion (*I only went to Talcahuano once when it was...bad.*)

As was done in the case of the valleys, separate mixed model random effects analyses were run to determine if there were any significant differences for average PW content ($F(1, 99.921)=843.118$, $p=.039$) and total word content ($F(1, 99.542)=792.693$,

p=.042) between any of the six plateau categorizations. The analyses both showed significant overall ANOVA results for PWs (p=.039) and overall word content (p=.042). To determine if there were indeed significant differences between plateau types and the dependent variables, post-hoc Bonferroni pairwise tests were run and in both cases there were no significant pairings. Table 5.2 illustrates the averages for both measurements by contour categorization.

Contour type	*Average plateau PW content*	*Average total plateau word content*
1	3.276	4.961
2	3.168	4.974
3	3.132	4.651
4	3.633	5.691
5	3.923	5.887
6	3.617	5.484

Table 5.2: Average PW and overall word content for the high sustained portions

The data show a high degree of variability in both the traditional prosodic content of the extended high portions, but also the overall length. While the valleys show that they can vary in size as well, the ranges of prosodic content and overall content were much ampler for the high portions, further suggesting that these portions are the most important portion of the Chilean Spanish plateau contours. The high degree of variability, with respect to both the prosodic content and the overall content, suggests that the length and prosodic content of these portions are at least to some degree dependent on the speakers and what they want to communicate to those around them. It should be further noted that the ranges, or thresholds, that were calculated from the current data, are not rigid, and are simply based on what was in the data. It is very possible that the upper limits of both the prosodic and overall content ranges can be superseded, and consequently expanded by speakers.

5.2 Analysis of Chilean Intonational Plateau Contours Using the Prosodic Hierarchy

Due to the apparent ability of speakers to expand and contract both the high and low portions, and the abundant PW range of the high portions, it was necessary to investigate how the Chilean Spanish plateau contours fit into the current framework of the Prosodic Hierarchy. With previous studies stating that the PW range for PPhs in Spanish is 2-4, with 2 being ideal (Prieto 2006, Rao 2007), and the extended amount of prosodic content in Chilean Spanish plateau contours, especially in the extended high portions, it is possible that when either portion is extended over long amounts of prosodic material, multiple PPhs and/or IPs are present. If this is true, then the PW range per PPh or IP might be reduced and more closely resemble what has been previously reported for Spanish.

As previously discussed, there are several cues that have been identified in the literature that indicate phrase boundaries in Spanish: pauses, pitch accents, and lengthening (e.g. Price et al. 1991, Nibert 1999, Rao 2010). Previous studies have also shown that IP and PPh boundaries are both frequently indicated by way of pauses and lengthening of final syllables, but that longer pauses and greater degrees of final lengthening are often associated with higher levels of the Prosodic Hierarchy, such as IPs (Price et al. 1999, Rao 2010). Pitch accents indicate PPh boundaries in the form of phrase tones (e.g. Nibert 1999, D'Imperio et al. 2005) and boundary tones. Together, these cues are what speakers frequently make use of to communicate different meanings (e.g. lilacs and yellow irises vs. yellow lilacs and yellow irises) and to parse information into smaller "chunks". It is assumed that by dividing information into smaller portions,

not only can subtle differences in meaning be communicated, but also it can potentially make longer strings of information more cognitively manageable (Christophe et al.2004).

In addition to the previously mentioned cues, Prieto (2006) uses the Tones and Breaks Indices from Sp_ToBI (Beckman et al. 2002, among others) to mark phrase boundaries. Break indices are used to divide utterances into smaller parts, based on prosodic and orthographic cues, and include five different levels of breaks. A level 0 break is used to mark interconnection between words on the orthographic level, such as when synalepha occurs when a word ends in the same vowel that begins the following word (e.g "l**o o**rdinario", "que se hag**a a**sí"). A level 1 break marks the separation between prosodic words. A level 2 break is less straightforward than level 0 and level 1 breaks. A level 2 break is described as an apparent disjuncture that does not have any effect on the fundamental frequency and/or a perceived intonational boundary that lacks the cues that typically mark PPhs and IPs. (http://prosodia.upf.edu/sp_tobi/en/labeling_system). The existence of level 2 breaks in Spanish is still very much debated, but because transcribers have perceived breaks at junctures where there is no prosodic indication of a break, it is still included in the Sp_ToBI labeling conventions (http://prosodia.upf.edu/sp_tobi/en/labeling_system). Level 3 breaks are used to mark PPh boundaries, and Level 4 breaks indicate the end of IPs. In her study, Prieto only uses level 2 breaks as a cue for phrasal boundaries.

When attempting to parse the contours according to the Prosodic Hierarchy, the cues that were used to establish prosodic boundaries were pauses/breaks, syllable lengthening, pitch accents, and level 2 ToBI breaks. Figure 5.8 shows an example of how this analysis was carried out.

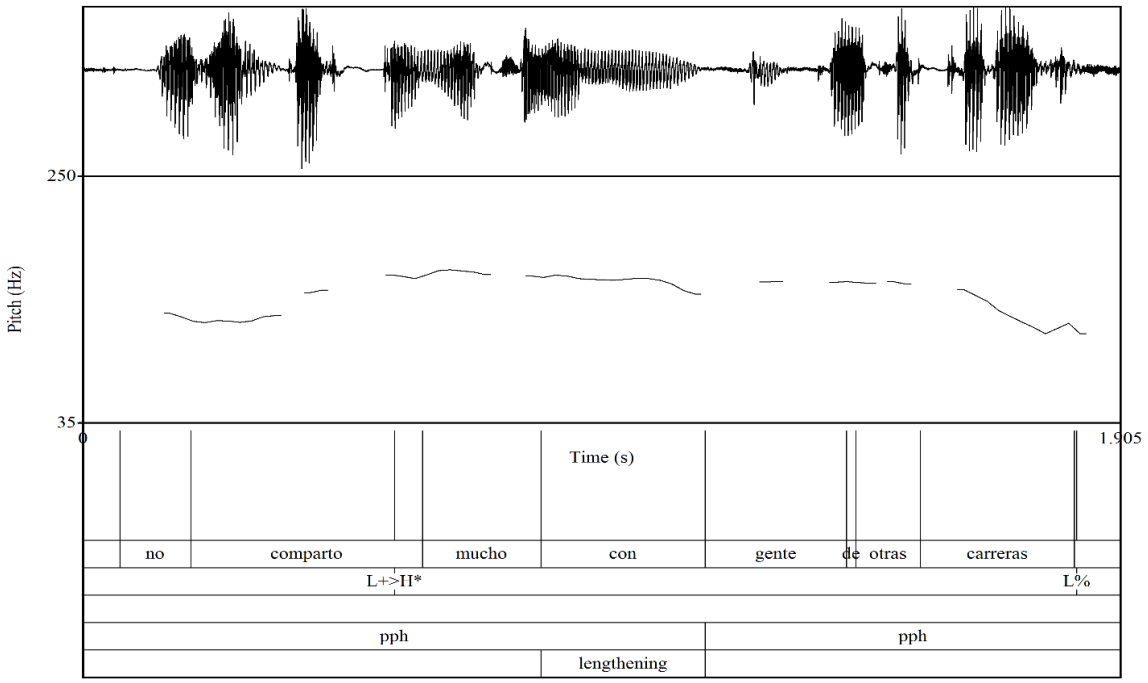

Figure 5.8: Example of how the attempt was made to divide contours into smaller components based on the Prosodic Hierarchy (*I don't have a lot of contact with people from other majors.*)

When attempting to parse the contours, 5 tiers were used in Praat (Boersma and Weenink 2012). The first tier was the word tier. The second through fourth tiers were for pitch accents, ToBI breaks, and whether the marked material was part of a PPh or an IP. The final tier was for transcription related notes. The example in Figure 5.8 shows a contour divided up into two PPhs that, together, form the content of an IP. The first PPh contains 3 PWs and the second PPh contains 3 as well. The cues that were used to determine the division of this specific example were primarily the lengthened preposition "*con*" and the low boundary tone at the end of the contour. There were no perceived level 2 ToBI breaks, and the fourth tier was consequently left blank. According to Sp_ToBI and AM conventions, there is a L+>H* pitch accent on the word "*comparto*" as

it initiates the rise into the extended high portion from the one-word valley, but the lengthening that occurs in the middle of the high plateau was ultimately perceived by the author as a more perceptually salient cue for a boundary. Thus, the utterance was parsed in the following manner: (*no comparto much con*)φ (*gente de otras carreras*)φ (φ=PPh). Figure 5.9 illustrates another example of how attempts were made to divide contours into smaller chains of information.

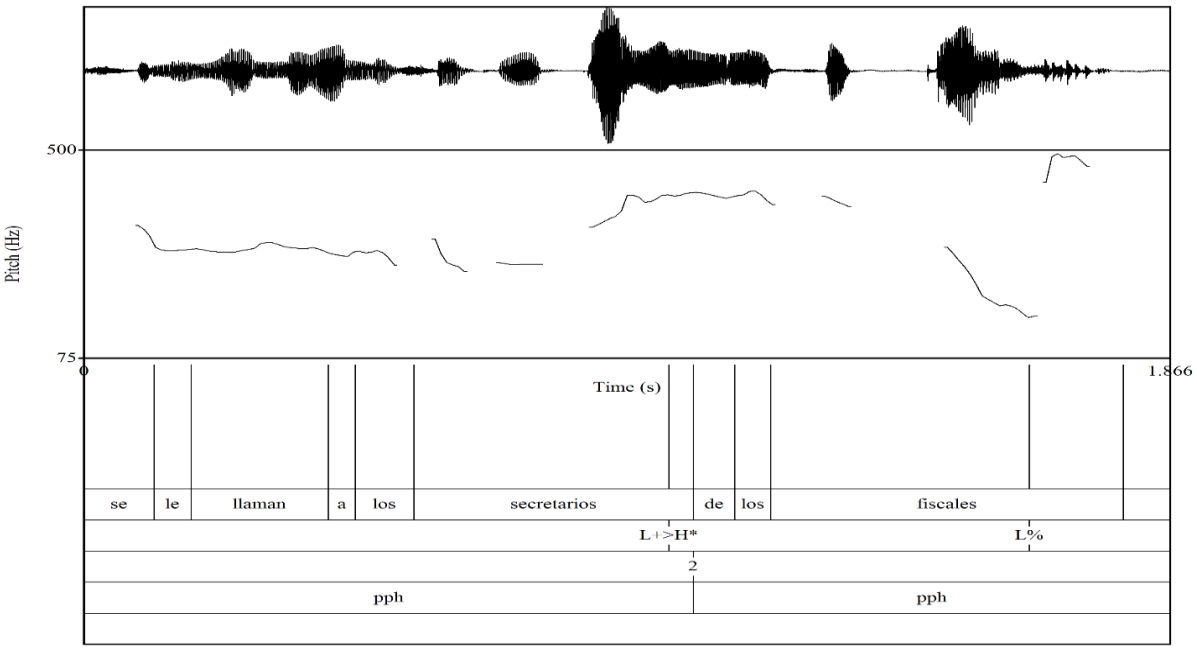

Figure 5.9: Example of how the attempt was made to divide contours into smaller components based on the Prosodic Hierarchy (*They're called the prosecutors' secretaries*)

Similar to the previous example, the contour in Figure 5.9 has been divided into two smaller PPhs that are part of a larger IP which contains more PPhs that were not part of the contour formed by the extended low and high portions. The first PPh contains two PWs and the second contains one. The principle cues that were used to determine the boundaries were a level 2 ToBI break between the word "*secretarios*" and the preposition

"*de*", and the low boundary tone at the end of the utterance. Once again, the rise occurs on a L+>H* pitch accent, yet the ToBI break was a more perceptually salient cue. It is possible that the perceptual salience of the level 2 break is because it occurs between two major syntactic junctures: a noun phrase and a prepositional phrase. Thus, while the break does not alter the F0 in any perceptible form, its occurrence between major syntactic junctures increases its perceptibility and salience with relation to other potential surrounding cues. As a result, the proposed parsing of the contour is (*se le llaman a los secretarios*)φ (*de los fiscales*)φ.

While the cues used to parse the contours are reported as reliable phrasing cues in the literature, with the nature of how the Prosodic Hierarchy is structured and the high level of variation exhibited by the Chilean Spanish plateau contours, theoretical problems were encountered. Before analyzing any examples, it is necessary to briefly review the structure and the theoretical assumptions of the Prosodic Hierarchy in order to understand how the issues that arose are theoretical challenges.

The Prosodic Hierarchy is based on the Strict Layer Hypothesis (SLH; Ladd 2008), which assumes that each level simultaneously governs everything below it while being governed by all levels above it. With the exception of the level of Foot, in Spanish it is assumed that every utterance contains at least one manifestation of each level. It is theoretically impossible for the hierarchy to exist if one level is missing. In other words, a PW cannot be present, if there are no syllables present, or a PPh, and consequently an IP, cannot exist if there is not prosodic content for them to govern. In other words, no matter the amount of non-prosodic content in an utterance, there must be at least one PW present for a PPh or an IP to be present (von Heusinger 2008). The absence of PWs

leaves the PPh and IP levels void of anything to govern. Even when an utterance is considered to be a single IP, the structure of the Prosodic Hierarchy implies that the utterance is simultaneously both a single PPh, which, through the assumptions of the SLH, attains IP status as well. Thus, when dividing utterances into different levels of the Prosodic Hierarchy, the researcher is obligated to assure that all levels of the hierarchy below the IP must be able to govern and be governed. Even the IP can be governed if the additional level of Utterance is added.

Generally, the difference between PPhs and IPs is that an IP, by virtue of being ranked higher, carries meaning and more complete and complex ideas than a PPh. PPhs often communicate incomplete ideas, as they are embedded in IPs, and therefore combine to communicate the more complete ideas that an IP is supposedly transmitting. IPs are also described as being "terminal" points in a given discourse (Rao 2009). In Spanish, this means that and IP is marked with a boundary tone (%) at its right extreme, which indicates the end of a thought (Rao 2010). Longer pauses also indicate the end of an IP, their greater length carrying a sense of definitiveness, which also serves to mark the end of an idea. Because PPhs generally give background information, or details about an IP (von Heusinger 2008), they are not terminal points in discourse and when tonally marked, their presence is indicated with right-edge located phrase tones, as well as short pauses and lengthened final syllables (Rao 2010).

Most of the previous work on Spanish using the SLH framework and the Prosodic Hierarchy has used controlled utterances designed to satisfy the demands of the SLH framework (e.g. Prieto 2006, Rao 2007, Nibert 1999, among others). However, due to the high level of spontaneity and naturalness of the current data, it was frequently very

difficult to satisfy the assumptions and structure of the SLH and the Prosodic Hierarchy, and frequently there were PPhs with no prosodic content.

One problem that the Chilean Spanish plateau contours present is the fact that there are no clear indications of phrase tones. If the contours were made up of multiple PPhs or multiple IPs at times, it would be expected to be able to observe evidence of phrase tones in the F0 contour. However, due to the fact that both low and high portions are sustained at their relative pitch levels consistently, the only regularly tonally salient portions of the contours were the rises and the falls. It is, therefore, not possible to identify phrase tones in valley or plateau internal positions. One potential argument is that the rise marks a boundary, but the problem is determining if the rise is located at the right or the left edge of a phrase. In other words, if the rise indicates there is a boundary, does it mark the end of one PPh, and the beginning of another in the sustained high portion, or does it mark the beginning of a new PPh that excludes the preceding low material and includes the following sustained high material? Previous studies on Spanish (Face 2003, Rao 2006) demonstrate that rises indicate that preceding lower tonal material is less communicatively important than material on which a rise in the fundamental frequency occurs. Based on this, the assumption is that the valleys are communicatively less important than the high portions, and therefore, the rise is the beginning of a new PPh, and the preceding valley material is its own PPh. However, in the end, the phrasal position of the rise is irrelevant, because the data show examples where no matter which supposed PPh the rise was placed with, PPhs devoid of prosodic material were created, as seen in Figure 5.10.

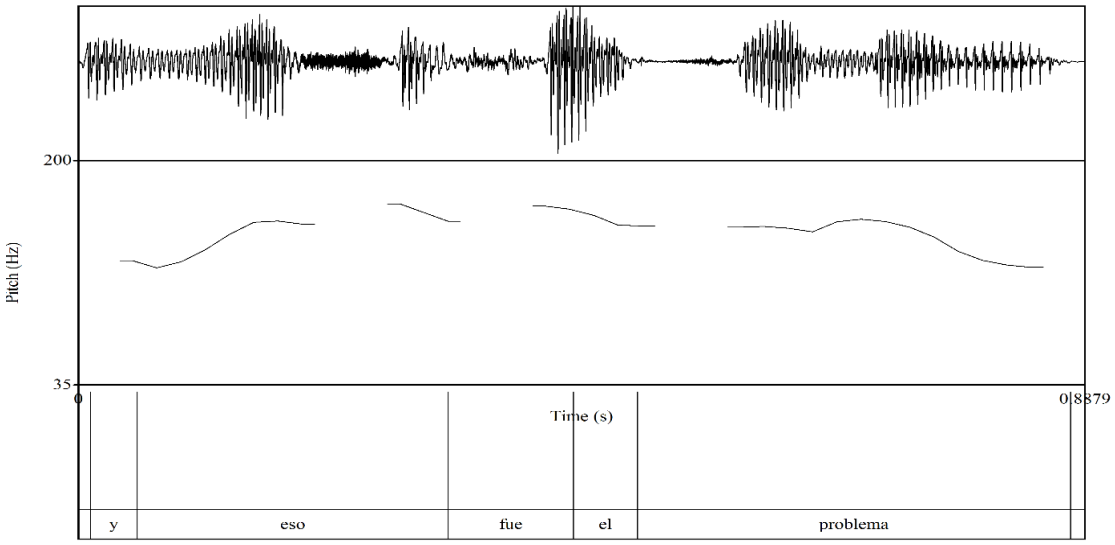

Figure 5.10: Contour in which the location of the rise results in no PW content in a proposed PPh (*...and that was the problem*)

The contour in Figure 5.10 is a Type 8 contour that rises on the non-prosodic pronoun "*eso*" and ends on a fall after a L+H* rise on the final word "*problema*". If the rise is assumed to start a new PPh, then the only word that precedes it is a non-prosodic conjunction, leaving a potential PPh without prosodic material. If the rise is assumed to mark the end of a PPh, then the PPh still is devoid of prosodic material since neither "*y*" nor "*eso*" are PWs. It must be pointed out that "*eso*", while traditionally not considered to be prosodic, could be argued to be prosodic in this instance because it occurs on a rise. In this specific instance, AM could posit that the speaker places a L+H* pitch accent on the first syllable of "*eso*", therefore making it prosodic. If the division is made at the beginning of the rise, there is still PPh with no prosodic content, but, if the division is made after the rise, then the aforementioned issues with the Prosodic Hierarchy can potentially be resolved. This may be a moot point, however, as evidence to be discussed shows that placing phrase boundaries at the end of the rises also results in problematic

divisions for the Prosodic Hierarchy. The contour in Figure 5.11 shows a similar instance where the rise occurs on non-prosodic content thus creating potential PPhs with nothing to govern.

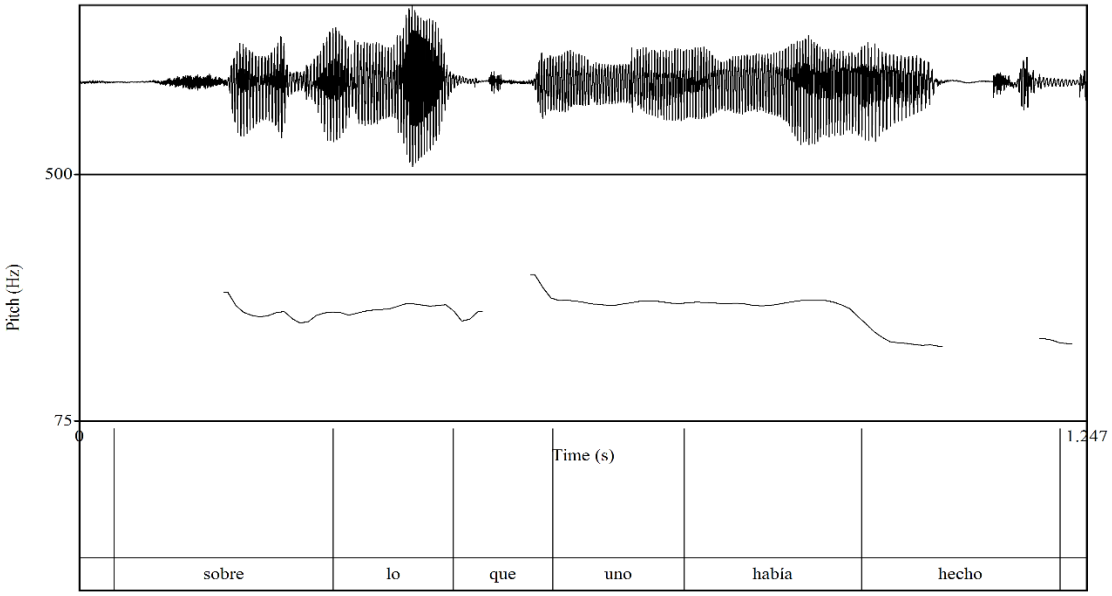

Figure 5.11: Contour in which the location of the rise results in no PW content in a proposed PPh (*…with respect to what one had done*)

A seemingly safe approach would be to simply assume that the Chilean Spanish plateau contours are all single PPhs or IPs, depending on their location in a given discourse. If all the contours were continuous, and had no major breaks in either the low or high sustained portions, it would be more feasible to make this assertion. However, as previously mentioned, speakers broke up both portions at times, and some of these breaks occurred at junctures that make divisions within an SLH based framework impossible due to the fact that they leave potential PPhs and IPs devoid of prosodic material. Figure 5.12 gives an example of a broken contour with a pause measuring 820 ms in the middle of the sustained high portion.

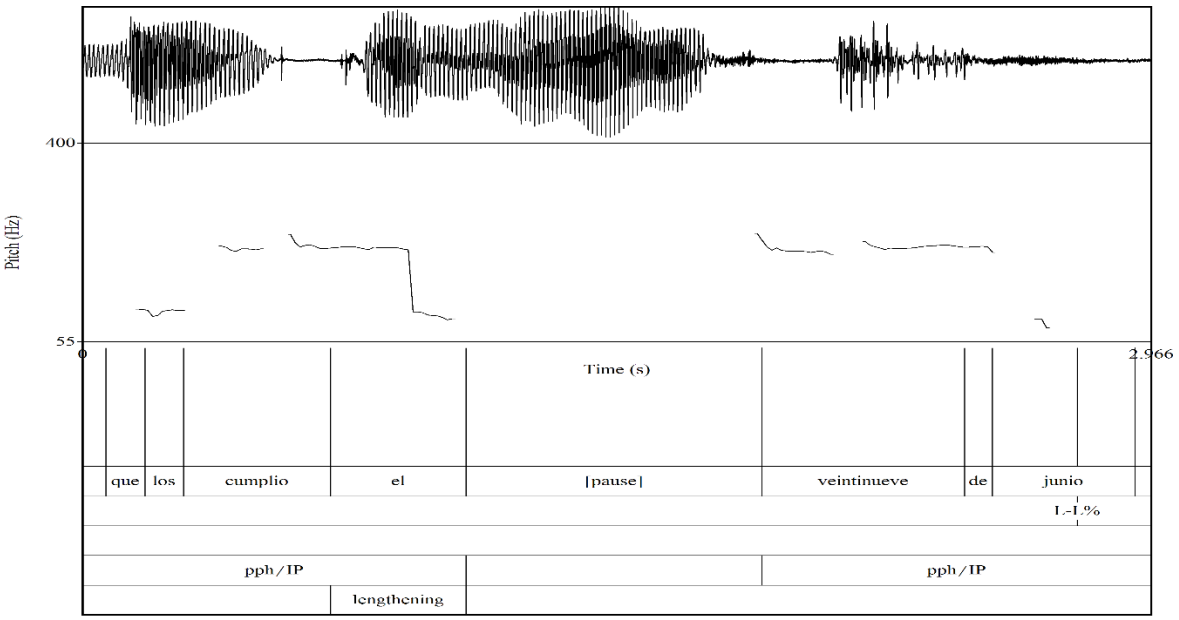

Figure 5.12: Contour with sustained high portion broken by a pause measuring 820 ms (*His birthday was* [pause] *the 29th of June*)

In accordance with the literature on Spanish phrasing, the pre-pausal syllable, in this case the word "*el*", is lengthened. The waveform offers visual evidence, showing how the speaker maintains "*el*" over three times as long (376 ms) as she does for the previous definite article "*los*" (108 ms). The rise lacks a pitch accent because the peak occurs before the stressed syllable in "*cumplió*", and occurs strictly on non-prosodic material. The only obvious pitch accent is a H+L* pitch accent on the final word "*junio*", followed by L phrasal and boundary tones. As previously discussed, the pause in the middle of the sustained high portion measures 820 ms, which would qualify as a long pause, according to Rao (2010). Based on previous findings regarding Spanish phrasing, it would be expected that a pause of this length would indicate the end of an IP. Yet, there is no boundary tone before the pause, but rather a sustained high pitch level, which has been associated with PPh boundaries in other Romance languages (D'Imperio et al.

2005). However, the high pitch does not begin in the pre-pausal word, as is the case in D'imperio et al. Rather, it is the same high pitch achieved at the peak of the rise and maintained throughout the whole portion until the fall.

Likewise, IPs are said to communicate complete ideas. If the contour in Figure 5.12 is made up of two IPs, then both IPs are formed by splitting a NP between its determiner and nucleus and are therefore, communicating rather incomplete ideas. In fact, in order to split the ideas contained in the contour, the most logical division would be to place a phrasal boundary after "*cumplió*", effectively dividing the utterance into the idea of having a birthday and the date of the celebration. However, this approach presents at least two problems. First, this division does not divide the contour into two complete ideas. Rather, it divides it into two phrases that, when combined, form an entire, complete idea. In other words, the two resulting phrases would be PPhs at most, and not IPs. Second, the pause would indicate a boundary at the right edge of "*el*", and with a boundary at the left edge of "*el*" as well (due to the supposed boundary after "*cumplió*), the contour is left with either an IP or a PPh with no prosodic content, which is in direct violation of the SLH.

If the contour is assumed to be two PPhs divided by the long pause, then the durational thresholds for pauses that indicate PPh boundaries must be drastically increased. However, this cannot be implemented without perceptual data similar to that used in Rao (2010). Finally, if it is assumed that the contour is a single IP that consists of two PPhs, then it must be accepted that pauses can occur in the middle of IPs without creating any further divisions, a phenomenon which is not attested in the known literature on Spanish phrasing, and is likewise in need of perceptual confirmation by native

speakers. Table 5.3 shows the different alternatives for parsing the utterance and the resulting problems they present.

Proposed parsing	*Problems*
(*que los cumplió el)IP* [pause] (*veintinueve de junio*)IP	1. No boundary before pause 2. Ideas in IPs are not complete 3. IPs occur across a split NP
(*que los cumplió) IP (el)IP* [pause] (*veintinueve de junio*)IP	1. Ideas in IPs are not complete 2. One IP has no prosodic content 3. IPs occur across a split NP
(*que los cumplió el* [pause] *veintinueve de junio*)IP	1. Long, internal pause, that creates no further parsing, unattested in previous literature
(*que los cumplió*)φ (el)φ [pause] (*veintinueve de junio*)φ	1. One PPh has no prosodic content 2. Pause length typically associated with higher levels of Prosodic Hierarchy in Spanish
(*que los cumplió el*)φ [pause] (*veintinueve de junio*)φ	1. Pause length typically associated with higher levels of Prosodic Hierarchy in Spanish

Table 5.3: Possible parsings and problems for contour 5.12

The contour in Figure 5.13 has two short pauses, according to the criteria set forth by Rao (2010), in the sustained high portion. The first pause measures 305 ms and the second measures 260 ms. Both of these pauses would be associated with PPh boundaries. The two perceptible pitch accents are on the rise and the fall, which with AM conventions would be transcribed as L+>H* on the rise and a H+L* on the fall. The first pitch accent is not without controversy, since the peak occurs two syllables after the supposed stressed syllable in "*mayoría*", but for the purposes of the prosodic analysis, current AM and Sp_ToBI conventions leave no other options. This particular issue will be discussed in more depth in Chapter 7. As was the case in the previous example, there is an example of final syllable lengthening in the word "*familias*" previous to the first pause. However, there is no lengthening of the preposition "*de*", which occurs before the second pause.

Also, similar to the previous example, there is no evidence of pitch accents; rather, there is only the same sustained high pitch before each pause, which is extended from the peak achieved at the onset of the sustained high portion.

With both pauses being small pauses, the assumption in Spanish would be that they mark PPh boundaries. However, this then leaves a PPh in the middle with only the non-prosodic word "*de*", creating a level of the Prosodic Hierarchy that has no content to govern. The length of the pauses, along with the absence of any boundary tone before each pause, together discard the possibility of IP boundaries. Similarly, not only would the location of the pauses create the same problem of an IP void of prosodic content, but the two potential IPs on the left and the right of "*de*" would communicate smaller ideas that together form a larger, more definitive idea traditionally associated with the IP level of the hierarchy. Finally, because IPs are considered to be more complete ideas than PPhs, and because they consequently have more complex syntax, it would not be expected for a speaker to separate IPs on the nucleus of a prepositional phrase, nor would it be anticipated that a speaker would form an IP out of a single preposition. Table 5.4 illustrates the possible ways to parse the contour and the theoretical problems that arise.

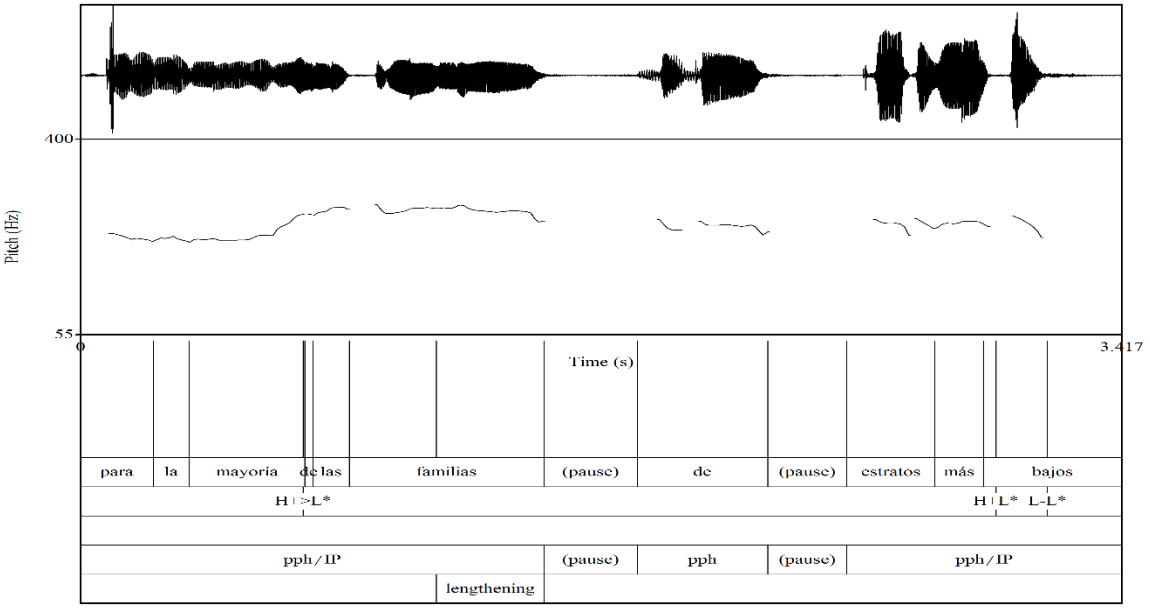

Figure 5.13: Contour with sustained high portion broken by two pauses (*...for the majority [pause] of [pause] lower income families*)

Proposed parsing	*Problems*
(*para la mayoría de familias*)φ [pause] (*de*)φ [pause] (*estratos más bajos*)φ	1. One PPh has no prosodic material
(*para la mayoría de familias*)IP [pause] (*de*)IP [pause] (*estratos más bajos*)IP	1. One IP has no prosodic content 2. Pauses are shorter and associated with PPh boundaries in the literature on Spanish. 3. No boundary tones before pauses 4. Ideas in IPs are not complete 5. Implausible to form an IP with a single preposition

Table 5.4: Possible parsings and problems for contour 5.13

The contour in Figure 5.14 illustrates an example where a pause breaks up a valley. The pause measures 235 ms and thus, based on Rao (2010), is a small pause associated with PPh boundaries. The final syllable of the conjunction "*pero*", as can be seen in the spectrogram, is lengthened preceding the pause, which is also an indication of

a PPh boundary in the literature. There is not perceptible pitch accent on the rise due to the fact that it occurs on a non-prosodic demonstrative pronoun. The only obvious pitch accent, similar to the previous examples, is the fall, which is followed by a low phrasal and boundary tone. Finally, there is also a perceived level 2 ToBI break after the word "*que*", which was also lengthened, helping reinforce the perception of a break.

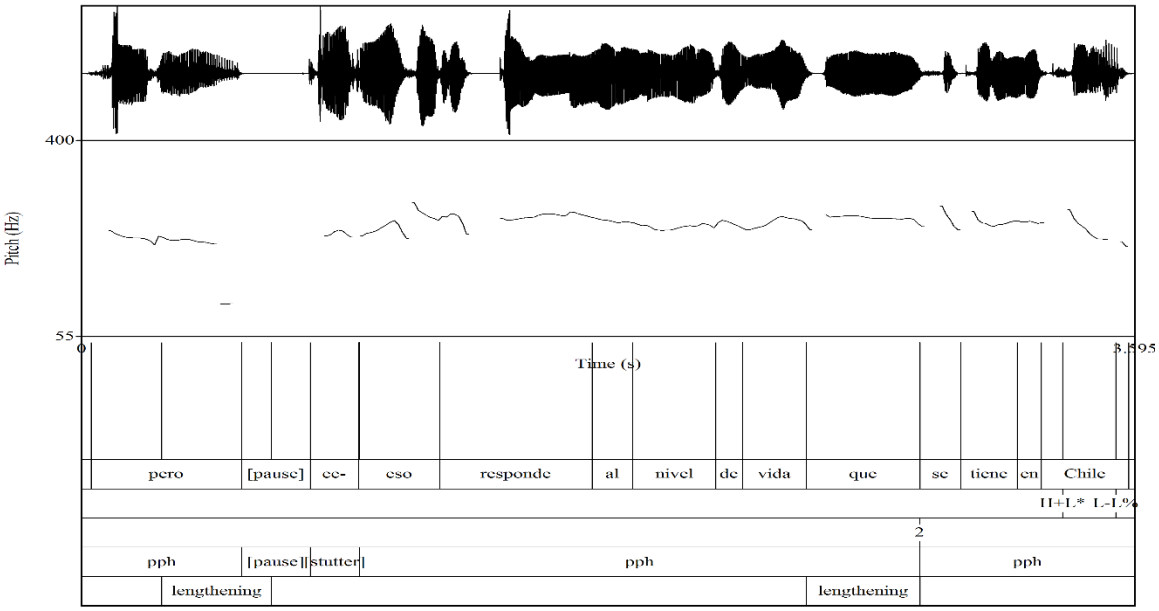

Figure 5.14: Contour with a rise broken by a stutter (*but* [pause] *ee- that's a response to the quality of life in Chile*)

Based on the cues described in the contour in Figure 5.14, the contour was split into three PPhs. The first PPh is the pre-pausal conjunction "*pero*". Both the pause and the lengthening of the final syllable, according to the literature, are what would indicate the PPh boundary. The second PPh extends from the rise to the level 2 ToBI break, and the final PPh extends from this ToBI break to the low, utterance-final boundary tone. As was the case with the previous examples, once again, the cues leave a PPh with no prosodic material in the first PPh. If this PPh is combined with the second PPh, to create

a contour made up of two PPhs, then current conventions need to be modified to allow pauses to occur within PPhs without causing additional parsing. This, obviously, would require perceptual data to confirm. Finally, if the contour is considered a single IP, then current convention must justify, as in previous examples, how an IP could have an internal pause that does not affect the parsing of the utterance. Likewise, the current framework must explain how a level 2 ToBI break can be perceived without breaking up the IP. If the ToBI break is said to break up the IP into two IPs, the ideas contained within each IP remain incomplete. Also, ToBI breaks that indicate IP boundaries are level 4 breaks and they are manifested in the F0 contour as boundary tones. Table 5.5 shows the possible parsings of the contour in Figure 5.14 and the problems that they create.

Possible parsings	*Problems*
(*pero*)φ [pause] ([stutter] *eso responde al nivel de vida que*)φ (*se tiene en Chile*)φ	1. One PPh has no prosodic material
(*pero* [pause] [stutter] *eso responde al nivel de vida que*)φ (*se tiene en Chile*)φ	1. PPh internal pause that creates no additional parsing is unattested in the literature on Spanish
(*pero* [pause] [stutter] *eso responde al nivel de vida que se tiene en Chile*)IP	1. IP internal pause that creates no additional parsing is unattested in the literature on Spanish 2. Perceived ToBI break does not create further parsing
(*pero* [pause] [stutter] *eso responde al nivel de vida que*)IP (*se tiene en Chile*)IP	1. Ideas in IPs are incomplete 2. Type 2 ToBI break not associated with IP boundaries

Table 5.5: Possible parsings and problems for contour 5.14

Speakers also demonstrated the ability to produce contours that contained more than one sentence, using cues to separate the two sentences that are more readily associated with other levels of the Prosodic Hierarchy. This is illustrated in Figure 5.15.

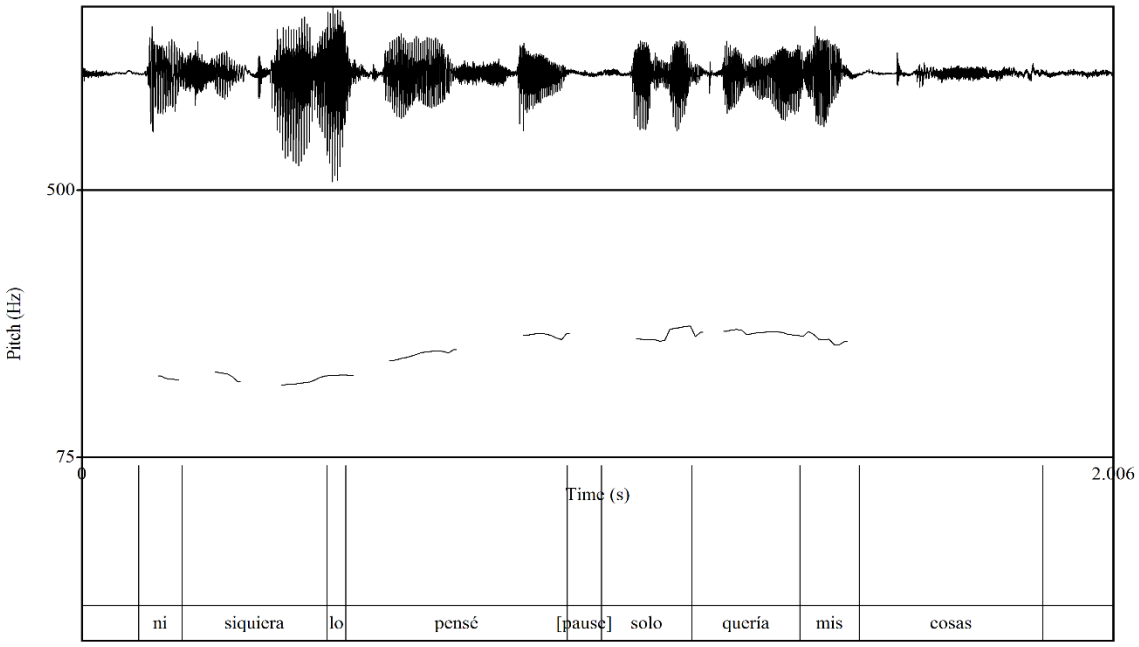

Figure 5.15: Contour containing two full sentences (*I didn't even think about it. I just wanted my stuff*)

The contour in Figure 5.15 contains two main ideas: (ni siquiera lo pensé) and (solo quería mis cosas). These ideas are separated by a brief pause whose duration measures 66 ms. While the pause does act as a cue separating the two ideas, its duration is minimal and, according to previous literature, would therefore be associated with PPh boundaries and not IP boundaries. However, the ideas that are communicated are both complete ideas, which are more traditionally associated with IPs and not PPhs. Likewise, both have complete subjects and predicates, indicating a more complex level of syntax, which also is more readily associated with the IP level of the Prosodic Hierarchy.

Finally, the data show clear cases where speakers use traditional phrasing cues, as they are documented in the literature, in contexts that contain no plateau contours, as illustrated in Figures 5.16 and 5.17.

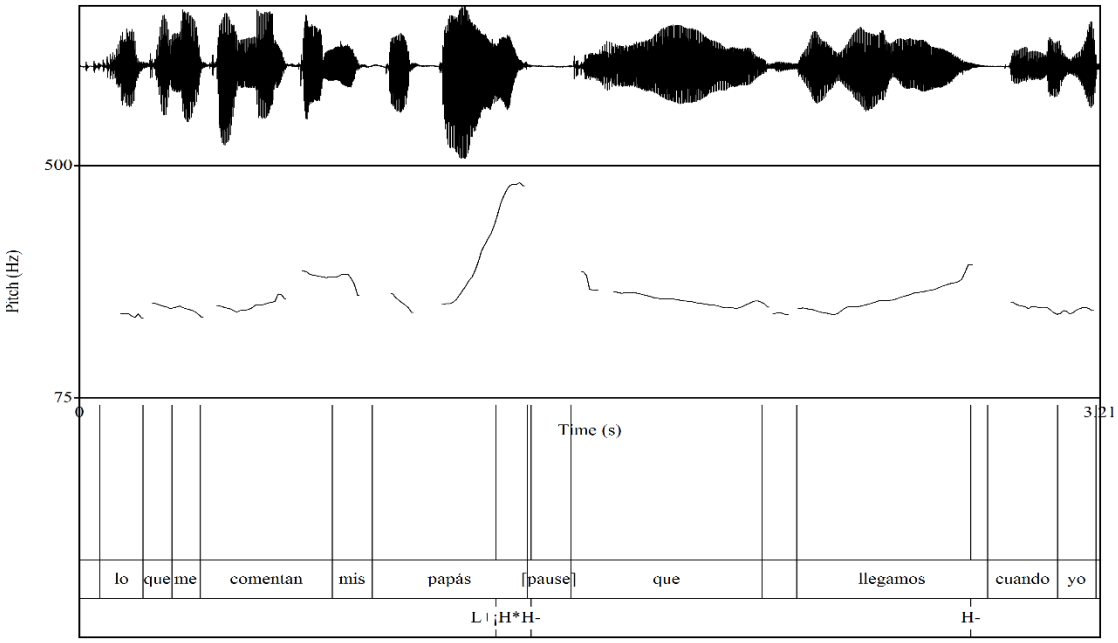

Figure 5.16: Example of speakers using Prosodic Hierarchy phrasing cues in a non-plateau context (*…what my parents tell me* [pause] *is that we arrived when I…*)

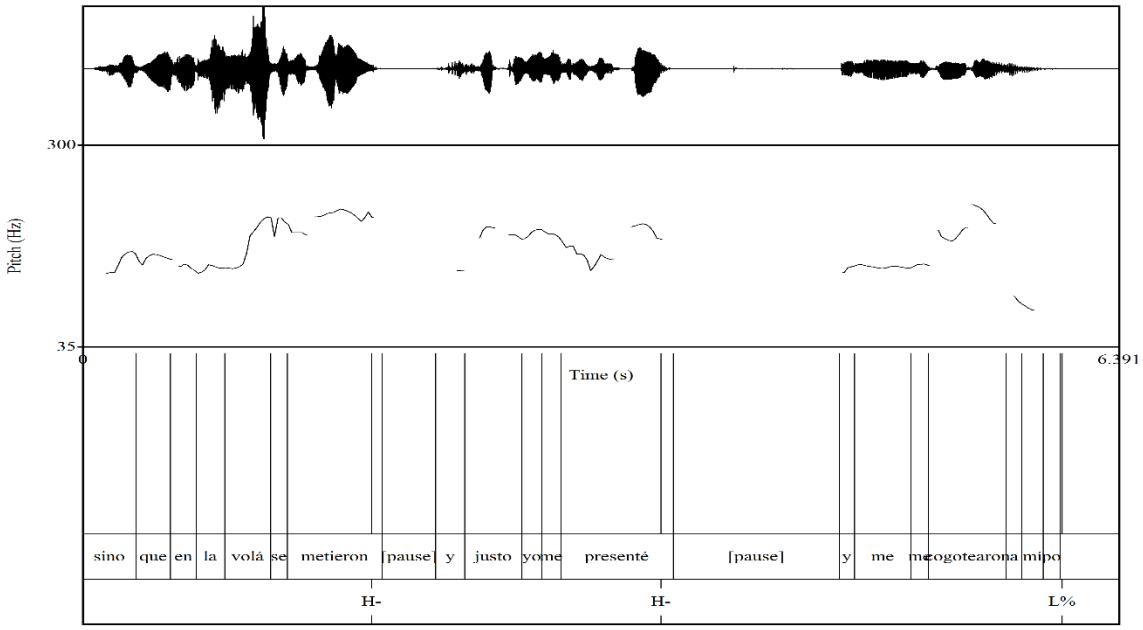

Figure 5.17: Example of speakers using Prosodic Hierarchy phrasing cues in a non-plateau context (*...rather, they got high and just then I ran into them* [pause] *and they mugged me*.)

In Figure 5.16, there are several cues that indicate the presence of a PPh boundary. First, the speaker raises the pitch on the stressed syllable of "*papás*" and continues to rise until reaching the following pause. This signifies the presence of a high boundary tone. Finally, the pause lasts 137 ms, which, according to Rao (2010), is considered to be a small pause and therefore associated with the PPh level of the Prosodic Hierarchy. The speaker also produces a continuation rise on the word "*llegamos*", providing evidence for another H- tone immediately before the closure period of the following stop [k]. While there is no way to parse a possible pause from the closure period of [k], the closure period of the stop, in a way, acts as another short pause.

In Figure 5.17 the speaker also produces two continuation rises before pauses. The first pause lasts 330 ms and the second lasts 1.03 seconds. Both pauses and phrase tones separate ideas that could either be considered complete or details of a larger

thought. This, consequently, highlights another one of Ladd's (2008) critiques of the SLH, in that PPhs are said to have a varying level of complexity, and the researcher, many times, decides on the status of more complex phrases. However, the determination of the status of the three phrases in Figure 5.17 is not the matter in question and is beyond the scope of the current dissertation. What is important is showing that Chilean speakers do in fact use traditional phrasing cues to parse ideas and information in contexts that do not contain plateau contours, offering evidence that either traditional cues do not apply in the context of the plateau contours and that speakers use different cues, or that the Prosodic Hierarchy, as it currently stands, cannot satisfactorily describe the content and the organization of the plateau contours.

5.3 Summary

Many of the aforementioned issues highlight several problems of the SLH, and the Prosodic Hierarchy, including some of Ladd's (2008) critiques. First, it is clear that in patterns like the Chilean Spanish plateau contours, due to a multiplicity of factors, it is difficult to clearly define what PPhs and IPs are and where their boundaries may or may not be located. One of the assumptions of the SLH that Ladd critiques is that PPhs, and consequently IPs as well, are said to communicate different ideas that range in complexity. In other words, while the literature asserts that PPhs communicate more incomplete and less syntactically complex ideas than IPs, there is no threshold that determines what level of complexity on a syntactic and a semantic level definitively determines whether an utterance, or a segment of an utterance, is one or the other. As a result, contours such as Figures 5.14 and 5.15, which show higher levels of complexity

accompanied by cues that are associated with lower, less complex levels of the Prosodic Hierarchy, create problems when trying to make such patterns fit into the SLH. Ladd states that these inconsistencies can erroneously influence how the researcher perceives supposed phrasal cues in an utterance, and the intentions of the speaker can be reduced to over-simplistic assumptions in order to make a given utterance fit within the limits and restrictions put forth by the SLH.

For example, based on Ladd's critiques, the problematic pauses in Figures 5.12 and 5.13 that leave levels of the hierarchy with nothing to govern, could simply be written off as a speaker error by the researcher in order to preserve the assumptions and the integrity of the theoretical framework. The contour in Figure 5.15 is also problematic. Figure 5.15 contains two complete and syntactically complex ideas, but separates them with a very brief pause (66 ms). However, the contour in Figure 5.12 appears to contain one main idea that is separated by a very long (820 ms) pause. The content on either side of the pause is neither complete nor as syntactically complex as the ideas in the contour in Figure 5.15. If the researcher were to assume that because the two ideas in Figure 5.15 are syntactically complex, the pause, despite its brevity, indicates the presence of an IP boundary, then they would essentially allow pauses before IP boundaries to be of virtually any length, despite the amount of cross-linguistic studies, and studies on Spanish, that have shown the association between short pauses and PPh boundaries. The same problem arises with the long pause in Figure 5.12. Due to the incompleteness of the portions of speech on either side of the pause, and the fact that they are not only syntactically more simplistic, but also are divided down the middle of a noun phrase, the researcher would most likely be led to assume that the pause indicates a PPh

boundary, and that both PPhs form a single IP. This approach would greatly expand the durational range of pauses indicative of PPh boundaries and might push the durational threshold of pauses indicative of IPs far beyond what speakers actually produce.

The researcher could simply write off the occurrence of these pauses as production errors, thus preserving the assumptions of the model. However, *sans* perceptual data, such an approach is theory-driven rather than data-driven. In fact, as previously discussed, one of Ladd's (2008) criticisms of the SLH in that the determining of the communicative intentions of speakers can potentially be done based on simplistic assumptions and conventions. If the researcher hears an audible pause, break, rise etc. in an area of the syntactic structure where it is simultaneously syntactically expected and semantically well-formed or coherent, a prosodic boundary is said to be in that location. However, if the exact same phenomenon occurs where there is a lack of coordination at different syntactic and/or semantic interfaces, then no prosodic boundary is deemed necessary and the break in the message is assumed to be a simple hesitation or speaker error. If nothing occurs where a boundary is expected, then, according to Ladd, the researcher could simply assume that there is underlying prosodic boundary at that location that happens to be phonetically unspecified. This is why perceptual data is needed before the communicative role, or lack thereof, of such cues in the context of the Chilean intonational plateaus, can be better understood.

The difficulties identifying PPhs and IPs also create issues with the notion of governability. The SLH assumes that there will always be at least one clear pitch accent, or PW, in every PPh and IP, and that speakers will naturally couch the organization of their utterances into this framework. In other words, no cues for phrasal or IP boundaries

should be produced unless there is at least one PW that precedes the cue and follows the previous cue. As seen in the data, when following the cues that previous studies assert are indicative of prosodic boundaries in Spanish, utterances end up being parsed in such a way that creating PPhs or IPs without any material to govern becomes unavoidable in some cases. Inevitably, in these cases there is always at least one non-PW that has no apparent association to any level of the Prosodic Hierarchy, yet syntactically and semantically maintains a relationship with the rest of the content. If, on the other hand, the contours are just assumed to be single units (i.e. PPhs or IPs), then the researcher has to explain why apparent cues that appear in the contours are ignored in these specific contexts, and not in the rest of the data on Spanish, and why Chilean speakers use these cues to divide up ideas and information in other contexts.

If a linguistic theory truly seeks to understand how humans produce and organize language, sooner or later it will have to find a way to satisfactorily describe emerging data in real-time. Simply put, no one solution from within the SLH and Prosodic Hierarchy frameworks can satisfactorily describe the behavior that Chilean speakers exhibit when producing plateau contours. A model cannot be considered universal if it can only satisfactorily describe some of the behavior of a given speech community, and strictly theory-motivated explanations that do not take into account the data produced by the community, or outright ignore it, risk losing not only their descriptive power, but also their credibility and relevance.

Chapter 6
Sustained High Portions and Syntax

RQ2: Are the rises and falls on the sustained high portions triggered at syntactic phrase boundaries? What are the preliminary implications of these patterns for the syntax-prosody interface?

6.1 Syntax and Chilean Spanish Intonational Plateau Contours

As discussed in the previous chapter, while the contours are produced with both an extended low and high portion many times, frequently the low portion is minimal or nonexistent. Therefore, based on the role of high intonational rises in discourse, and previously discussed evidence from the data, the extended high portion will be considered to be of more communicative importance to the speaker. The specific components of the high portion that will be analyzed are the rise and the fall, since these junctures are what consistently begin and end all extended high portions in the data, with the exception of Type 3 plateaus, which have no fall. An in depth analysis of the interaction between the syntax and prosody over the entire length of the high portion is beyond the scope of the current dissertation.

6.2 Syntax and Rises

In 60% of all the cases, the rises began on one of four major syntactic junctures: noun phrase (NP)(26%, 137 of 530), verb phrase (VP)(17%, 90 of 530), adjective phrase (AdjP)(6.23%, 33/530), and adverbial phrase (AdvP)(11.32%, 61 of 530), as seen in Table 6.1.

Juncture	***Quantity***	***Percentage***
AdjP(adjective)	33	6.23%
AdvP(adverb)	61	11.32%
NP(single noun)	57	10.75%
NP(determiner)	24	4.53%
NP(nucleus)	55	10.38%
VP(single verb)	66	12.26%
VP(helping verb)	6	1.13%
VP(nucleus)	9	1.7%
VP(gerund)	6	1.13%
VP(reflexive pronoun)	3	0.57%
Conjunction	2	0.75%
PrepP(preposition)	1	0.38%
Combination	207	38.5%
Total	530	100%

Table 6.1: Frequency and number of syntactic junctures that initiate rises

However, as Table 6.1 demonstrates, the data was not as straightforward as the initial results indicate. As a result, it was also necessary to break down the numbers with respect to NPs and VPs even more. In doing this, it was revealed that speakers frequently split NPs and VPs that were branched, or contained more than one node. In less than half of the rises that began on NPs (57 of 137), the NP only contained a noun, and in almost three quarters of the rises that began on VPs (66 of 90), the VP only contained a single verb. In just over 40% (55 of 137) of rises that were realized only on NPs, the rise occurred on the main noun and not the preceding determiner, which consequently remained in the low valley (Figures 6.1 and 6.2), and in 17.5% (24 of 137) of the rises that occurred through NPs, the rise only occurred on a determiner (Figures 6.3 and 6.4).

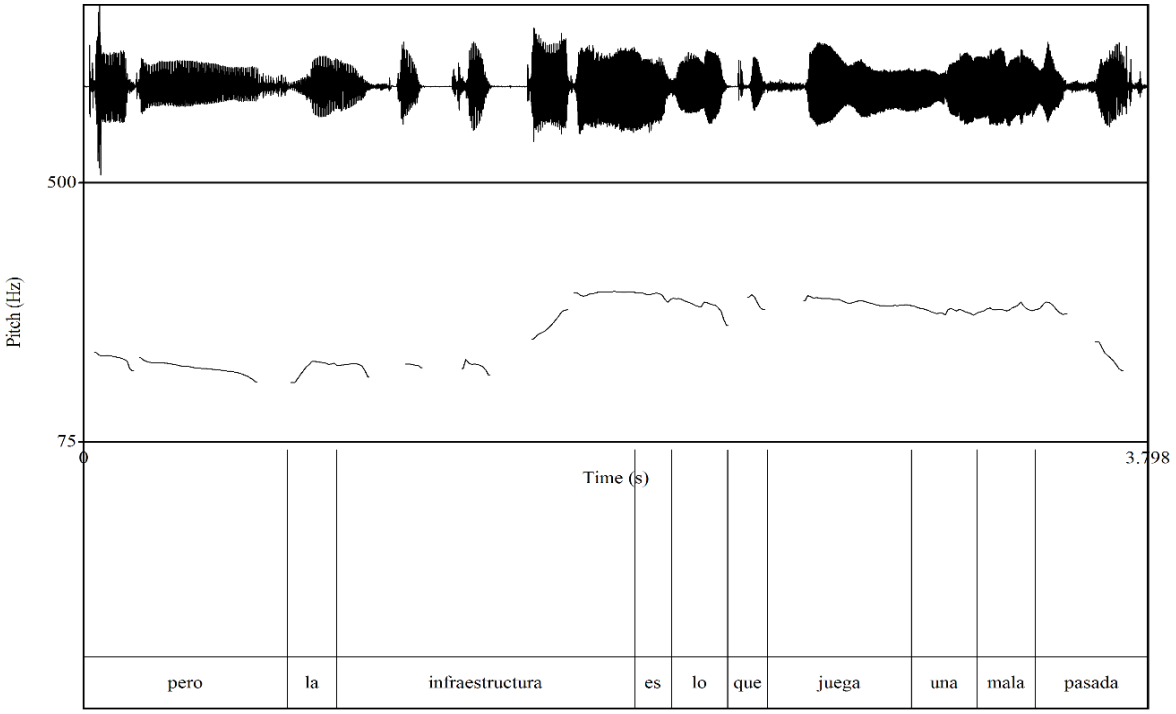

Figure 6.1: Example of a contour that splits an NP and leaves the determiner in the preceding valley (*...but what is unpredictable/dangerous is the infrastructure*)

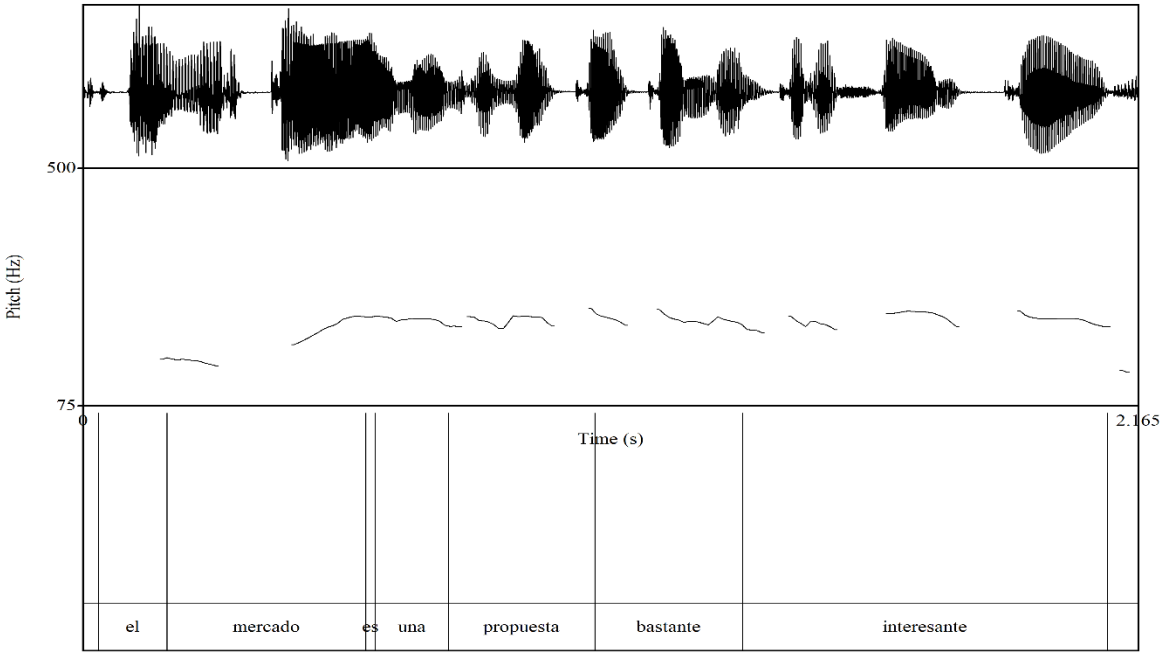

Figure 6.2: Example of a contour that splits an NP and leaves the determiner in the preceding valley (*Marketing is a very interesting possibility*)

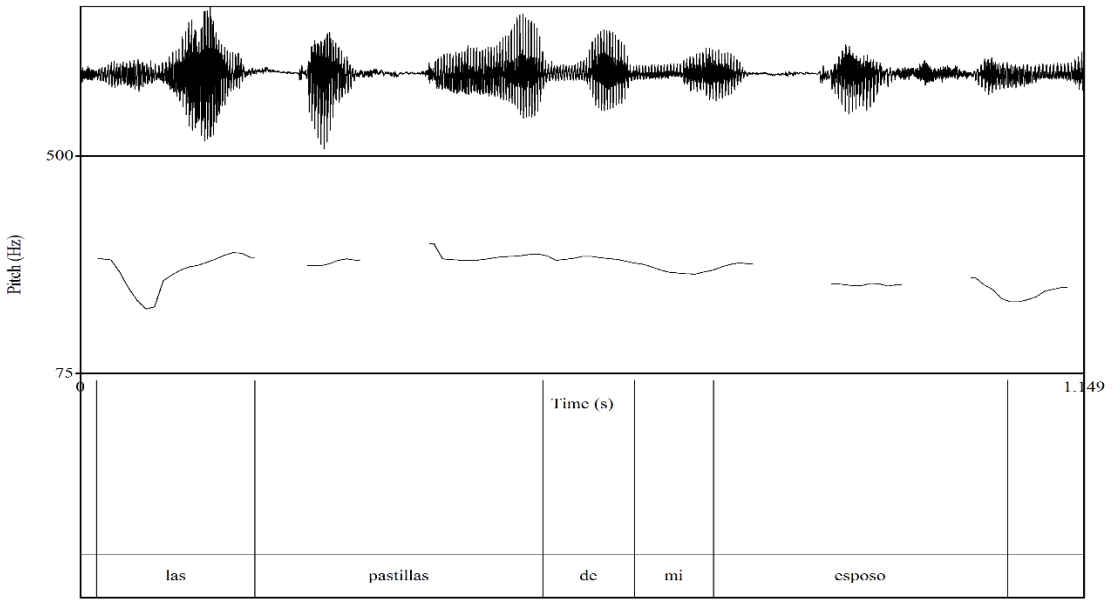

Figure 6.3: Example of a contour that splits an NP by rising only on the determiner (*...my husband's pills…*)

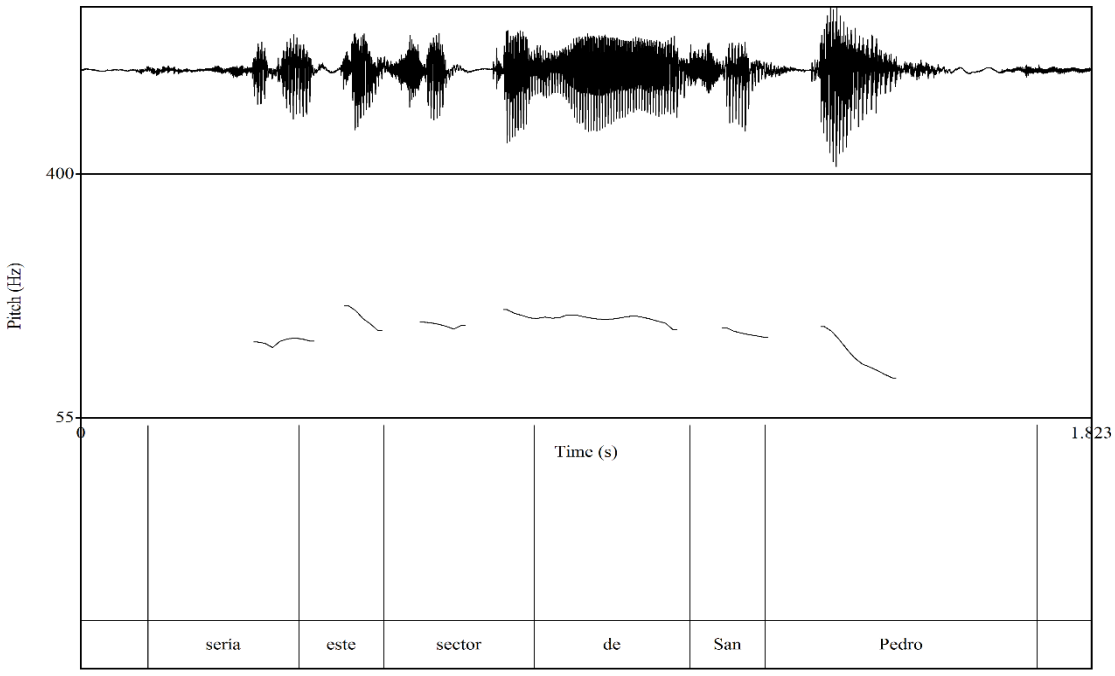

Figure 6.4: Example of a contour that splits an NP by rising only on the determiner (*...it would be this area of San Pedro*.)

While there was an overwhelming tendency for rises to occur at some point on a major syntactic juncture, there were a few exceptions. In the remainder of the cases that

rose on a single juncture, 0.38% of the tokens (2 of 530) the rise began on a conjunction (Figure 6.5, rise occurs on "*porque*"), and 0.19% (1 of 530) began on a preposition (Figure 6.6, rise occurs on "*de*").

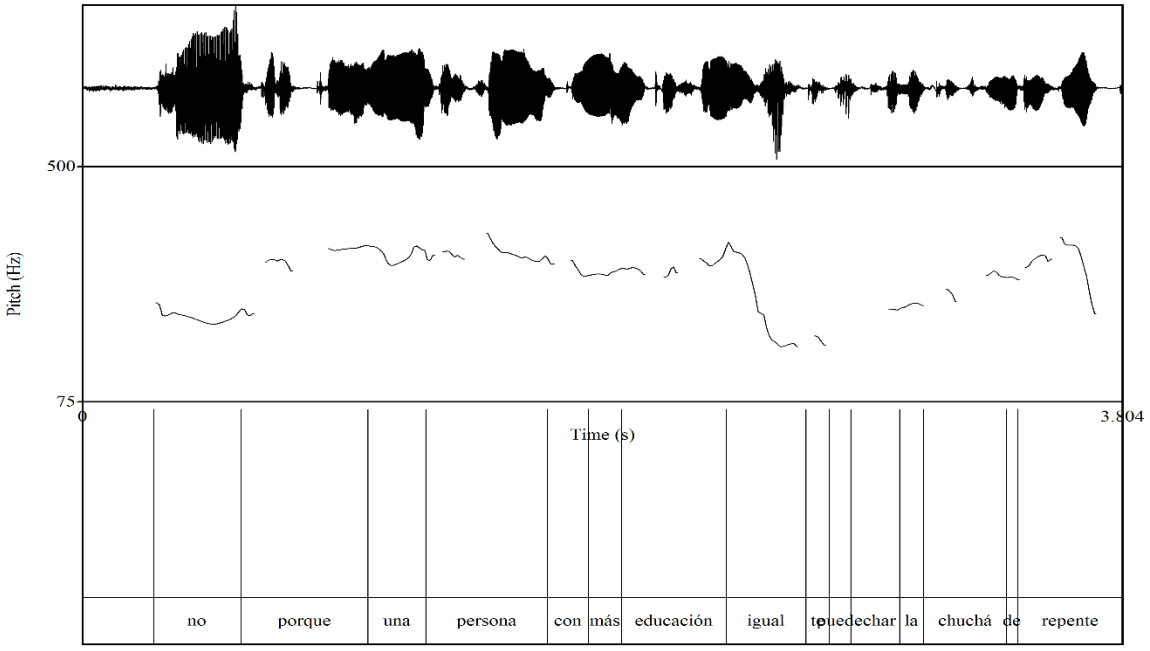

Figure 6.5: Example of contour that rises on a conjunction. (*No, because someone with more education can talk shit to you as well*)

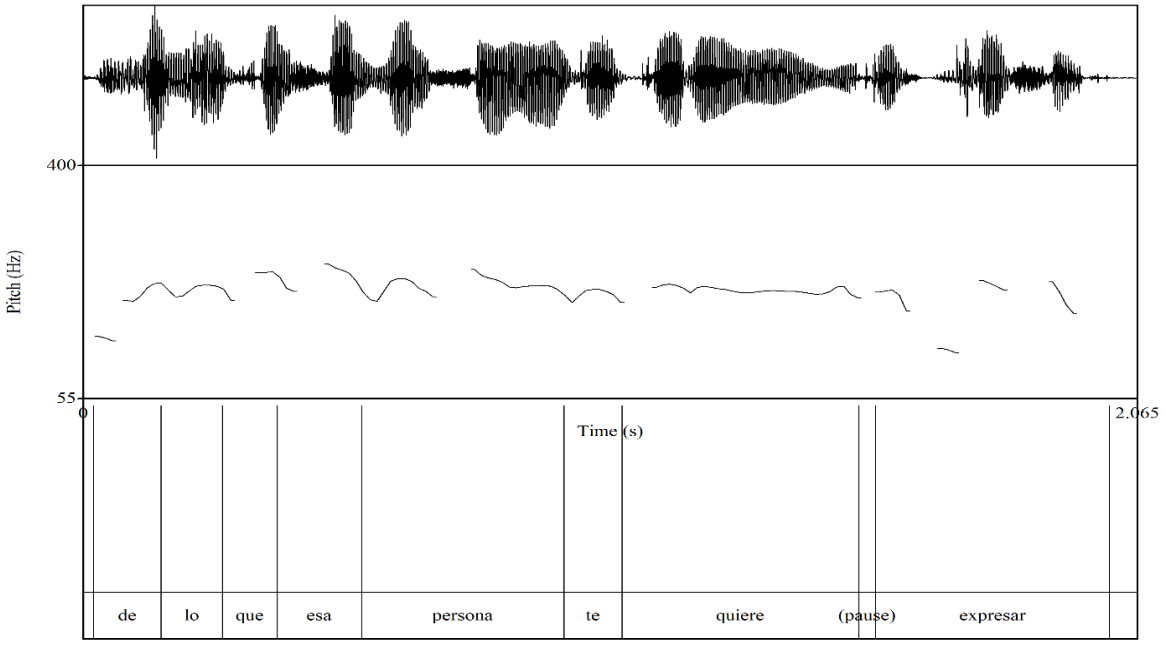

Figure 6.6: Example of contour that rises on a conjunction (*...of what that person wants to* [pause] *express to you*)

For the remaining 39% (206 of 530) of the tokens analyzed, the rises extended through uninterrupted chains that were made up of combinations of all of the aforementioned junctures and constituents. These cases will be referred to as chain rises. A chain rise was considered to be any rise that was realized through more than one node, whether the nodes were part of the same juncture or if they belonged to different ones. In other words, some chain rises occurred on both the determiner and noun nodes of an NP, while others occurred through helping verbs and the past participle perfect form of the main verb. Others were realized over the duration of multiple nodes and multiple junctures before reaching their peak. The overall range for chain rises was 2-7 words. Some chain rises were comprised of only prosodic content (Figure 6.7), others rose

through only non-prosodic content (Figure 6.8), and some were a mixture of prosodic and non-prosodic material (Figure 6.9).

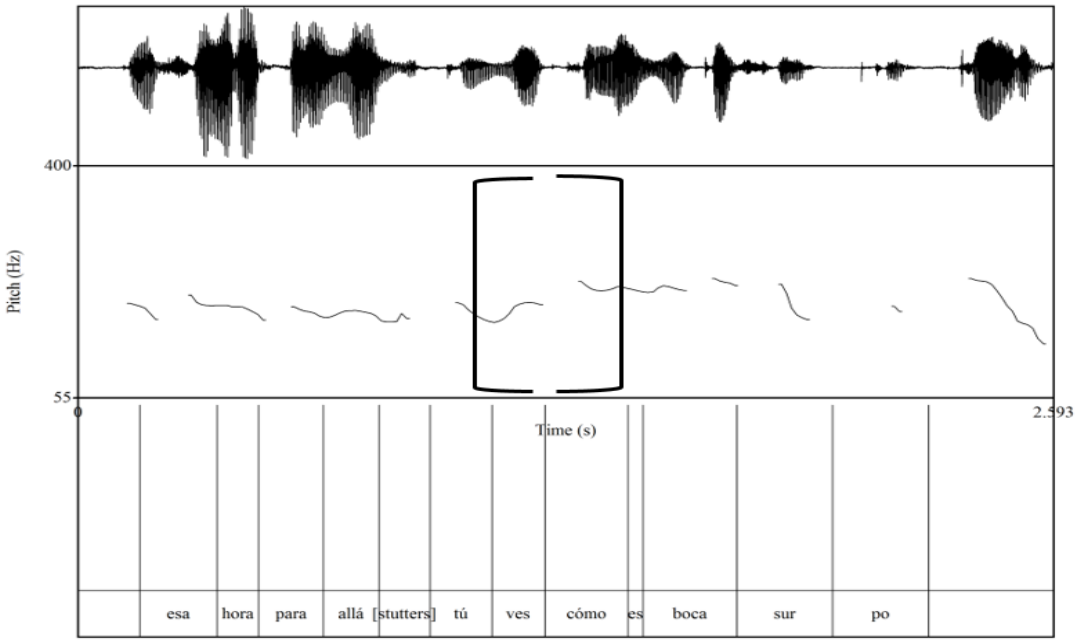

Figure 6.7: Example of a contour with a chain rise that occurs only on prosodic content (…*that time out there* [stutters] *you know what Boca Sur is like*)

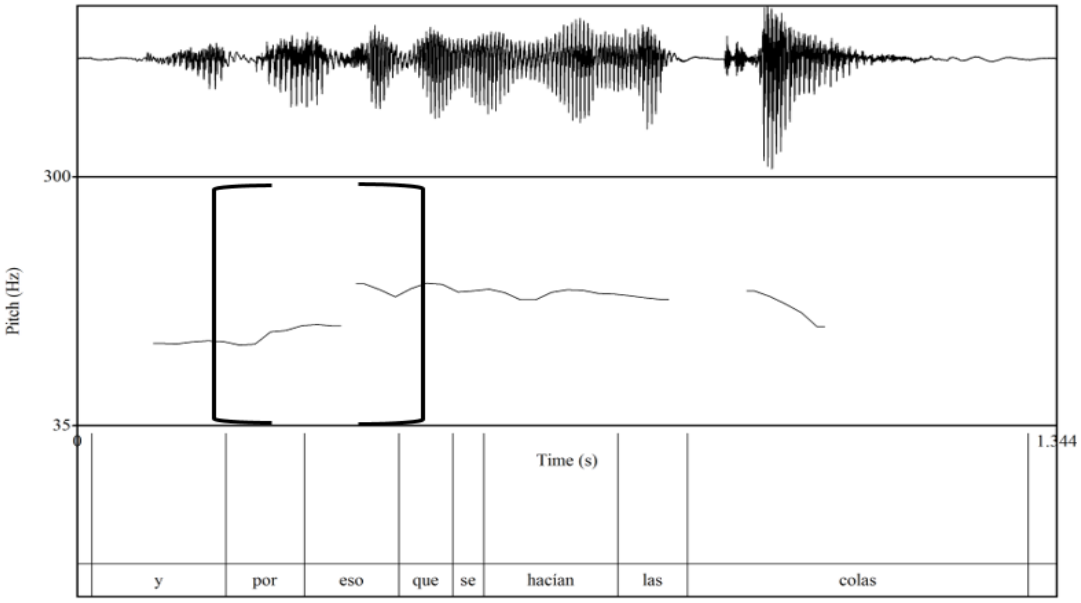

Figure 6.8: Example of a contour with a chain rise that occurs only on non-prosodic content (...*and that's why there were lines*)

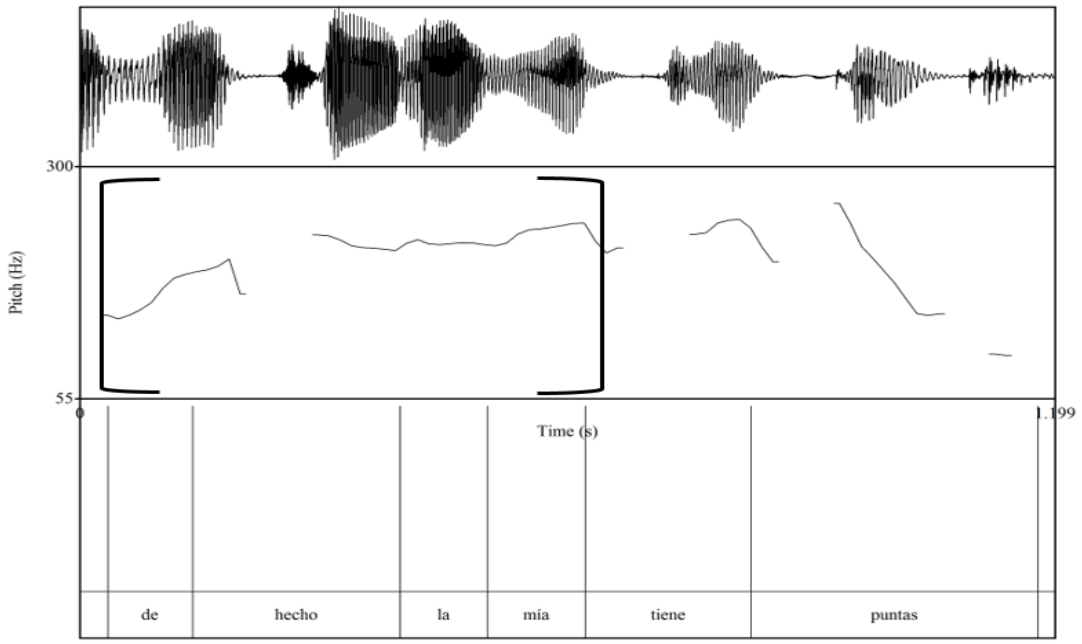

Figure 6.9: Example of a contour with a chain rise that occurs on a mixture of prosodic and non-prosodic content (*...in fact, mine has sharp points*)

In the first example seen in Figure 6.7, the rise occurs through two words, a VP containing only the verb "*ves*" and an AdvP containing the adverb "*cómo*". After the rise peaks within the second word, the speaker maintains two more prosodic words at the high tonal level achieved by the rise, before falling on the final prosodic syllable of the utterance. It must also be noted that the speaker also includes the very common tag "*po*" (also written as "*poh*") in the low portion after the fall. This was fairly common, and due to the high frequency of its use in Chilean Spanish, it had several phonetic representations, several of which underwent heavy levels of reduction: [po], [pu] [βo], [βu], [o], [u] and [m]. While any cases of utterance final {po} were included in the overall word count, it was never considered prosodic.

The second example, in Figure 6.8, is unique to the previous two because the speaker initiates and realizes the full rise through all non-prosodic content. The speaker

begins the rise on a PP containing the single preposition "*por*", and continues through the following NP, which contains the traditionally non-prosodic pronoun "*eso*", and peaks before the next word. The speaker maintains the high for four more words, only one of which is traditionally prosodic, before ending the utterance in a drop on the final traditionally prosodic syllable.

The final example, in Figure 6.9, shows a rise through multiple portions of prosodic and non-prosodic content. The speaker initiates the rise on the AdvP "*de hecho*" which is made up of a preposition and a noun. The rise begins on the non-prosodic preposition, rises through the prosodic noun and continues through both the determiner and noun nodes of the following NP "*la mía*". The determiner is non-prosodic, while the possessive adjective, acting as a noun in this case, is prosodic. The speaker then maintains the high tone reached at the peak of the rise for one PW, finishing with a fall on the final word of the utterance. Figure 6.10 is another example of a chain rise comprised of several prosodic and non-prosodic junctures.

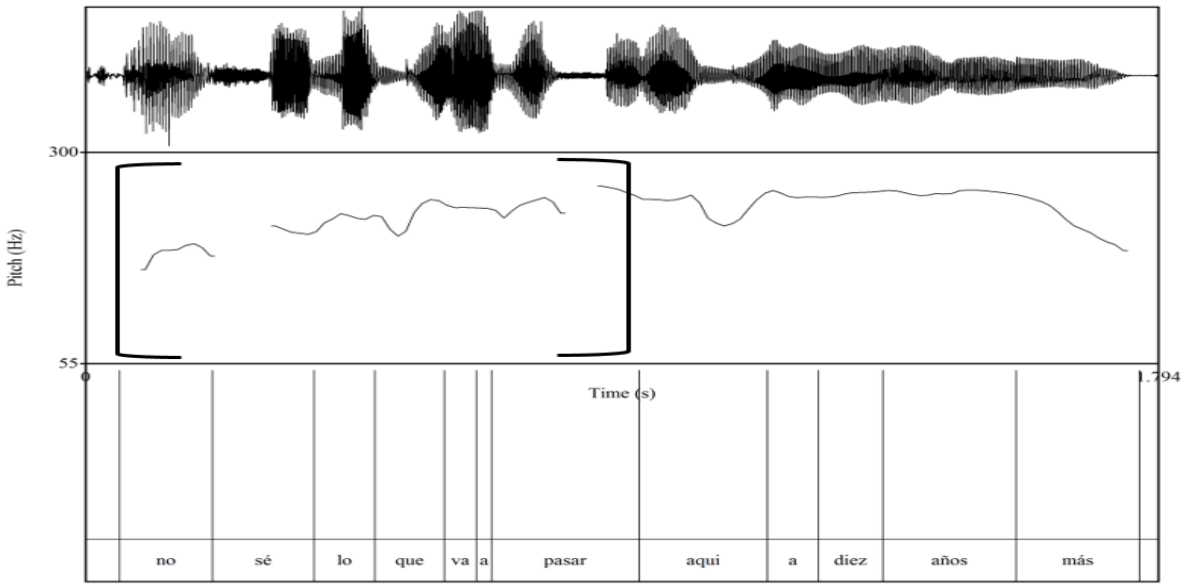

Figure 6.10: Example of a contour with a chain rise that occurs on a mixture of prosodic and non-prosodic content (*I don't know what is going to happen here 10 years from now*)

Similar to the previous example, the contour in Figure 6.10 has a rather long rise. The speaker begins to rise on the adverb "*no*", and continues through 3 VPs, a NP, a conjunction and a PP. In all, the rise consists of 7 words, 4 prosodic and 3 non-prosodic. Once the rise peaks, the speaker maintains the high tonal level for 4 words, 2 prosodic and 2 non-prosodic, and falls on the final prosodic syllable.

Finally, the data also demonstrated that rises were capable of occurring on and being maintained through breaks such as stutters and self-corrections; speakers did not need to start over or reset their pitch. Figures 6.11 and 6.12 show examples of broken rises.

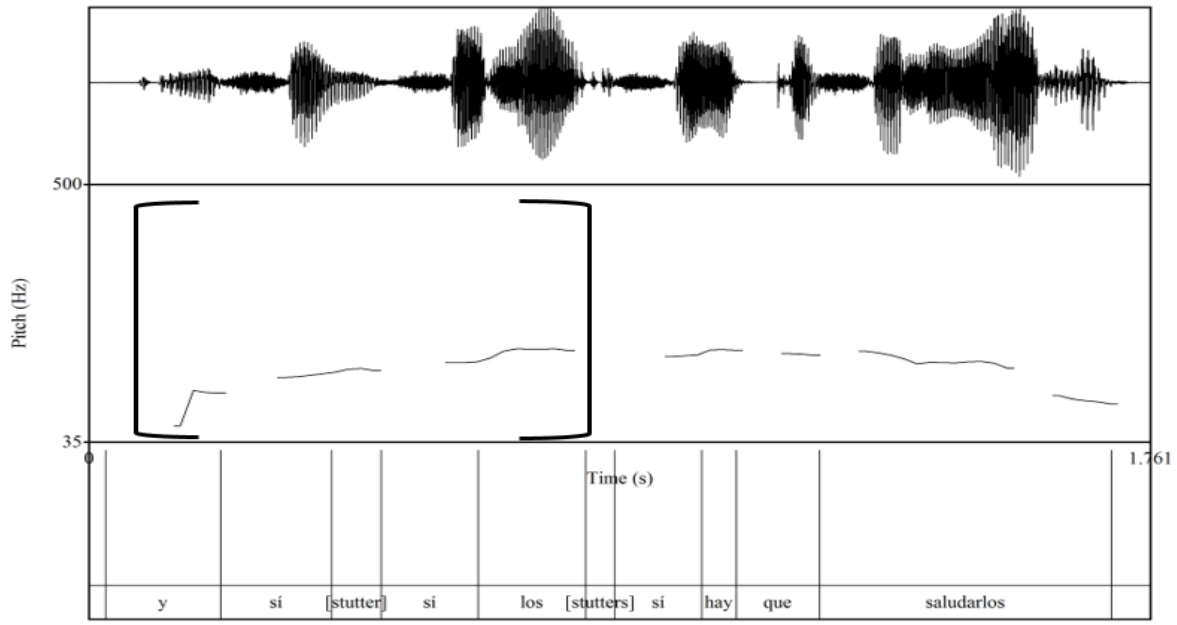

Figure 6.11: Example of a rise that continues despite a break caused by a stutter (*and, yes* [stutter] *yeah they* [stutter] *yeah, you need to acknowledge them*)

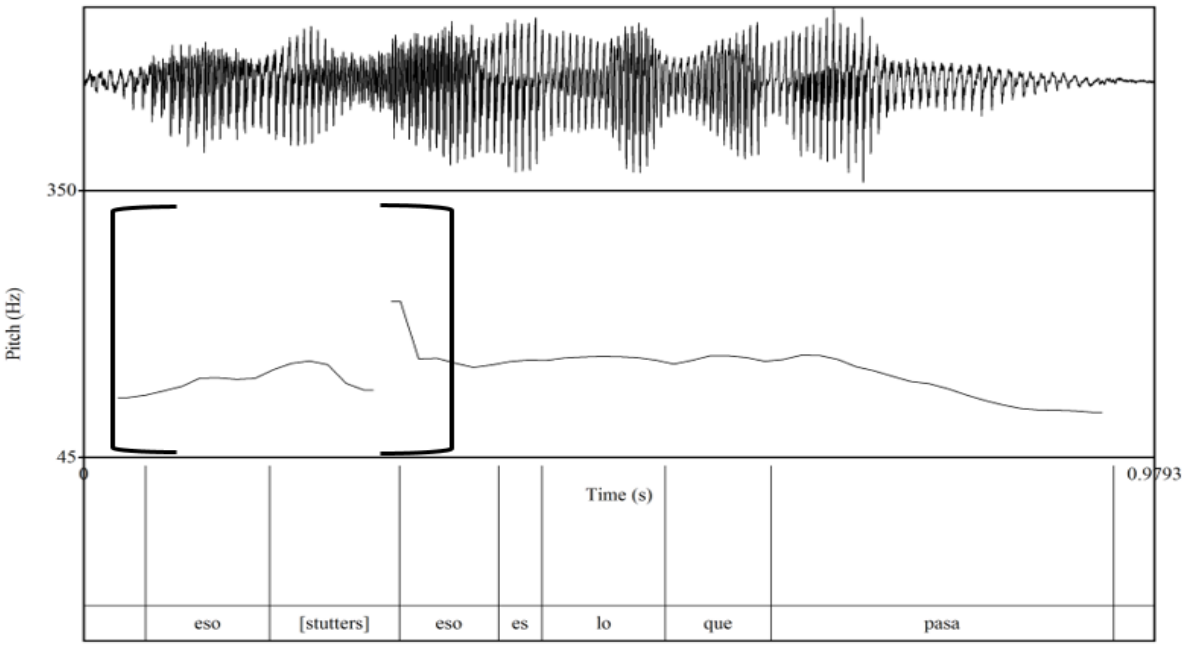

Figure 6.12: Example of a rise that continues despite a break caused by a stutter (*that* [stutter] *that's how it is*.)

In Figure 6.11, the speaker begins to rise on the word "*sí*" after which he stutters. Instead of starting over and resetting the F0, he actually continues to rise through the stutter and through the next two words to complete the rise. The contour in Figure 6.12 is similar. The speaker starts the rise on the word "*eso*", and stutters while continuing to rise until peaking on the following word.

The tendency to rise through various types of breaks, along with the evidence of rises occurring through multiple syntactic junctures, is indicative that the syntactic content of the rise might not be the first priority of the speakers. Rather, speakers appear to be more concerned with attaining a target high tonal level for the sustained high portion.

6.3 Syntax and falls

Before discussing the falls, it is important to note that in most cases, the term fall refers to a tonal fall on some measure of the final portion of a contour. In the case of the Type 3 contours there was no tonal fall. The "fall", or final portion of Type 3 contours, should be understood to be the final word, prosodic or non-prosodic, of the extended high portion, or in other words, the absolute end of the contour.

In almost all cases, 96.79% (513 of 530), the falls began on one of the four major junctures: NP 58.3% (309 of 530), VP 15.47% (82 of 530), AdjP 13.77% (73 of 530), and AdvP 9.25% (49 of 530). The remainder of the falls began on conjunctions (0.75%, 4 of 530), discourse markers (0.19%, 1 of 530) and prepositions (2.26%, 12 of 530), as illustrated in Table 6.2. With specific regards to Type 3 contours, as previously

mentioned, there were only 16 in all. Of these 15 contours, 7 ended on nouns, 2 on adverbs, 3 on verbs, 1 on an adjective, 1 on a determiner, and 1 ended on the tag/discourse marker "*po*".

Juncture	***Quantity***	***Percentage***
AdjP(adjective)	73	13.77%
AdvP(adverb)	49	9.25%
NP(noun)	130	24.53%
NP(determiner)	12	2.26%
NP(nucleus)	168	31.7%
VP(verb)	59	11.13%
VP(nucleus)	17	3.21%
VP(gerund)	4	0.75%
VP(reflexive pronoun)	1	0.19%
Conjunction	4	0.75%
Discourse marker	1	0.19%
PrepP(preposition)	12	2.26%
Total	530	100%

Table 6.2: Frequency and number of syntactic junctures that initiate falls

The falls showed a lot less variation than the rises. However, as was the case with the rises, Table 6.2 demonstrates that while the majority of falls began on one of the four major junctures, speakers would sometimes split branched NPs and VPs. In other words, if a fall began on an NP with a determiner node and a noun node, speakers would, at times, maintain the determiner in the high portion and then fall on the nucleus, or the noun, as illustrated in Figure 6.13.

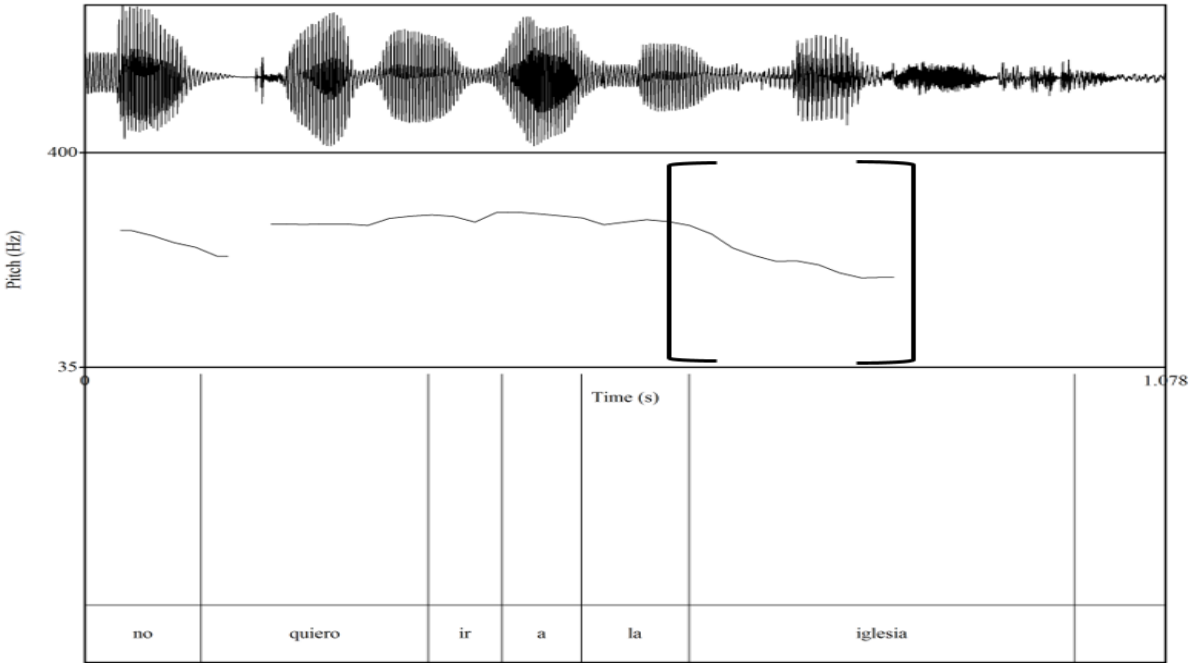

Figure 6.13: Contour with a fall that splits an NP (*I don't want to go to church*)

6.4 Summary

Similar to previous studies on the role that syntax and prosody occupy together (e.g. Christophe et al. 2004 among others), there was a certain level of coordination between syntax and prosody at the rise and fall portions of the Chilean Spanish plateau contours. On the surface, with 60% of all rises and 96.79% of all falls occurring on either an NP, VP, AdjP, or an AdvP, it appears that there is a high level of coordination, with speakers rising primarily on syntactic junctures that contain traditionally prosodic material. However, like the studies previously cited in the present dissertation, this coordination is not by any stretch categorical. As previously shown, frequently speakers did not appear to be primarily concerned with traditional notions of prosodic and non-prosodic content, as they often split VPs and NPs with multiple nodes, rising at times on

the prosodic nodes of these junctures, and on the non-prosodic nodes in other instances. The chain rises demonstrate an even lower level of coordination between the syntactic and prosodic elements of the rises, as speakers continued to rise to the peak of the rise portion through multiple syntactic junctures and both traditionally prosodic and non-prosodic content.

The falls, while showing a higher level of syntactic and prosodic coordination, still showed similar prosodic behavior to that of the rises in that they could sometimes occur over multiple junctures, split branched constituents, and be realized over both prosodic and non-prosodic elements. Likewise, even when falls occurred on main junctures and supposed prosodic content, only Type 1 and Type 5 contours had falls that occurred on stressed syllables. Type 6 contours, while always falling on postonic syllables, always rose on the final stressed syllable and thus showed a consistent level of prosodic-syntactic coordination. However, Type 2 contours always occurred on the final postonic syllable of the utterance-final word, Type 3 contours lack a final fall, and Type 4 contours could contain multiple postonic syllables or multiple words and syntactic constituents. Thus, while syntax and prosody match up at times on both the rise and fall portions of the plateau contours, they do not do so on a consistent basis, and any coordination that was observed could be due simply to coincidence rather than any deliberate behavior exhibited by speakers. Similarly, the frequency of the four main junctures might be the root cause of much of the supposed coordination of prosody and syntax observed in the data. In other words, because NPs, VPs, AdjPs, and AdvPs are more common than other constituents, their being associated with the rises and falls at higher frequencies than less common junctures could just be a consequence of their

higher levels of usage within the language, rather than the result of grammar-internal rules dictating where speakers should and should not initiate these rises and falls.

It must be noted that the syntactic behavior of the split constituents is also indicative that when speakers produce these contours, the contrast between prosodic and non-prosodic content is not always clear. For example, in cases of split NPs where the rise occurs on the determiner with the noun being the first element of the sustained high portion, it could be postulated that speakers treat these determiners as prosodic in order to realize the rise. In cases of multiple syllabic determiners, the presence of more than one syllable only increases the likelihood that speakers convert one of these traditionally non-prosodic syllables into a tone bearing until to be able to initiate the rise. The same could be said of split VPs and instances where VPs and NPs at the fall portions are split. If speakers do in fact treat traditionally non-prosodic material in the rises and falls as prosodic, there must be a motive for the markedness of this behavior. At this point, it appears that such behavior shares a connection with the communicative intentions of the speakers. This possibility and its implications will be further discussed in Chapter 7.

While syntax cannot, and must not, be written off as unimportant or irrelevant to speakers when producing these patterns, the data suggest that coordination between syntax and prosody is not what speakers treat with the highest level of importance. The notable levels of incongruence between the syntax and prosody of the rises and falls of the Chilean Spanish plateau contours suggest a more pragmatically driven motivation behind their production rather than a cause rooted in linguistic or grammar-internal systems. In other words, speakers frequently treat syntax with secondary importance because what most concerns them is completing the idea they are trying to communicate.

Speakers only include the material they consider important to the message they are attempting to transmit in the sustained high portion, regardless of how F0 movements correspond with the syntactic organization of the specific idea. This is accomplished by splitting branched VPs and NPs, rising and falling through various constituents and mixtures of traditionally prosodic and non-prosodic content. In other words, the data suggest that speakers treat the information of the plateau contours from rise to fall more as singular units, thus creating disjuncture between prosody and syntax at times because what speakers are treating as a single unit can be comprised of multiple syntactic components.

Chapter 7

Autosegmental Metrical Phonology and Chilean Spanish Intonational Plateau Contours

RQ3: Is current Autosegmental Metrical phonology able to satisfactorily describe the Chilean intonational valleys and plateaus?

7.1 AM-Centered Approaches to Chilean Intonational Plateaus

The current framework of AM is such that the two potential analyses proposed in Rogers (2013) are the only real possibilities of describing the Chilean Spanish plateau contours without making any modifications to the theory.

7.1.1 Monotonal Chains of Pitch Accents

The first analysis assumes that all the prosodic content in both the extended low and high portions have monotonal L or H pitch accents that independently associate with the metrical tier. The rise is either L+H* or L+>H* and the fall is H+L*. This is very similar to the approaches used by Cid and Ortiz (1998) for the vocative hat contours they report, and by Pérez (2015) for the absolute interrogative hat contours she documents in Spanish in Galicia. Any movement between the metrically strong points along the low and high portions of the contour is assumed to be phonetic interpolation and therefore is not phonologically rooted. Figures 7.1, 7.2, and 7.3, taken from Rogers (2013), illustrate this approach. Figure 7.1 is an extended valley and a short plateau, Figure 7.2 is a long plateau and a minimal valley, and Figure 7.3 is an example of a contour with an extended valley and high portions.

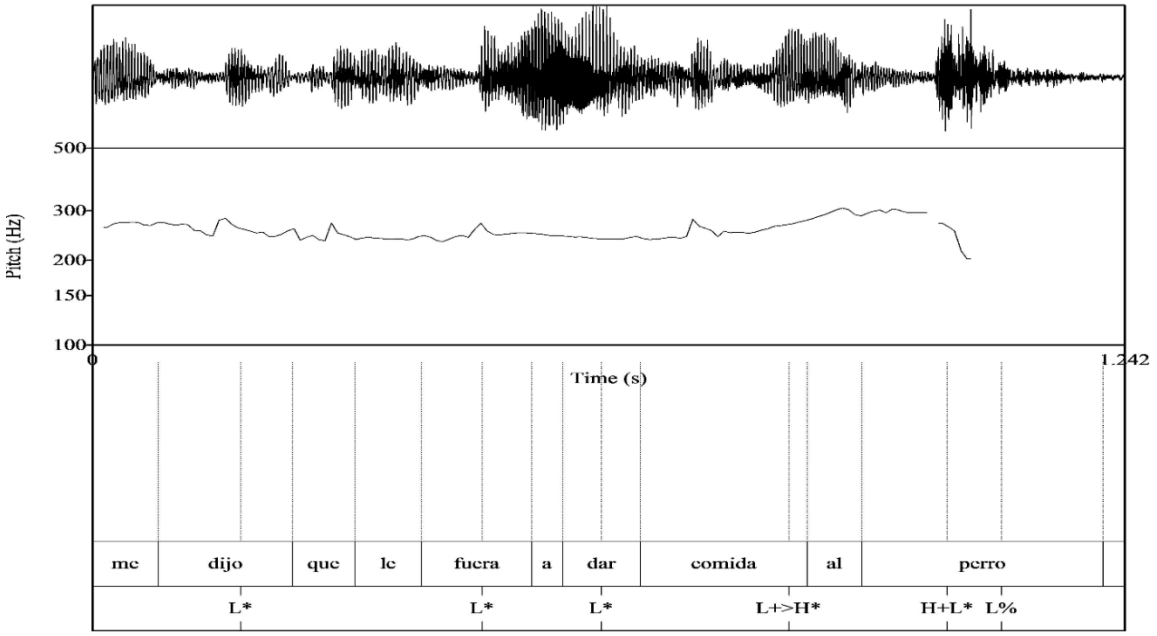

Figure 7.1: Contour with a long valley of monotonal L tones from Rogers (2013, p. 185) (*...she told me to go feed the dog*)

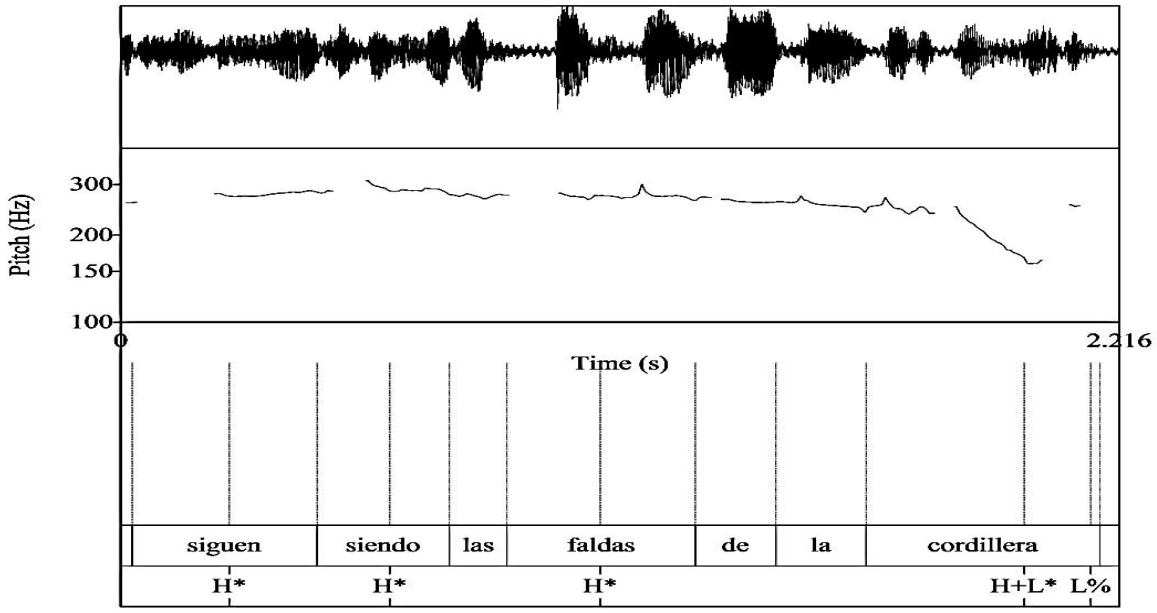

Figure 7.2: Contour with a long sustained high portion of monotonal H tones from Rogers (2013, p.186) (*...they are still the foothills*)

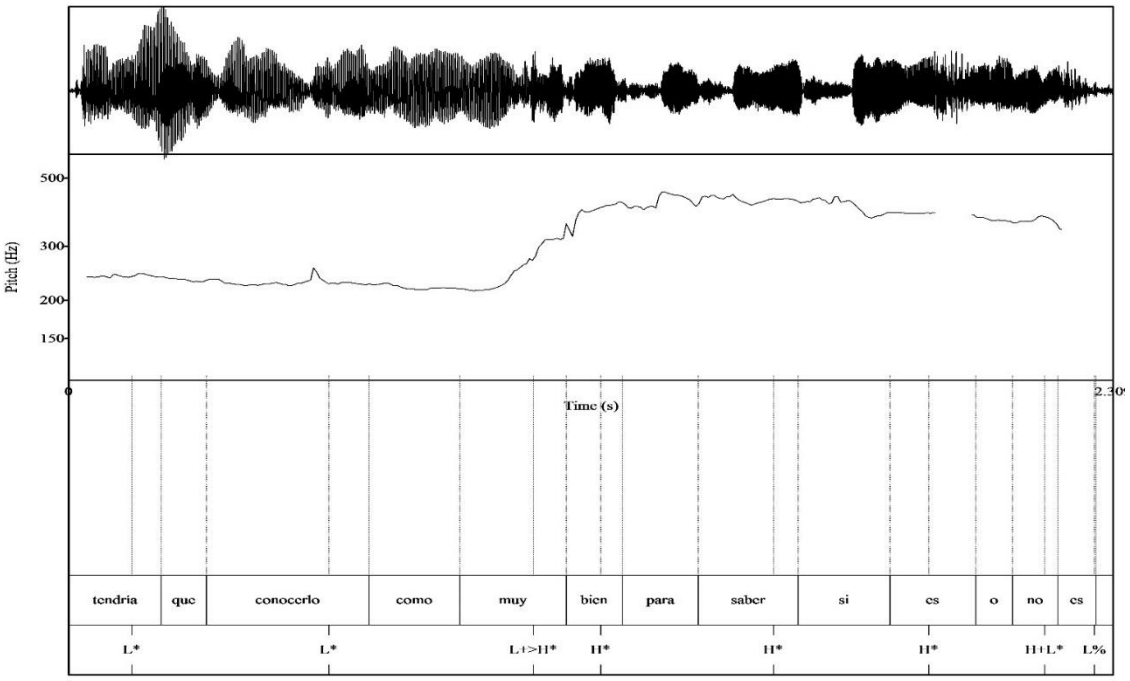

Figure 7.3: Contour with a long valley and extended high portion, each with several monotonal L and H tones, from Rogers (2013, p. 186) (*I would have to get to know him/her really well to know if he/she was or wasn't*)

With specific regards to monotonal H and L tones in Spanish, the literature indicates that they are phonetically realized as high and low plateaus. Additionally, the H tones are not preceded by any evidence of a valley. Prieto and Roseano (2010) and Aguilar, de la Mota, and Prieto (2009) only document monotonal L pitch accents in nuclear position in broad focus statements and information seeking questions and monotonal H pitch accents in nuclear position of wh-questions and yes-no questions. With respect to Chilean Spanish, Ortiz et al. (2010) found that monotonal H pitch accents were generally found in the nuclear position of open enumerations, invitational questions, and certain calling contours that ended with a H% boundary tone. However, there is some inconsistency in their general reporting of where monotonal H pitch accents appear in Chilean Spanish and the examples they provide. Apart from the contexts in which they

initially report monotonal H tones as being present, they also show examples where these pitch accents appear in uncertainty statements, exclamative statements, and even broad focus statements. They report the presence of monotonal L pitch accents in nuclear position of wh- and echo questions, as well as in gentle requests and on the last member of closed enumerations. Of note is that no studies within the Sp_ToBI framework, nor any previous to the development of Sp_ToBI, report utterances of multiple monotonal H pitch accents.

In reality, this first approach is more a *de facto* analysis from within the confines of the AM framework. There is no empirical or data-driven basis that backs up the assumption that either the low or the high portions are chains linked together by monotonal tonal events. It is merely the simplest way of accommodating the Chilean Spanish plateau contours within AM. Such an approach may not even be phonological and the use of AM could be more as a means of phonetic description, rather than employing it as a phonological model as it was originally intended (Face 2014). In fact, when the Chilean Spanish plateau contours are analyzed in more detail, the assumption that they are chains of monotonal pitch accents encounters several critical problems.

7.1.1.1 The Assumption of Interpolation Within Sustained High Portions

The argument that the extended high portions are chains of H tones depends critically on the assumption that all metrically unassociated material between tonal events is interpolated. If the material between H* events is not interpolated, then it becomes problematic and difficult for AM and Sp_ToBI to explain how so much non-prosodic content is sustained at consistent, high tonal levels. As previously noted, the data set

used for Rogers (2013) was much less robust than the corpus that the current dissertation draws from. Thus, with the limited data I had in the 2013 study, this argument generally holds up.

Likewise, for most of the categorizations observed in the current data, the assumption that non-prosodic material is interpolated works as well. However, in cases where the extended high portion was broken by pauses, stuttering, or self-corrections, only for the speakers to continue at the same high level after the break, the assumption of interpolation becomes more difficult to justify for two reasons. First, the data suggest that speakers treat material after plateau-internal pauses differently than material that follows pauses in non-plateau contours, possibly indicating the occurrence of different phonological processes in the differing contexts. Second, the pitch maintenance at a high level requires a greater degree of physical exertion, which only increases when speakers maintain the high extended portions through breaks. Thus, based on the production of plateaus from a physical viewpoint, speakers appear to be making a deliberate effort to sustain all plateau-internal content, both traditionally stressed and unstressed lexical items, at a high pitch level, instead of simply connecting stressed material by way of phonetic interpolation.

7.1.1.2 F0 Pre and Post-Pausal Behavior in non-Plateau Contexts

Most studies that examine the role that pauses play in prosody do not focus on the behavior of the fundamental frequency after pauses. Rather, they focus on how the pitch changes in anticipation of a following pause, pause length, and on the impact of pauses on the perception of phrasal organization and hierarchicalization. However, it is possible

to deduce possible post-pausal F0 behavior based on what has been studied regarding pauses and intonation. Rao (2010) demonstrated in three different varieties of Spanish that longer pauses indicated the end of an idea. Speakers would also often lengthen final syllables and reduce fundamental frequency right before these pauses to further indicate the end of an idea. Price et al. (1991) and Ladd (2008) also state that pauses are associated with prosodic boundaries, and that longer pauses tend to indicate the presence of stronger boundaries, such as IPs, which many times indicates the end of an idea.

While there are few known studies showing F0 behavior after pauses in Spanish, the idea of pitch reset has been shown to be an indicator of preceding PPh and IP boundaries in various languages. Like pauses, the degree to which speakers reset the fundamental frequency has been shown to affect the type of preceding boundary. For example, Lin and Fon (2011), showed that in Taiwanese Mandarin, more drastic resetting of pitch was associated more with the higher ranked IP boundaries. De Pijper and Sanderman (1994) demonstrate that in Dutch, pitch reset occurs after pauses, indicating that not only are pauses and pitch reset used in Dutch as well to mark prosodic boundaries, but pitch reset is also an indicator of a new phrase or idea. D'Imperio et al. (2005) show that pitch reset follows pauses in Italian but that Spanish speakers did not show evidence of pitch reset after prosodic boundaries. In fact, they state that after prosodic breaks, the initial peaks following these breaks were very low in Spanish when compared to other Romance languages. Therefore, based on this evidence, and the findings observed in Rao (2010), Spanish speakers would be expected to lower the fundamental frequency of their utterance after pauses instead of maintaining the post-pausal content at a high tonal level. The current data show that when pauses occurred

outside of the plateau contours, speakers did often reduce the fundamental frequency and produce the following content at a lower F0 level, consequently contrasting with how they treated post-pausal content in the high portions of the plateau contours. Likewise, in some cases, differing from D'Imperio et al., when pausing outside of the context of the plateau patterns, speakers also exhibited pitch reset after the break, a behavior also contrary to the behavior documented when a high extended plateau portion was interrupted by a pause. This contrary behavior was not categorical, but it was only observed in non-plateau contours.

Figures 7.4 and 7.5 were both produced by the same speaker. The first figure shows how the speaker produced post-pausal content outside the context of the plateau contours, and the second contour shows an extended high portion interrupted by a pause as the speaker corrects herself. In the first contour, the pauses appear to be a mechanism to help the speaker correct herself and reformulate the idea she is trying to communicate.

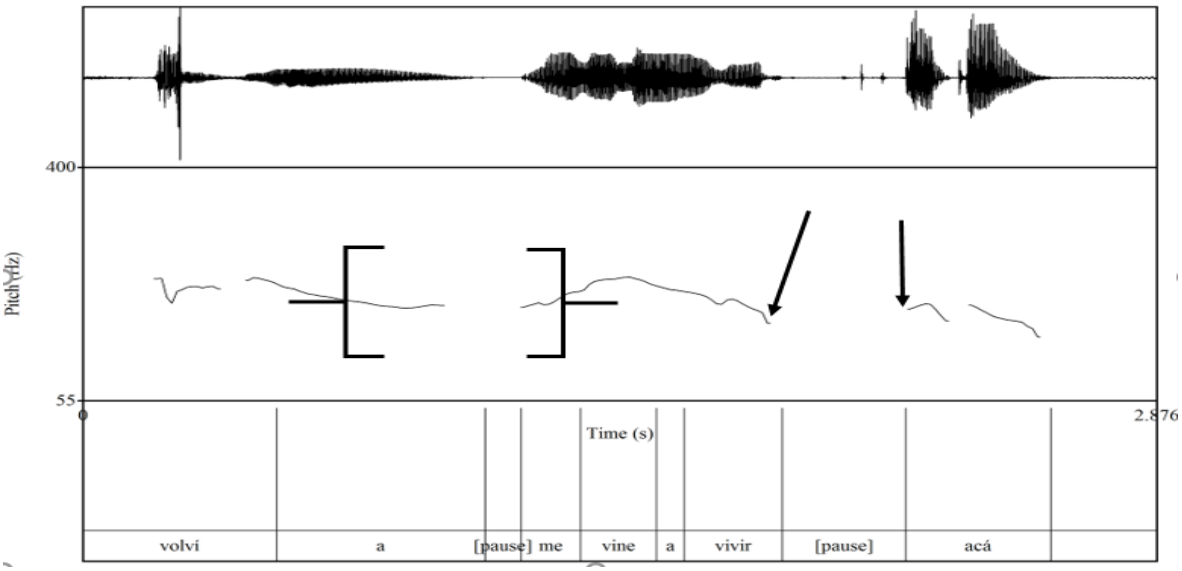

Figure 7.4: Non-plateau contour showing pre-pausal F0 lowering and post pausal pitch reset (*…I went back to* [pause] *I came here* [pause] *to live*)

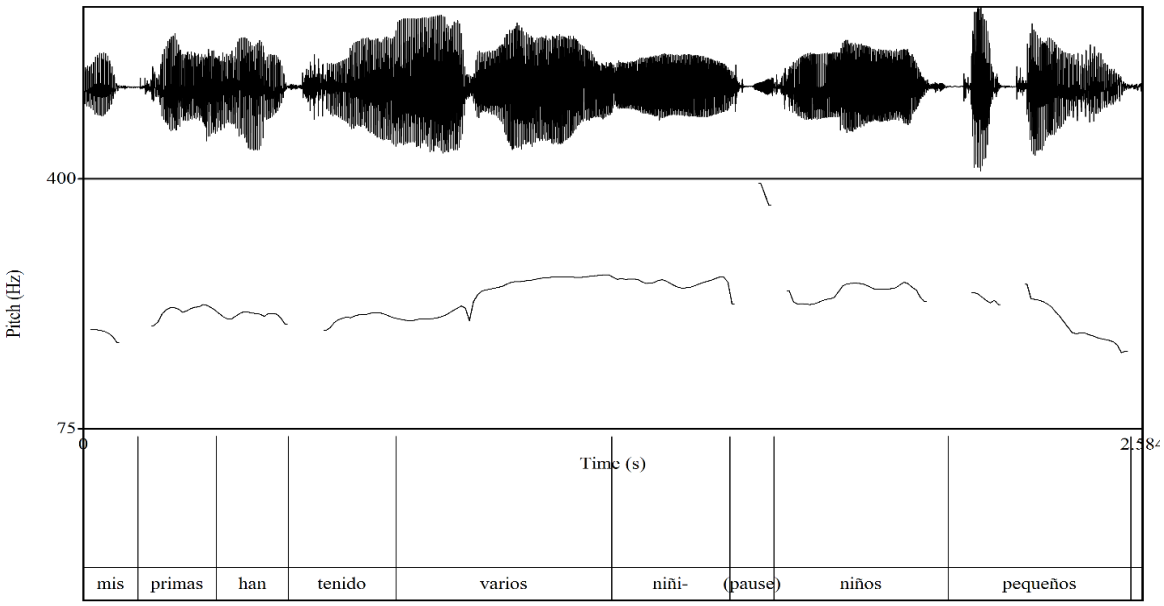

Figure 7.5: Plateau contour showing the lack of F0 reduction preceding the pause and the lack of pitch reset after (*my cousins have had several sma-* [pause] *small kids*)

In Figure 7.4, the brackets show behavior similar to the findings in Rao (2010) and D'Imperio et al. (2005), in that the speaker reduces the fundamental frequency of the utterance leading up to the pause, and begins the following content at the same low pitch level, before rising into a new pitch accent. The first arrow shows that, once again, prior to the second pause, the speaker reduces the fundamental frequency. However, unlike after the first pause, following the second pause, as indicated by the second arrow, she appears to slightly reset the pitch at the onset of the word "*acá*". In the plateau shown in Figure 7.5, the speaker stutters and corrects herself in the middle of the high extended portion. Prior to and after the pause, however, there is no evidence of F0 reduction; rather, the corrected content following the pause is still produced at the same high tonal level as the rest of the plateau-internal prosodic and non-prosodic content.

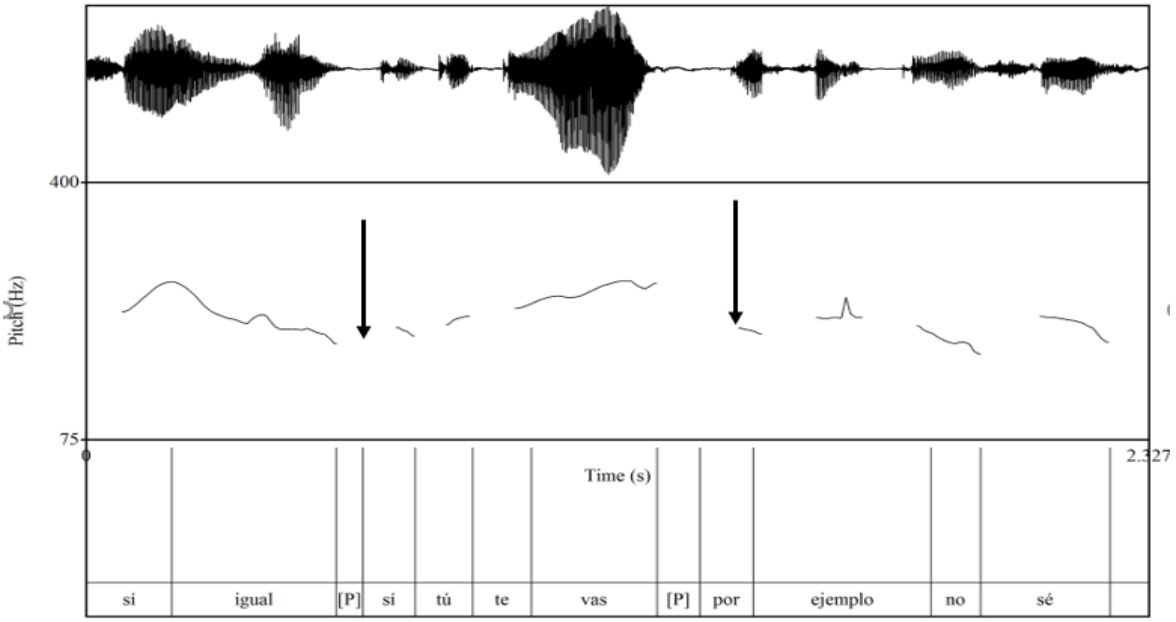

Figure 7.6: Non-plateau contour showing F0 reduction prior to pauses and pitch reset after (*yeah, it's the same* [pause] *if you go* [pause] *for example, I don't know...*)

In Figure 7.6 the speaker pauses twice in the same utterance. Prior to the first pause, the intonational curve descends, indicating F0 reduction. After the pause, the following phrase starts out at a low pitch level and rises until the second pause. Unlike after the first pause, the speaker resets the fundamental frequency at a lower tonal level at the start of the following phrase.

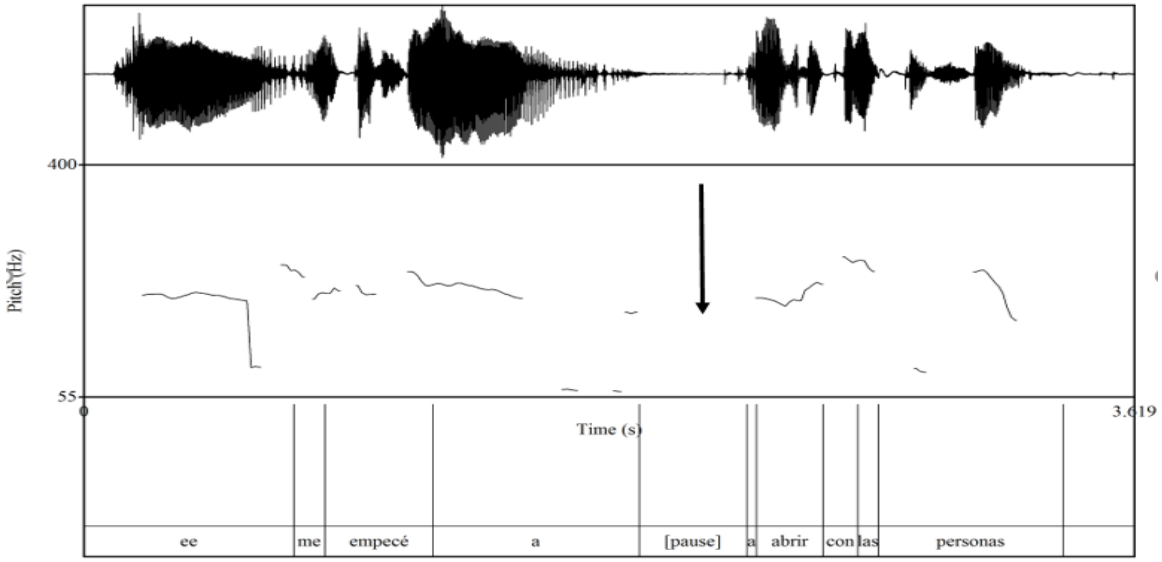

Figure 7.7: Non-plateau contour showing F0 reduction prior to a pause (*ee, I started to* [pause] *to open up with people*)

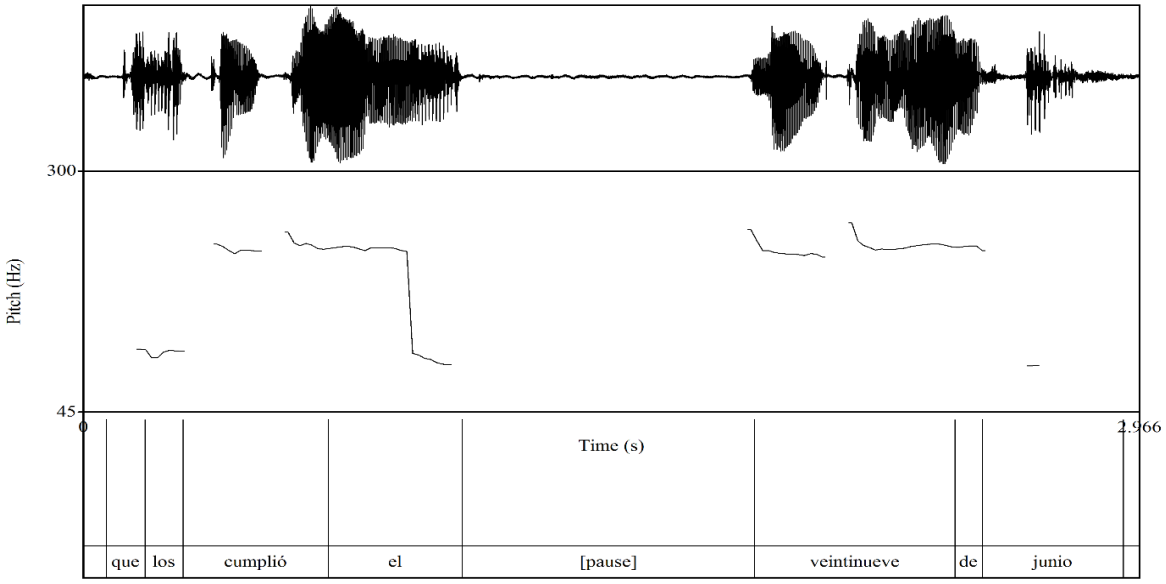

Figure 7.8: Plateau contour with no pitch reset after an extended pause (*His birthday was [pause] the 29th of June*)

Figures 7.7 and 7.8, both produced by the same speaker, show instances of longer pauses in a non-plateau and a plateau-internal context. The first example, Figure 7.7, shows a pause of 392 ms as the speaker pauses to finish her idea. The fundamental

frequency prior to the pause begins to descend, and after the pause stays at the same low level, before rising on the next stressed word. In the plateau in Figure 7.8, the speaker pauses in the middle of the extended high portion for 821 ms. This pause serves a similar purpose to the one in the Figure 7.7, as the speaker appears to use it to finish formulating her idea mentally before verbally communicating it. The following non-prosodic numeral, "*vientinueve*" is realized at the same high tonal level of all the plateau content prior to the pause, and the speaker maintains the high portion for one more non-PW before falling on the final stressed syllable of the utterance.

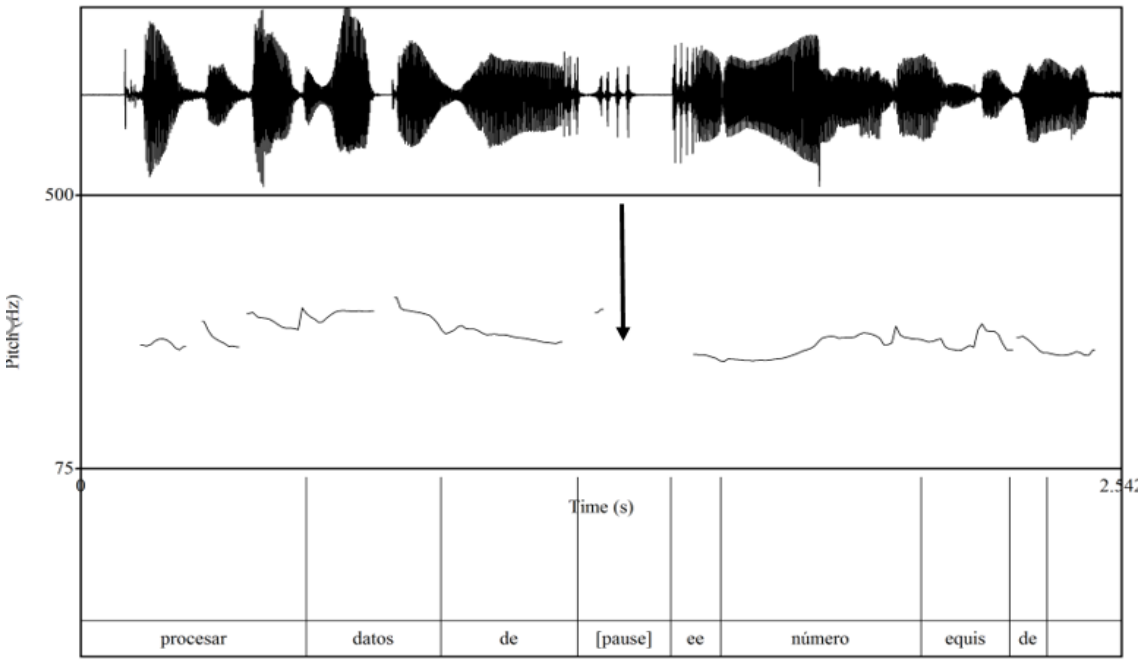

Figure 7.9: Non-plateau contour showing F0 reduction prior to a pause (...*process data from* [pause] *ee X number of*...)

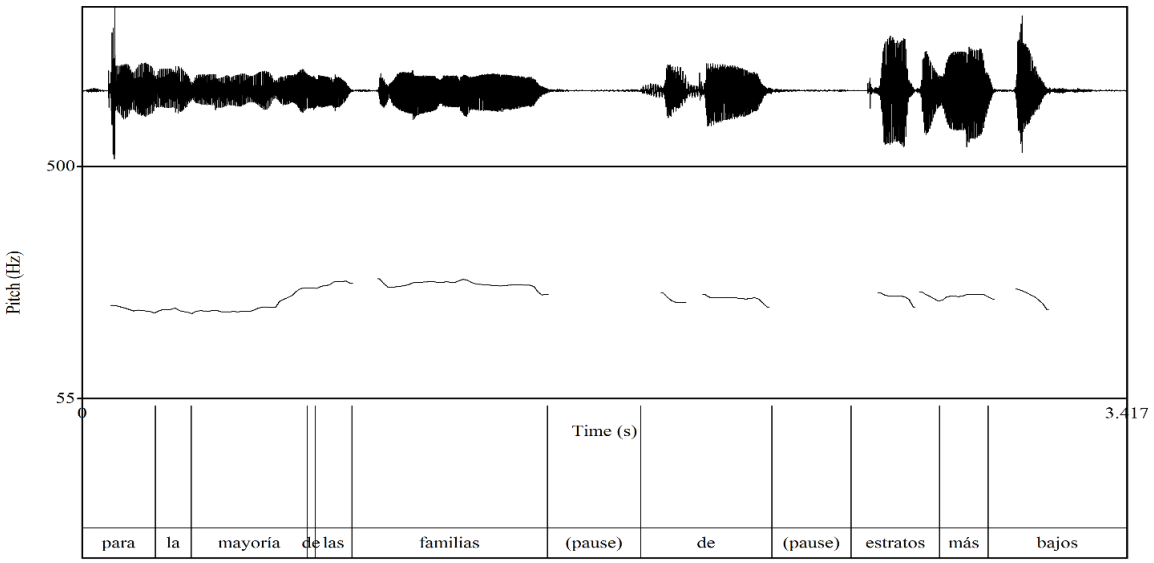

Figure 7.10: Plateau contour showing no F0 reduction prior to pauses or pitch reset after. (*...for the majority [pause] of [pause] lower income families*)

Figures 7.9 and 7.10 show contours produced by another participant with the same type of pauses interrupting both contours, as shown in previous examples. In Figure 7.9, a non-plateau contour, the speaker descends prior to the pause and maintains the pitch at the same low level immediately following the break before rising into a following pitch accent. In other words, before and after the pause pitch reduction occurs, and then there is a deliberate movement to a tonal target on the next stressed syllable. On the other hand, the plateau in Figure 7.10 shows the speaker maintaining a high pitch through two pauses and across both non-prosodic and prosodic content with no observable movement of any tonal targets throughout the entire high portion.

Finally, Figure 7.11, a non-plateau contour, shows a long pause preceded by pitch reduction and followed by a high pitch reset. Figure 7.12, also produced by the same speaker corresponding with the previous figure, shows a long pause in the high extended portion of a plateau contour, similar to a number of previous examples. Also similar to

previous examples, there is no F0 reduction prior to the pause, nor is there any pitch reset or low peaks after the break. As has been the case in all of the previous examples, the speaker also maintains a high pitch level after the pause, through the non-prosodic contraction "*pa'l*" and the PW "*lado*" before falling through the final two words of the utterance.

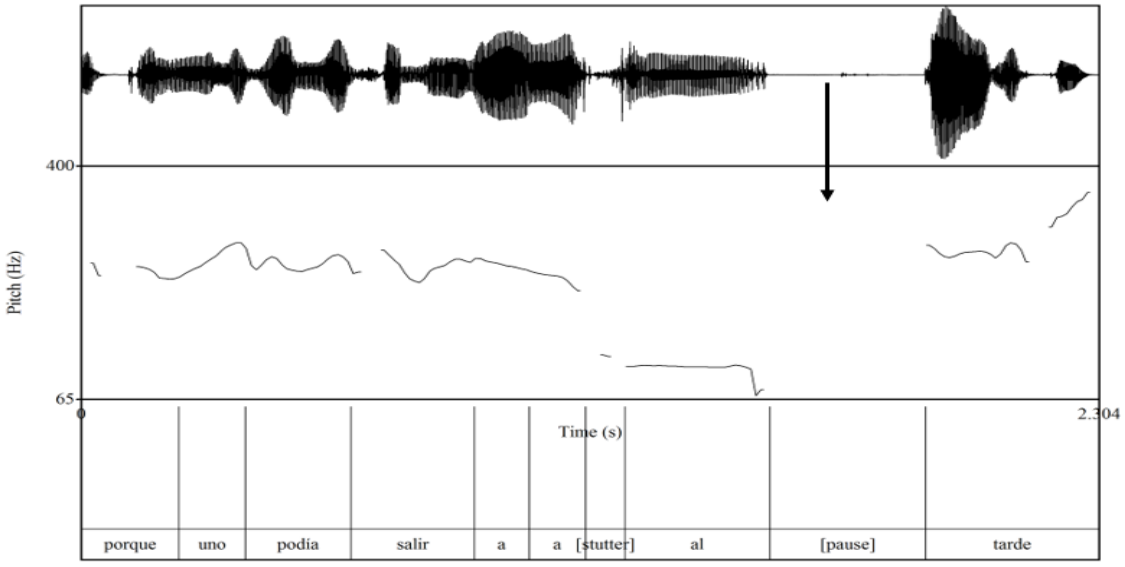

Figure 7.11: Non-plateau Figure showing F0 reduction prior to a pause and pitch reset after (*because you could go out to, to* [stutter] *to* [pause] *late*)

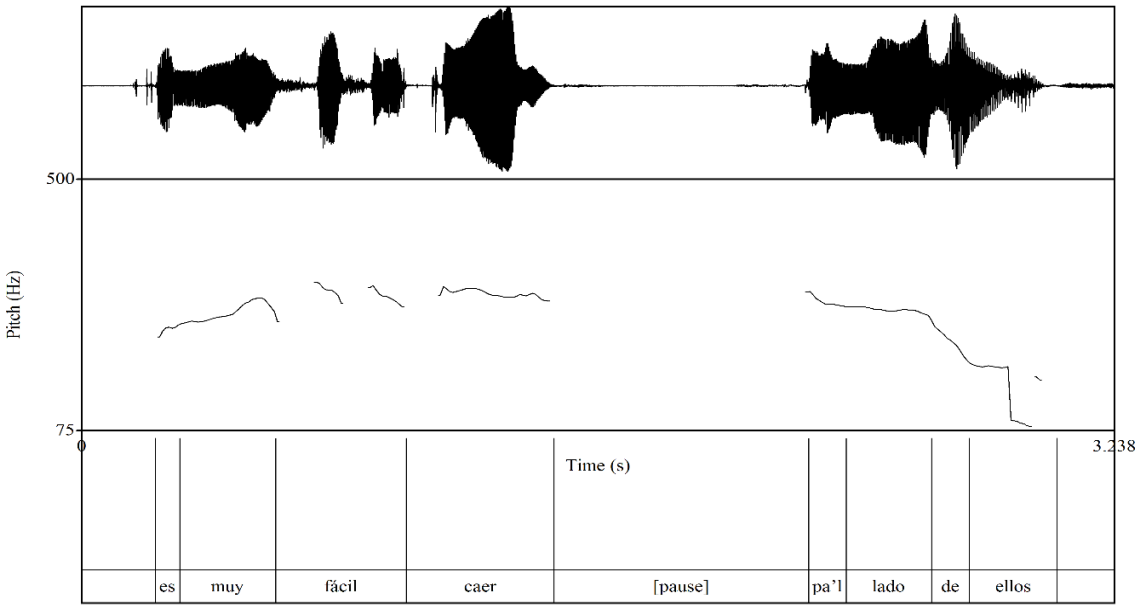

Figure 7.12: Plateau contour showing no pre-pausal F0 reduction and no post-pausal pitch reset (*It's easy to get caught up* [pause] *in their way of life*)

While pitch reset and F0 reduction are not categorically observed prior to and following pauses in non-plateau contours, they are never observed in any of the plateau contours. It is clear that speakers treat prosodic and non-prosodic material before and after pauses differently in these non-plateau contexts. In the plateaus, there is a more obviously deliberate effort to maintain all content, not just traditional prosodic content, at a sustained high pitch level.

7.1.1.3 Interpolation and Physical Effort

Ohala (1983) states that "The [human] speech production mechanism can be viewed as a device that converts muscular energy into acoustic energy" (p.190). While the capacity to perform any physical task varies greatly from individual to individual, it is still finite. Although Ohala focuses these limitations and constraints on the segmental

processes and limitations of a variety of languages, Gussenhoven (2002, 2004) includes intonation and prosody as two speech phenomena that are also ultimately limited by the finite capacities of the human anatomy. Gussenhoven (2002) asserts that speakers are aware of these limitations and exploit them in a variety of ways to communicate different meanings and messages. Regarding intonation, because the capacity of the human anatomy to produce chains of phonetic material is finite, Gussenhoven further postulates that an expenditure of greater effort can be interpreted as the speaker indicating that their message is important. Thus, while the speaker limits the amount of physical material they can produce by exerting more effort, the increased effort and pitch range are exploited so that what the speaker does choose to invest her or his effort on, stands out when compared to other utterances produced with less physical exertion. With respect to Spanish, both Face (2003, 2011) and Rao (2006) show that higher pitch excursions (i.e. more physical effort) increase the perceptual salience of words and ideas in utterances thus giving them higher communicative importance with relation to the rest of the surrounding prosodic material. Therefore, another challenge to the notion of interpolation between independent H pitch accents, is the physical effort that speakers deliberately expend to sustain the high pitch level through not only pauses, but other breaks, such as self-corrections and stutters. If even part of the material in the sustained high portion is communicatively less important, it would not be expected for speakers to expend the necessary physical effort to maintain the high pitch over so much non-prosodic material and through breaks with such consistency.

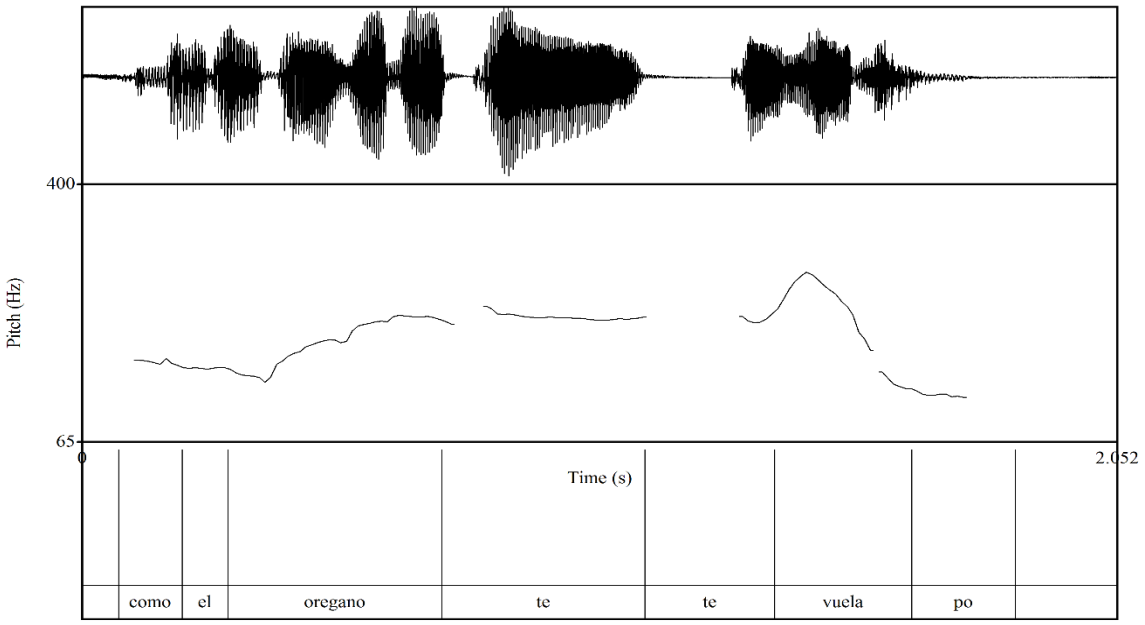

Figure 7.13: Plateau contour demonstrating high pitch maintenance through a self-correction on traditionally unstressed content (*…like, oregano gets you, you high*)

Figure 7.13 illustrates a broken Type 6 contour. The speaker rises on the word "*orégano*" and then stutters, producing the non-prosodic direct object pronoun "*te*" two times, before rising on the final stressed syllable of the extended portion. Despite the fact that "*te*" is non-prosodic, the speaker still sustains the high pitch level attained after the initial rise through both instances of the pronoun.

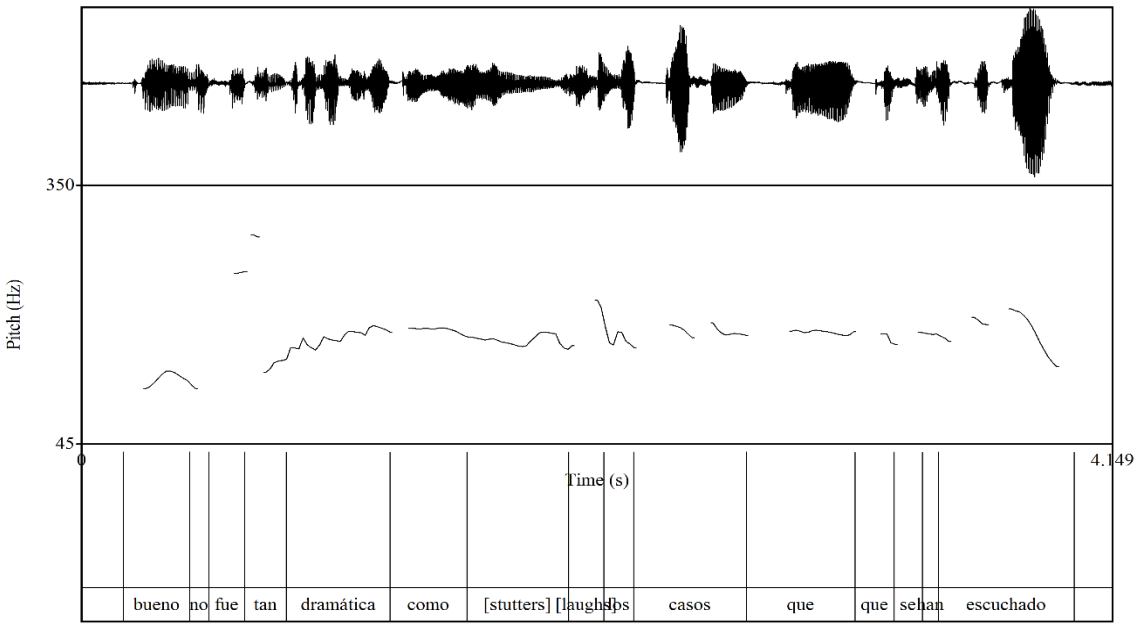

Figure 7.14: Plateau contour showing high pitch maintenance through breaks caused by stuttering and laughing (*well, it wasn't as dramatic as* [stutters] [laughs] *some of the other instances that have been heard of*)

Figure 7.14 is another example of a broken Type 6 plateau. The rise occurs on the words "*tan*" and "*dramática*" and the high pitch is maintained through 7 words (2 prosodic 5 non-prosodic) and two breaks: an instance of the speaker stuttering, followed by a brief laugh. The contour then rises on the final stressed syllable of the utterance, and then falls. Despite the consecutive breaks, the non-prosodic definite article "*los*", which is the first word after the breaks, is still realized at the same sustained high tonal level as the content prior to the breaks.

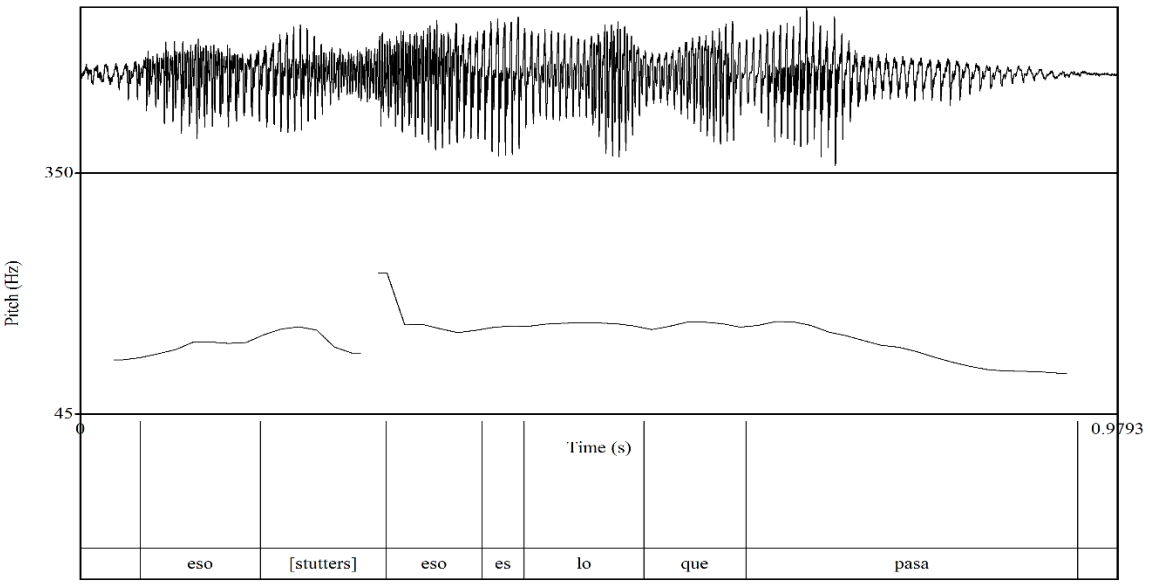

Figure 7.15: Plateau contour that shows no pitch reset or reduction after a break caused by stuttering in the rise (*that [stutter] that's how it is*)

The Type 6 plateau pattern in Figure 7.15 is unique when compared to previous examples of broken extended high portions. While the previous examples showed pitch maintenance through breaks in the sustained high portions, the example in Figure 7.15 shows the speaker stutter in the rise and still achieve the peak without reducing or resetting the fundamental frequency afterwards. The speaker starts the rise on the non-prosodic demonstrative pronoun "*eso*", stutters before the rise peaks and then repeats "*eso*" after the break as the peak of the rise. Not only does the speaker continue to expend effort to complete the rise and arrive at the extended high portion, he also does so through completely non-prosodic content. In fact, the first prosodic word, "*es*" does not even occur until within the extended portion.

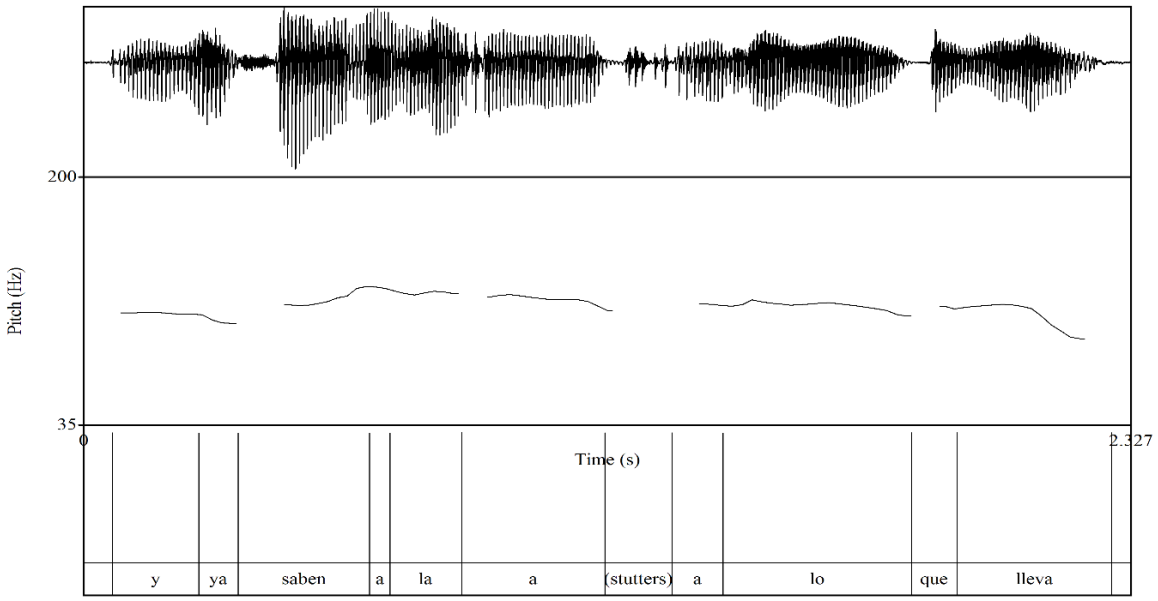

Figure 7.16: Plateau contour showing pitch maintenance through a stutter break in the high portion (…*and they already know what, to* [stutter] *what it leads to*)

Like all of the previous examples, the Type 2 contour in Figure 7.16 has a break in the middle of the sustained high portion, and like the previous examples, the speaker also maintains the same high, sustained pitch, before and after the break. What is unique about the contour in Figure 7.16 is that the content before and after the break is all non-prosodic. In fact, after the rise peaks, the entire extended portion is made up of non-prosodic content up until the final word "*lleva*", during which the fundamental frequency is sustained over non-prosodic content for 1.3 seconds. Rather than interpolation between metrically strong targets, the contour in Figure 7.16 shows the speaker making a deliberate, physical effort to maintain the same high F0 level, regardless of what is traditionally considered to be stressed or not, even after a break in the intonational contour and several self-corrections.

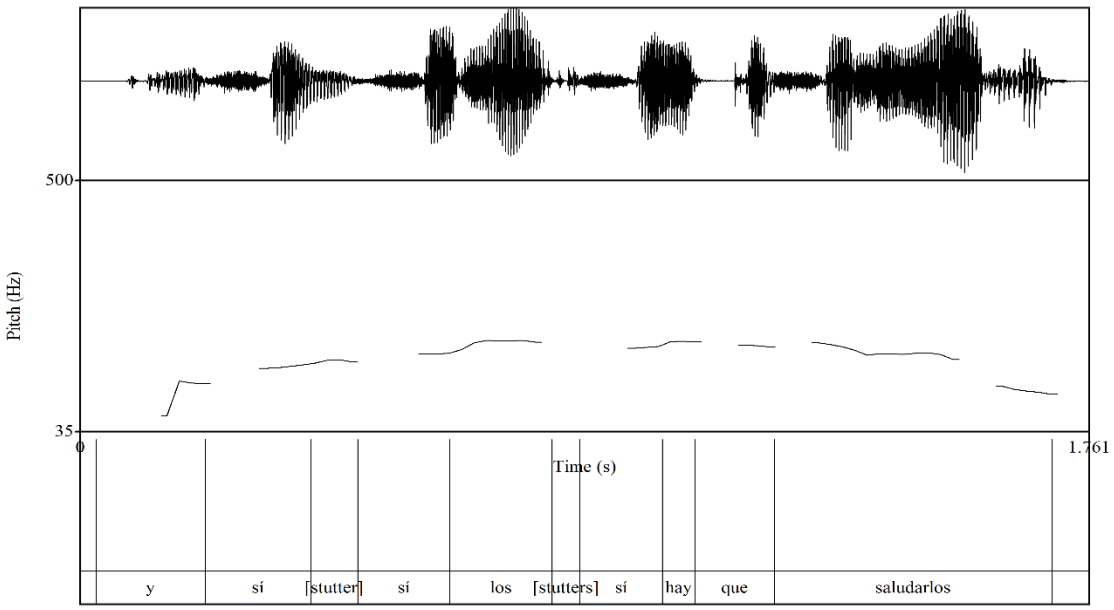

Figure 7.17: Plateau contour showing high pitch maintenance through breaks on the rise and sustained high portion (*and, yes* [stutter] *yeah they* [stutter] *yeah, you need to acknowledge them*)

Finally, the Type 1 contour in Figure 7.17 shows a number of instances of the speaker making the same deliberate effort to maintain an idea rather than a chain of individual tonal events at a high level. First, the rise occurs through a break caused by the speaker stuttering. Next, after the peak, the speaker stutters again, corrects himself, sustains the same high pitch level after the second break, and then continues until the fall on the final stressed syllable.

Based on the previous examples, speakers exhibit behavior and tendencies that suggest that when they produce plateau contours, they are not phonologically "aiming" for individual targets along an intonational chain. Rather, as previously discussed in Chapters 5 and 6'\, speakers appear more concerned with communicating whole ideas or concepts more as singular units. Also, the energy that speakers exert when producing the high extended portions of the Chilean Spanish plateau contours is as much devoted to

what AM would label metrically strong words and syllables as it is to those traditionally metrically unassociated, non-prosodic elements. The traditional notions of stress and prosodic strength, which are fundamental to AM, do not hold up in the data.

Particularly telling are the examples that have post-pausal non-prosodic content, such as prepositions and numerals, maintained at the same high pitch level as the content preceding the pauses. If the high portions are chains of H pitch accents, then it would be expected that speakers would only make an effort to sustain prosodic content at a high tonal level, since non-prosodic content is considered phonologically unimportant. This is why prosodic content that falls between pitch accents on a tonal chain is said to be simply phonetic interpolation. If the content between prosodic words is simply phonetically interpolated, then it would not be expected for speakers to keep non-prosodic content, such as the preposition "*de*" from Figure 7.10, the contraction "*pa'l*" of the preposition "*para*" and the definite article "*el*" in Figure 7.12, or the numeral "*veintinueve*" in Figure 7.8, at the same sustained high F0 level attained previous to the pause. Equally unanticipated would be sustained F0 levels over sections of consecutive non-prosodic content, such as what is observed in Figure 7.16.

The effort that speakers make to maintain even non-prosodic content at high tonal levels across pauses, stutters, and self-corrections serves as further evidence that all content internal to the sustained high portions, has the same communicative status in the mind of the speaker. The previous examples show this happening across pauses of varying lengths, as well as multiple stutters and self-corrections, lending further support to the notion that the effort to sustain a high pitch level is something of which speakers are conscious. If all content has the same communicative status in the mind of the

speaker, F0 movement from traditionally non-prosodic content to prosodic content across the sustained high portions cannot be interpolation. It would appear that contrary to what AM indicates about the meaning of a tonal contour being phonologically rooted in the chaining together of various, independent tonal events, the extended high portions of Chilean Spanish plateau contours are speaker-motivated, and get their meaning from the entire idea, however large or small, that the speaker chooses to express from rise to fall.

7.1.1.4 Inconsistent F0 Movement

If the prosodic content of either the low or high portions is truly made up of independent phonological associations, then it would be expected that there would be some level of consistent evidence within each portion that speakers are treating these events as independent, albeit linked, tonal events. In other words, there should be evidence along the pitch contour of speakers making an effort to make the prosodic content of the low and high portions more salient than the non-prosodic content that surrounds it, as is the case in other utterances that have been documented in Chilean Spanish and other dialects. For example, Ortiz et al. (2010) show multiple examples of different statements in Chilean Spanish, such as broad focus declaratives, absolute interrogatives, narrow focus statements, and contradictions statements, where each pitch accent clearly rises above the non-prosodic content that surrounds it. Figure 7.18 is a broad focus statement from one of the author's corpora of Chilean Spanish that shows clear rises that distinguish the prosodic content from the interpolated intervening non-prosodic content.

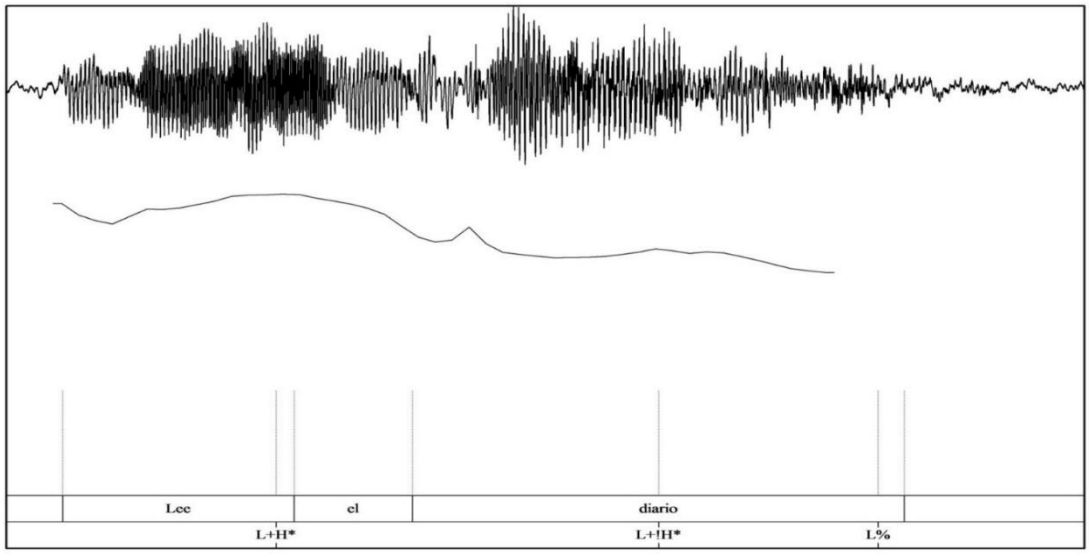

Figure 7.18: Non-plateau contour showing typical rising and falling F0 (*s/he reads the newspaper*)

On the first PW, *"lee"*, the contour clearly rises and peaks within the stressed syllable. Between the next PW and the first, the there is a non-prosodic definite article. The contour dips, or sags, as it gradually descends on its way to the final metrically strong syllable of the utterance. When the contour reaches the stressed syllable "*dia*"- of "*diario*", the contour rises once more and peaks within this syllable, and then continues to descend toward the final low boundary tone. Face (2004) demonstrates this same behavior in Castilian Spanish, as can be seen in Figure 7.19.

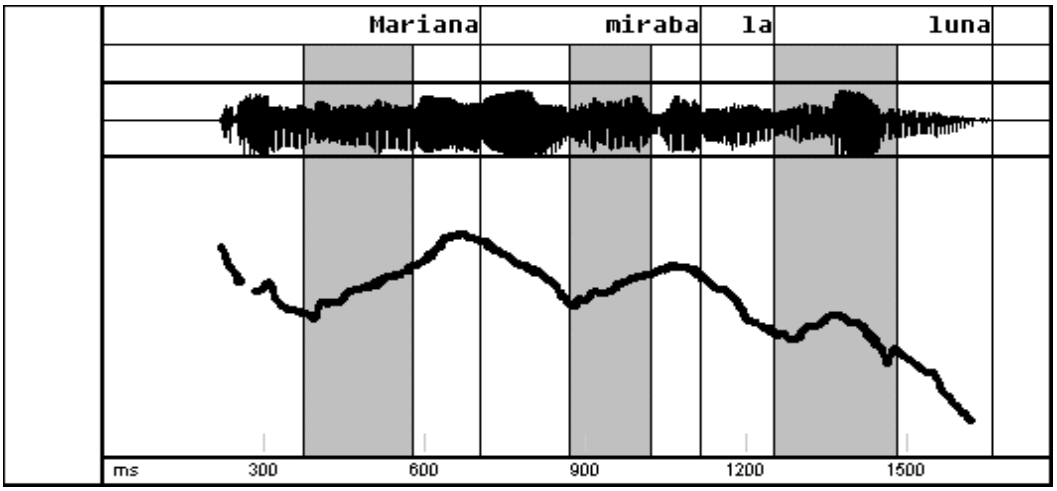

Figure 7.19: Non-plateau contour showing rising and falling F0 contour, adapted from Face (2004) (*Mariana was looking at/looked at the moon*)

Each stressed syllable in Figure 7.19 shows a perceptible rise and peak that distinguishes the pitch accents from the non-prosodic material. The material between each pitch accent is interpolated as it sags or dips before rising into another pitch accent. In other words, one of the stronger pieces of evidence in the current literature on Spanish intonation that supports the AM assumption that intonational contours are chains of connected, independent, tonal events is the consistent evidence of tonal movement to apparent targets. The previous examples, and countless others that appear in the literature, show an overwhelming tendency for speakers to produce perceptible F0 movement toward various tonal targets, thus distinguishing metrically strong items from non-prosodic content. This is part of what AM claims gives contours their different, and many times, contrasting meanings, a notion that has been proven in numerous studies through perceptual experiments.

It must be noted that many of the studies that document this tendency of speakers to aim for tonal targets have made use of very controlled methods, and the extent to

which their findings can be generalized to include more natural or spontaneous speech is debatable. In fact, in Spanish, Face (2003) and Rao (2009) both report that in spontaneous speech, speakers show a tendency to deaccent, or produce no perceptible F0 movement, through various portions of their utterances to varying extents. Face reports that speakers of Castilian Spanish deaccented prenuclear prosodic words up to 30% of the time, while Rao reports that speakers of Barcelona Spanish deaccented 23% of the time. However, despite these high rates of imperceptible F0 movement across accentable material, both authors report that in the majority of the cases, there was perceptible movement of the fundamental frequency on stressed, or metrically strong, syllables. Thus, despite the higher levels F0 reduction, speakers of Spanish still appear to string together specific tonal events and targets in spontaneous speech. In other words, the F0 movement on stressed syllables in Spanish is phonological, and not purely phonetic, like the interpolation between tonal events.

One of the problems that the Chilean Spanish plateau contours present AM is the consistent, and seemingly deliberate, tendency to chain prosodic and non-prosodic content together at the same relative tonal levels, paired with the lack of consistent perceptible F0 movement across prosodic content in extended portions of contours, especially the high portion. While deaccenting, especially in the low portion, is certainly a possibility, based on what previous studies report and the theoretical assumptions of AM, at least some level of consistent, perceptibly salient movement of fundamental frequency on the metrically strong tonal events of both portions would be expected. The data indicate that this is not the case. Within the extended low and high portions, at times there is apparent F0 movement on stressed syllables, where it would be expected, but in

other instances, there is F0 movement on unstressed syllables and non-prosodic lexical items. In other cases, there is no perceptible F0 movement. Thus, a given valley or plateau can show F0 movement, or a lack of F0 movement, at any given point along their respective durations. This tendency gives the impression that speakers treat all material, prosodic and non-prosodic, within each respective portion as having equal communicative importance. In fact, the only consistent evidence of F0 movement occurs on the rise and fall of the high portions of contours, and as previously demonstrated, these rises and falls can also occur on both traditionally prosodic and non-prosodic content. Figures 7.20 and 7.21 are examples of the inconsistency of the F0 movement observed in the current data.

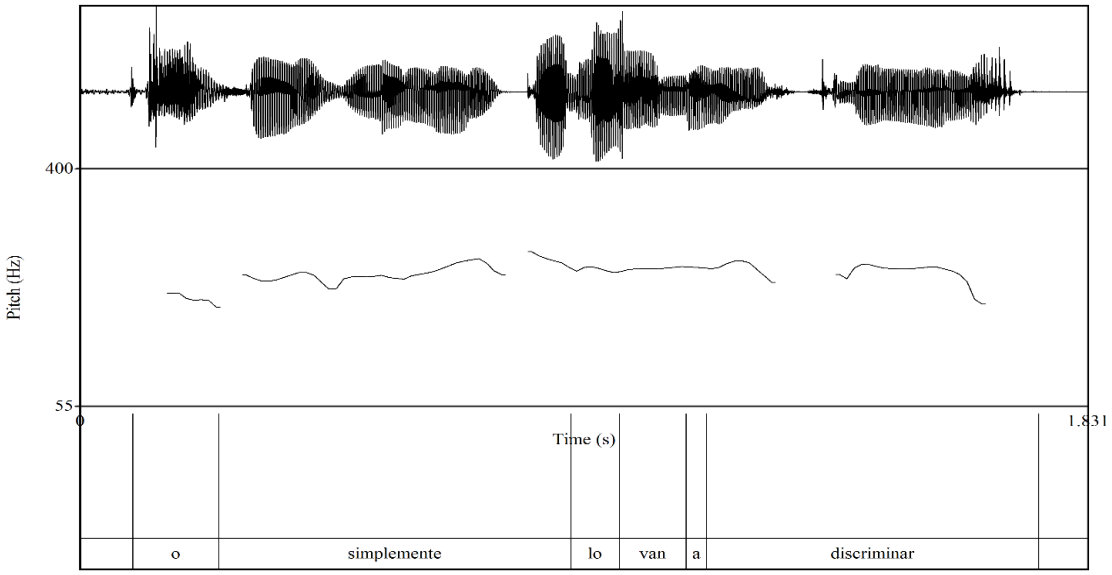

Figure 7.20: Plateau contour that shows inconsistent F0 movement in the high portion (*...or they'll simply discriminate against them*)

The only apparent tonal movement in the contour seen in Figure 7.20 is the rise on the first word "*simplemente*", which peaks on the last syllable, and the fall on the

stressed and utterance-final syllable of "*discriminar*". The valley is limited to one non-prosodic conjunction that, as would be expected, shows no meaningful F0 movement. Between the rise and fall portions of the plateau section, the speaker produced no F0 movement on the one full PW, "*van*", which is contained within the high portion. When the speaker reaches the final word, "*discriminar*", there is a slight, perceptible rise in F0 on the first, unstressed syllable before the contour falls on the final, stressed syllable.

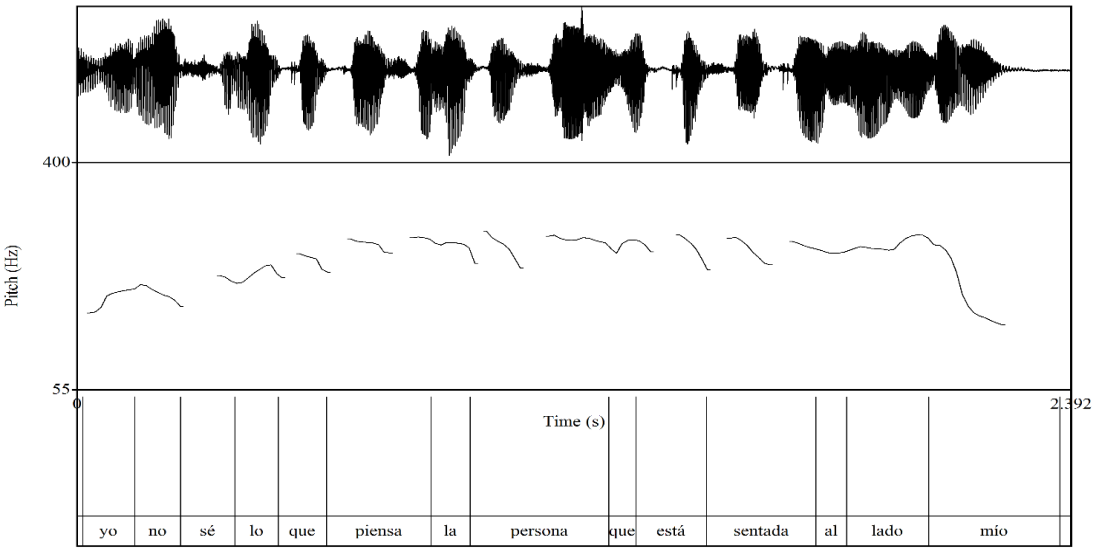

Figure 7.21: Plateau contour that shows inconsistent F0 movement in the high portion (*I don't know what the person sitting next to me is thinking*)

Figure 7.21 likewise exhibits several inconsistencies related to F0 movement. First, it must be noted that there is no valley. Instead, there is only a dip in the fundamental frequency on the word "*no*", which is followed by the beginning of the rise on the next word "*sé*". However, the rise does not occur on a single word as was the case in the previous example from Figure 7.20. Rather, in this case, it occurs on three full words, two of which are non-prosodic, and the first, and stressed syllable of the word

"*piensa*". Assigning pitch accents to the prosodic content of such a rise is problematic. The only real option for the first prosodic word "*sé*" is L+>H*, since the peak occurs after the stressed syllable that it begins in. A monotonal H* is not an option because there is a clear F0 descent on the previous word "*no*". Therefore, according to the AM and current Sp_ToBI frameworks (Estebas and Prieto 2008), the pitch accent on "*sé*" has to be bitonal. It cannot be L+H*, according to Estebas and Prieto, because the rise peaks posteriorly to the stressed syllable. The fact that the rise continues through two non-prosodic function words is also problematic. If it is assumed that the metrical associations of stressed syllables are what make them salient when compared to the surrounding non-prosodic content in a given intonational contour, then a continuous, maintained rise to a perceptibly higher tonal level would not be expected to occur through content not traditionally associated with the metrical tier. Second, none of the ostensible prosodic content that is contained within the high portion shows any noticeable movement to tonal targets that would indicate that this content is metrically stronger than the rest of the surrounding material. All content between the final syllable of "*piensa*" and the last syllable of "*lado*" is consistently maintained at the same high tonal level by the speaker.

Finally, the end portion of the contour in Figure 7.21 is also problematic for an analysis that assumes that the plateau is a chain of monotonal high tones. The first syllable of the penultimate word "*lado*" is the stressed syllable. However, as previously mentioned, there is no F0 movement that might indicate this. In fact, contrary to expectation, the only salient F0 movement of the high portion occurs on the final, and unstressed syllable of "*lado*". If there is a pitch accent, then it must go on the stressed

syllable, but current AM and Sp_ToBI conventions do not have any pitch accent that could be placed at this juncture. Figure 7.22 shows a more detailed, syllable-by-syllable division of the final portion of the plateau.

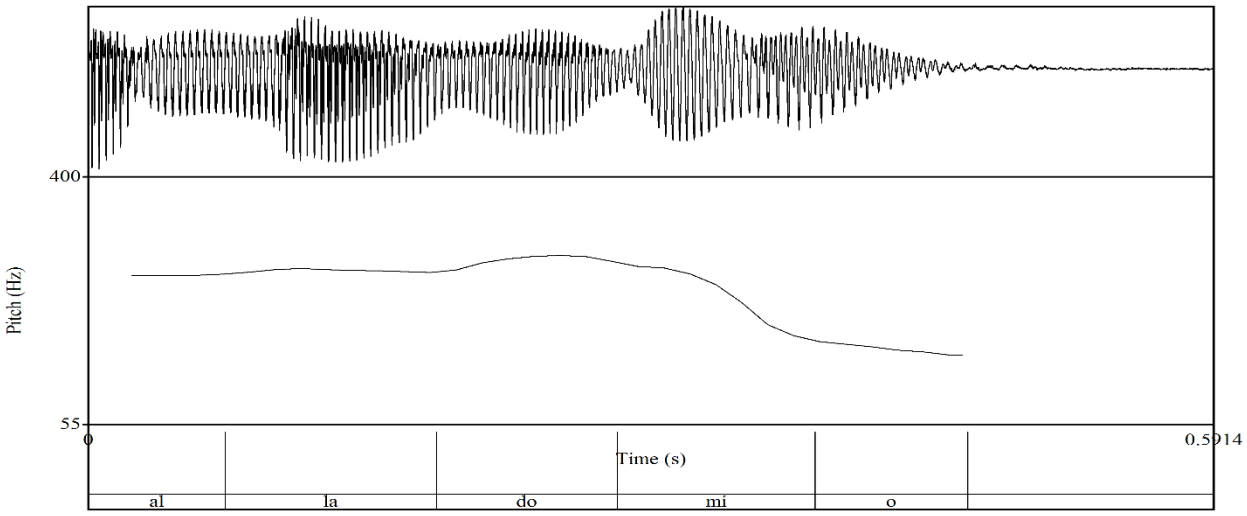

Figure 7.22: Final portion of a plateau contour with F0 rise on an unstressed syllable (*...next to me*)

With a rise beginning at the onset of the syllable "-*do*" and peaking within the same syllable, the supposed metrically strong syllable would seem to be devoid of metrical association, since the phonetic realization of this association appears on the postonic syllable, which is an assertion that is contrary to AM and Sp_ToBI. In order to explain what happens at this juncture, and still keep the current AM and Sp_ToBI frameworks in-tact, it would be necessary to assume that the stressed syllable is in fact where the metrical association occurs and that the following rise and peak, despite being in the following syllable, are the second half of a L*+H bitonal pitch accent that occurs on the stressed syllable. Several problems arise with this analysis. First, the associated tone has to be the L tone because it extends throughout the entire duration of the stressed

syllable, with the rise not even starting until the following syllable. Willis (2003) observed a similar pitch accent in Dominican Spanish, and in order to distinguish it from the already established L+H*, Face and Prieto (2007) label it L*+H, indicating that the L is in fact the associated tone. Nevertheless, this pitch accent is not appropriate for the present example because the material in question occurs on an already high tonal level and there is no L tone from which the H tone can rise. In fact, the very assumption that the high portion is a chain of monotonal H tones would fall apart if a L tone were said to be contained in this portion of the contour. This leaves only the option of proposing a new pitch accent. Since the content previous to the rise is already realized at a high tonal register, then, the only tone that could associate with the supposed stressed syllable would be a H tone. The rise then would have to be considered upstepped because it rises above the rest of the previous high material. This would yield a new pitch accent H*+>¡H. The lower high tone has to be the starred tone because it occurs on what is supposed to be the metrically strong syllable. If the first tone is the associated tone, then this calls into question the need to upstep, since upstepping commonly occurs as a way to increase the salience of the metrical association of a particular tonal event. But, if there is no association between the upstepped H tone and the metrical tier, there is no apparent phonological motive for upstepping the following proposed H tone. Likewise, proposing a new pitch accent for a single instance in one dataset essentially nullifies the universality of the theory.

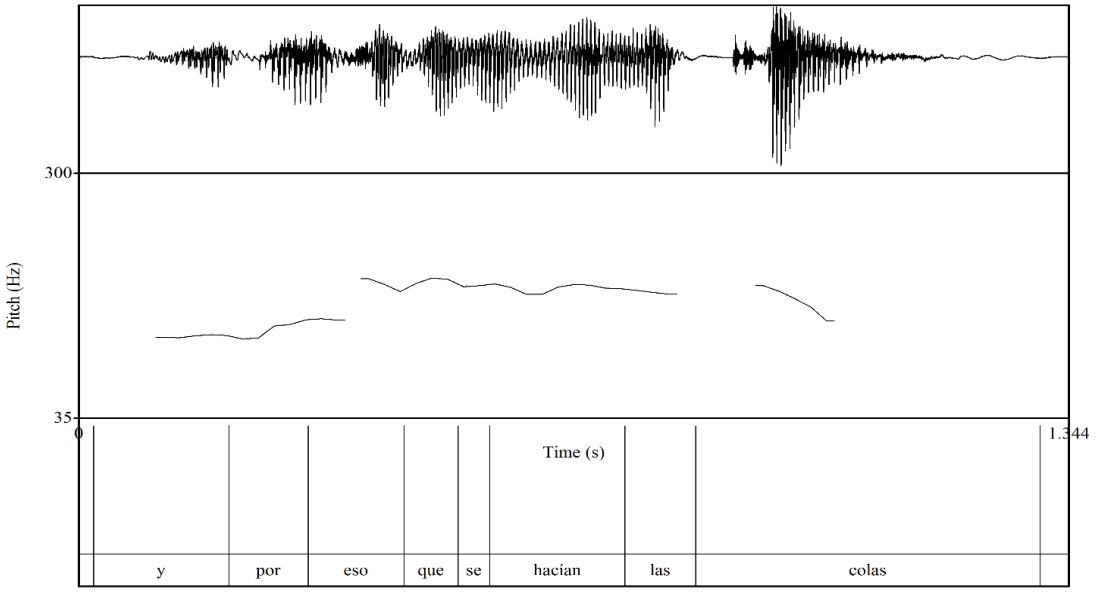

Figure 7.23: Plateau contour with a rise that occurs solely on non-prosodic content (*...and that's why there were lines*)

Figure 7.23 gives another example of a rise occurring through multiple non-prosodic units with a minimal preceding valley. In this case, the valley is made up of one coordinating conjunction. The entire rise is non-prosodic, and no pitch accent can be assigned to either of the words within the rise. In fact, the first four words of the plateau portion are non-prosodic. The first PW does not occur until halfway through the high portion. If no pitch accent can be assigned to any of the content in the first half of the plateau, then it must be asserted that nothing in the rise or the first half of the high plateau is metrically strong, which then calls into question why a speaker would make the very deliberate effort to produce such an abrupt and intonationally salient rise, and then maintain a high tonal level on material that cannot usually associate to the metrical tier. In the only PW, "*hacían*", the contour dips after the first syllable and then rises and peaks within the same syllable, which could potentially be seen as evidence of deliberate F0 movement within the plateau. However, this F0 drop most likely occurs due solely to

phonetic factors, since it occurs on the segment [ɦ], causing the fundamental frequency to briefly drop due to the frication of the segment. The only portion of this specific contour that could be assigned a definitive pitch accent is the drop on the final stressed syllable of the final word "*colas*".

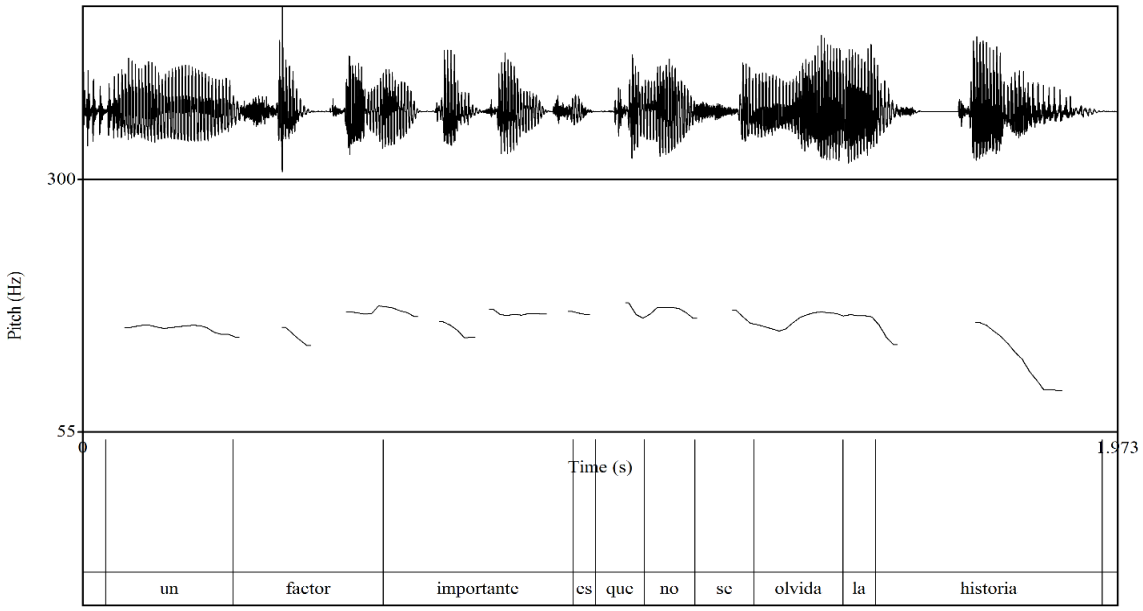

Figure 7.24: Plateau contour showing inconsistent F0 movement in high portion (*An important thing is that history never be forgotten*)

Figure 7.24 is another example where there appears to be F0 movement that is most likely due to phonetic factors upon further examination. The rise occurs on the word "*factor*", specifically on the stressed syllable "*-or*". Apparent F0 drops occur on the stressed syllables "*-tan*" of "*importante*" and "*-vi*" of "*olvida*" and on the monosyllabic word "*no*". These drops could be interpreted as low valleys from which associated H tones could rise. However, as was the case in the previous example, these drops could also be the result of the segments they occur on ([t], [n], and [lv] respectively) rather than

being motivated by phonological factors. Also, when F0 appears to rise after the drops observed in "*importante*" and "*olvida*", it peaks, but maintains itself at the same high tonal level achieved by the initial rise over both traditionally prosodic and non-prosodic content, instead of sagging. Further inconsistency is seen in the F0 trajectory as it falls across the first two, unstressed syllables of "*importante*".

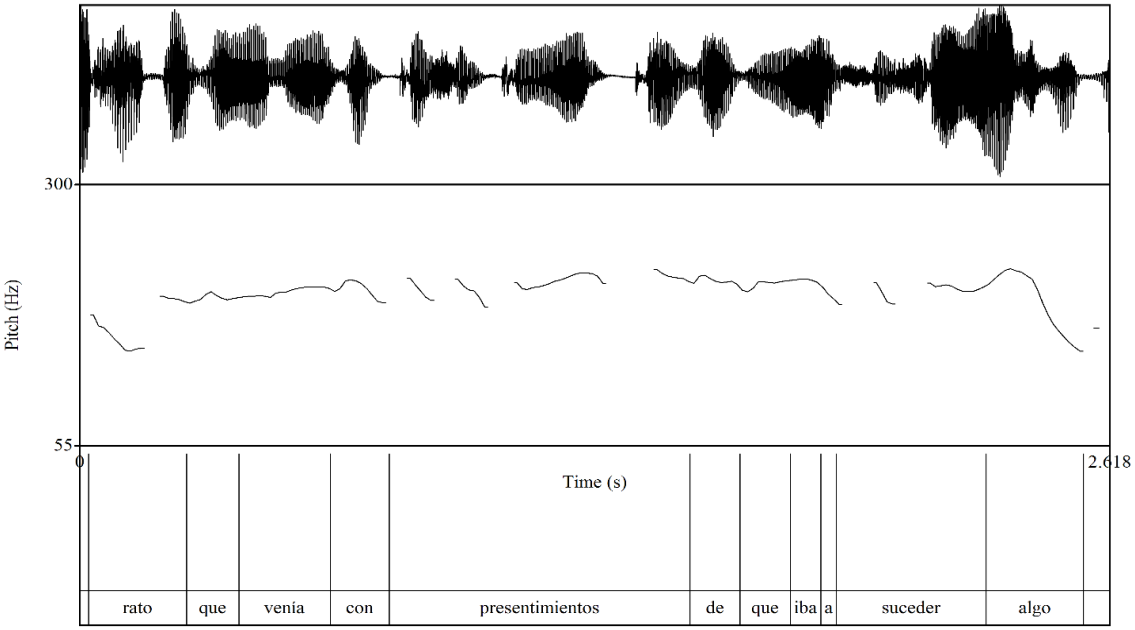

Figure 7.25: Plateau contour showing inconsistent F0 movement in the high portion (...*a while I had been thinking that something was going to happen*)

The rise in Figure 7.25 occurs gradually across the first five words and peaks on the stressed syllable "-*mien*" of "*presentimientos*". No valley is observed in this example. The notable feature of the contour is that it is a Type 6 contour with perceptible, and deliberate F0 movement on the final word. The two possible pitch accents within an AM framework would be either a monotonal, upstepped H tone that falls due to a final L% boundary tone or a bitonal upstepped H*+L and a L% boundary tone. A bitonal L+H* is not possible because, as previously discussed, the speaker has

already reached, and maintained, a variety of content at a high tonal register, and therefore, the presence of L tones cannot be justified. If the prosodic plateau-internal content were a chain of monotonal H tones, then it would be reasonable to expect movement similar to that found on the final PWs of the Type 6 contour more frequently throughout the duration of the high portion of Chilean Spanish plateau contours. Nevertheless, the only time this type of F0 movement is consistently observed is on the final stressed syllable of Type 6 patterns, and in no other pattern classification in the current data set are these deliberate rises present in the high portion.

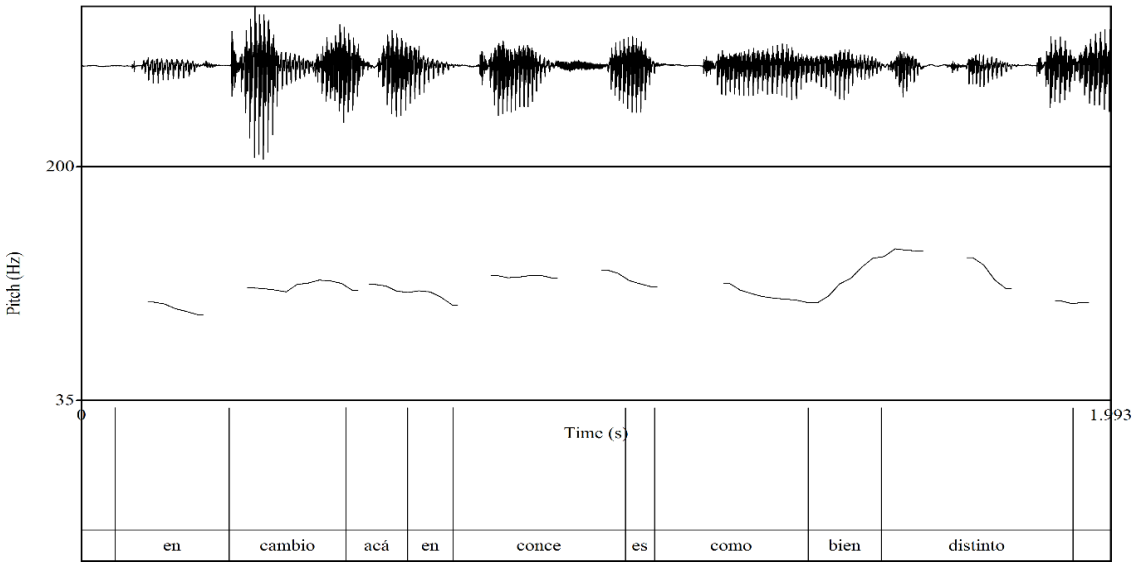

Figure 7.26: Plateau contour showing inconsistent F0 movement in the valley (…*on the other hand, here in Concepción it's, like, really different*)

The contour illustrated in Figure 7.26 is one of the few examples whose valley is longer than its plateau. The prosodic behavior though, is similar to what was observed in the high tonal portion of the Chilean Spanish plateau patterns; that is, there is no

perceptible F0 movement toward metrically strong targets. Figure 7.27 is another example showing the same lack of F0 variation in the valley.

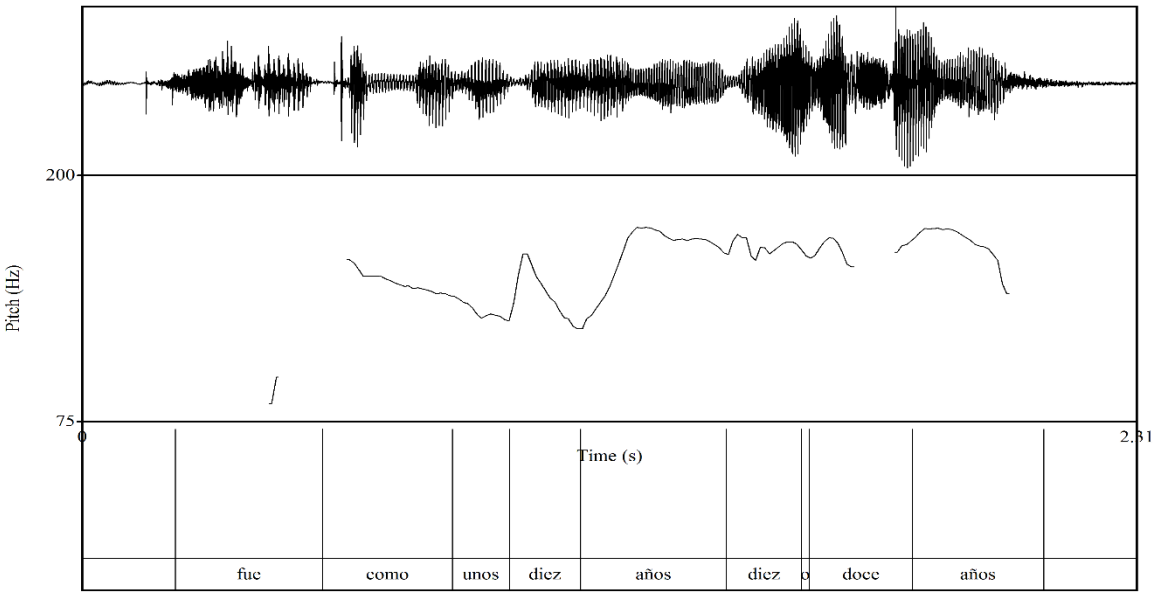

Figure 7.27: Plateau contour showing inconsistent F0 movement in the valley (*it was around 10 years, 10 or 12 years*)

In summary, unlike other utterances and patterns that have been reported in Chilean and general Spanish, the Chilean Spanish plateau contours do not show consistent F0 movement on stress-bearing, or metrically strong, syllables in either the valleys or the high portions. The only consistent and observable F0 movement that occurs in the patterns is seen in the rises, falls, and final stressed syllables in the high portions of Type 6 contours. Without evidence of a pattern of consistent F0 movement where pitch accents are expected, it is hard to justify the notion that both high and low portions are simply chains of monotonal H and L pitch accents. While this is the simplest and most likely approach current Sp_ToBI and AM theory would take, the behavior of the current data does not uphold this assumption. In fact, with the exception of the final

item of Type 6 contours, all other lexical content within both the extended low and high portions appears to be afforded equal prosodic status as speakers make no observable efforts to make any distinction between prosodic and non-prosodic material using fundamental frequency and independent, metrically anchored tonal targets.

7.1.2 Pitch Level Specific Deaccenting

To avoid the problems that interpolation and monotonal pitch chains present an AM-centered analysis, as an alternative AM-centered approach to the Chilean Spanish plateau contours, I postulate in Rogers (2013) that both the extended low and high portions undergo F0 level-specific deaccenting, or the lack of F0 movement through metrically strong, or stressed syllables. This analysis proposes that the only actual material that associates with the metrical tier is the valley-initial L pitch accent, the L+H or L+>H pitch accent that initiates the plateau, and the H+L pitch accent that ends the plateau. All other intervening material is unassociated and therefore has no pitch accent. If the plateau contours are constructed as such, then sustained pitch in both the extended low and high portions can be attributed to speakers simply shooting for the next tonal target. Figure 7.28, from Rogers (2013), illustrates this notion.

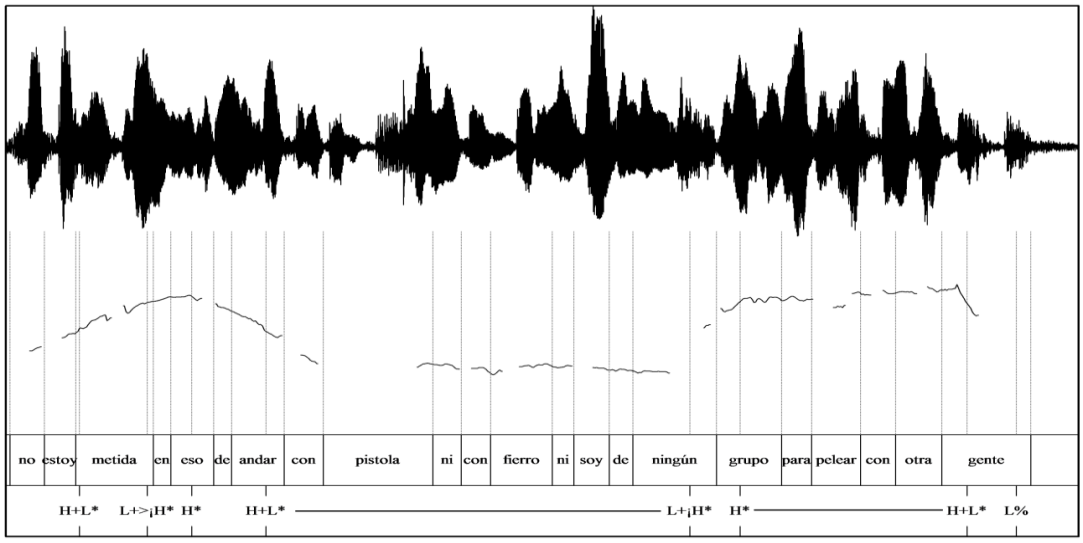

Figure 7.28: Plateau contour showing how AM conventions would indicate level-specific deaccenting, adapted from Rogers (2013, p. 183) (*I'm not into that whole thing of walking around with a pistol or a gun, nor am I a member of any group that goes around picking fights)*

In accordance with this second approach, in Figure 7.28, the first L* starts the valley, and all other material is deaccented and maintained at a low tonal level. The only other tone in the valley is the L tone of the first pitch accent that begins the rise. After reaching both L targets in the valley, the next target is a monotonal H* on the second word in the rise, which is assumed to be the final target the speaker aims for after initiating the rise. As was the case with the valley, after the rise peaks, all the material in the sustained high portion is maintained at the same high tonal level until the speaker reaches the next target: the H tone on the bitonal H+L* that initiates the plateau-final fall. The final targets are the L* of the final pitch accent and the L% boundary tone that ends the utterance.

This approach can be modified to fit the different categorizations of plateau contours documented in the current study as well, since modifications would only have to be made at the end of the sustained high portions. The final tonal target in Type 2

contours would simply be the final L% boundary tone, since the final stressed syllable remains at the sustained high pitch level on which the rest of the high portion occurs. For Type 3 contours, because there is no utterance final drop, the final target would be a H% boundary tone. Type 4 plateaus would be slightly more complicated and potentially problematic due to the varying amount of material that a speaker can choose to include in the fall. If the fall only contains the final few syllables of the utterance, the final pitch accent would be H+L* and would be followed by a L% boundary tone, as is the case with Type 1 contours. If more than one stressed syllable is situated in the fall, the only solution in the current AM and SP_ToBI framework would be an initial H+L*, followed by the needed amount of monotonal L* pitch accents and a final L% boundary tone. Type 5 contours would be exactly the same as Type 1 contours due to the fact that the only difference appears to be a phonetic downward slope. Finally, Type 6 contours would end in an upstepped H* pitch accent followed by a L% boundary tone. This approach would also argue that tonal maintenance through breaks is simply, once again, speakers working toward the tonal targets that are already anchored to the metrical tier.

This approach certainly can describe the valleys and plateaus from within current theory, but as was the case with the first AM-centered proposal, the current data create challenges for an approach that relies on the assumption of deaccenting.

7.1.2.1 Deaccenting and Physical Effort

With regards to deaccenting in Spanish, traditionally, in Spanish, prosodic salience has been said to be placed on newer information (Zubizarreta 1998, 1999), leading to the assumption that deaccented material is most likely old or less important

information. However, Cruttenden (1993) found that Spanish actually does not deaccent old information frequently. Related to these findings, Ocampo (2010) states that the determination of informational importance in Spanish is made primarily by the speaker, and focus can be placed wherever the speaker desires. Consequently, this also implies that the speakers can decrease the prosodic salience on whatever material they desire. These sentiments are echoed by Face (2003), whose comparison of lab speech and spontaneous speech presents evidence that in more natural speech it is harder to use prosodic cues to determine focus. Rao (2006) states that deaccenting in Spanish is connected to lower levels of emotion in the speaker and in his analysis of deaccenting in Barcelona Spanish, Rao (2009) determined that deaccenting was more common on lexical items that were peripheral to the overall meaning of an utterance. This suggests that deaccenting has a pragmatic function, and helps highlight information by decreasing the overall salience of other information that a speaker has deemed as less important.

Based on what has been observed with regards to deaccenting, the phenomenon is more of a conservation or a lack of physical effort that, at times, could have communicative or pragmatic motives. As previously discussed with regards to monotonal H* chains and the high portions of the Chilean Spanish plateau contours, speakers appear to be making a conscious effort to form and sustain the high extended portions. Deaccenting is the lack of F0 movement through stressed content where one would expect tonal events associated with the stressed syllables. The lack of pitch movement does not seem to be the consequence of deliberate physical effort, nor does it make sense to assume that high tonal maintenance of prosodic and non-prosodic material across breaks and over extended periods of time is an indicator of a lack of physical

exertion on the part of the speaker. In fact, both Face (2003, 2011) and Rao (2009) state that in Spanish, rises, such as those that initiate the high extended portion of the Chilean Spanish plateau contours, perceptually lend greater communicative salience to the word or words with which they associate. This implies that rises are the result of a conscious increase in physical expenditure with the end goal of highlighting information that is seen as more important than other surrounding information. The rigors of this physical effort on the part of the speakers would only increase upon sustaining the high pitch level achieved after the initial rise, and would increase even more as this high pitch level is maintained through breaks.

Thus, from the perspective of physical effort in speech production, the extended high portions appear to be the result of a process or phenomenon that is contrary to deaccenting, in the sense that they are the result of the conscious physical effort of speakers to maintain an idea or a concept at a high tonal level over a given period of time. Deaccenting implies a lack of physical effort being made along the F0 contour on certain lexical material that is not to be perceived by speakers as being as important as other accented material in a same given utterance.

While the high extended portions, once again, present a serious challenge to the assumption of F0 level-specific deaccenting, it is plausible that there is at least some degree of deaccenting occurring in the valleys at times. In fact, as previously mentioned in Chapter 4, and based on the previous studies on deaccenting in Spanish (e.g. Rao 2006, 2009, Face 2003), the valleys could play a role in the overall salience of the high extended portion by providing it with a tonal contrast. Figures 7.29-7.31 illustrate a few

examples where the potentially deaccented valleys could possibly be playing a pragmatic role by contrasting tonally with the high plateau portions.

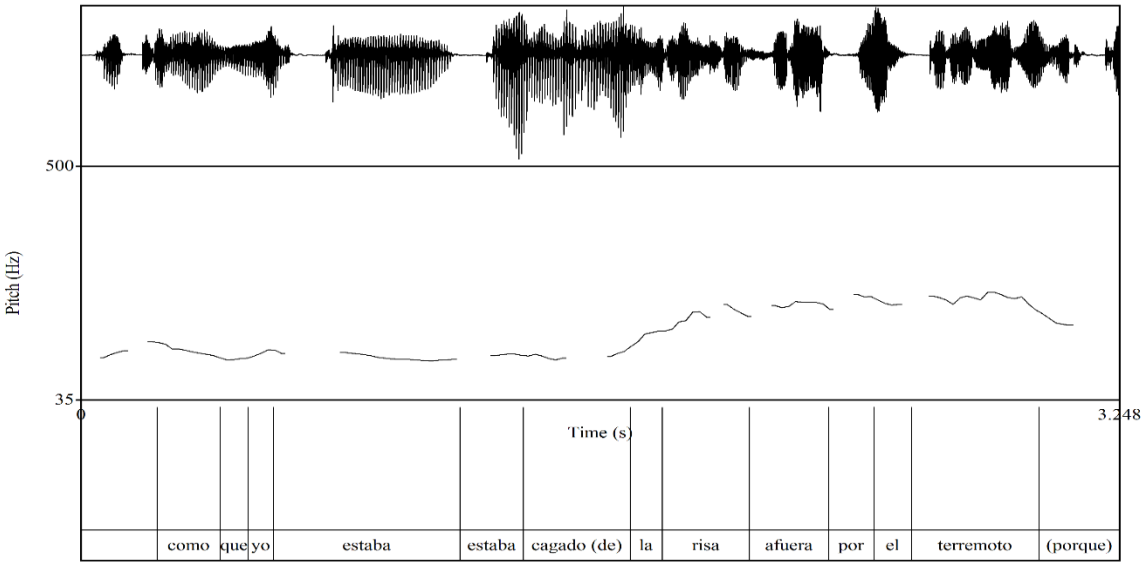

Figure 7.29: Plateau contour with possible deaccenting in valley (*…like, I was outside shitting myself laughing because of the earthquake*)

In the conversation from which the contour in Figure 7.29 was taken, the speaker is telling the author about his experience during the 8.8 earthquake in 2010, which occurred close to Concepción. At this juncture of the conversation the speaker has explained that he was out clubbing and drinking and was fairly inebriated when the earthquake took place. As a result, he was not completely aware of the gravity of the situation immediately afterwards, and consequently found the aftermath humorous. It was not until the next day that he heard about the subsequent tsunami and the extent of the damages. Consistent with the few studies on deaccenting in Spanish, the valley in Figure 7.29 shows no F0 movement through any of the PWs in the valley, with the possible exception of "*yo*". The first real perceptible F0 movement, or effort to alter the

trajectory of the intonational contour, begins when the speaker begins to rise into the high portion on the adjective "*cagado*" (pronounced "*cagao*"). It is conceivable that here the speaker is trying to place more prosodic salience on his mental and emotional state immediately following the earthquake, possibly to place emphasis on the fact that he was not aware of the gravity of the situation at the time. A deaccented valley could thus serve as a secondary mechanism to the extended high portion to emphasize this idea by not only offering a tonal contrast, but also contrasting the levels of physical effort required to produce both portions.

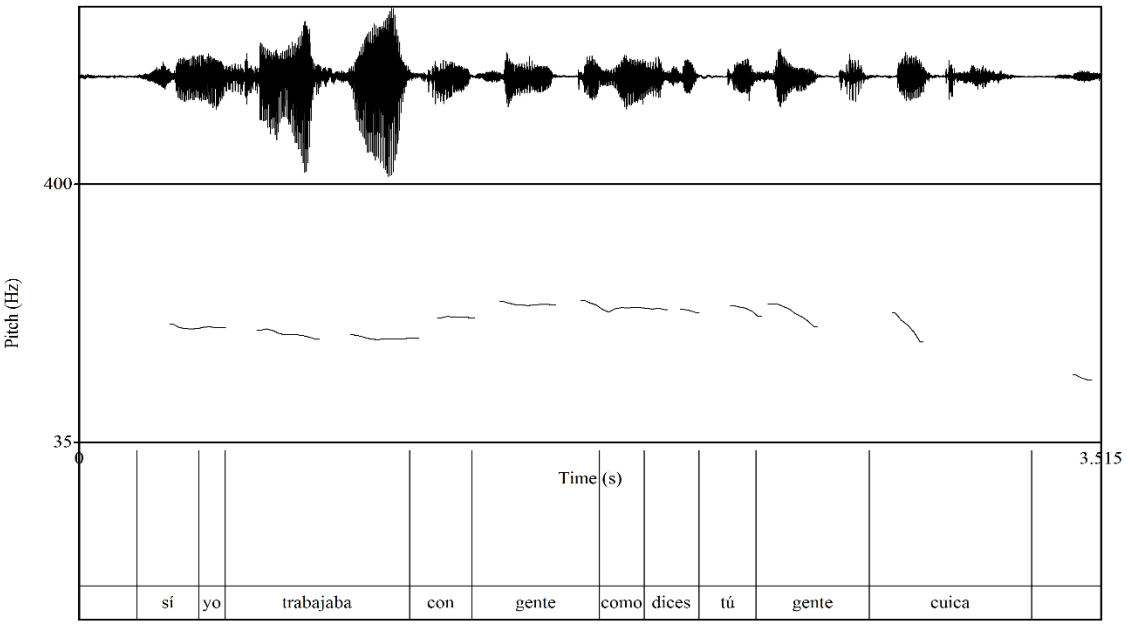

Figure 7.30: Plateau contour with possible deaccenting in the valley (*Yeah, I worked with people, like you say, rich people*)

The conversation that the contour in Figure 7.30 was taken from was about the terms used to describe the socioeconomic extremes of Chilean society. In this case the author and the speaker were talking about the speaker's views on the wealthy, or

"cuicos". The contour in Figure 7.30 is at a point in the conversation where the speaker is stating that she has worked with or around wealthy people, and therefore, she is qualified to describe them. In this case, after the contour, she states that "cuicos" have a very specific way of talking. Therefore, it is possible that the contour is being used by the speaker to emphasize that she feels qualified to list off attributes of those on the wealthy end of the socioeconomic spectrum of Chilean society. As was the case in the previous example, there is no F0 movement on any PW in the valley, creating a tonal contrast with the high portion, possibly to increase the salience of the high plateau.

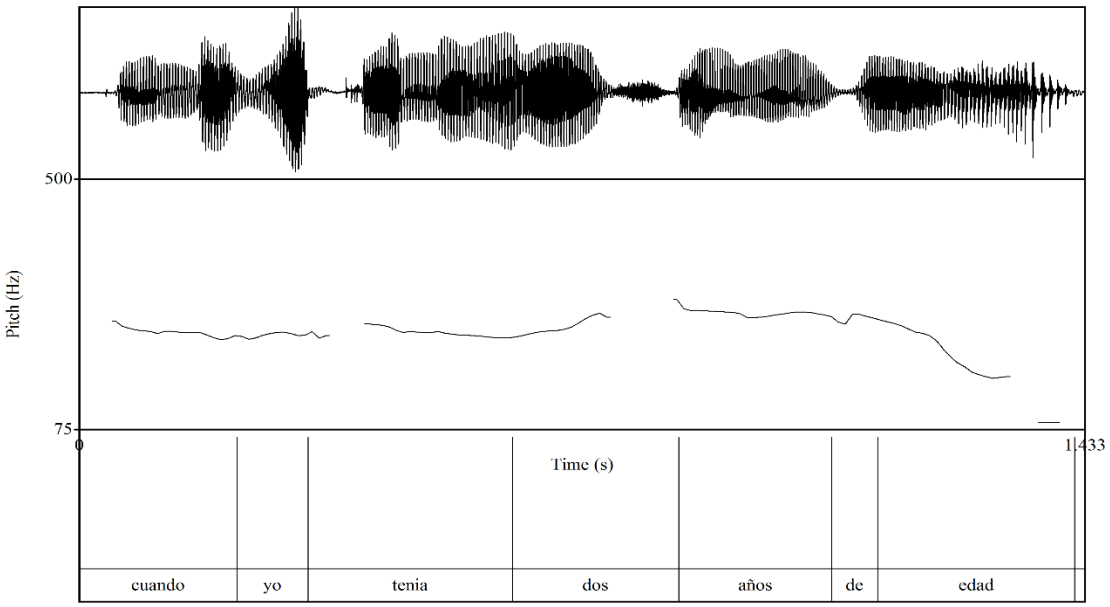

Figure 7.31: Plateau contour with possible deaccenting in the valley (*...when I was two years old*)

Similar to the previous two examples, the contour in Figure 7.31 shows no F0 movement on either of the two PWs in the valley. The contour comes from a point in the conversation in which the speaker was telling the author her age when she moved to the Bío-Bío region of Chile. If the speaker was trying to place emphasis or focus on her age

when she arrived in the region, then the valley once again could act as a secondary mechanism of emphasis by making the high portion perceptibly more salient.

Based on previous studies on deaccenting in Spanish, and the examples from the data, valleys could play a role in the overall salience of the high extended portion by providing it with a tonal contrast. The overall role of valleys, though, if any, appears to be minimal. In general, valleys were much smaller and less frequent than the extended high portions. As previously mentioned, the average PW count for valleys was .6 PWs per valley and the overall word count was 1.34 words per valley. Many times there was no valley, and speakers simply chose to rise immediately into the extended high portion of the contours. Therefore, many times, there was not much material to contrast with the extended high portions. However, the possibility of deaccented valleys increasing the emphatic strength of the high portions by creating a tonal contrast cannot be discarded. The tonal contrast can also be interpreted as a contrast of physical effort, which can be understood as a mechanism to increase the attention paid to the idea contained in the high portion. Thus, it is possible that when both a valley and a high plateau are present, two different processes are occurring, with deaccenting only taking place across the valley.

7.1.2.2 Lack of Evidence of Deaccenting at High Tonal Levels

Another problem about assuming that the low and high tonal maintenance in the Chilean Spanish plateau contours is due to deaccenting is that research on deaccenting, both in Spanish and cross-linguistically, all describes the phenomenon as occurring at a low tonal level. Ladd (1980) describes deaccenting in English as a "lowering of the degree of accentibility of an item or constituent" (p.87), thus implying a certain degree of

F0 reduction. Yu, Khan, and Sundara (2014) describe deaccenting in English and Bengali as "tone compression", as does Xu (2011) in his analysis of Mandarin and Taiwanese. For Moroccan Arabic, Yeou, Embarki, and Al-Maqtari (2007) describe deaccenting as occurring concurrently with the lowering of pre-focal syllables, further supporting the notion that deaccenting is associated with low tonal levels. Ipek and Jun (2014) also show that post-focus words in Turkish undergo deaccenting, which is indicated by low fundamental frequency levels. Likewise, Scarborough (2007) demonstrates how deaccenting also occurs as a lowering of the fundamental frequency in Farsi. Figures 7.32 (taken from Yeou et al. 2007) and 7.33 (taken from Scarborough 2007) respectively show pre-focus deaccenting in Moroccan Arabic, and post-focus deaccenting in Farsi.

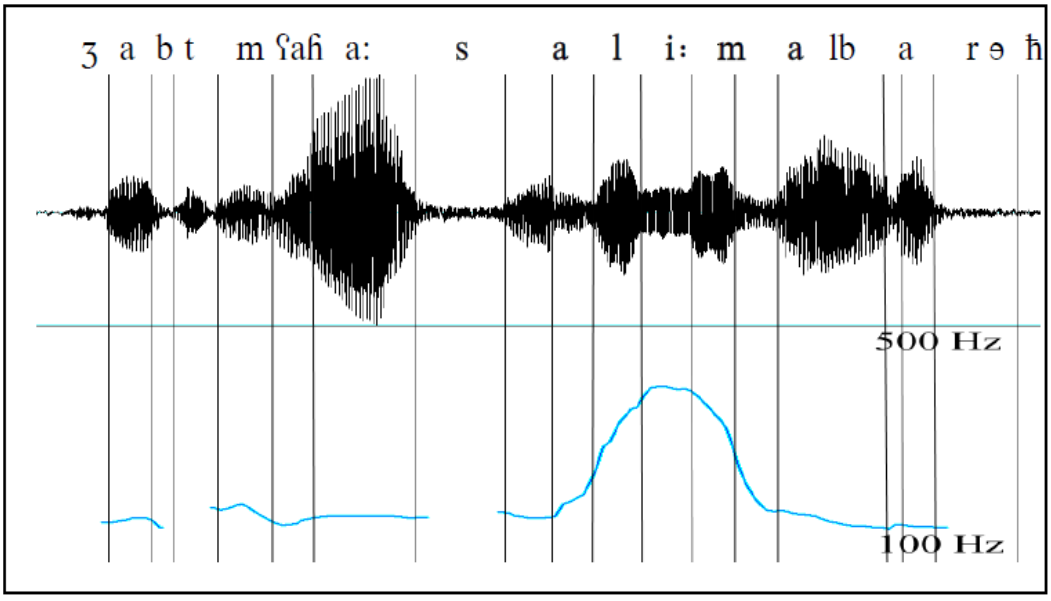

Figure 7.32: Pre-focus deaccenting in Moroccan Arabic (adapted from Yeou et al. 2007)

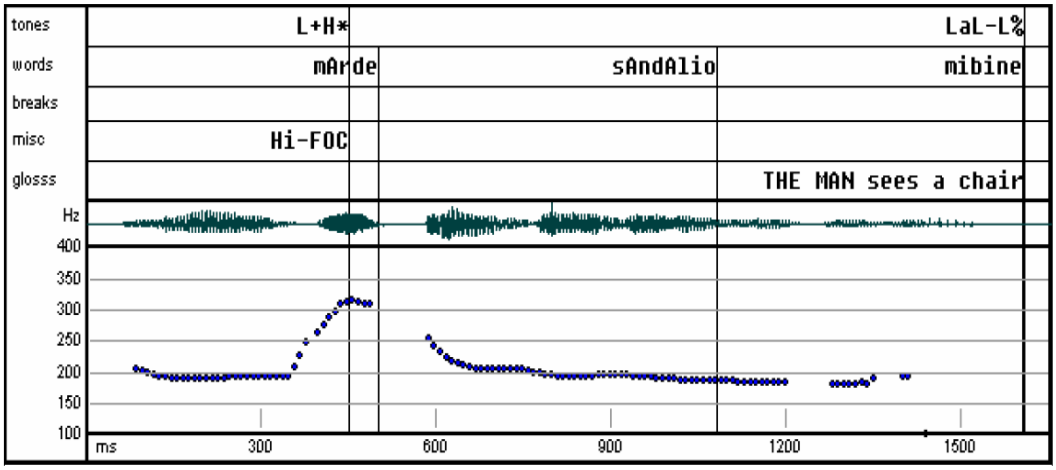

Figure 7.33: Post-focus deaccenting in Farsi (adapted from Scarborough 2007)

While limited, the research on deaccenting in Spanish also shows deaccenting as a phenomenon that occurs at, or results in, low F0 levels. The main studies on Spanish deaccenting, Face (2003) and Rao (2006, 2009), all support this notion. Likewise, Alvord (2006) found that in 69% of Miami-Cuban broad focus declaratives, the final syllable was deaccented. Figure 7.34, taken from Alvord (2006), illustrates a case of deaccenting in Miami-Cuban Spanish.

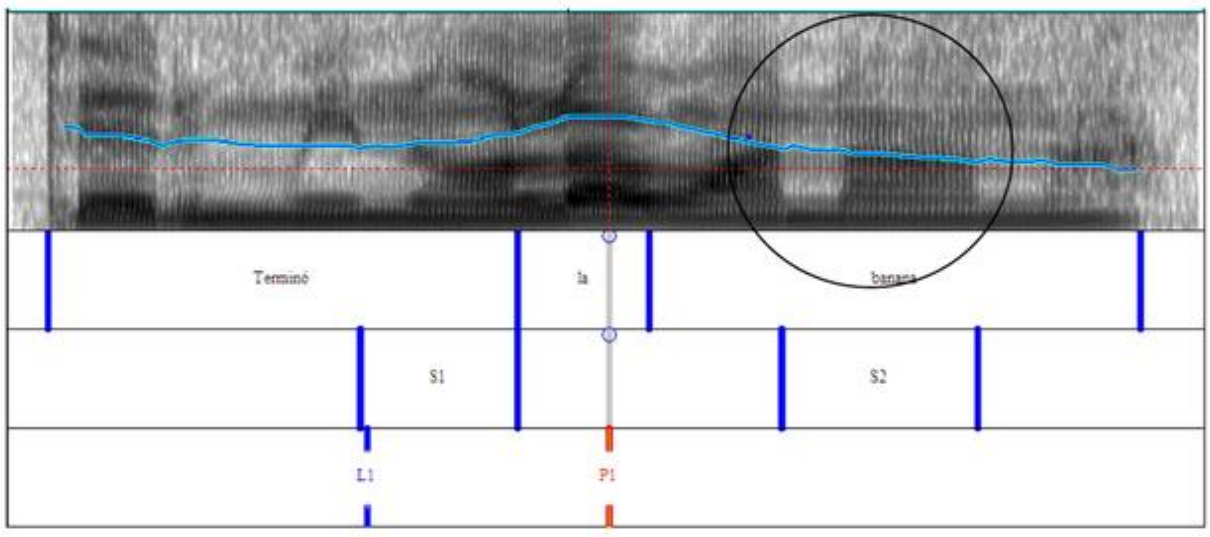

Figure 7.34: Deaccenting in Miami Cuban Spanish (adapted from Alvord 2006)

As can be seen, the final word "*banana*", shows no appreciable F0 movement toward a tonal target. Likewise, the F0 contour continually drops from the peak achieved on the previous L+>H* pitch accent until the end of the utterance. At no point does the pitch track show any evidence of rising through this deaccented portion.

While there is abundant cross-linguistic evidence, and emerging evidence in Spanish, that all supports the idea that F0 lowering and low F0 levels are associated with deaccenting, there are no known studies that indicate that deaccenting can occur at high F0 levels. Thus, while this still leaves open the very real possibility that valleys are at times deaccented, the level-specific deaccenting approach I lay out in Rogers (2013) still cannot satisfactorily account for sustained high portions.

7.2 Extended Tonal Events

The solutions that I propose in Rogers (2013) are able to describe a portion of the data, but they cannot satisfactorily explain or describe all of the data. As AM and Sp_ToBI are currently structured, the only way to take into account all of the data and describe the Chilean Spanish plateau contours is for the theory to be modified in such a way that tonal events can extend to both prosodic and non-prosodic material. Such modifications would not only step outside the current framework, but would also be considered relatively significant given that the theory posits that a "tonal structure consists of a string of *local events* with certain points in the segmental string" (Ladd 2008, p.44, italics added). As I assert, allowing for tonal events to extend and associate

to a variety of content implies that whatever portion is considered an extended event functions as a single unit.

Given that the contours are potentially made up of three (rise, sustained portion, fall), and sometimes 4 different tonal events, when a preceding valley is present, it is necessary to investigate whether treating each portion as its own tonal event is supported by the data. Similarly, any viable solution has to be able to accommodate all the different documented contour categories and behaviors borne out in the data.

7.2.1 Solution 1: Consecutive Extended Events

A first potential solution assumes that all of the parts of the contours are their own individual, potentially extended tonal events. This approach would appear slightly different for the different categorizations, and different categorizations would have more tonal events than others. For example, by nature Type 3 contours have one fewer event than Type 1 contours because they have no fall.

Type 1 and 4 contours would have a minimum of three tonal events: a rise, a high sustained portion, and a fall. A preceding valley would be considered a possible fourth tonal event. As mentioned in the methodology chapter, Type 1 and Type 4 contours are identical until the fall. Type 1 contours fall on the final stressed syllable, while Type 4 contours fall on at least two postonic syllables and potentially over the course of several words. However, this difference does not matter if the fall is considered one tonal event with the potential to extend, and thus the difference between the two contour types would simply be that the fall in Type 4 patterns is extended, while the fall in Type 1 contours is not. Figure 7.35 shows how the current solution could be applied to both contour types.

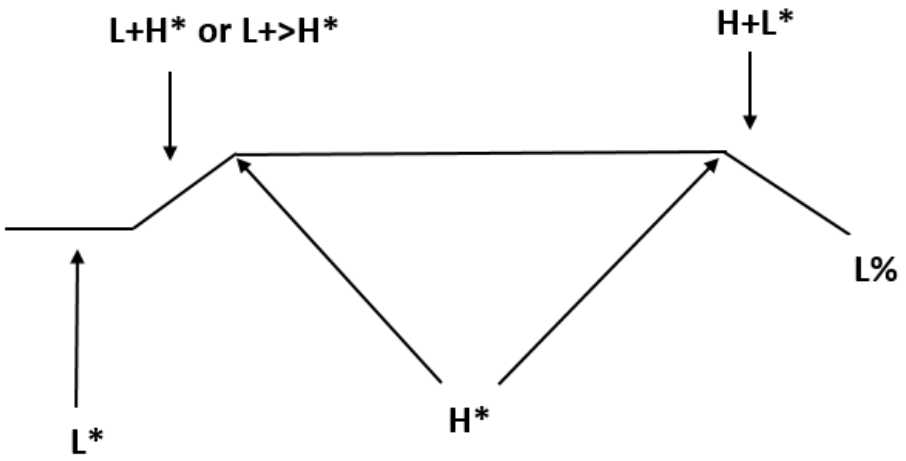

Figure 7.35: Model of how the approach of consecutive extended tonal events is applied to Type 1 and 4 contours

As illustrated in Figure 7.35, any preceding valley would be considered a single, potentially extended, tonal event. It must be noted as well, that as previously discussed, it is also a possible that valleys are deaccented, in which case the only junctures that matter to the current solution are those that make up the high sustained portion. After the valley, the rise would be either a L+H* or a L+>H* extendable tonal event. In other words, by allowing the rise to extend, the theory could take into account all of the rises in the data, including both single word rises, and those containing multiple words. The next event is the high, sustained portion, which can extend and retract over a wide range of content. Finally, the fall is the final event, which, as previously discussed, extends in Type 4 contours, but not in Type 1 contours. Both types of contours end on a L% boundary tone. Figures 7.36, a Type 1 contour, and 7.37, a Type 4 contour, show how this approach is applied to actual examples from the data. The use of the convention "‖" indicates that the corresponding event is able to extend. The asterisks, or stars, "*", on the outside of the

bars indicate that the entire portion is associated with the metrical tier, and is considered metrically strong. In both examples, the rise is extended, as is the sustained high portion.

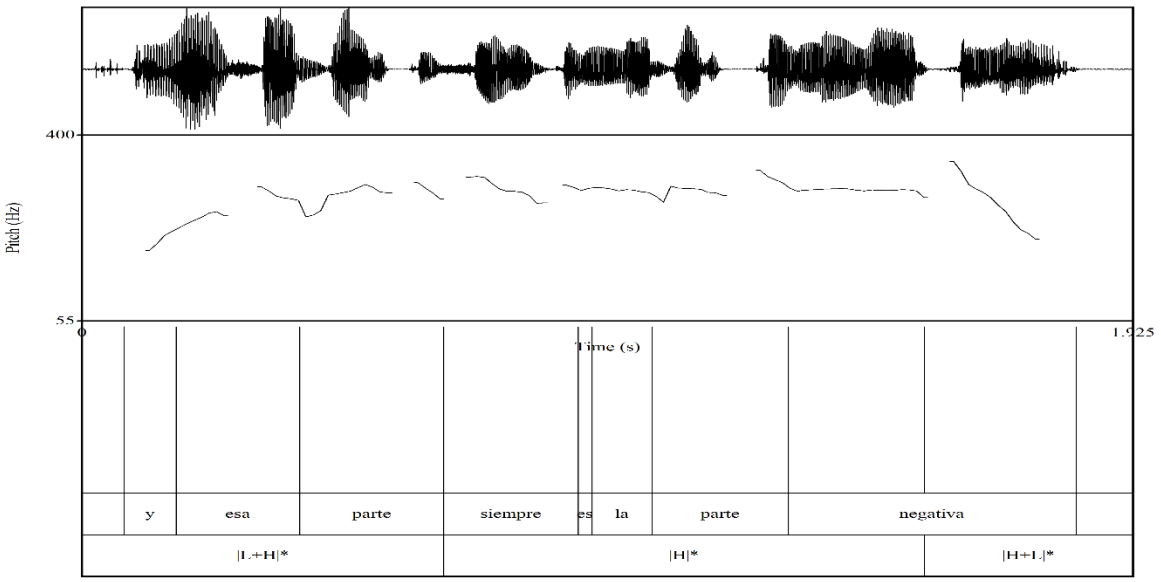

Figure 7.36: Application of consecutive extended events solution to a Type 6 contour from the data (*...and that part is always the negative part*)

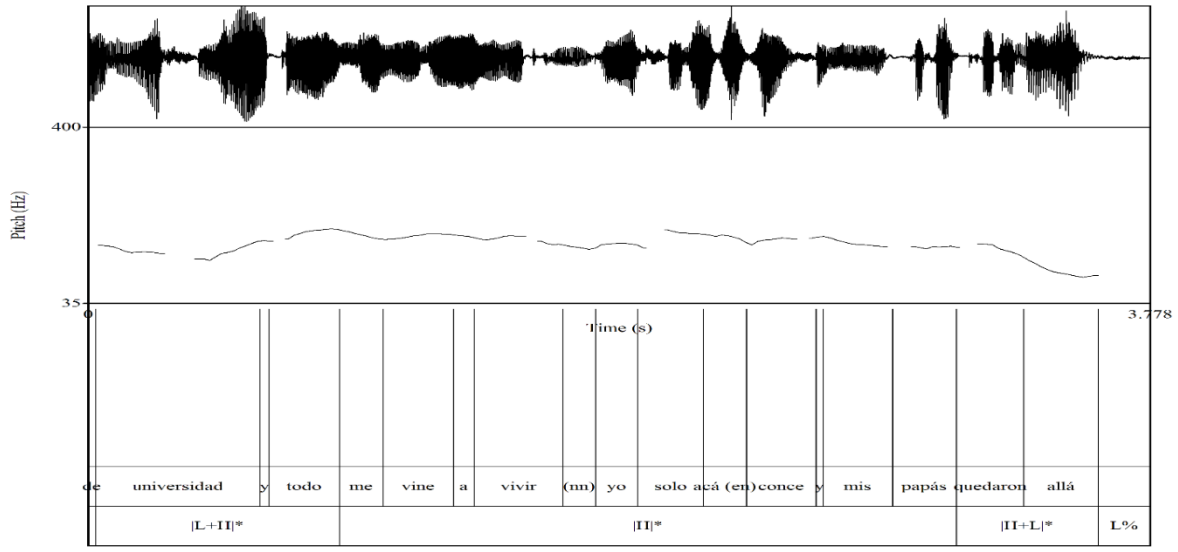

Figure 7.37: Application of consecutive extended events solution to a Type 4 contour from the data *(…university and everything, I came here mm to Concepción to live on my own and my parents stayed behind*)

The application to Type 5 contours is identical to that of Type 1 and 4 patterns, with the only difference being Type 5's unique slanted form. Figure 7.38 shows how the modification can be applied to Type 5 patterns and Figure 7.39 shows its application to the data.

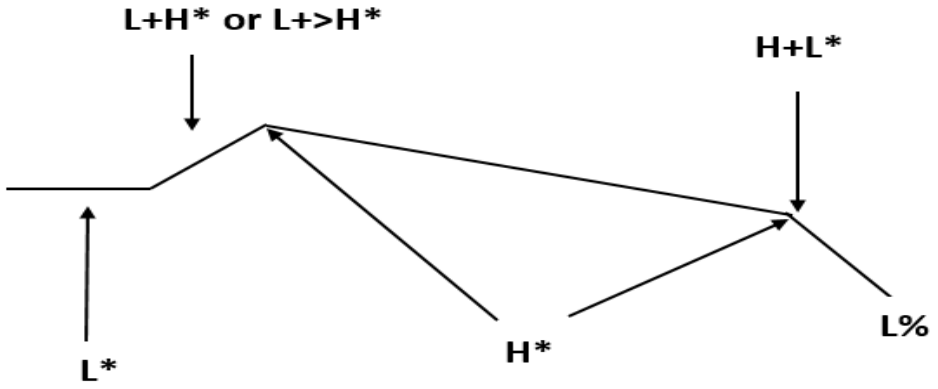

Figure 7.38: Model of how the approach of consecutive extended tonal events is applied to Type 5 contours

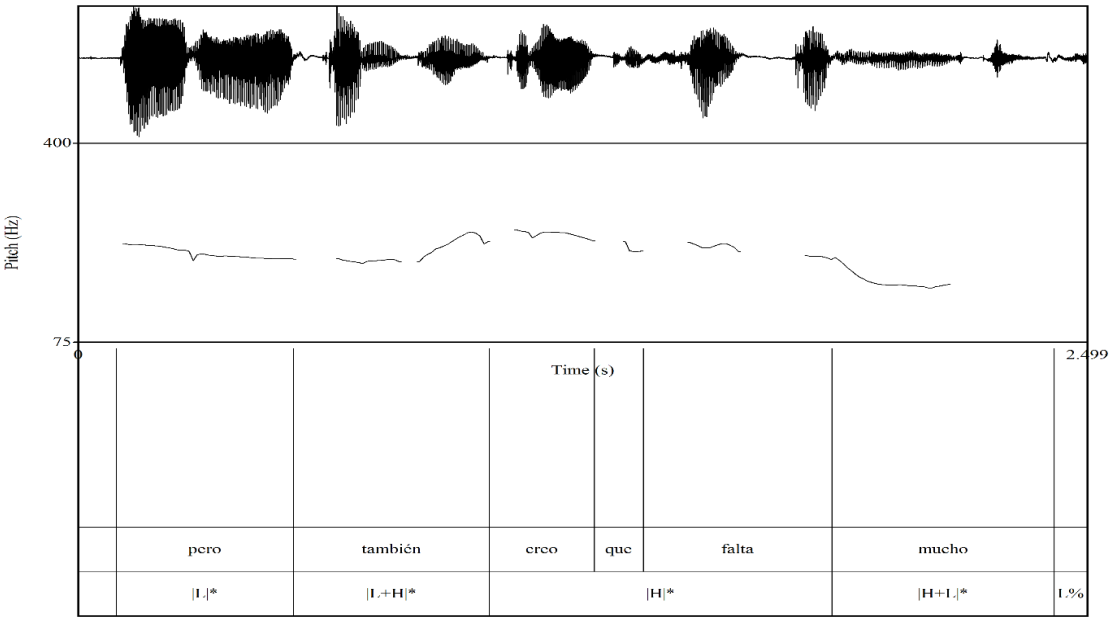

Figure 7.39: Application of consecutive extended events solution to a Type 5 contour from the data (*but, also I think there's a lot lacking*)

Under the current assumption that each main portion of the contours is a tonal event, Type 2 and Type 3 contours have a maximum of three tonal events when a preceding valley is present, and only two when there is no observable valley. Figure 7.40 illustrates how this modification to AM would be applied to Type 2 contours, and Figure 7.41 demonstrates its application to a Type 3 contour.

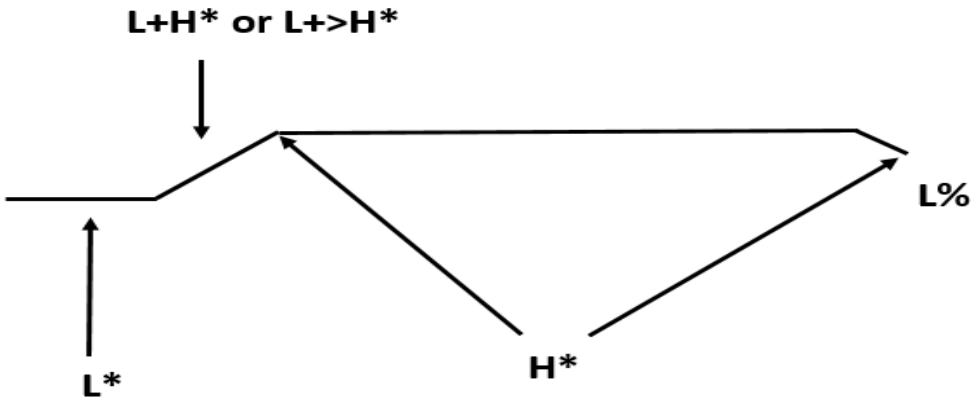

Figure 7.40: Model of how the approach of consecutive extended tonal events is applied to Type 2 contours

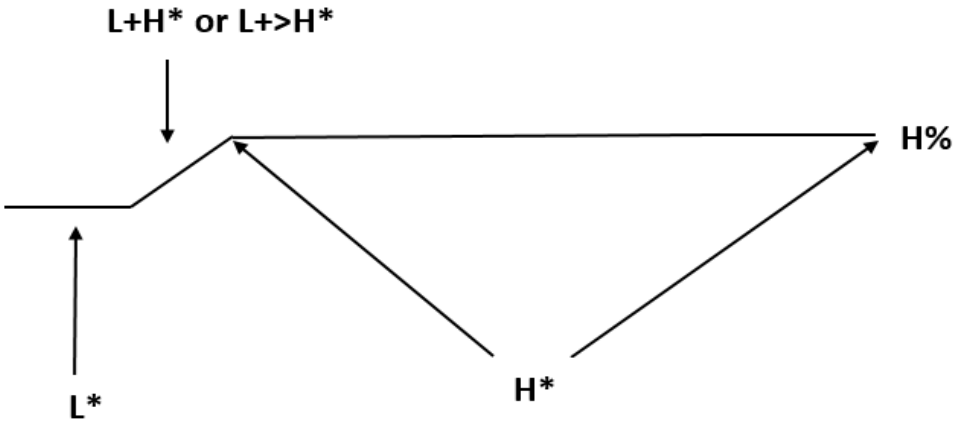

Figure 7.41: Model of how the approach of consecutive extended tonal events is applied to Type 3 contours

The application of the modification to both Type 2 and Type 3 patterns is identical for both the valley and the rise. Once again, the only difference is the final portion of the respective contours types. In the case of Type 2 patterns, the high sustained portion extends from the peak of the rise until the penultimate syllable of the utterance and falls on the final syllable. Because the high portion is said to be an extended tonal event, the corresponding H tone is extended over all the content, and the final L% boundary tone is assumed to be the final target that causes the F0 drop at the very end of the contour. With respect to Type 3 contours, the only difference is that there is no fall at the end of the contour. The extended H tone associates to all the content after the rise, and according to AM and Sp_ToBI conventions, it is assumed that the utterance ends in a H% boundary tone because of the lack of a final fall. Figures 7.42, a Type 2, and 7.43, a Type 3, show the modification's application to the data.

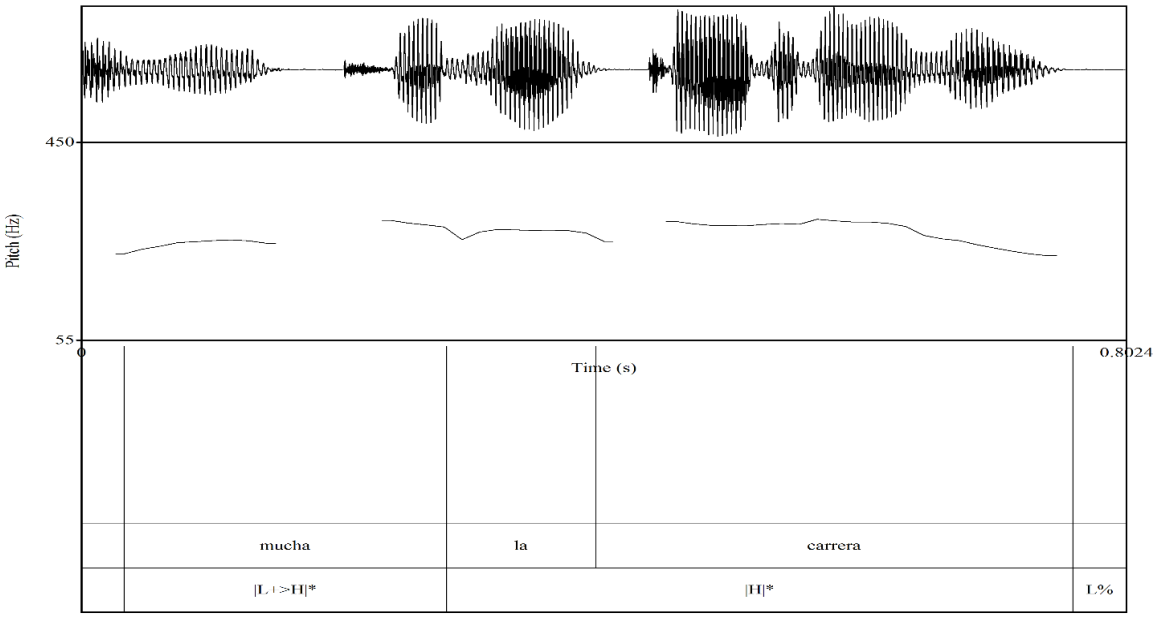

Figure 7.42: Application of consecutive extended events solution to a Type 2 contour from the data (...*the major's a lot*)

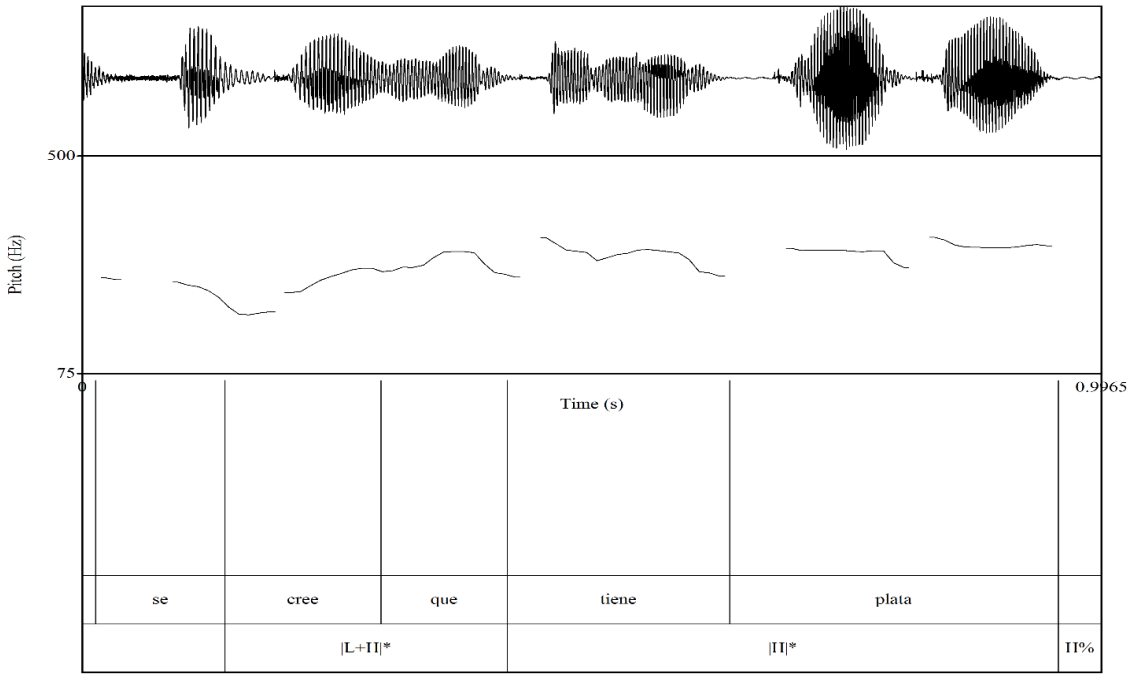

Figure 7.43: Application of consecutive extended events solution to a Type 3 contour from the data (...*they think they have money*)

Finally Type 6 contours have the same amount of tonal events as Types 1, 4, and 5, but their final tonal event, a rise on a single syllable at the end of the sustained high portion, does not extend. In other words, the final tonal event is a traditional, independent, single metrically strong event as proposed by the current AM and Sp_ToBI frameworks. The data indicate that this rise always peaks within the tonic syllable. Normally, such a rise might be something similar to L+¡H*. However, there are no lows in the sustained high portion, therefore, this pitch accent is labeled as ¡H*. The high tone is upstepped because it peaks above the rest of the high content. The high tone is also considered to be the associated tone and the postonic syllables fall toward a final L% boundary tone that ends the contour. Figure 7.44 demonstrates how these modifications are applied generally, and Figure 7.45 shows their application to the actual data.

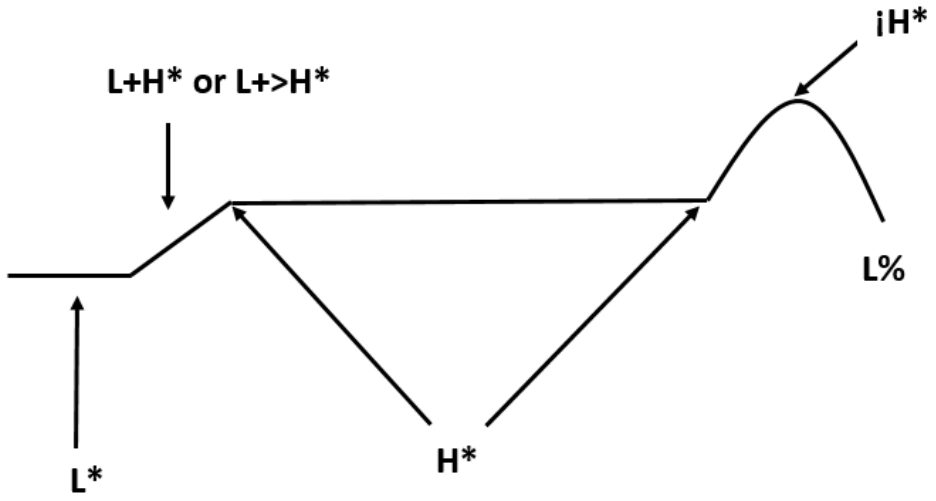

Figure 7.44: Model of how consecutive extended events solution is applied to Type 6 contours

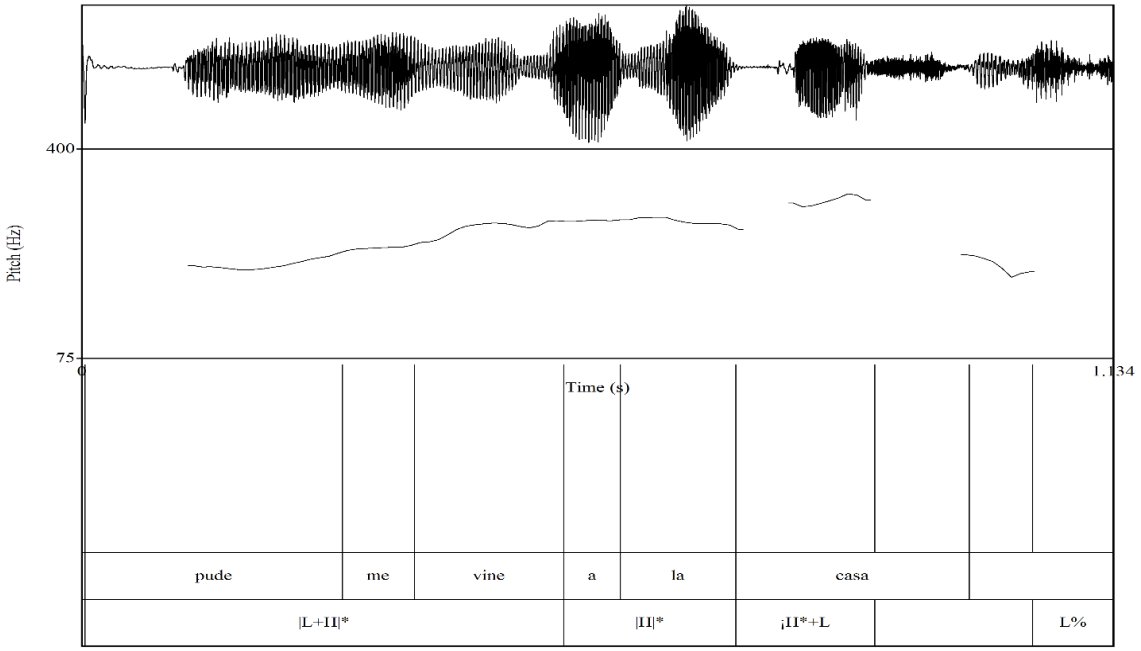

Figure 7.45: Application of consecutive extended events solution to a Type 6 contour from the data (...*I could, I came home*)

As seen in Figure 7.45, the rise is extended over 3 words, 2 prosodic and 1 non-prosodic, and the sustained high portion is only maintained for 2 non-PWs. The final word "*casa*" has an upstepped rise in the first syllable and then falls on the final syllable toward a L% boundary tone.

7.2.1.1 Advantages and Disadvantages of Consecutive Extended Tonal Events

The proposal that the Chilean contours in question are a chain of extended tonal events is a rather drastic modification of the AM theoretical framework. Not only does it assume that tonal events can be extended to potentially include a large amount of content, it also assumes that multiple extended events can occur consecutively, whereas even a single extended tonal event has never been allowed by AM previously. Nevertheless, as the data demonstrate, if Chilean Spanish plateau contours are to be described by AM,

modifications need to be made, because the mold that AM currently presents is not adequate for these contours.

There are several advantages to a theory that assumes consecutive extended tonal events. First, the concept of extended tonal events accounts for the documented ability of all four portions of the contours (valley, rise, high portion, and fall) to vary in size and content. In other words, it allows the theory to describe each portion when it contains more than one word. As AM stands now, each prosodic element of every one of the plateau contours' portions has to be its own independent tonal event, even though speakers appear to not treat each prosodic element as independent from whatever content surrounds it.

Another advantage of this proposed approach is that it can successfully take into account productions with breaks in both the rise portions and the sustained high portions. If an event is extended, then naturally, speakers would continue to produce a rise or maintain a high portion until reaching the following tonal target that would indicate the beginning of the subsequent tonal event. In other words, if a break occurs in the middle of an event, speakers recognize that the event has not ended and can continue until completing that event.

A final advantage of this approach, specifically in the case of Type 6 contours, is that it allows for the side-by-side use of extended tonal events with singular tonal events. This allows both approaches to coexist and potentially be used together in any future data that might require the use of both to describe newly documented tonal phenomena that might not fit the current AM mold.

Assuming that each portion is a potentially extended tonal event also produces theoretical problems that ultimately make this approach unsatisfactory for taking into account all of the data. Because AM already allows for the association of stressed syllables in Spanish to the metrical tier, it is easy to explain rises that occur through prosodic material since all the current approach does is extend a single metrically strong syllable to more than one metrically strong syllable. However, when the rises are made up of a mixture of prosodic and non-prosodic material or solely non-prosodic material, the explanatory power of approaching the contours as chains of extended tonal events is challenged.

One possible solution for rises that occur partly or entirely on non-prosodic content is to place a H- phrase tone at the peak of the rise. The high phrase tone would act as an additional target for which speakers could potentially aim, thus explaining why they initiate and maintain rises through non-prosodic content.

A common problem that arises with placing a H- tone at the peak of the rise is that the data on prosodic phrasing from Chapter 4 indicate that the plateau contours cannot be parsed into smaller phrases due to the fact that PPhs are at times left without any PWs. Likewise, the peak of the rise is not always at a juncture where the separation of the rise-final word and the first word of the sustained high portion is plausible. Therefore, neither approach can be justified. Figure 7.46 demonstrates an example of why rises cannot always be separated from the rest of the contour.

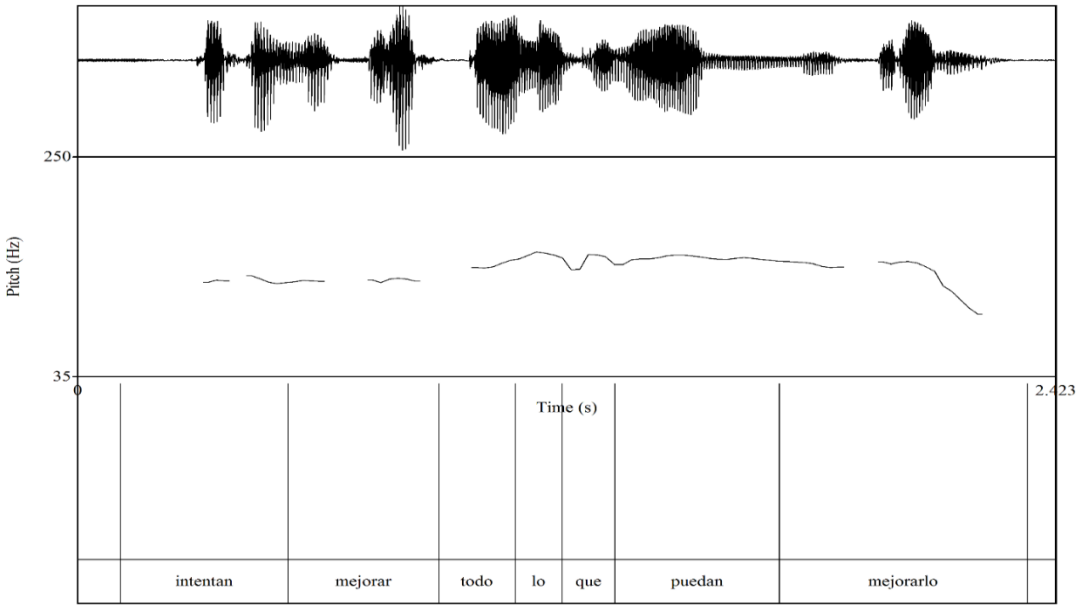

Figure 7.46: Plateau contour showing problematic rise (*...they try to improve it as much as they can*)

The rise in Figure 7.46 occurs on the adjective "*todo*" and the first half of the relative pronoun "*lo que*". The peak occurs within the syllable "*lo*" and the sustained high portion subsequently begins on the word "*que*". While the sequence of "*lo que*" consists of two words, they act as a single unit. If the rise is considered to be a single tonal event, then, despite functioning as a single unit, "*lo que*" would have to obligatorily be split. An inspection of the data indicates that in the majority of instances where "*lo que*" occurred in a contour, the entire relative pronoun was included as a single unit either in the rise or the sustained high portion, rather than being split. Figures 7.47 and 7.48 are examples of speakers treating "*lo que*" as a single unit with the entire sequence being included in the rise in 7.47 and the entire sequence being produced in the sustained high portion in 7.48.

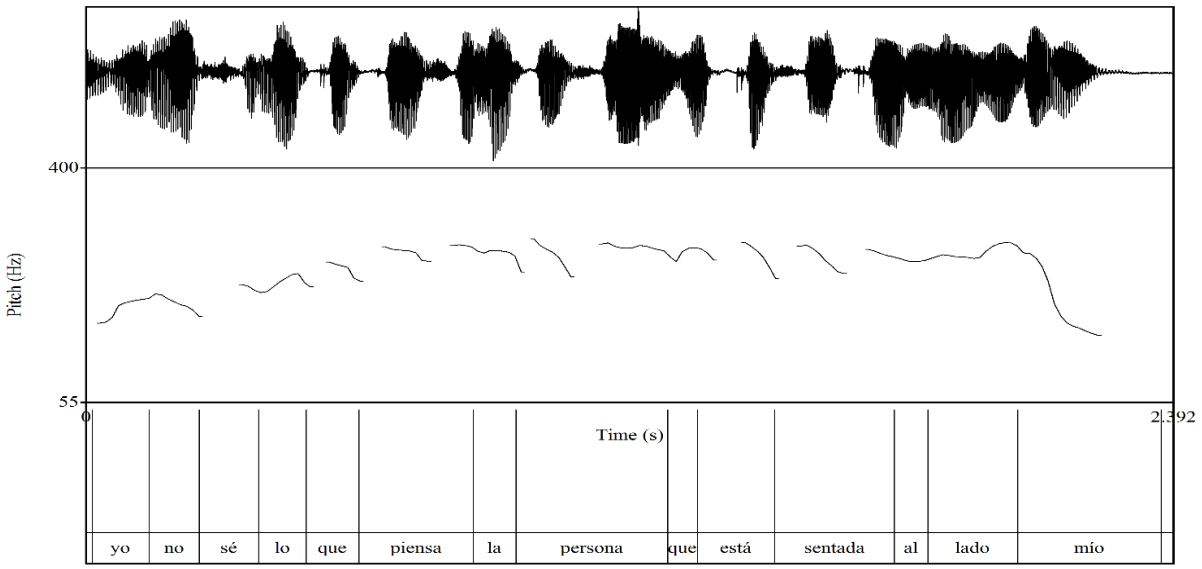

Figure 7.47: Plateau contour where speaker includes "lo que" as a single unit in the rise (*I don't know what the person sitting next to me is thinking*)

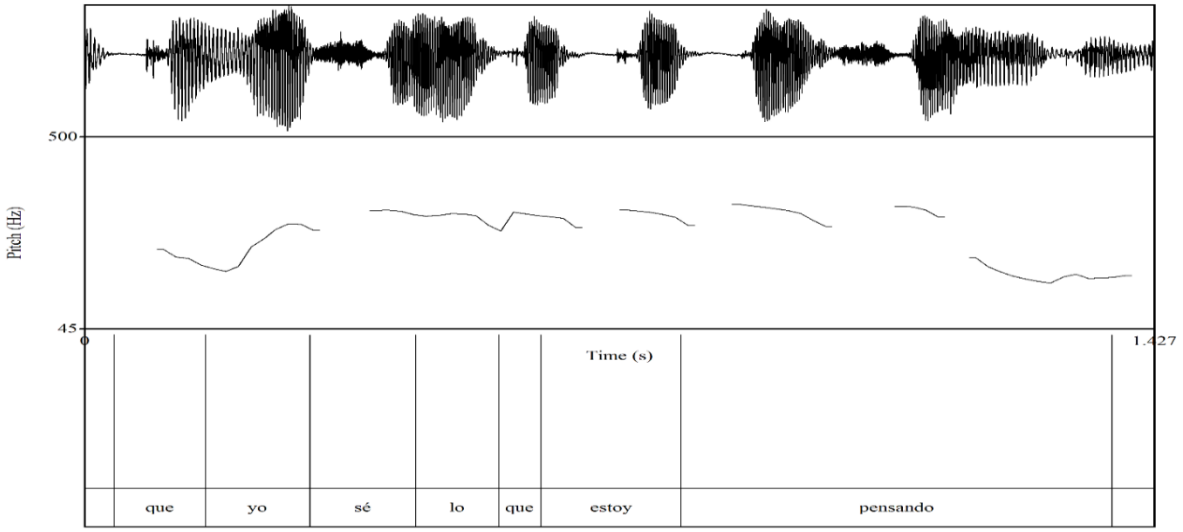

Figure 7.48: Plateau contour where speaker include "lo que" as a single unit in the sustained high portion (...*I know what I'm thinking*)

It is apparent from the data, and the examples in Figures 7.47 and 7.48, that speakers consistently treat "*lo* que" as a single unit. In cases where part of the pronoun is

in the rise and the other part in within the valley or the sustained high portion, such as the contour in Figure 7.45, there is nothing about the context or usage of "*lo que*" that would indicate any communicative purpose to splitting the relative pronoun. In other words, there is no apparent shift in focus, stress, or any change in meaning that would indicate a necessary split of the relative pronoun. This is consistent with the conclusions regarding the Prosodic Hierarchy and phrasing presented in Chapter 5.

A second possible explanation for speakers rising on and through traditionally non-prosodic material is that the extension of the metrically strong association to all the rise-internal content essentially makes all of the content prosodic. In other words, in a mixed rise, at least it can be said that there are traditional content words whose perceived prominence could be extended to traditionally non-prosodic content also contained within the rise. This explanation is more plausible for the rises that have a mixture of traditionally prosodic and non-prosodic content. It is still problematic for explaining how rises can initiate and rise only on non-prosodic content. In rises that only contain function words, none of the content possesses customary prosodic prominence to extend to traditionally non-prosodic content, and therefore, it is difficult to justify these rises as singular tonal events.

Also problematic, is that treating the contours as chains of 2-4 extendable tonal events leaves open the possibility that one or more portions of the high portion (i.e. rise, high plateau, and fall) are more prominent or communicatively more salient than the others. Without perceptual data this is unverifiable, but the problems that the plateaus create for prosodic phrasing in Chapter 5 are a preliminary indicator that between the rise and the fall of sustained high portions, with the exception of the final word of Type 6

contours, all content shares the same level of communicative and/or prosodic salience. The lack of coordination between syntactic junctures and F0 in sustained high portions shown in Chapter 6 also points to the possibility that speakers prefer to treat the content from rise to fall in a more singular manner, rather than parsing it into smaller components with differing levels of communicative and prosodic significance.

Based on the previously discussed challenges that the data create for any modification that proposes parsing plateau contours into smaller portions, it appears that such an approach cannot account for all of the data, even if these portions are allowed to extend. It is certainly possible to apply this method to a select number of contours with no apparent difficulties. However, AM and Sp_ToBI are still left with the task of satisfactorily accounting for the remaining data.

7.2.2 Solution 2: Single Extended Low and High Tonal Events

A common denominator in all of the challenges that the data create for an approach that treats the valleys, rises, high portions, and falls as separate extendable tonal events is that speakers do not seem to be treating each of these portions as individual tonal events. Rather, the data discussed in this and previous chapters point to a tendency to limit the contours to one extended high tonal event, and if a preceding valley is present, a potentially extended low tonal event. This is similar to the third solution that I proposed in Rogers (2013), who states that by treating both low and high portions as single tonal events with the ability to extend their metrical association to a variety of content "it could be argued that it is not the individual units that give the valleys or the [sustained high portions] their meaning, rather the entirety of each respective

portion…[B]oth portions are respectively produced as single high and low phonologically specified intonational events..[and] the prosodic words within each portion are…not independent of one another" (pp. 187-188). Thus, all prosodic material from the beginning of the valley to the word prior to the rise can be considered a single low tonal event, and all prosodic content from the rise to the fall is considered a single high tonal event.

One of the more notable advantages this approach has over the previous approach of multiple extended tonal events is that its application is more uniform over all of the contour categories and exhibits less variation. The maximum number of tonal events for Types 1-5 is two when a valley is present and, in many cases, one. Type 6 contours have a maximum of three tonal events when a valley is present, but the final rise does not have the potential to extend like previous low and high events. The slight differences in the final portion that distinguish Type 1, 2, and 4 contours do not change the application of this approach because of the ability of the high sustained tonal event to extend. As a result, it can be extended to include only the final postonic syllable of the utterance, the final stressed and postonic syllables, or multiple postonic syllables or words. Figure 7.49 illustrates how this approach is generally applied and Figure 7.50 demonstrates its application to a Type 4 contour in the data.

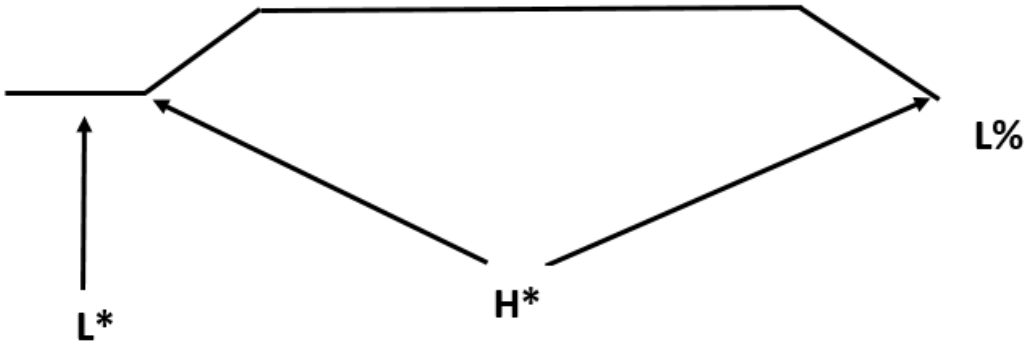

Figure 7.49: Model of how the single extended event solution would be applied to contour types 1,2, and 4

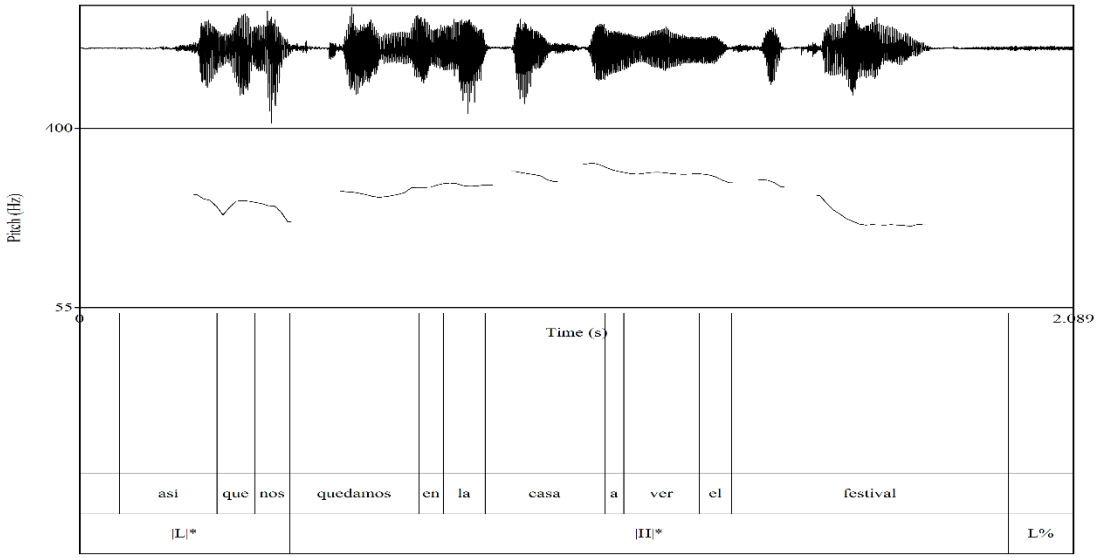

Figure 7.50: Application of single extended event solution to a Type 4 contour from the data (*...so we stayed home to watch the Festival*)

The application of Type 3 contours is no different, except that the event does not extend to include a final drop. The only difference for Type 5 contours is the downward

slant in their shape not seen in any of the other categorizations. Figures 7.51 and 7.52 illustrate how this approach is applied to Type 3 and 5 patterns respectively.

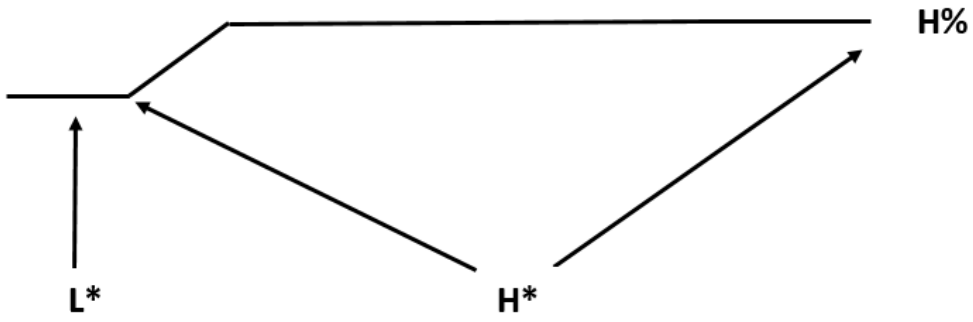

Figure 7.51: Model of how the single extended event solution would be applied to Type 3 contours

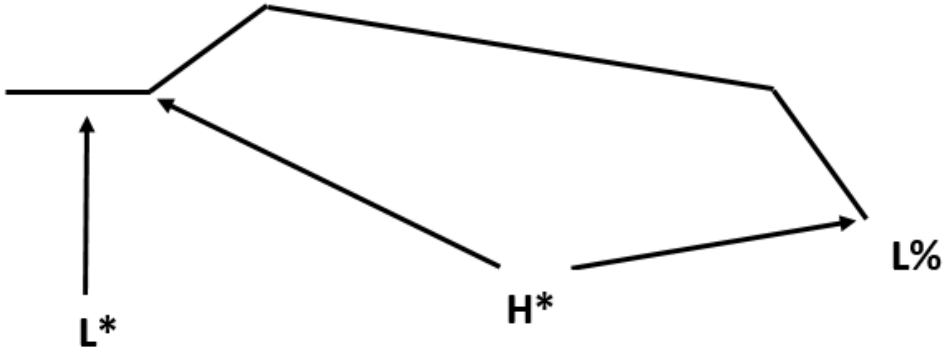

Figure 7.52: Model of how the single extended event solution would be applied to Type 5 contours

As previously mentioned, Type 6 contours have the most tonal events due to the rise on the tonic syllable of the final word of the contour. The valley and the sustained high portion that precede this rise can be extended. However, the data indicate that the final rise always occurs on a single syllable and never shows any tendency to extend to more content. This is indicative of speakers deliberately making an effort to increase the

salience of the final word above that of all previous high content. This has the effect of narrowing the focus of the utterance at the end and potentially creates three possible levels of communicative importance. The valley content is the least salient and therefore could be seen as having the least communicative importance in the overall contour. Likewise, it can offer a tonal contrast that increases the perceptible salience of the following two high events. Following the valley content in importance would be all the content contained in the rise and the duration of the sustained high portion that precedes the final rise. Finally, the word on which the final rise occurs, which also ends the utterance, is afforded the greatest amount of communicative salience and importance relative to the utterance and the idea the speaker is seeking to communicate. Figure 7.53 demonstrates the practical application of the current approach to Type 6 contours, and Figure 7.54 shows its application to a contour from the data.

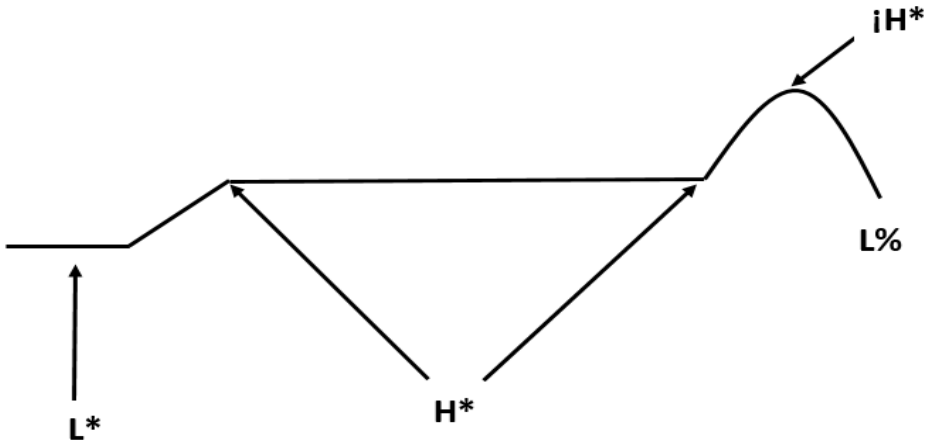

Figure 7.53: Model of how the single extended event solution would be applied to Type 6 contours

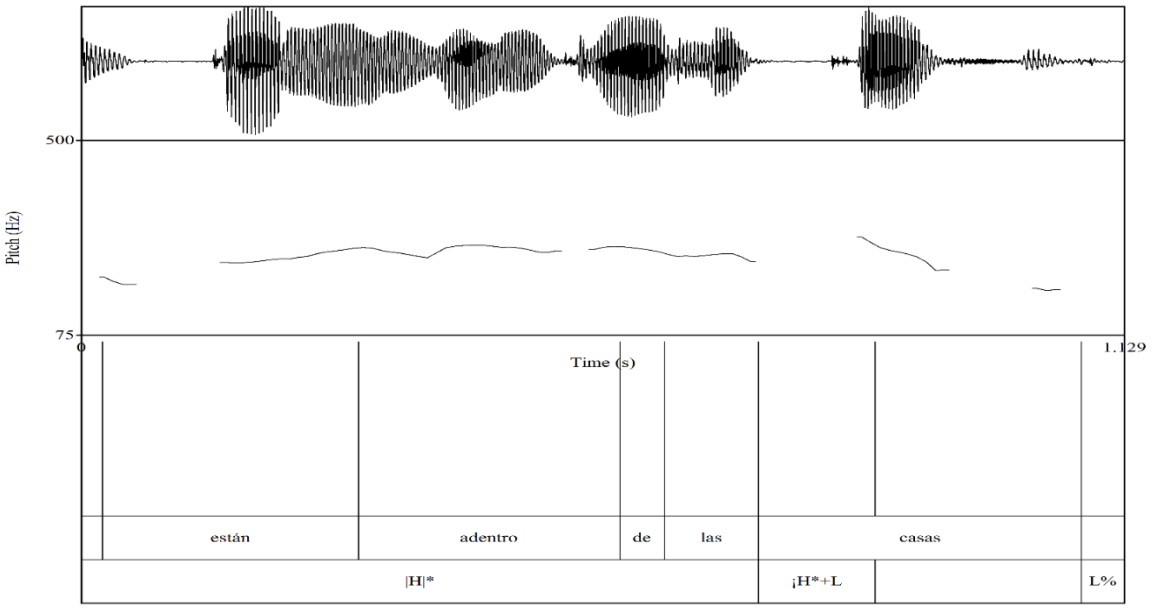

Figure 7.54: Application of the single extended event solution to a Type 6 contour from the data (*...they are in the houses*)

This preliminary proposal does in fact work for the majority of the data. First, by having all of the PWs associated to the same point on the metrical tier, be it in the form of a low tone or a high tone, the amount of intervening non-prosodic material does not matter because it is included in the event. Because these PWs are not independent of one another, there are no transitions from non-prosodic points on the F0 contour to subsequent prosodic targets. This potentially resolves the issue reported earlier in this chapter of there being no observable consistency of F0 movement between PWs to indicate that non-prosodic content is intended to be less salient than supposed prosodic content. Second, by allowing tonal events to extend, it is now possible to account for the high levels of variation in the overall size of both the low and the high portions. Speakers simply choose to include a given amount of material in each portion, and because both events can theoretically be extended or retracted for an indefinite amount of time, it is

possible for either portion to include as little as a few syllables to as much as a large number of words, both prosodic and non-prosodic.

Treating both the low and high portions as single tonal events also allows for AM to describe how speakers exhibit high tonal maintenance through the major and minor breaks previously discussed (i.e. stutters, pauses, self-corrections). Because the sustained high portion and its content are perceived as singular events by speakers, the high tonal plateau is maintained, in spite of any intervening break, until the event is considered over by speakers, which is indicated by a H% or L% boundary tone. In the case of plateaus that are not utterance final (i.e. subcategorization 7), the event ends on a L- or H- phrase tone. This supports the notion that the entirety of the high sustained portion, rather than individual targets on an F0 chain, is what gives this portion of the contour meaning.

7.2.2.1 Advantages and Disadvantages of Single Low and High Tonal Events

Despite the apparent ability of Rogers' (2013) proposal to describe both his and the current data, there are a few modifications that must be made based on tendencies and patterns observed in the current data. First, as was the case for the proposal of multiple, consecutive extendable events, a challenge that the data present for Rogers' (2013) single extended tonal events proposal is what exactly creates the rise. Rises that contain only prosodic content are not problematic but mixed rises and rises that contain solely non-prosodic content pose challenges. It has already been established that there cannot be a H- phrasal tone acting as a target at the peak of the rise due to a variety of previously discussed reasons. A rise that initiates on non-prosodic content or a rise that occurs through a mixture of prosodic and non-prosodic content cannot be justified satisfactorily

even with the proposed modifications. According to AM, these rises should not occur because, according to the theory, there is no phonological motivation for their existence. A rise would be expected at a metrically strong juncture, and a continued rise would be expected to occur over a series of metrically strong points as well. Yet, as the data indicate, and as previously discussed a number of times, speakers appear to disregard or redefine traditional notions of stress and metrical strength when they produce rises that are not comprised strictly of prosodic content.

Based on the data, the ability of any AM-based proposal is limited in its ability to account for the behavior of these problematic rises. Without the presence of any targets to justify non-prosodic or mixed rises, the assumption must be made that by virtue of the sustained high portion being an extended tonal event, the high tonal level achieved by the plateau portions is the target. This would allow a rise to occur over traditionally non-prosodic content. While unsatisfactory, the data and the constraints of AM do not allow for any real alternative. This assumption still does not explain the motivation for such types of rises. While this acts as a phonological description, the behavior of the rises containing non-prosodic content suggests that the motivation for these rises might not be phonologically based at all, which would call into question the phonological basis of the rest of the high portion as well.

A final challenge of the data I present in Rogers' (2013) is that the frequently small size of valley portions, along with their absence in numerous cases, it is possible that the only extended event is the high sustained portion, and the valley, even when seemingly extended, is simply deaccented. In other words, valleys, due to their small size and frequent absence when compared to high sustained portions, do not attain a level of

communicative importance comparable to that of high portions, and to exhibit the marked behavior of extending a tonal event would contribute nothing of additional importance to the overall meaning of what speakers attempt to communicate by means of these contours. This is especially evident in low portions that consist of single, non-PWs, or cases where words dip to create a valley-like structure before rising on the tonic syllable (Figure 7.55, Figure 7.56 from Rogers 2013, and Figure 7.57 from the current data).

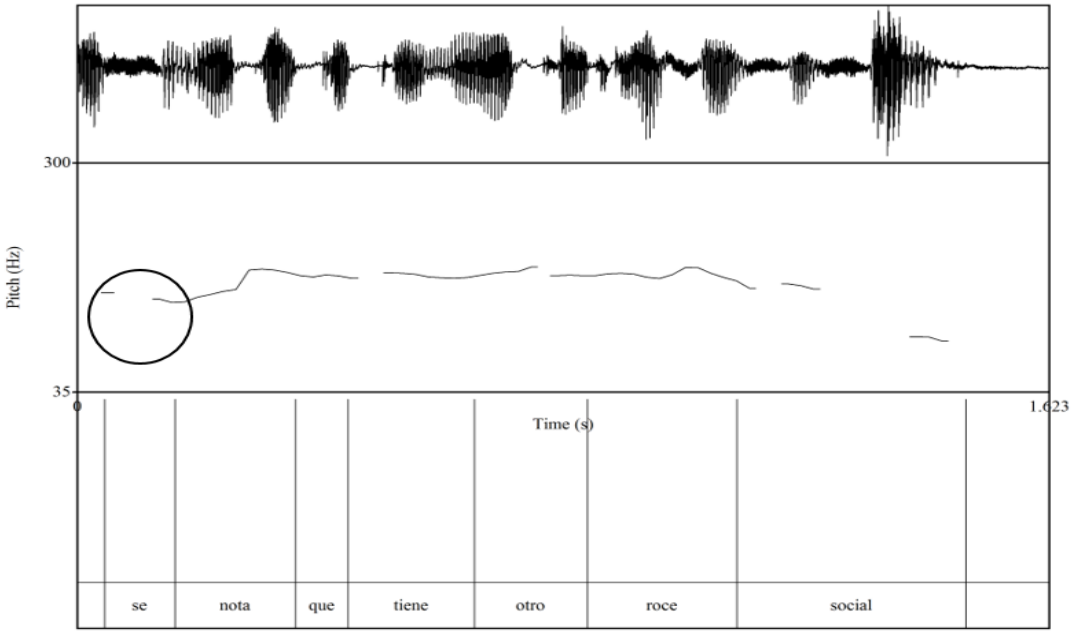

Figure 7.55: Contour with a single, non-prosodic word in the valley portion (*it's obvious that they're from another social background*)

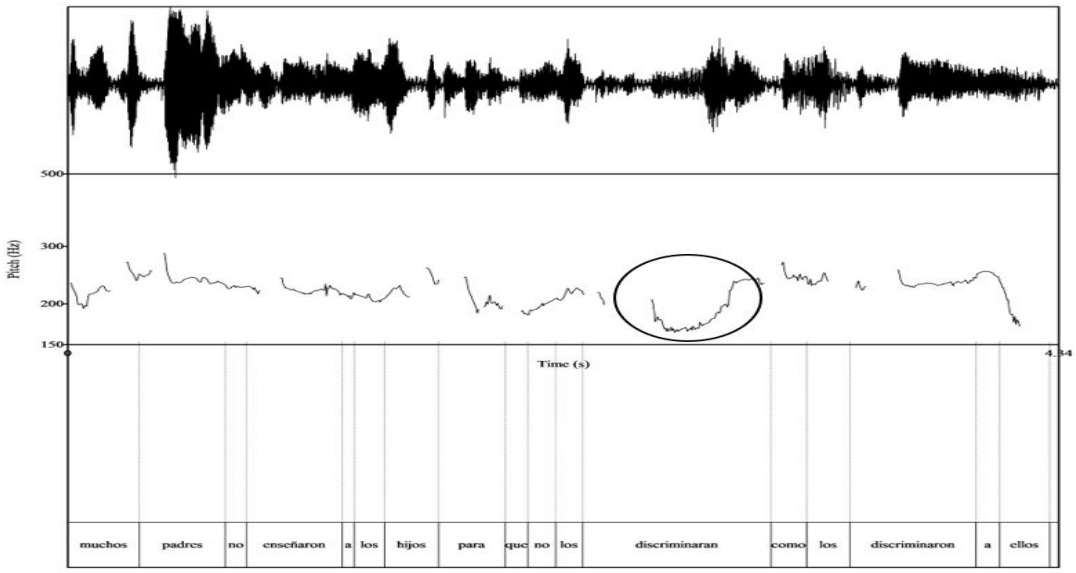

Figure 7.56: Plateau contour showing a valley formed by a dip in the unstressed portion of the word that also initiates the rise, adapted from Rogers (2013 p. 182) (*Many parents haven't taught their children not to discriminate as they themselves have been discriminated*)

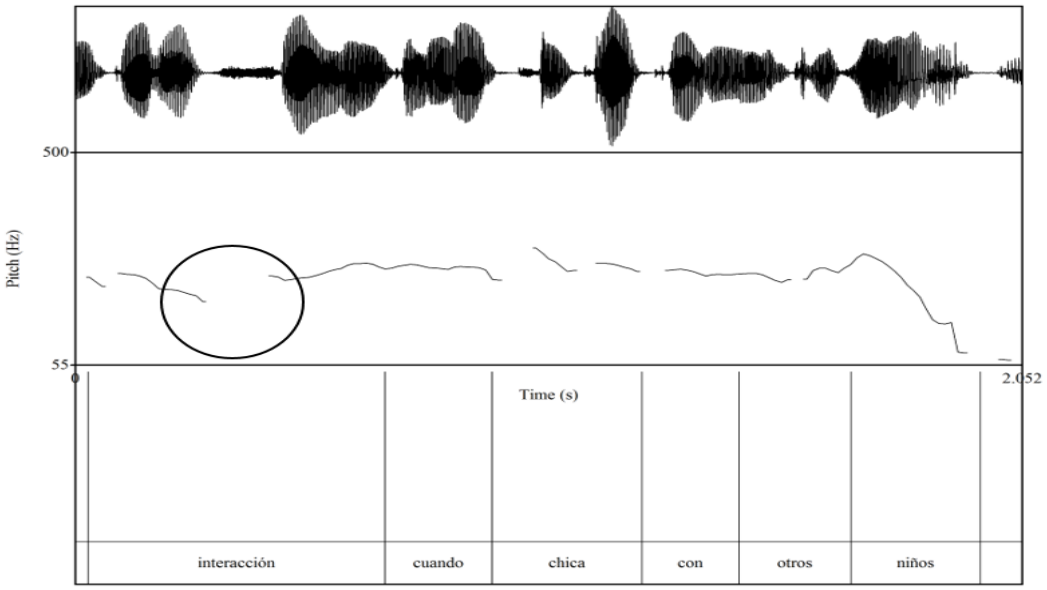

Figure 7.57: Plateau contour showing a valley formed by a dip in the unstressed portion of the word that also initiates the rise (*...interaction with other kids when I was a girl*)

In Figure 7.55, the low portion only lasts for the duration of the reflexive pronoun "*se*", and the valley-like portions in Figures 7.56 and 7.57 do not even contain a full

word. Rather they both dip on a number of pretonic syllables before rising on the tonic syllable of the same words they drop on and into the high portion. The latter two examples pose two challenges to the notion that valleys are extendable low tonal events. First, it is difficult to argue that a valley is an extended low tonal event when both valley and rise are initiated on the same word. In both examples, a fall over the pretonic syllables creates the low portion right before the rise on the tonic syllable. Second, the fall and rise within the same word points to a rather deliberate effort of the speakers to not only initiate a rise, but to also produce a preceding low tonal contrast with the subsequent rise and high sustained portion. As a result, while valleys might not contain salient enough information to be considered extended tonal events, they still appear to have an important role in reinforcing and/or increasing the salience of the following information by creating a tonal contrast with the high extended event, similar to what has previously been shown for post-focal deaccenting in Spanish and Farsi, and pre-focal deaccenting in Moroccan Arabic (include citations for Spanish, Farsi & Arabic). Thus, rather than being extended low events, the behavior exhibited in the data is more indicative of deaccenting, or a decrease in the salience of the preceding low content by decreasing the F0 level and pitch movements.

As previously discussed in this chapter, this resulting contrast can also be viewed in terms of physical effort, as illustrated by both Ohala (1983) and Gussenhoven (2004). In other words, the tonal contrast also points to a contrast of physical effort exerted by the speaker on different portions of the utterance that extends over the totality of the contour. Per earlier discussions, Gussenhoven posits that speakers take advantage of the physical limitations that the human anatomy presents for speech to communicate extralinguistic

meaning such as increased emphasis for various purposes that could be emotional, attitudinal or of another type. The physical contrast between the two parts of a given contour with a valley and a high plateau could potentially reinforce, or even increase, the perceived salience of the high portion. In other words, listeners not only hear the tonal contrast, but also recognize the differences in physical effort and recognize the motivations of the speaker for choosing to invest a higher amount of energy on the high portion than the low portion.

In light of this evidence, AM can be modified to include the entire body of evidence presented by the current study by assuming that the Chilean Spanish plateau contours only contain one extended tonal event: the sustained high portion between the rise and the fall. The only exception would be Type 6 plateaus, in which the high event would extend to the final content word, where the final tonal event would be the upstepped rise at the end of the utterance. The valleys are deaccented in a way that speakers can reinforce the salience of the sustained high content, but they are not able to extend tonal events. While this modifies the AM framework considerably, it does so in such a manner that there is a way for all the data and documented tendencies of the speakers to be described using AM-based conventions.

7.3 Toward a More Speaker-Centered Approach

As asserted by Face (2011), no theory of linguistics should be so adamantly supported that its framework does not allow for the incorporation of necessary modifications that reflect data-based variation in real-time speech. The previously

proposed second solution provides the necessary modifications for AM to account for all the Chilean Spanish data presented in this dissertation. While small compared to the vast amounts of other data on Spanish and other languages, the modifications are necessary because the current AM framework simply cannot account for all of the Chilean Spanish data in the current investigation. Thus, while tentative and pending further Spanish and cross-linguistic data, the modifications are necessary.

Even with the necessary modification, the theory still has a difficult time satisfactorily explaining what motivates the realization of Chilean Spanish plateau patterns. Intonational plateaus have been documented in a small number of different languages (Basque (Elordieta 2003), Guaraní (Clopper and Tonhauser (2011), and K'iche' (Yasuvel 2013)) as well as in the context of absolute interrogatives in Spanish in contact with Galician (Pérez 2015). However, none of these varieties show evidence of extended tonal events. Rather, each researcher has been able to use AM to explain and describe the intonational plateaus of the respective languages they analyze.

One of the potential causes of the inability of AM to account for this new data is that AM studies of intonation have concentrated more on describing the tonal movements of utterances and how the form the resulting contours take phonetically relates to the phonological capacities of speakers. Prieto (2015) states

> "In recent decades, the standard [AM] model of intonation has helped to foster the idea that intonation should be regarded as a phonological component of linguistic systems…this work has focused on the representational issue (i.e., how to encode linguistically relevant pitch movement in an efficient way while being faithful at the same time to the phonetic realization of the tunes) and has hardly dealt with

> the issue of the semantic and pragmatic interpretation of intonation contours." (pp. 371-372)

Prieto reviews a variety of theoretical approaches that have been and are used to explore the different functions of intonation with relation to meaning. She further states: "some of the traditional assumptions on intonational meaning (such as phonetic vs phonology)…do not stand well with empirical findings" (p.379). One of these discrepancies she cites is the deeply rooted assumption within the AM theoretical framework that there is generally a "one-to-one" relationship between the form that contours take and their meanings, with little or no regard to the context in which speakers produce such contours (p.374). Similarly, Hirschberg (2002) asserts:

> "While students of intonational meaning generally look for the regularities in intonational interpretations such as 'Increased prominence is interpreted as focus'…there are too many counter-examples in normal speech production to conclude that particular intonational behavior maps simply to clear interpretations. Even when empirical studies have found regular associations between phenomena…these studies also find many occasions when commonly accepted "meanings" of intonational features do not seem to hold." (pp.3-4)

As a result, Hirscherg concludes that intonational meaning is highly dependent on the context in which speakers produce different contours. This notion supports Ocampo's (2010) findings on Spanish, which demonstrate that in natural speech, speakers can place prosodic prominence and/or focus wherever they choose, rather than always placing new or focused information near the end of utterances, as studies that work with

grammaticality judgments (e.g. Zubizarreta 1998, 1999) or laboratory speech have concluded.

In the case of the Chilean Spanish plateau contours, the current frameworks of AM and Sp_ToBI are inadequate for describing and explaining the data presented by the current study. This inadequacy appears to be rooted in the assumption, critiqued by both Prieto (2015) and Hirschberg (2002), that there must be a one-to-one correspondence between form and meaning. In other words, AM assumes that independent, metrically strong events strung together along an F0 contour are the phonological motivation behind the meaning of different intonational contours. The Chilean Spanish plateau data, however, do not appear to be the primary result of phonological motivations. Speakers do use different phonological mechanisms to increase salience (e.g. low vs. high contrast) or call more attention to different content, but the data presented suggest that productions are more pragmatically and contextually motivated. This implies that these contours are produced based more on the context of the conversation and the pragmatic and communicative intents of the speaker, rather than on internal grammatical or phonological factors. By combining conventions that AM has shown to communicate meaning, such as deaccenting, F0 rises to increase the communicative salience of a lexical item, low and high tonal contrasts, etc., with pragmatic and discursive context, it is possible to account for all of the Chilean Spanish data presented in the present study from a theoretical perspective.

Based on the data and the tendencies previously discussed, Chilean Spanish plateau contours behave as a form of extended focus wherein an idea or a concept is what speakers make use of intonation to communicate, rather than a chain of individual

phonological events. Thus, all content from the start of the rise to the eventual fall at the end (or the utterance-final flatline, in the case of Type 3 contours), is essentially afforded the same level of importance, or communicative salience, by the speaker. In other words, speakers are focused on transmitting an entire idea or concept, thus extending prosodic prominence to all the content in an idea rather than to a select number of content words. This extension is primarily motivated by pragmatic factors (i.e. focus on an idea) rather than phonological factors. There are several pieces of evidence that support the notion of extended focus namely: the markedness of the plateau contours, the lack of coordination between syntax and prosody, the size variability, and the physical effort required to produce these patterns.

First, the markedness of the Chilean Spanish plateau patterns, when compared to other more common contours that have been documented in the variety, points to a specific function that has not yet been explored in the literature. While plateau contours are present in the speech of all of the participants of the current study, as well as all of the participants in Rogers (2013), they are not the most common contours used by speakers of Chilean Spanish. This is why potential arguments that the plateau contours are actually accentual phrases, which have been used to explain other plateau-like structures in other languages (e.g. Elordieta 2003 for Basque) do not hold up. If Chilean Spanish were an accentual phrase dialect, then it would be expected that accentual phrases would be the norm in Chilean intonation. This is not the case, as the previous literature has shown that Chilean Spanish intonation shares a large number of similarities with other documented varieties of Spanish (e.g. Ortiz et al. 2010). Thus, the plateau contours are a

marked use of intonation within the Chilean variety, and consequently, their markedness suggests a role that other documented contours do not possess.

Several previously documented AM conventions point to the contours being a focus mechanism. First, according to Face (2003) and Rao (2009), in spontaneous Spanish, rises are used to increase the communicative salience of the lexical items on which they are realized. Rises have also been documented in various dialects of Spanish, as well as cross-linguistically, as being instrumental in indicating narrow focus and emphasis (e.g., Face 2001, Prieto and Roseano 2010, Ladd and Morton 1997, among many others). The common theme in these studies, whether rises are associated with narrow focus, emphasis, or increasing communicative salience, is that they are intended to bring whatever lexical item they occur on to the forefront of the awareness of both speaker and listener(s). While the aforementioned studies document rises that occur on single lexical items, if a pragmatic motive is what causes a rise, it can certainly be argued that speakers can choose to rise through multiple lexical items and prolong the emphasis, or the focus, of an utterance to the extent that they desire.

Related to the role of intonational rises is how AM uses a distinction between high and low tones to create distinctions in meaning. High tones are more often associated with more salient or "important" information, while low tones have been associated more often with less prominent content. This contrast is evident in instances of Chilean Spanish plateau contours where a valley precedes the sustained high portion. As previously discussed, speakers can potentially use this contrast to reinforce and even increase the salience of the content in the high portion, the same way AM can use the contrast between single low and high tonal events to increase or reinforce the salience of

single high tonal events. By introducing pragmatic motives into the analysis, speakers are allowed to increase the amount of content in both the low and high portions, and can ultimately contrast ideas, or differing portions of ideas, with one another. Deaccenting, another established intonational behavior within the AM framework, is likewise observed in the valley portions, and is also a manner for speakers to establish the tonal contrast between valleys and sustained high portions.

A second piece of evidence for the plateau contours being mechanisms of focus is the frequent lack of coordination between the syntax and the prosody of the contours. The rises, especially, have been shown to create numerous problems for AM. The reason that the lack of coordination between syntax and the rises, and to a lesser extent, the falls, is problematic is because examining the issue strictly from within the confines of AM approaches it strictly from a phonological angle. Without taking into account the context of the utterance, or the possible pragmatic motivations that a given speaker may have for producing a plateau contour instead of a less marked contour, it becomes almost obligatory to force a phonological motivation on the rises and falls. However, it has been repeatedly demonstrated that the rises and falls exhibit behavior more indicative of pragmatic motivations. In other words, it is difficult and problematic to assert that the rises and falls occur at phonologically specified junctures, when the data indicate that speakers do not seem to be heeding phonological constraints or tendencies when they produce the rises that initiate the sustained high portions and some of the contour-final falls. Examples of this are when speakers split branched NPs and VPs, leaving items such as articles and helping verbs in valleys, only to split similar NPs and VPs later by rising on articles and helping verbs and placing the nuclei of these constituents in the

sustained high portions of contours. Furthermore, the data show that speakers can split multiple word pronouns, such as "*lo que*", that function as single units, between the rises and the sustained high portions.

Another well-documented problem that the rises specifically present that creates a disjuncture between prosody and syntax is the fact that they defy previously held notions of stress and prosodic prominence. Under normal conditions, rises would be expected to occur on the prosodic nuclei of main syntactic junctures. While this does occur in the data, rises also occur through multiple prosodic and non-prosodic nodes of different syntactic constituents, and at times, rises begin and extend solely on and through traditional non-prosodic syntactic content. A purely phonological attempt to describe what motivates these rises falls well short of the goal, since it is not possible to deduce a phonological motivation for an event whose behavior indicates a high level of dependence on the speaker, rather than leaning heavily on the parameters of a specific linguistic system.

A third source of evidence that reinforces the notion of extended focus, is how both the low and high portions can contain a wide range of content. This high level of variability is what creates a number of stumbling blocks for the Prosodic Hierarchy. As was previously mentioned, the valleys contained 0-6 PWs, and the sustained high portions contained 1-11 PWs. The overall word range for the valleys was 0-8 words, while the high portions ranged from 1-16. It must be noted that these limits are only reflective of the maximums and minimums observed in the data, and that there was no trend observed that suggests that these limits are absolute. The size of each portion appeared to be almost completely dependent on the speakers; therefore, it is very likely

that both the PW count and the overall word count for both portions can be extended to potentially include a significantly greater amount of content. Once again, when attempts were made to analyze each portion from a strictly phonological perspective, the entirety of the data could not be accounted for, with attempts to divide the contours into PPhs and IPs, using the same methodology of previous studies at times resulting in PPhs or IPs having nothing to govern. However, the size variation becomes easier to describe if the data is simultaneously considered from a pragmatic perspective. Just as speakers showed no obvious tendency to follow previously established notions of syntactic and prosodic coordination and prosodic prominence, they also show secondary regard for the Prosodic Hierarchy. One reason for this might be that because speakers want to draw attention to a collective idea, all the content between the rise and the fall is effectively given the same level of prosodic prominence. If this is true, then the PW range for the high portion would increase dramatically from 1-11 to 1-16. The sheer level of variation with regards to the size of both the low and high portions, combined with an observed tendency to frequently deviate from established phonological frameworks, such as the Prosodic Hierarchy, lends further credence to the idea that the production of the Chilean Spanish plateau contours is primarily speaker-dependent and pragmatically motivated.

Perhaps the strongest tendency observed that acts as evidence in favor of extended focus and a speaker-centered analysis is the physical effort that is required to produce the Chilean Spanish plateau contours. The fact that speakers maintain the high portion over a potentially large amount of content, as well as through breaks, including long pauses, is suggestive that if there is a target, that target is the end of the idea or concept that they are trying to communicate to another interlocutor. A purely phonologically centered analysis

from within the parameters of AM would predict that the high pitch between tonal events would not be consistently maintained, let alone continued, through and during different types of breaks. However, from a pragmatic outlook, there is no reason to assume that speakers cannot, or will not, continue to exert the amount of physical energy necessary to completely communicate the idea they include in the high portion.

At the current juncture, a pragmatics-based approach is the best way to explain and describe the Chilean Spanish plateau contours. The behavior and patterns exhibited at prosodic, syntactic, and physical levels strongly suggest that the contours are heavily dependent on the motivations and communicative goals of the speakers. This does not mean that speakers do not make use of AM-based phonological conventions to help convey whatever idea or message they are trying to communicate to a given interlocutor. However, these devices are secondary, and the primary motivations for producing the patterns appear to be strongly pragmatically driven. What is lacking at this point is perceptual data. In order to prove or falsify the conclusions made based on the behavior of the current data set, perceptual data from native speakers of Chilean Spanish is needed. There is very preliminary evidence that I have gathered informally from participants from my 2013 study and some that make up the participants of the current dissertation, showing a tendency to favor the notion of extended focus, especially when rises are comprised of more than one lexical item, but this data is too sparse and the methodology is still in its initial stages of development to definitively conclude anything. For the time being though, the evidence documented in the present study is strongly suggestive that the production of Chilean Spanish plateau contours is dependent on contextual and pragmatic factors as well as the intentions and motivations of the speakers. A purely

phonological analysis from within the framework of AM and Sp_ToBI in not capable of accounting for the entirety of the data.

Chapter 8

Exploring Mapudungun and Chilean Intonational Plateaus

RQ4: Is there evidence that the Chilean Spanish "plateau" pattern is the result of contact with Mapudungun?

8.1 The Mapudungun Language in Chile

At this point, studies on Mapudungun intonation simply do not exist. Most of the linguistic literature regarding Mapudungun has focused on documenting and teaching its grammar (e.g. Zúñiga 2002, Smeets 2008, among others). Also, as has been the case many times with many different Amerindian groups in the Americas, the Mapuche people, and consequently their culture and language, have faced a high level of stigmatization over the centuries, including from early linguists such as Alonso (1953), which has led to a devastating decline in the number of native speakers of the language. The Unrepresented Nations and Peoples Organization (UNPO) states:

> "The loss of Mapuche culture and language go hand in hand. While the older generations still converse in *Mapudungun*, many children do not learn their ancestral language as they are educated in Chilean schools where the curriculum is in Spanish. The Mapuche indigenous language is a language in resistance, maintained voluntarily by *Mapudungun* speakers. This has led to a general loss of identity as some Mapuche youth come to consider themselves Chilean rather than Mapuche, especially because of the suffering endured due to widespread discrimination" (p.8, italics in original)

In light of the current social and linguistic plights of the Mapuche people, it is lamentably unsurprising that such little attention has been dedicated to the realization of linguistic studies of Mapudungun.

As previously stated, Alonso (1953) strongly disregards any possibility or notion that Mapudungun has influenced Chilean Spanish, instead arguing that the peculiarities that other researchers have observed in Chilean Spanish are internal to Spanish, rather than being contact-induced. What this assertion ignores is the near impossibility that Mapudungun did not have some type of influence on Chilean Spanish due to the high level of the population (84%, Censo chileno 2002) that identifies as having some level of Mapuche origin. In fact, a number of biological studies on Chilean DNA support the idea that there has historically been a high level of social and cultural contact between Chileans and the Mapuche people. Using the mitochondrial, or maternal, DNA of 162 randomly selected subjects from Santiago, Rocco, Morales, Moraga, Miquel, Nervi, Llop, Carvallo, and Rothhammer (2002), conclude that 84% of the population of Santiago has maternal DNA of Amerindian origin. Because Santiago is further north, "Amerindian" includes individuals with Atacameño and Aymará origin as well. However, Mapuche was the largest of the indigenous origins documented, which only increases in the south. Cruz-Coke and Moreno (1994) analyzed the nuclear, or overall, DNA of male and female subjects from the northern cities of Santiago and Valparaiso, and while similarly documenting a high level of indigenous admixture, they also showed that this admixture increases in the middle and lower socioeconomic strata of both cities. Based on the census data and the DNA evidence, it would be erroneous to assume that the terms "Chilean" and "Mapuche" are mutually exclusive at this point, given the high level of

"mestizaje", or mixture, of European and Mapuche individuals that has historically occurred in the region over the last six centuries.

To assume that a level of cultural contact that would result in the vast majority of the Chilean population to have varying levels of Mapuche origin, as well as the evidence that suggests that this contact was even more intense in the working classes, would not result in some level of contact-related change in both languages, defies logic. Rather, it seems to be more based on long held prejudices that have endured since Spain first colonized the region.

As discussed in Chapter 2, Sadowsky and Aninao (2013) present strong evidence that this intense contact in the south has actually resulted in a variety of Chilean Spanish frequently written off as "uneducated" and "incorrect" and referred to disdainfully as "castellano mapuchizado" (mapuchized Spanish). However, their participants were not only monolingual Spanish speakers, but most of them had monolingual Spanish-speaking parents as well. They were also educated and current high school students. The data presented by the authors shows compelling evidence that at one point there was prolonged contact between Mapudungun and Spanish in the area. This contact resulted in certain morphosyntactic features of Mapudungun (e.g. lack of subject-verb agreement, lack of grammatical gender) having potentially solidified and perpetuated themselves in the monolingual Spanish of a linguistic community. These findings are even more compelling because it is extensively documented in the literature on language contact and change that morphosyntax is one of the deeper subsystems of language and is usually more resistant to contact-induced change (e.g. Thomason and Kaufman 1988, Silva Corvalán 1994, Van Coetsem 2000). Thus for morphosyntactic changes, such as those

shown by Sadowsky and Aninao, to occur, intense and prolonged cultural and linguistic contact between Mapudungun and Spanish would have been required.

An in-depth analysis of Mapudungun intonational phonology is beyond the scope of the current dissertation. The purpose of the analysis of Mapudungun intonational plateau contours and their subsequent comparison to Chilean intonational plateau contours is to present evidence to reinforce the notion that Mapudungun is the best source to search for the origins of the Chilean Spanish plateau contours. Likewise, the current study seeks to further dispel the notions that Mapudungun has had minimal influence on Chilean Spanish.

8.2 Intonational Plateaus in Mapudungun and Other Agglutinating Languages

Intonational plateau contours, similar to those documented in the Chilean data, were observed in the recordings from Smeets (2008). Table 8.1 is a key for the different labels Smeets provides for the various particles in agglutinated Mapudungun words and Figure 8.1 is an example of one of the Mapudungun plateau contours observed in the data.

Label	Meaning
1,2,3	first, second, third person
CA	causative
CF	constant feature
COLL	collective
improd	improductive suffix
IND	indicative
INST	instrumental object
NEG	negation
ns	non-singular
P	plural
PR	progressive
PS	persistence
PVN	plain verbal noun
RE	iterative/restorative
REF	reflexive/reciprocal
ST	stative
SVN	subjective verbal noun
VERB	verbalizer

Table 8.1: Labels used by Smeets (2008) for describing Mapudungun

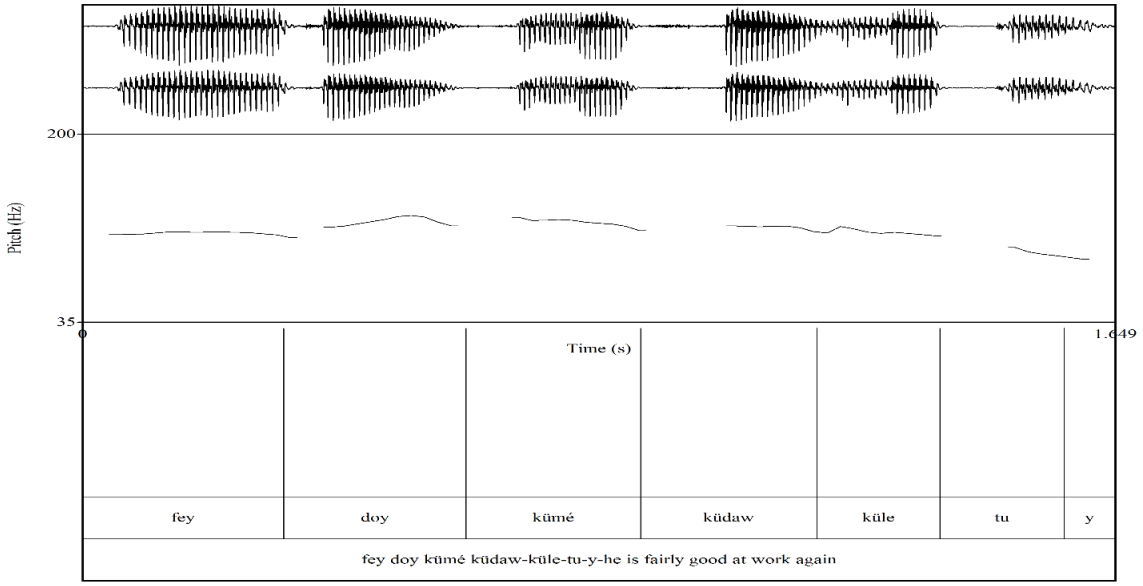

Figure 8.1: Example of a Mapudungun intonational plateau from the data

Fey doy kümé küdaw-küle-tu- y
he more good work- ST- RE-IND_3
he is fairly good at work again

The contour rises on and extends over a variety of agglutinated and non-agglutinated words. There is a small valley-like portion on the subject pronoun "*fey*". The rise then occurs on the adverb "*doy*", which Smeets (2008) states is used to indicate the comparative and/or superlative forms of an adjective or an adverb. The sustained high portion then extends over the adverb *kúmé* and the agglutinated word "*küdawkületuy*", with the fall beginning on the iterative/restorative marker "*tu*" and concluding on the third person singular indicative marker *y*. Figure 8.2 is another example of a Mapudungun plateau contour.

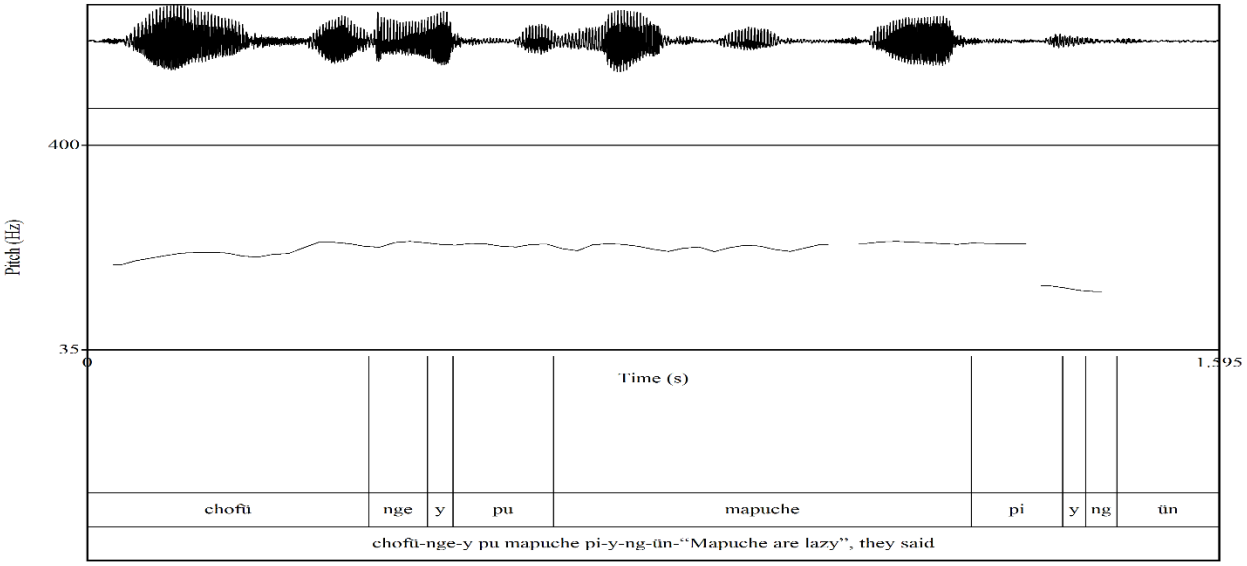

Figure 8.2: Example of a Mapudungun intonational plateau from the data

chofü-ng- y pu Mapuche pi- y- ng- ün
lazy-VERB IND_3 COLL Mapuche say- IND 3ns p
"Mapuche are lazy", they said.

The contour in Figure 8.2 rises through the agglutinated word "*chofüngy*", peaking on the adjective "*chofü*" right before the verbalizing particle "*ng*". The sustained

high portion extends over the final two particles of the word that the rise occurs on and continues through the particle "*pu*", the noun "*Mapuche*", and then falls on the indicative marker "*y*" of the agglutinated word "*piyngün*". The fall extends through the third person non-singular indicator "*ng*" and the plural marker "*ün*".

While AM has never been applied to Mapudungun, attempts have been made to describe intonational plateaus in other agglutinating languages, some of which are Amerindian like Mapudungun. For example, using lab speech, Clopper and Tonhauser (2011) and Yasuvel (2013) show that both Guaraní and Ki'che' have intonational plateaus, as seen in Figures 8.3 and 8.4, adapted from Clopper and Tonhauser, and Yasuvel, respectively.

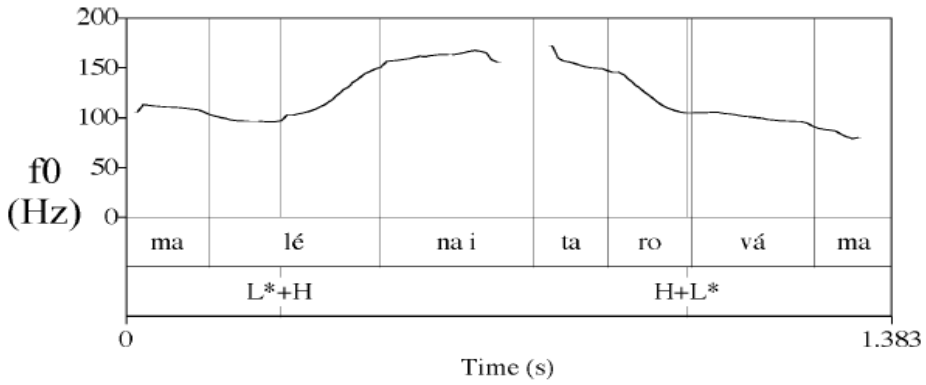

Figure 8.3: Guaraní intonational plateau adapted from Clopper and Tonhauser (2011)

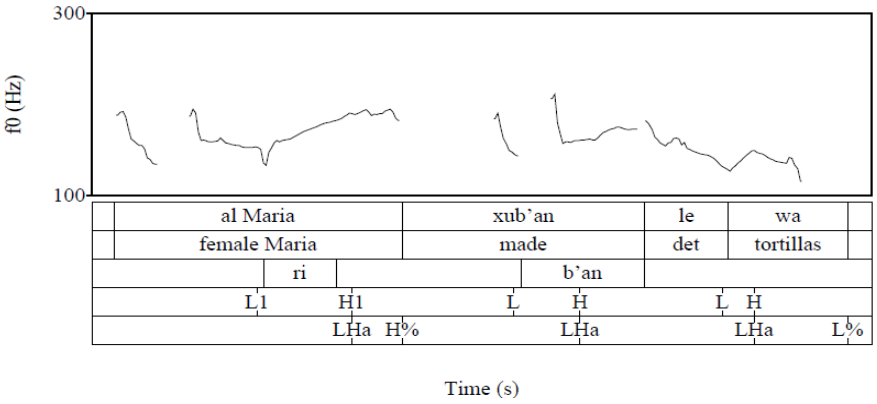

Figure 8.4: Ki'che' intonational plateau, adapted from Yasuvel (2013)

Both Guaraní and Ki'che' are analyzed using pitch accents at the rise and the fall portions of the plateaus. Neither uses any pitch accent on the high portions. Also, it must be noted that the high portions are much shorter than many of the examples shown for the Chilean and Mapudungun plateau contours. Another agglutinating language that has intonational plateaus is Basque, as shown in Figure 8.5, adapted from Elordieta (2003).

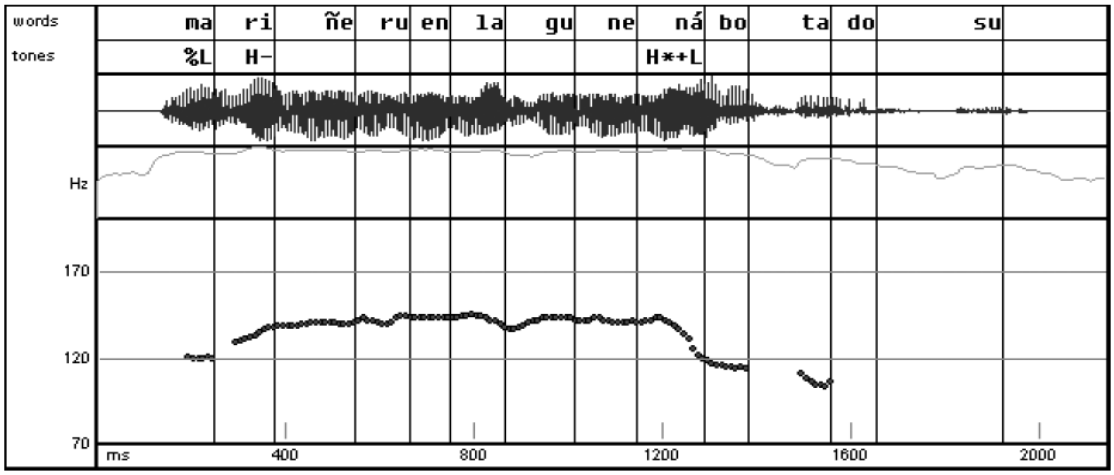

Figure 8.5: Basque Intonational plateau, adapted from Elordieta (2003)

The AM analysis that Elordieta (2003) uses is different from the analyses used for Guaraní and Ki'che' because Basque is considered an accentual phrase language.

Therefore, the rise, while it resembles the Amerindian and Chilean rises in form, does not receive a pitch accent. The plateau begins on a L% boundary tone, and rises to a H- phrase tone before peaking and maintaining the high tone achieved at the peak of the rise until a fall, which does receive a H*+L pitch accent. The extended high portion is also longer than the Guaraní and Ki'che' examples, more closely resembling the Chilean and Mapudungun contours in form.

As can be seen by the previous cross-linguistic examples of AM and agglutinative intonation, there are different approaches and variation in the different analyses. Likewise, the plateau patterns do not always occur in the same contexts. For example, the Guaraní plateau is used most often in what the authors call "subject contrastive" contexts, while the context provided for the Basque example appears to be more broad focus in nature. Thus, while it may appear that agglutination might lend itself to the production of intonational plateaus, the use of intonational plateaus may not be the same in Guaraní, Ki'che' and Basque as they are in Mapudungun.

8.3 Mapudungun and Chilean Intonational Plateaus

While no in-depth phonological analysis using AM will be made of Mapudungun plateau contours, both the Mapudungun and Chilean contours showed a number of striking similarities, and several of the behaviors discussed in previous chapters were also observed to varying degrees in the Mapudungun plateau contours examined. These trends, namely, form, pragmatic function, and similar syntactic behavior on the rise portions, are suggestive of a common origin for the contours in both languages.

8.3.1 Form

A visual examination of the data leaves no doubt that the plateau contours in both languages bear a striking resemblance in form. Both can have a preceding low portion, followed by a rise that can occur on one word or multiple words and/or morphological particles. The sustained high portions in both languages also demonstrate the same high levels of variation with regards to their duration and size. In other words, speakers in both languages can expand (Figures 8.6 and 8.7) and retract (Figures 8.8 and 8.9) the sustained high portion to include a wide range of content.

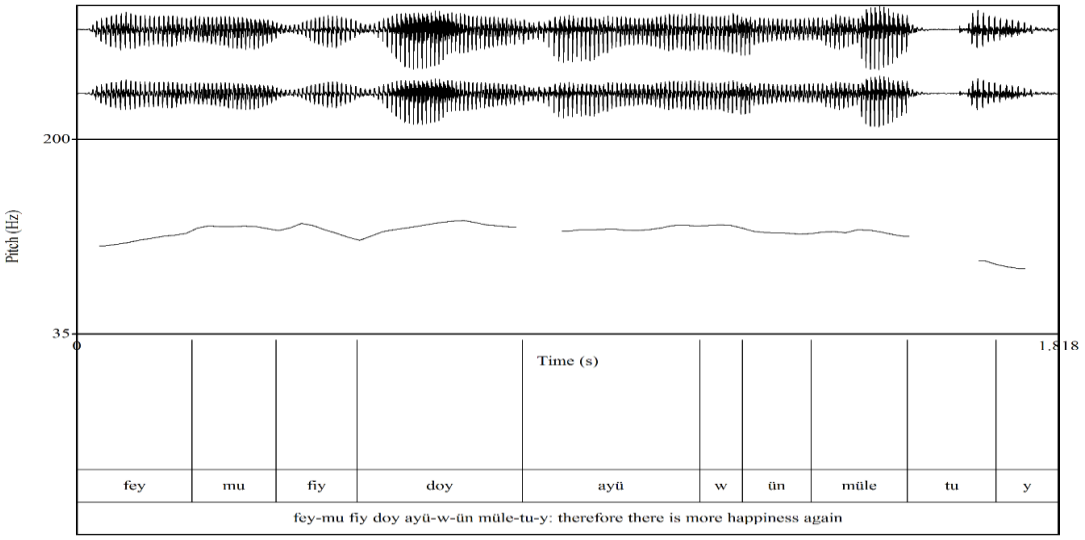

Figure 8.6: Example of a long intonational plateau from Mapudungun

Fey- mu fiy doy ayü- w- ün mule-tu- y
That INST that more love-REF PVN be RE IND_3
Therefore, there is more happiness

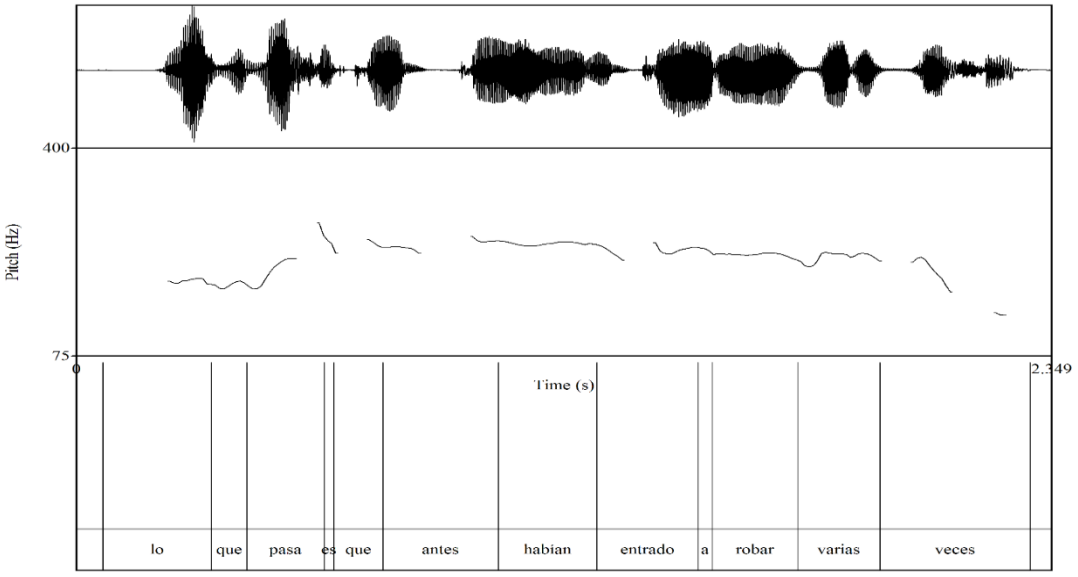

Figure 8.7: Example of a long intonational plateau from Chilean Spanish (*…the thing is that people had broken in several times before*)

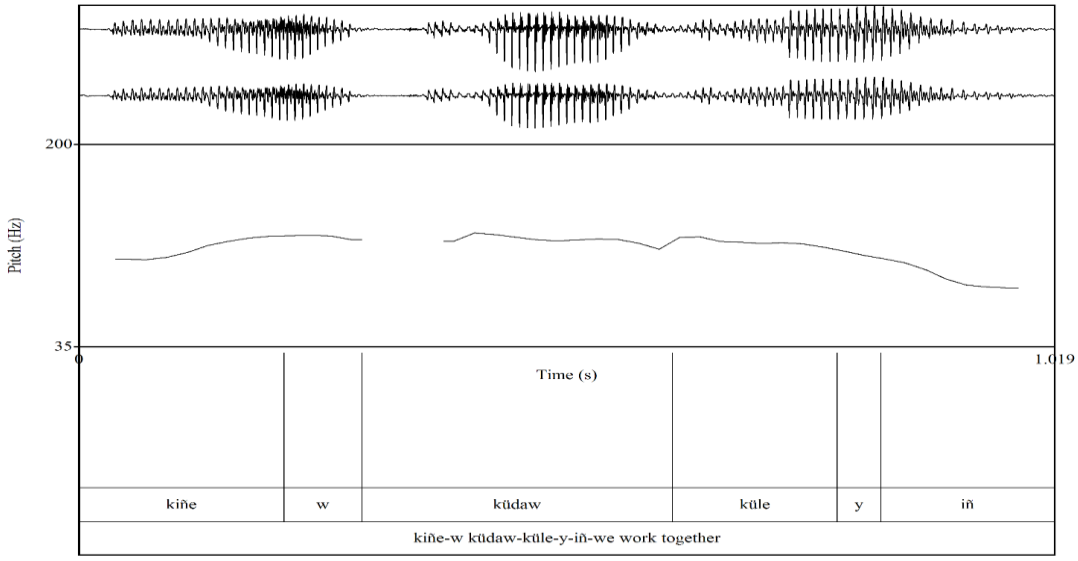

Figure 8.8: A short intonational plateau from Mapudungun

Kiñe- w küdaw-küle- y- iñ
one- improd work- ST- IND 1ns_p
We work together

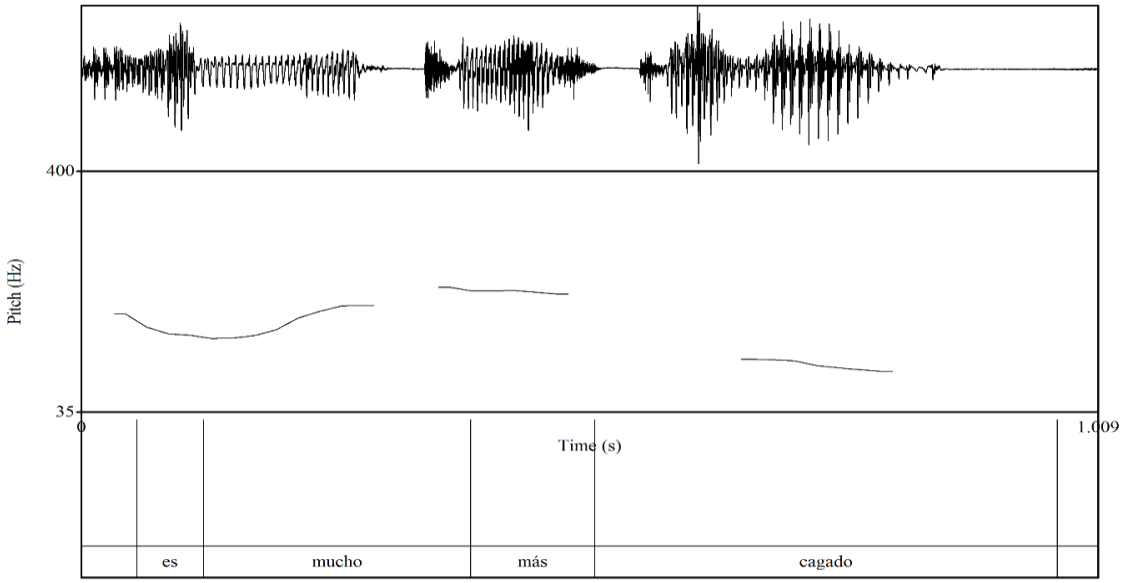

Figure 8.9: A short intonational plateau from Chilean Spanish (…*it's a lot shittier*)

The contours in Figures 8.6 and 8.7 are examples of how speakers of Mapudungun and Chilean Spanish can extend the sustained high portion to contain a large amount of material. The Mapudungun contour in Figure 8.6 extends to include both agglutinated and non-agglutinated content, while the Chilean Spanish contour in Figure 8.7 contains a mixture of content and function words. In Figure 8.8, the Mapudungun speaker rises on the numeral "*kiñe*" and then extends the sustained high portion over one agglutinated word "*küdawküleyiñ*". The short contour also falls on the final two particles of this word. The short Chilean Spanish contour in Figure 8.9 rises on the adverb "*mucho*" and maintains the high portion for one word, "*más*", before falling on the final word. As discussed in Chapter 2, Spanish and Mapudungun treat stress differently. While stress is crucial in Spanish for determining meaning differences between words, it only functions this way in certain contexts in Mapudungun. As a result, with the information available in the current data set, it is not possible to compare the amount of

prosodic and non-prosodic material in the rises or the sustained high portions. What is obvious, though, is that speakers can expand and contract these high portions with relative ease and liberty.

Another similarity is that the falls for both Chilean Spanish and Mapudungun plateau contours can occur on a single syllable or can expand to include a variety of content. This is illustrated in the previous two Mapudungun contours in Figures 8.6 and 8.8, whose drops occur at the end of agglutinated words and contain two morphological particles. The fall on the Chilean contour in Figure 8.9 expands to contain the entire final word of the utterance.

Finally, the data indicate that in Mapudungun, different categories of plateau contours may exist, as they do in Chilean Spanish. The contour in Figure 8.10 represents a small contour taken from the Mapudungun data, which rises right before the contour-final syllable, similar to the Type 6 contours documented in the Chilean Spanish data. Figure 8.11 is an example of a Type 6 contour from the Chilean Spanish data in order to compare the similar forms of the two contours.

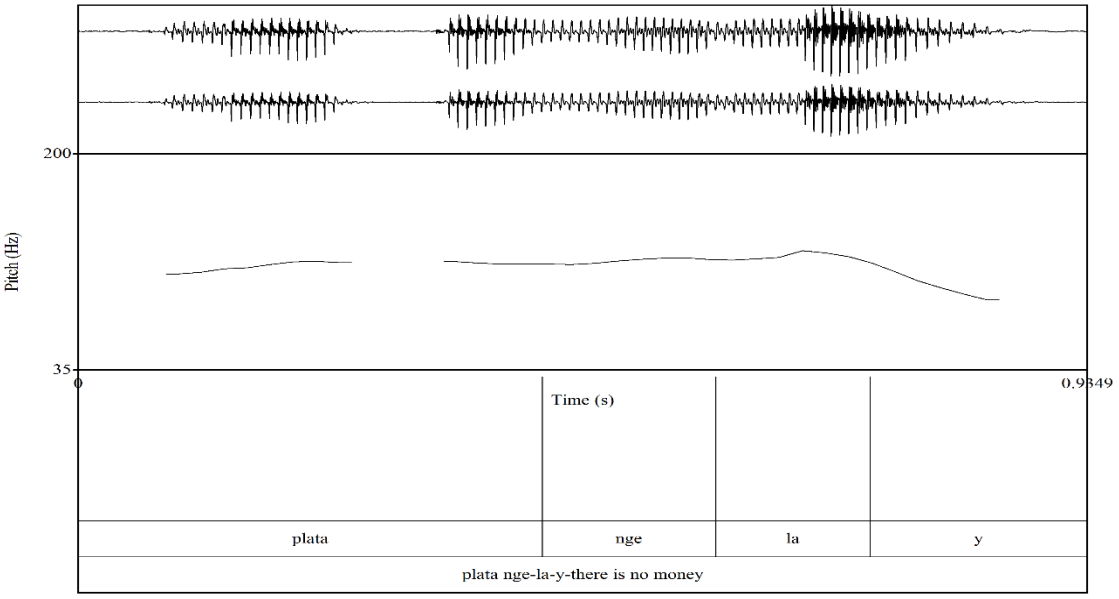

Figure 8.10: Intonational plateau from Mapudungun similar in form to a Type 6 Chilean contour

Plata nge-la- y
money be-NEG IND_3
there is no money

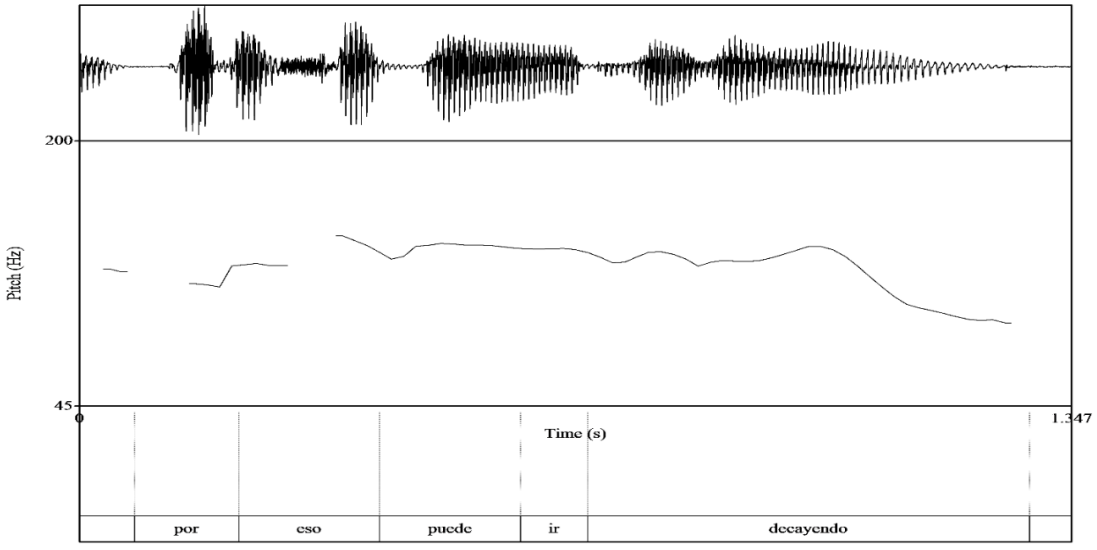

Figure 8.11: A Type 6 Chilean Spanish plateau contour (*…that's why it can get worse*)

The Mapudungun contour in Figure 8.10 rises and peaks on the noun "*plata*", and then extends through a single agglutinated word, "*ngelay*". On the particle "*la*", which indicates negation, the speaker rises and peaks within the same syllable, and then begins to fall after the peak, and through the final particle *y*. As the Chilean Spanish data suggest, the reason for the rise at the end of Type 6 contours is to emphasize the final word of the contour more than the rest of the high content. While Mapudungun does not make use of stress in the same way as Spanish, the rise on the negative particle could, in fact, be a similar strategy of the speaker to highlight the fact that there is no money. In the context of the conversation, the speaker is talking about how during a time of unemployment, he and a few friends came together and made and sold bricks in an effort to make money. At the specific point of the conversation leading up to the production of the plateau contour, he was talking to the interviewer about how expensive it was to buy materials, such as wood, to build a house. He states that these materials are very expensive, and then states that there is no money while producing the plateau contour. The increased emphasis on "*la*" makes it clear that there was no way that he and his friends had any means of purchasing these more expensive building materials. Thus, the similar forms could be indicative of similar communicative strategies that speakers in both languages employ with different types of plateau contours.

8.3.2 Pragmatic Function

While the current data do not include the perceptual input of native speakers of either language, it is possible to determine the pragmatic function of the contours based on the context of the interviews. In Chapter 7 it was proposed that the Chilean Spanish

contours were a mechanism of extended focus. Extended focus is to be understood that while the speaker is highlighting a certain portion of their utterance, the scope of the focus is broader than narrow focus, and can be expanded to include an entire utterance, thus allowing a contour to be both a broad focus declarative, and a mechanism of focus. In other words, no portion of the utterance is more highlighted than the rest. The use of the rise and the sustained high tonal portion is what makes the utterance more salient than other non-plateau declarative utterances that precede and/or follow it. Based on the contexts of the various interviews from which the Mapudungun contours were taken, the same behavior is observed in Mapudungun.

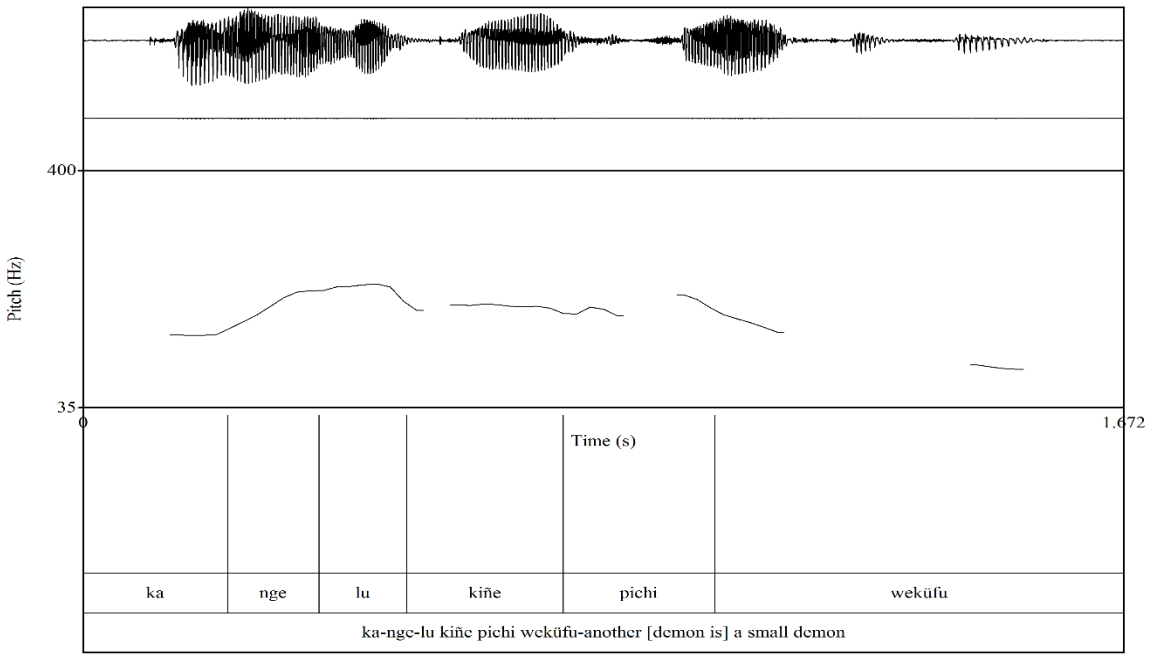

Figure 8.12: Mapudungun broad focused intonational plateau

ka- nge- lu kiñe pichi weküfu
other- VERB- SVN one small demon
another [demon is] a small demon

The contour in Figure 8.12 comes from a story from one of Smeets' (2008) Mapuche speakers. Here the speaker is reading from an account that he wrote down earlier about traditional Mapuche beliefs about demons. The following is a transcription in English of the context from which the contour was taken, with the contour content in bold and the sustained high portion in capital letters.

> *When the cattle owners sleep, they (the raised souls) go about to see that not even one animal is stolen. They are very well dressed. Sometimes they ride about. They wander with big spurs. Their teeth shine at night. Sometimes they like to show themselves to people who wander about alone*. ***ANOTHER [demon is] A SMALL DEMON****. He does not grow…"* (Smeets 2008, p. 375)

The purpose of the text is to relate information to the listeners that they may have not known beforehand. At the specific juncture in the conversation represented in Figure 8.12, the speaker has just finished describing the attributes and features of one kind of demon and is indicating that he is going to describe another type of demon. There is no indication of narrow focus, or additional emphasis, on any of the words or particles that make up the contour. As far as the speaker knows, all of the information contained in the contour is unknown to the interviewer, thus suggesting that it is similar to a broad focus statement. Figure 8.13 is taken from a conversation in the Chilean Spanish data.

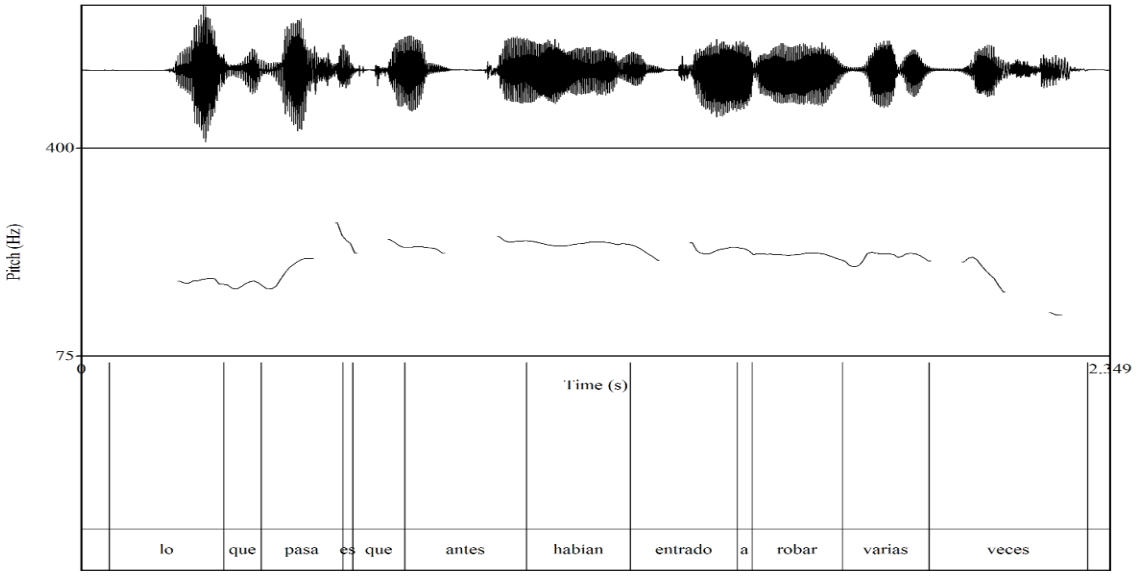

Figure 8.13: Chilean Spanish plateau contour showing similarities to a broad focus statement *(…the thing is that people had broken in several times before*)

The contour in Figure 8.13 comes from a point in an interview with a speaker from Candelaria in which he was talking about what he does to avoid having his children fall into some of the negative influences, such as drugs and theft, that are prevalent in several areas of Candelaria. Previous to the contour, he had finished speaking about what he feels needs to be done to keep children and youth off the street. The conversation then shifts slightly and the interviewer asks if anyone had ever broken into the speaker's local church building, the answer to which forms the contour in Figure 8.13. The following is part of the transcript in both Spanish and English, with the contour portion in bold and the sustained high portion in capital letters.

***Speaker**: Sí..ellos no terminan de crecer a los dieciocho, po. Ellos no van a tener su poder de decisión hasta que no se casen y adquieran sus cosas, po.*

***Interviewer**: Y¿ alguna vez han, han r-, han entrado a robar, a robar a la iglesia?*

***Speaker**: Sí, varias- (breath) **Lo que PASA ES QUE ANTES HABÍAN ENTRADO A ROBAR VARIAS VECES**. Pero ya, como pusieron rejas de seguridad y puertas dobles de..de acero, ya no entran, po."*

***Speaker**: Yes...they aren't adults when they turn eighteen. They won't make their own decisions until they're married and have their own stuff.*
***Interviewer**: And, has anyone ev- ever broken into, broken into the Church?*
***Speaker**: Yes, several-(breath) **the thing IS THAT PEOPLE HAD BROKEN IN SEVERAL TIMES BEFORE**. But now, with a fence for security and double doors made of…of steel, people don't break in anymore."*

As was the case with the Mapudungun contour in Figure 8.12, the information that is contained in the plateau contour in Figure 8.13 is new to the conversation. Likewise, according to previous literature, none of the content in the low and high portions shows indications of narrow focus or increased emphasis. Based on the context and the content, similar to the previous Mapudungun example, the portion of the utterance that is contained in the contour resembles a broad focus statement, that, using the proposed pragmatic modifications proposed at the end of Chapter 7, possibly highlights and extends focus on the high sustained content. Figure 8.14 shows another example from the Mapudungun data.

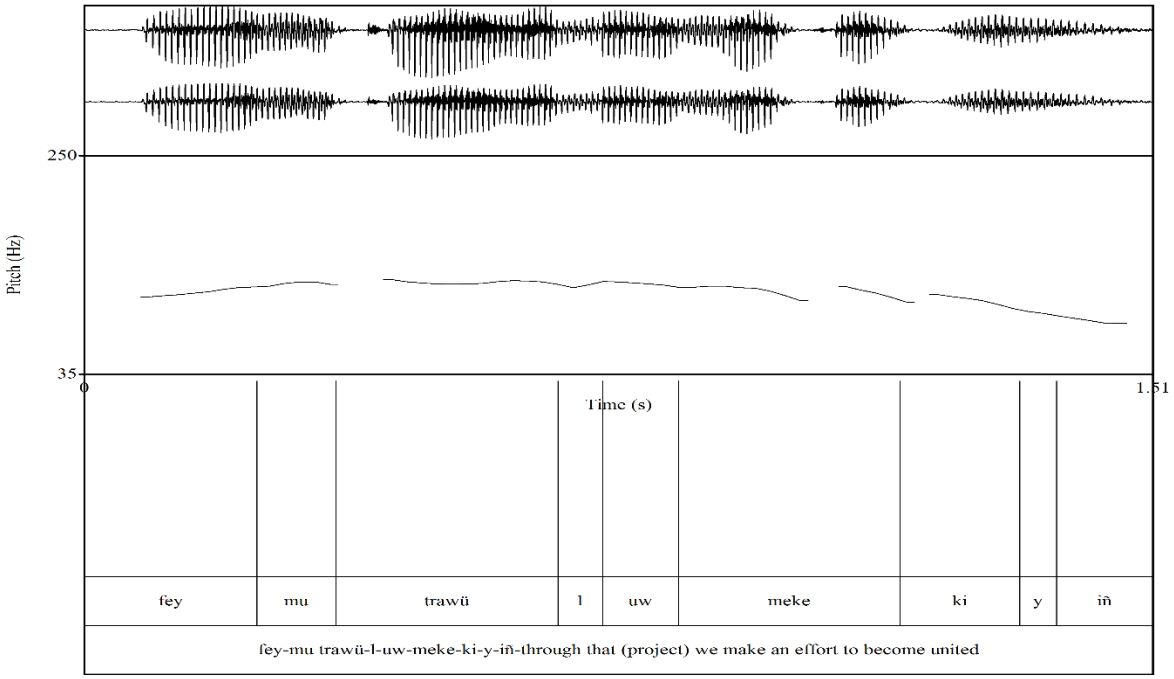

Figure 8.14: Mapudungun broad focus intonational plateau

Fey -mu trawü- l- uw- meke-ki- y- iñ
that- INST get.together- CA- REF- PR- CF- IND 1ns_p
Through that (project) we make an effort to become united

The contour in Figure 8.14 comes from the same conversation as the contour in Figure 8.10. In this specific instance, the speaker is also talking about how he and a few friends make and sell bricks together and how working together has fostered a sense of unity among the friends. The following transcription in English shows the context, with the portion contained in the contour in bold and the sustained high portion content in capital letters.

***Speaker*:** *Therefore, we join in one project so that we can all earn money [and] have good houses. For today it is so very expensive to buy wood and planks to build a house. It is very expensive [and] there is no money, and what we have,*

[some] small cattle, is not worth much anymore either. Therefore, we have undertaken this particular project. We make bricks. We do this brick-project together. ***THROUGH THAT [project] WE MAKE AND EFFORT TO BECOME UNITED****. We are all friends. It is satisfying that we work on a project like this."* (Smeets 2008, p. 471)

As has been the case with the previous Mapudungun and Chilean Spanish examples, the context of the conversation is indicative that the content in the plateau contour is declarative in nature and that any focus present in the utterance is broad in nature and not concentrated exclusively on any one portion or element of the contour. Following Figure 8.15 is another example from the Chilean Spanish data of the broad focused nature of the plateau contours.

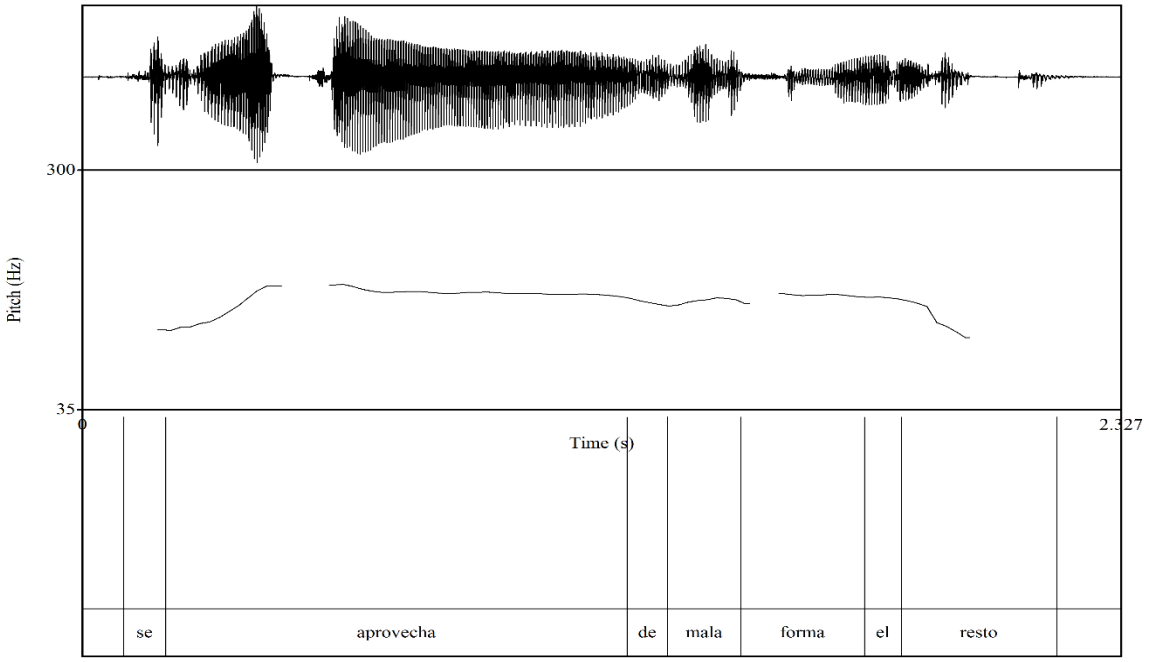

Figure 8.15: Chilean Spanish plateau contour showing similarities to broad focus statement (*…takes unfair advantage of others*)

This contour comes from a point in the interview in which the speaker and the interviewer were speaking on the topic of the term *flaite* in Chilean society. The word *flaite* is typically pejorative and used in reference to delinquents from the more blue collar strata of Chile. The *Academia Chilena de la lengua* (2010) defines *flaite* as "a person from a low social class who exhibits an extravagant appearance and behavior and is frequently associated with delinquents" and "[someone] who has typically negative characteristics…such as bad etiquette, poor taste…and is involved in delinquent activities" (p.395, translations mine). In the interview with the speaker who produced the contour in Figure 8.15, the speaker was clarifying to the interviewer that he did not agree with the tendency of definitions of *flaite* to be associated with people from lower socioeconomic strata. In order to give more context, what follows are Spanish and English transcriptions of this specific portion of the interview, with the plateau contour in bold, and the sustained high portion in capital letters.

> ***Speaker*****:** *Eee, generalmente hay personas que lo asocian así como flaite es gente pobre, o delincuente…pero en realidad hay gente más-de-son delincuentes pero puede estar en la clase baja o la clase alta.*
>
> ***Interviewer****: Sí*
>
> ***Speaker****: Flaites como eso. (pause) Como alguien que (pause)* ***se APROVECHA DE MALA FORMA AL RESTO****. Y no cumple con las reglas, no respeta al resto.*

***Speaker*:** *Eee, generally there are people who make that association between "flaite" and poor people or delinquents…but in reality there are people who are more-from-who are delinquents, but they can be lower or upper class.*

Interviewer*: Yeah*

Speaker*: "Flaites" like that. (pause) Like someone who (pause)* ***TAKES UNFAIR ADVANTAGE OF OTHERS.*** *And doesn't obey the rules or respect anyone.*

Due to his desire to not associate socioeconomic stratification with the term "*flaite*", the speaker is indicating to the interviewer what he considers the definition of "*flaite*" to be. As was the case with the previous Chilean Spanish and Mapudungun examples, there is no F0 movement in the sustained high portion that highlights one word more than the rest of the content. The contextual cues also indicate that the specific idea that makes up the contour was not known to the interviewer beforehand. Thus, as with the previous example, the contour in Figure 8.15 most closely resembles a broad focus statement, once again, with the possibility that the speaker uses the sustained high portion to extend focus to the entire idea that it contains.

8.3.3 Syntactic Junctures and Tonal Behavior at Rises

One of the more notable behaviors of the Chilean Spanish plateau patterns that has been presented in the current data is how completing an idea, or including certain content in the sustained high portion from rise to fall, frequently takes precedence over prosodic coordination with syntax. As noted in the previous chapter, one of the more

problematic components of the high sustained portions are their initial rises, which can split constituents with multiple nodes and even multiple word pronouns that function as single units. Likewise, they rise on content not traditionally considered to be prosodically strong, or stressed. This same behavior was also observed in some of the rises of the Mapudungun plateau contours. Figure 8.16 illustrates an example from the Mapudungun data where the speaker leaves the article in the low portion and rises on the accompanying noun. Figure 8.17 is an example from the Chilean Spanish data that shows the same behavior on the rise and serves as a comparison to the Mapudungun contour.

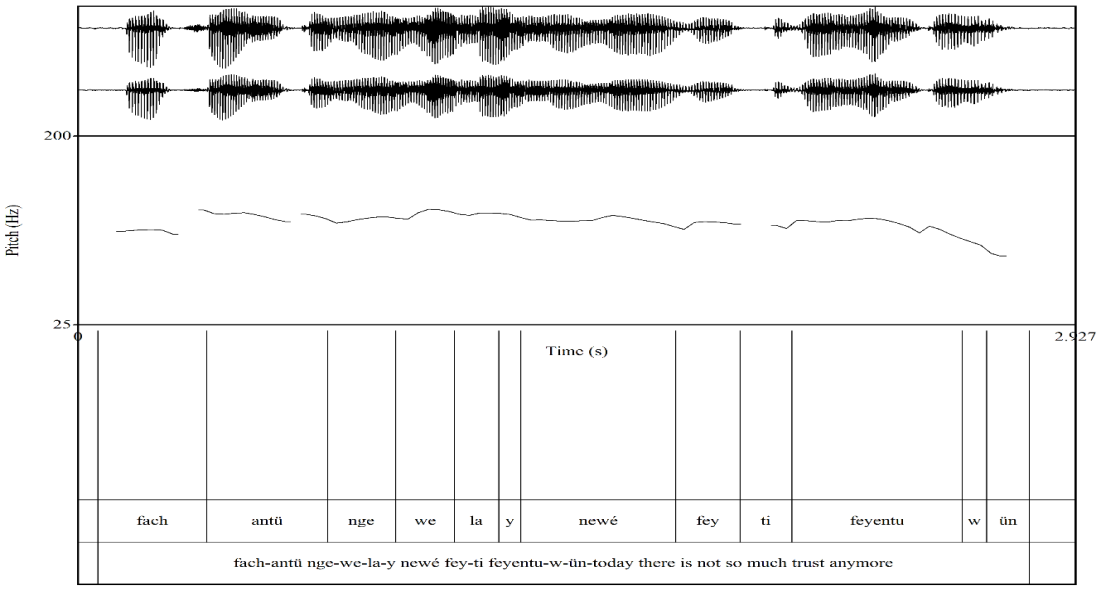

Figure 8.16: Mapudungun intonational plateau contour that splits an NP in the rise

Fach- antü nge- we- la- y newé fey- ti feyentu- w- ün
this- day be- PS- NEG- IND_3 not.very that-the believe/trust- REF- PVN
Today there is not so much trust anymore

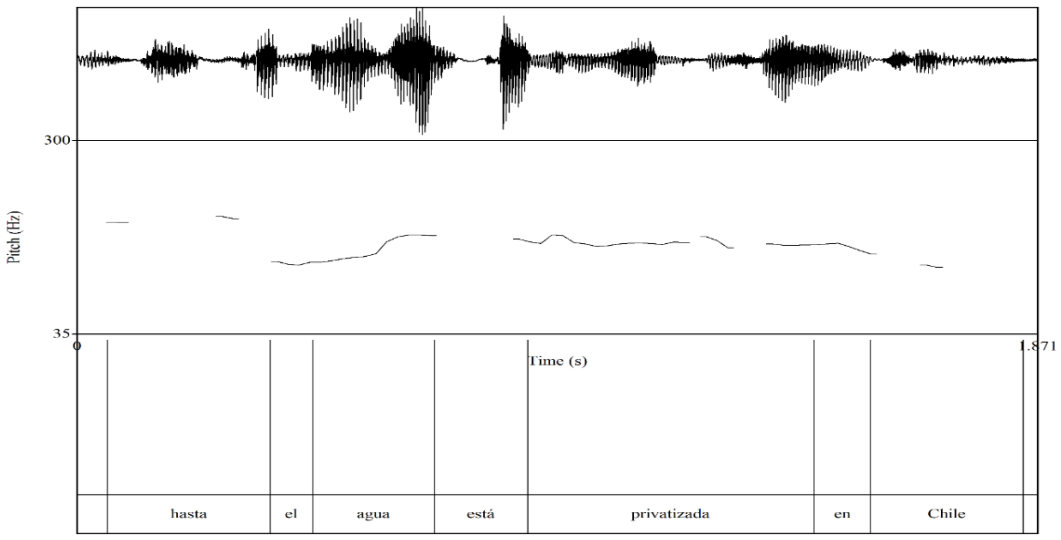

Figure 8.17: Comparable Chilean intonational plateau that splits and NP in the rise (*...even water is privatized in Chile*)

In the Mapudungun contour in Figure 8.16, the rise initiates on an agglutinated word made up of two morphemes that essentially act as the determiner and noun nodes of an NP. The word itself is split by the rise, with the morpheme that acts as the article, "*fach*", remaining in the low portion and the rise occurs almost instantaneously afterward on the nominal particle, "*antü*". The Chilean Spanish contour in Figure 8.17 shows similar behavior, as the speaker splits the NP and leaves the definite article in the low portion, and initiates and completes the rise on the following noun. The contour following in Figure 8.18 is an example of a Mapudungun plateau with a rise being realized on what would not commonly be considered prosodic content.

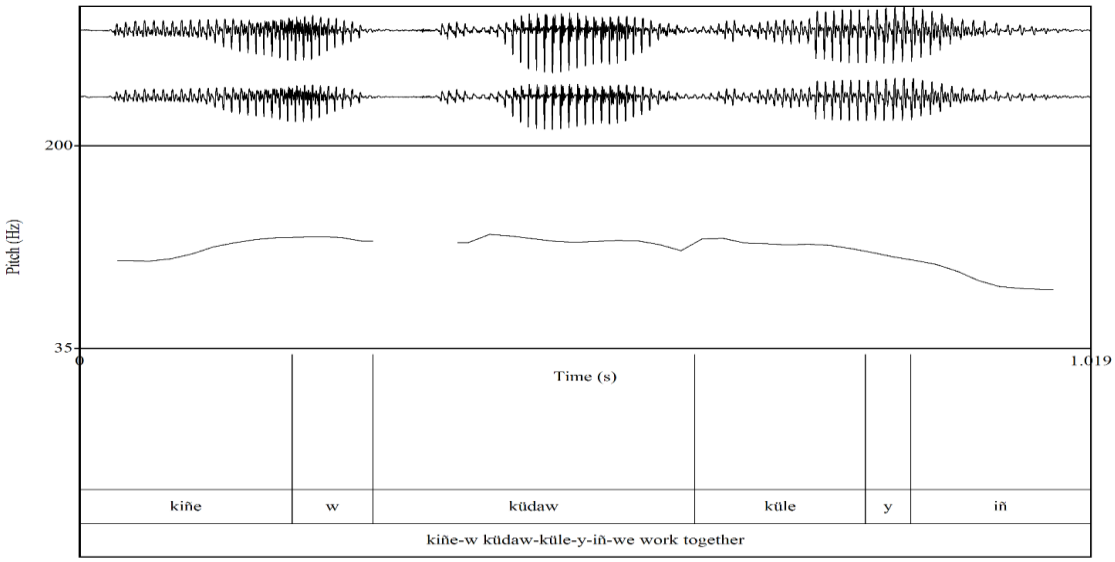

Figure 8.18: Mapudungun plateau contour that rises on potentially non-prosodic content

Kiñe- w küdaw-küle- y- iñ
one- improd work- ST- IND 1ns_p
We work together

This specific plateau contour shows a rise on what, in Spanish, would be considered non-prosodic. The word "*kiñe*" is the Mapudungun numeral "one". In the context of the conversation that this specific plateau pattern is realized, its function is to indicate that the group of individuals that the speaker is referring to work as one. Because stress is not treated the same in Mapudungun as it is in Spanish, it therefore might not be as uncommon as it is in Spanish for F0 rises to occur at these junctures, but in Spanish, numerals are generally considered unstressed (Quilis 1999). Figure 8.19 is an example of a contour from the Chilean Spanish data whose rise also begins on an unstressed numeral (*tres*).

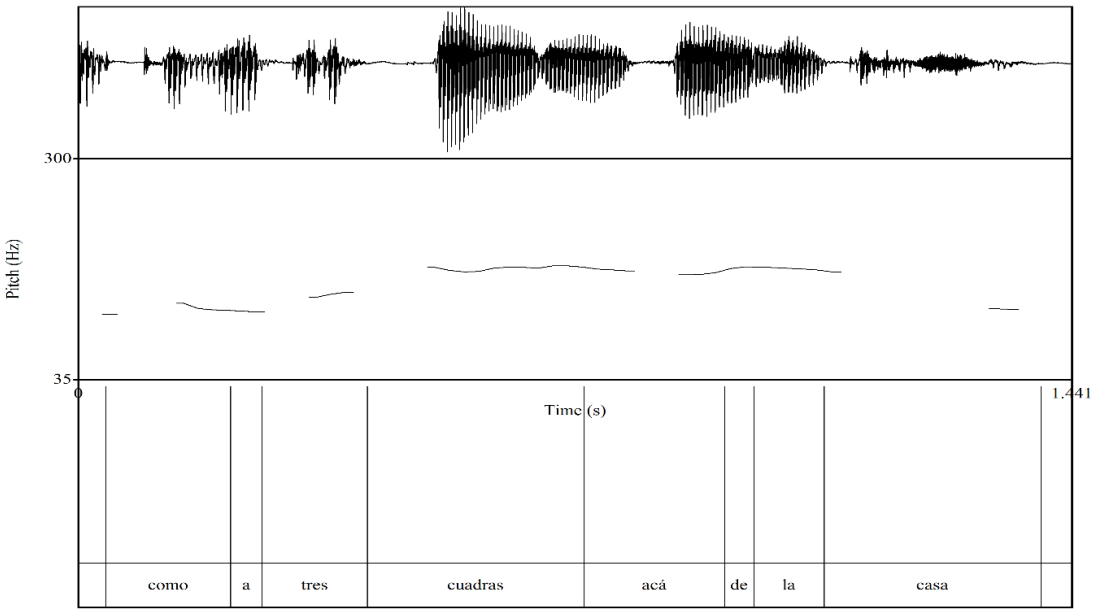

Figure 8.19: Chilean Spanish plateau contour whose rise occurs on a non-prosodic numeral (*...like, three blocks from the house here)*

The agglutinative nature of Mapudungun makes any endeavor to compare the syntax of the Chilean and Mapudungun rises potentially problematic. For example, in Spanish, an article and a noun are always separate words, while in Mapudungun they are morphemes that at times can combine to make one word, as was seen with the word "*fachantü*" in Figure 8.16. This could potentially affect how stress is perceived or assigned. However, the speaker who produced the Mapudungun contour in Figure 8.16 did not rise until the nominal morpheme, effectively splitting the word like the rises in the Chilean Spanish data sometimes split NPs with a node for both a determiner and a noun. Chilean Spanish plateaus also split NPs by rising and peaking on the determiner node, causing the following noun to become the first word in the sustained high portion. This type of behavior was not found in the Mapudungun data. However, the data set was also

much smaller than the Chilean Spanish data, and it is therefore possible that the same behavior could be observed in a more substantial corpus.

8.4 Summary

Admittedly, the Mapudungun data is severely limited. Due to the constant tension and struggles between the Mapuche and outside occupying and governing entities and forces that has existed since the colonial days, it is difficult to collect data in Mapudungun. The Mapuche are distrustful of outsiders—especially post-dictatorship. Likewise, due to the stigmatization of their culture and language in Chile, speakers can be very reluctant to speak Mapudungun or even to admit that they are speakers of Mapudungun. Despite these difficulties and limitations, the recent studies by Sadowsky (2013) and Sadowsky and Aninao (2014), along with the high level of individuals who identify as having some level of Mapuche origin, and the biological findings regarding the high level of Amerindian DNA in the Chilean population, are strong evidence that at one point in Chile's history, most likely pre-dictatorship, there was potentially more prolonged cultural and linguistic contact between the Mapuche and Chilean society than previously assumed. To assume that the cultures, but not the languages, can influence each other is, at best, illogical.

The recent literature is indicative of the possibility that there here was a period in which both languages influenced one another to varying degrees. This possibility is buoyed up by Sadowsky's (2013) and Sadowsky and Aninao's (2014) findings regarding the influence of Mapudungun on the vowels and morphosyntax of Chilean Spanish, both

of which are subsystems considered more resistant to contact-induced change. As a result, it is possible that the intonation of Chilean Spanish was also influenced during this period of contact with Mapudungun. In situations of language contact, intonation has been shown to be one of the least resistant linguistic subsystems to contact-induced change. In fact, detectable and significant changes can occur in a relatively short time period. For example, Chapter 2 cites Simonet's (2011) study that focused on the utterance final F0 movements of Spaniards who had recently moved to the Catalan-speaking island of Majorca. He found that in a relatively short amount of time (a matter of a few years), those Spaniards who were especially interested in integrating themselves into Majorcan society showed Catalan-like F0 movements in the nuclear portions of their broad focus declaratives. Alvord (2006) also documents a social connection in Miami-Cuban absolute interrogatives. Those individuals who had more social networks with Cubans produced the characteristically Cuban falling contour more than those who associated with Spanish speakers from countries and regions outside of Cuba.

Even though the amount of data available on Mapudungun intonation is sparse at the current time, the similarities between the Mapudungun and Chilean Spanish plateaus point to the real potential of a common, contact-induced origin for the pattern in Chilean Spanish. First and foremost, the plateau contours in both languages have very consistent and similar forms. In both languages the contours begin on rises and end on falls. More importantly, speakers of both languages show the same tendency to expand and retract the sustained high portions to include a wide range of content. This tendency, at times, to maintain a large variety of content, and at others a minimal amount, at a high tonal level is not observed in any other variety of Spanish. Mapudungun is only spoken in Chile and

sparsely in parts of Patagonian Argentina. The fact that similar intonational patterns with the documented ability to expand and retract to include a wide variety of content at a maintained high tonal level are found in both Chilean Spanish and Mapudungun, while not being documented in any other variety of Spanish, points to a possible common origin.

The data indicate that the pragmatic function and context of the contours in both languages are similar as well. In both languages, speakers tend to produce the contours in contexts that strongly resemble broad focus declaratives. The broad range of content that the contours in both languages can contain excludes many other pragmatic possibilities, such as narrow focus. The use of the rises, sustained high tonal portions, and falls in both languages suggests that speakers use these cues to differentiate broad focus declaratives from the ideas that they communicate using plateau contours by highlighting entire ideas and thus creating instances of extended focus that contrast with regular broad focus declaratives.

Finally, the initial rises for the contours in both Mapudungun and Chilean Spanish show similarities that cause many of the same problems. Despite the typological differences of both languages, both Mapudungun and Chilean rises split NPs with multiple nodes and rise on material that is not traditionally considered stressed, or prosodic. As discussed in Chapter 7, the treating of syntax as if it were of secondary importance, and the apparent disregard of traditional notions of stress, are indicative in both languages of a tendency for speakers to be more concerned with communicating an idea or a concept, rather than satisfying or fulfilling supposed requirements or constraints set forth by an internal grammar.

While much more data is needed, as well as more in-depth studies on Mapudungun intonation, in order to more concretely determine if Chilean Spanish plateau contours are the result of contact with Mapudungun, the data presented by the current investigation indicate the strong possibility that Mapudungun is the most likely source. This does not just open up avenues for further inquiries into the possibility of Mapudungun having a much more far-reaching influence on Chilean Spanish intonation; when combined with other recent studies on Mapudungun and Chilean Spanish, the trends in the data are suggestive that the influence of the Mapuche on Chilean Spanish has possibly been much greater than the assertions that have held up and guided research over the last century.

Chapter 9

Conclusions

9.1 Chilean Intonational Plateau Contours

Throughout the course of the present dissertation, it has been demonstrated that Chilean intonational plateau contours present a number of ultimately irreconcilable problems for current intonational theory, specifically for AM and the Prosodic Hierarchy. Likewise, initial evidence is suggestive of a contact-induced origin with roots in Mapudungun.

9.1.1 Research Question #1

Research question #1 is repeated here:

1. *What are the PW thresholds for both the valley and sustained high portions of the Chilean Spanish plateau patterns? What are the implications of these thresholds for PPh length and the Prosodic Hierarchy?*

The data indicated that the valleys were much smaller and less common than the sustained high portions. Overall, the valleys had the lowest overall and average word and PW counts. The average word count for the valleys was 1.34 words per valley, while the average PW count was 0.59 PWs per valley. The valleys ranged from 0-8 overall words and 0-6 PWs. In many cases valleys were not present or their content was highly limited. Despite the limited size and presence of the valleys, the PW range still exceeds the ideal range of 2-4 PWs per PPh reported in the literature for Spanish (Prieto 2006, Rao 2007).

The sustained high portions showed a much higher level of variation than the valleys. Unlike the valleys, each token extracted had a sustained high portion. The high portions also almost always had a significantly greater amount of content than the valleys. The overall average word count for the high portions was 5.19 words and 3.43 PWs. The high tonal portions also had much larger ranges for words, 1-16, and PWs, 1-11. The PW range of the sustained high portion is significantly larger than the previously established range for PW content in PPhs for Spanish.

In order to determine if the increased PW ranges were for single or multiple PPhs and/or IPs, attempts were made to parse the contours. The variation documented in both the valleys, and particularly in the high portions, created a number of theoretical difficulties for the current framework of the Prosodic Hierarchy. First, traditional cues used in the literature on Spanish and other languages for dividing utterances into IPs and PPhs (pauses/breaks, syllable lengthening, pitch accents, and level 2 ToBI breaks) could not account for all of the tendencies in the data. While the use of these cues worked for some of the data, there were also contours where placing a phrase boundary at these junctures was not possible for a number of reasons. In some cases, the content of a portion of an utterance resembled that of a PPh, based on its syntactic simplicity and the fact that it was a portion of an idea or an incomplete idea. However, sometimes the following cue, such as a long pause, was associated with IPs. Syllable final lengthening was also unreliable as a parsing cue due to the fact that it created PPhs and/or IPs with no PW content, which is prohibited by the Prosodic Hierarchy. In the case of pitch accents, the only junctures where pitch accents would be plausible were at the rise and fall portions of the sustained high section. The placement of a phrase boundary at the end of

the rise was not possible in all of the cases. By doing so, sometimes parsings were made that created PPhs or IPs with no prosodic content to govern. In other instances, the placement of a boundary tone at the peak of the rises split multiple word pronouns such as "*lo que*" that act as a single unit. Finally, Type 2 ToBI breaks created similar parsings that are prohibited by the Prosodic Hierarchy. Even if the contours are assumed to be single PPhs or IPs, the subset of broken contours make this seemingly safe approach problematic because the breaks occur at junctures that would once again leave PPhs and IPs without any prosodic material to govern.

The data do not indicate that Chileans never use these phrasing cues as they are used in other varieties of Spanish. In fact, numerous cases were observed on non-plateau contours, wherein speakers did in fact use cues, such as phrase tones and pauses, to mark PPh and IP boundaries in manners similar to those documented in other dialects. This creates a theoretical paradox because the Prosodic Hierarchy, and by extension, the Strict Layer Hypothesis, can be used to explain most of what has been studied regarding Chilean Spanish intonation, but cannot be used in any way to satisfactorily and specifically account for all of the observed behaviors and tendencies in the plateau contour data.

9.1.2 Research question #2

Research question #2 is repeated here:

2. *Are the rises and falls on the sustained high portions triggered at syntactic phrase boundaries? What are the preliminary implications of these patterns for the syntax-prosody interface?*

At first glance, there appeared to be a fairly high level of coordination between prosody and syntax, with 60% of the rises and 96.7% of the falls initiating on a major juncture (NP, VP, AdjP, AdvP). When the data was examined in greater detail, it was concluded that, particularly with the rises, and to a lesser extent the falls, there was much less coordination between prosody and syntax. Speakers split NPs and VPs with multiple nodes on both the rises and the falls. With specific regards to the rises, as has been mentioned several times, it was observed that multiple word pronouns (e.g. *lo que*) that function as a single unit could be split, with *lo* being in the rise and *que* being the first word of the sustained high portion after the rise peaked.

Both the rises and the falls were also observed as occurring across multiple syntactic constituents and junctures. In fact, many rises and many of the falls in Type 4 contours were realized over multiple words and syntactic nodes. Some of these types of rises and falls only occurred across prosodic content, while in other instances, the junctures and constituents that made up certain rises and falls were a mixture of prosodic and non-prosodic content. There were also rises and falls that occurred strictly on traditionally non-prosodic constituents. No analysis was done on the content in the sustained high portions; however, a preliminary visual inspection of the data suggests that between the rise and fall, the internal syntax of the extended high portion does not matter

as much as the collective nature of what the speaker is trying to communicate. Future studies are needed to verify this notion.

While coordination between syntactic constituents and significant points on the F0 contour does occur, the trends observed in the data are indicative that this coordination is more secondary, and quite possibly largely due to the structure of the language and not to any internal grammar that speakers are following. In fact, when taken into account with the results related to the Prosodic Hierarchy, the syntactic data further buoy up the notion that the plateau contours, especially the content that speakers include between the rises and falls of the sustained high portions, are more pragmatically motivated and speaker-dependent. In other words, the plateau contours are not the primary result of phonological targets or coordination of interfaces. Rather, speakers are focused on fully communicating an idea or concept, and whether their F0 contour matches up with key syntactic points is, at best, a secondary issue or concern.

9.1.3 Research question #3

Research question #3 is repeated here:

3. *Is current Autosegmental Metrical phonology able to satisfactorily describe the Chilean intonational valleys and plateaus?*

The AM theory of intonation has facilitated developments in and contributions to our current understanding and manner of describing the role that intonation plays in human communication. The fact that the theory has been successfully used to compare intonation cross-linguistically demonstrates its strength. With specific regards to Spanish, as Face (2014) states, the AM theory has allowed researchers to continually

develop and modify the theory in order to be able to compare how intonation is used across different dialects in the Spanish-speaking world. This ability to compare cross-dialectally allows researchers to better understand how prosody is used, how it varies, and how it potentially changes across a large and varied number of Spanish speakers.

Despite the rapid advances in our understanding of Spanish intonation, and intonation in general with relation to human communication, there is still much that is not known. Within just Spanish, there are still disagreements over how AM should be used to describe different phenomena. One of the disadvantages, as pointed out by Hualde (2003) and Face (2014), is that it can be successfully argued, in some cases, that different analyses can be used for the same contour. Face states that this is problematic because AM is a phonological theory, and therefore, different analyses should carry different, contrasting meanings. He also states that when researchers are faced with more than one possible analysis for a given contour, it appears that rather than propose data-driven analyses, researchers sometimes opt for their own personal preferences instead of further pursuing an empirically-based use of AM.

Another problem that AM faces relates to the methodology that has been used to elicit the data that researchers have used AM to describe. Due to the complexity of intonation, many studies on Spanish and other languages have relied heavily on controlled speech and tasks. The advantage of such methodologies is that researchers can more easily elicit the types of productions and contexts that they desire to include in their investigations. In more spontaneous and less controlled speech, it is much more difficult to elicit certain, less frequent, contours, such as absolute interrogatives or narrow focus. Likewise, issues such as focus, stress, and emphasis are much easier to identify within a

controlled methodological framework. Indeed, as mentioned in several previous discussions, Ocampo (2010) states that in spontaneous speech the location of focus, emphasis, or new and old information seems to depend more on the preferences of the speaker, rather than what the grammar may or may not dictate. Thus, while controlled methodologies have allowed for researchers to study certain aspects of language and intonation, the data are potentially only a very small sample of the role of intonation in language. In fact, Face (2003) and Rao (2009) show that in spontaneous speech, intonation exhibits different behaviors than when produced under more controlled circumstances. Hence, there is much potential variation within Spanish intonation, and intonation in general, that AM might not be able to analyze. As stated by Face (2014), the plateau patterns documented in Rogers (2013), and in the current investigation, by extension, are potentially some of this variation that AM cannot satisfactorily explain. He goes on to postulate that as more variation in Spanish and, by extension, language in general is documented through more detailed research, it is very possible that AM will encounter a growing number of challenges.

Any modifications made to AM to account for the Chilean Spanish plateau contours must acknowledge that metrical associations can extend to a large variety of content. Two potential modifications proposed in the present dissertation attempted to incorporate extended tonal events into the AM framework. The first proposed that the contours are made up of a series of tonal events with the potential to extend their metrical association to multiple words. What this implies is that in a given plateau contour, the valley, the rise, the sustained high portion, and the fall are all separate, extendable, tonal events that connect with one another to form a contour. Ultimately, this approach could

not account for all of the data, especially rises that split branching syntactic constituents, those that rose on strictly non-prosodic content and those that split pronouns like *lo que*. The second suggested modification proposed that the valley and the sustained high portions were single low and high extended events. This approach is preferable to the first since it is able to account for more of the data, including the problematic rises, along with broken contours. However, further examination of the valleys points to the more likely probability that they are deaccented and the only extended tonal event is the high portion. This final modification is able to describe and account for all of the data examined from within a theoretical framework that still resembles AM.

It is very likely that as more natural speech data is used in more cross-linguistic studies on intonation, more data and intonational variation will come to light that will present similar challenges for AM. As previously discussed as early as Hirschberg (2002), and as recently as Prieto (2015), when established interpretations of intonation in different languages have been examined in more natural speech, researchers are frequently presented with data that runs counter to certain long-held assumptions and claims in previous literature. Both authors assert that intonational meaning cannot be fully understood or determined if studies neglect to include contextual and pragmatic data in their various analyses. A strictly phonological approach, such as AM, essentially places limits on what speakers are able to accomplish using intonation, and makes the overreaching assumption that established phonological constrictions and tendencies are the driving force behind speakers' communicative use of intonation.

9.1.4 Research question # 4

Research question #4 is repeated here:

4. *Is there evidence that the Chilean Spanish "plateau" pattern is the result of contact with Mapudungun?*

While not a challenge to the AM theory of intonation, one of the most compelling aspects of the Chilean Spanish plateau contours is that they have not been observed in any other variety of Spanish. The closest to the Chilean Spanish plateau contours that has been documented in any previous study are the examples of absolute interrogative hat patterns that Pérez (2015) reports on in the Spanish of speakers in contact with Galician in Spain. However, nothing is known about these patterns beyond their form, since they are a small subset of data in a larger sociolinguistic analysis she carries out on Galician's influence on Spanish intonation. It is not known if these interrogative hat patterns exhibit the same behaviors as the Chilean Spanish plateau contours on the rises, extended high portions, and the falls. Likewise, how they fit into the Prosodic Hierarchy and their relationship with the syntax-prosody interface is also unknown.

The overall lack of plateau contours in the varieties that have been documented in the Spanish-speaking world suggests that it is most likely unlikely that intonational patterns like the Chilean Spanish plateau contours are a natural byproduct of the Spanish intonational system. Equally unlikely is that the patterns originated from a spontaneous *ex nihilo* event that occurred exclusively in Chilean Spanish, independent of any other linguistic influence, including that of other varieties of Spanish. The most likely possibility is that these patterns are the result of contact with another language at some point in the history of the region. The most viable candidate for a source for the Chilean

Spanish plateau contours via language contact, as shown in the data, is Mapudungun. This is not only due to the evidence of the high level of cultural and social mixing that is borne out in Chile's census data and DNA studies, but also the number of similar behaviors that Mapudungun and Chilean Spanish intonational plateaus exhibit.

At first glance, one of the most obvious similarities is the form of the plateaus in both languages. Most notable is that the sustained high portions in both languages show a high amount of variation with respect to their size, and speakers in both languages show the same ability to extend or retract this portion of the contours to include a very limited amount of content to a very large amount. The pragmatic context of the plateau patterns in both languages also shows similarities, with contextual and discursive cues suggesting that the patterns are realized in broad focus-like settings. The intonational behaviors in the contour itself may be what speakers use to distinguish the content of the plateau contours from that of other broad focus statements. Finally, speakers of both languages showed the same tendencies to split branching NPs and to rise on non-prosodic syntactic items, such as numerals and articles. These are phenomena that are not documented in any of the known literature on other varieties of Spanish, which further reinforces the notion that the origin of the Chilean Spanish plateau patterns is outside of Spanish.

9.2 Contributions

The present dissertation makes a number of contributions to our current understanding of intonation in general, and that of Spanish in particular. First, the data and trends analyzed and observed throughout the course of the study further demonstrate

that the plateau contours I document in Rogers (2013) are not idiosyncratic features of a few speakers. I observed the patterns in the speech of individuals from a range of age groups, socioeconomic strata, and three different geographical regions of Chile. This confirms the widespread use of the plateaus in Chilean Spanish and highlights the fact that any comprehensive study of Chilean Spanish intonation cannot truly be accomplished without including these patterns in its analysis. Furthermore, the present study breaks with the trend of many recent and older studies on Spanish intonation that use controlled, laboratory data to study different aspects of intonation. In line with what Hirschberg (2002) states, intonation needs to be studied in more natural contexts in order to confirm the conclusions of previous work and to better understand how speakers use intonation to communicate.

Perhaps the most notable contribution is the evidence presented that demonstrates the very real difficulties that the AM theory of intonation encounters when attempts are made to apply it to the Chilean Spanish plateau contours. Based on the trends observed in the data, no AM analysis from within the theory's current framework can account for the entirety of the data. Any AM-centered analysis must undergo significant modifications in order to describe the Chilean Spanish plateau data, and any proposed modification cannot be made without allowing tonal events to extend beyond a single metrically strong point. The best possible approach is for researchers to move beyond the strict phonological analyses of intonation that have largely been the trend over the last few decades, and integrate more context and pragmatic-based approaches into their analyses of intonational behavior, including those of the Chilean Spanish plateau contours.

Another addition that this study makes to the field of linguistics in general, is that it is the first known study to investigate and document aspects of Mapudungun intonation. Up to this point, the few prosodic studies done on Mapudungun have focused mainly on stress placement, and have largely done so in passing. Mapudungun is an endangered language, and therefore, not only does its influence on Chilean Spanish need to be further documented, but how intonation is used as part of the overall Mapudungun linguistic system does as well. Because of the delicate state of Mapudungun and its diminishing number of speakers, this should be done while it is still possible.

Finally, the data presented also further contradict the long held notions that Mapudungun has had little to no influence on Chilean Spanish. Regrettably, while objectiveness is assumed to be part of any scientific investigation, prejudices sometimes motivate the interpretation of data, leading to the perpetuation of erroneous ideas that ultimately guide future investigations. This is, in part, what has led to the dearth of studies on the influence of Mapudungun on Chilean Spanish. Fortunately, in the last few years, studies have come out that empirically refute these long held ideologies toward Mapudungun. The current study will hopefully continue to open avenues of research on the true extent of the level of contact-induced change that has occurred in both Chilean Spanish and Mapudungun.

9.3 Limitations

The most obvious limitation of the current study is the lack of perceptual data to confirm the theoretical conclusions that are proposed based on the observed behavior of

the data. This is one of the weaknesses that both Hirschberg (2002) and Prieto (2015) highlight as being one of the main drawbacks of many current studies on intonation. While there is very limited perceptual data that tends to confirm the proposals made in the present dissertation, it is far too limited, and the methodology is still not fully developed.

An additional limitation is the scarcity of the Mapudungun data. Due largely to political and social factors, it is very difficult to obtain spontaneous, recorded speech in Mapudungun. Furthermore, many Mapudungun speakers are bilingual and it is rare to find a monolingual Mapudungun speaker in the same urban settings in which the Chilean Spanish data was gathered. However, monolingual Mapudungun data is still needed, not only to reinforce what has been concluded and demonstrated in the current study, but to also solidify, or possibly refute, the contact-induced link between Mapudungun and Chilean Spanish intonational plateau contours.

9.4 Future Directions

The next step in understanding the Chilean Spanish plateau patterns and their function within the Chilean Spanish linguistic community is the analysis of perceptual data. Perceptual insights from speakers can help confirm the proposal made that the primary motivators for the realization of these patterns are the communicative desires and goals of the speakers, as well as contextually-based pragmatic factors, and that phonology plays a secondary role in the process. If perceptual data is able to confirm this notion, then these potential results will seriously challenge AM theory.

Equally important is further studying the relationship between Mapudungun and Chilean Spanish intonational plateau contours. This will give researchers a clearer idea of the role that each plays in their respective language, as well as the potential trajectory they followed from Mapudungun into Chilean Spanish. In order to do this, Mapudungun intonation must be more fully documented, which, in turn, can lead to more insights regarding the influence of Mapudungun on Chilean Spanish intonation in contexts outside of the plateau contours.

Finally, a factor that made attempts to parse the Chilean Spanish contours into PPhs and IPs particularly difficult is the irregular rhythm and cadences that were observed at times in the data. At times, the rhythm of Chilean Spanish sounds dramatically different than the more commonly observed syllable-timing in other varieties of Spanish. This is one more aspect of Chilean Spanish that is drastically different from the norm and merits much more detailed future investigations.

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