The Intonational Phonology of Daco-Romance

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Abstract

Within the field of Romance phonetics and phonology, the intonation of the Daco-Romance languages (Romanian, Aromanian, Megleno-Romanian and Istro-Romanian) has been a much-neglected topic. In fact, until relatively recently, little was known about the general importance of intonation in speech and about its forms and functions. Intonation in Daco-Romance was investigated only marginally, usually in mainstream Romanian grammar compendia, which doomed it to be a virtually unstudied area. Although there are several short descriptions of Romanian intonation (Dascălu-Jinga 1971, 1998, 2001; Vasiliu 1965; Chițoran, Pârlog and Augerot 1984; Chițoran 2002) they were not conducted in any particular framework and were mainly impressionistic in character. It is apparent that a fresh comprehensive approach to intonation in Romanian and in Eastern Romance in general is needed as a basis for future pedagogical, typological, and comparative research.

After a critical account of major intonation theories – the IPO theory, the 'traditional British' system and the Autosegmental-Metrical (AM) theory – it is argued that the most suitable framework in which this project should be conducted is the AM theory. The main aim of the present thesis is to propose a comprehensive model for intonation in Romanian and the other Daco-Romance varieties based on the Autosegmental-Metrical theory (Pierrehumbert 1980, Ladd 2008 [1996], Gussenhoven 2004). This will involve the first Romanian ToBI (Ro-ToBI) transcription of intonation and show how focus is realised in the language. After providing an inventory of pitch accents and boundary tones, special attention is given to broad focus and narrow/contrastive focus in yes-no questions and wh-questions, which were reported to be peculiar in Romanian intonation compared with other (Western) Romance languages (Ladd 2008).

For this purpose, 12 native speakers of all four Daco-Romance varieties were interviewed, which resulted in a spontaneous corpus (short conversations or short stories), and a semi-spontaneous corpus (questionnaires specially designed to elicit broad, narrow and contrastive focus, as well as other specific types of intonation). Acoustic analyses were performed in PRAAT followed by a comparative study of Daco-Romanian, Aromanian, Megleno-Romanian, and Istro-Romanian. In order to facilitate research and comparative studies across Romance languages, the data presented in this thesis was obtained using two intonation questionnaires based on the Discourse Completion Test (initially developed by Blum-Kulka et al. 1989) which

included some 31 situations designed to elicit a large number of specific sentence types and pragmatic meanings and eight different focus contexts.

An analysis of the intonational phonology of Daco-Romance varieties suggests that they tend to align more with each other than with the non-Romance languages with which they are in contact. With respect to focus, the findings presented here suggest that the Nuclear Stress Rule (NSR) (Zubizarreta 1998; 2010) applies in Eastern Romance only to a certain extent in broad focus contexts, but not in narrow focus which allows contextual de-accenting. The results presented showed that Daco-Romance has a very rich and diverse intonational phonology as a bridge prosodic system between Slavic and Romance. The outcome of the project will not only have applications for automatic speech recognition (TTS systems) but will also help us to better understand intonational phonology in Romance in general.

Abstract in Romanian

În cadrul studiilor de fonetică și fonologie romanică, intonația în domeniul daco-romanic fost o realitate ligvistică neglijată. De altfel, până relativ recent, foarte puțin se știa in general despre importanța intonației în vorbire, despre formele și funcțiile ei. În domeniul daco-romanic intonația a fost analizată ca subiect auxiliar, de obicei în cadrul compendiilor de gramatică generală a limbii române, rămânând astfel o zonă foarte puțin studiată. Deși există mai multe descrieri scurte ale intonației limbii române (Dascălu-Jinga 1971, 1998, 2001; Vasiliu 1965; Chițoran, Pârlog and Augerot 1984; Chițoran 2002), acestea nu se încadrează în nicio teorie specifică și s-au bazat în principal pe date auditive. Este limpede că este nevoie de o nouă abordare a intonației în limba română și în celelalte varietăți romanice ca bază pentru viitoare cercetări pedagogice, tipologice sau comparative.

După o expunere critică a unor teorii intonaționale – teoria IPO, sistemul tradițional britanic și teoria auto-segmentală-metrică (AM) – am susținut că cea mai potrivită teorie pentru desfășurarea acestui proiect este cea din urmă. Principalul scop al acestei teze este acela de a propune un model cuprinzător de intonație a limbii române și a celorlalte varietăți daco-romanice bazat pe teoria AM (Pierrehumbert 1980, Ladd 2008 [1996], Gussenhoven 2004), oferind pentru prima dată o transcriere ToBI a intonației limbilor est-romanice (Ro-ToBI) și arătând cum se realizează focusul în aceste limbi. După expunerea unui inventar de accente nucleare și tonuri de demarcare, ne-am concentrat asupra focusului larg și îngust/contrastiv în întrebările polare și relative,

despre care literatura de specialitate arată că este specifică în limba română în comparație cu limbile romanice de vest (Ladd 2008).

În acest scop au fost intervievați 12 vorbitori nativi ai varietăților daco-romanice, ceea ce a rezultat într-un corpus spontan (conversații și narațiuni scurte) și un corpus semi spontan (chestionarele au fost construite special pentru a extrage focus larg, îngust și contrastiv, precum și diverse tipuri de intonație). Analize acustice au fost efectuate în PRAAT, urmate de un studiu comparativ între limba română standard, aromână, meglenoromînă și istroromână. Pentru a facilita cercetarea și studiile comparative între limbile romanice, datele prezentate în această teză au fost obținute folosind două chestionare intonaționale bazate pe Discourse Completion Test (DCT – inițial dezvoltată de Blum-Kulka et al. 1989) care au inclus 31 de situații făcute să extragă un număr mare de tipuri de enunțuri specifice și pragmatice precum și 8 contexte de focus.

O analiză a fonologiei intonaționale a celor patru varietăți daco-romanice sugerează că acestea se aliniază mai mult una cu alta decât cu limbile ne-romanice cu care sunt în contact. În ce privește focusul, rezultatele prezentate aici sugerează că Regula Accentului Nuclear (Nuclear Stress Rule - NSR) (Zubizarreta 1998 ; 2010) se aplică în limbile romanice de est doar într-o anumită măsură în contexte de focus larg, nu și în contextul focusului restrâns, care permite deaccentuarea. Rezultatele prezentate arată că limbile din domeniul daco-romanic au o fonologie intonațională foarte bogată și diversă, cu un sistem prozodic la granița dintre limbile balcanice, slavice și romanice. Rezultatele proiectului vor avea aplicații nu doar în sistemele de detectare automată a limbajului (TTS), ci ne vor ajuta să înțelegem mai bine fonologia intonațională a limbilor romanice în general.

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Abbreviations and glossing symbols

-	affix boundary
=	clitic boundary
1	first person
2	second person
3	third person
ACC	accusative
C	consonant
CP	compound past auxiliary
D	dative
DEF	definite article
F	feminine
FUT	future auxiliary
G	genitive
IMPRF	imperfect
INDEF	indefinite article
M	masculine
N	Nominative
NP	noun phrase
PL	plural
PN	personal name
PP	past participle
PREP	preposition
PRES	present
SG	singular
SUBJ	subjunctive particle
V	vowel
NSR	Nuclear stress rule
C-NSR	c-command nuclear stress rule
ISC	Incremental Storage Concatenation
INTSINT	International Transcription System for Intonation
ToBI	Tones and Break Indices
AM	Autosegmental-Metrical
IF	information focus
CF	contrastive focus
BF	broad focus
AP	accentual phrase
F	Focus
Hz	Hertz
IP	Intonational Phrase
ip	intermediate phrase
PW	prosodic word

CHAPTER ONE
Introduction

Daco-Romance is the eastern branch of the Romance languages and is represented by Romanian (or Daco-Romanian), which has the largest number of speakers, Aromanian, Megleno-Romanian and Istro-Romanian (Maiden 2016). The only variety in this subgroup that is not critically endangered is Daco-Romanian. The Daco-Romance varieties spoken in South-Eastern Europe, became separated from the Roman Empire culturally and administratively from the third century, and gradually became languages distinct from Latin and from each other.

As pointed out by Gussenhoven (2004: xviii), "there is a vast literature on tonal systems in the languages of Africa and Asia, but in spite of many years of dialectological research in Europe, the prosodic systems of varieties of well-known European languages are to all intents and purposes under-described, while the same is true for most languages spoken elsewhere in the world."

Until very recently, Romanian and Eastern Romance intonation was not an area of particular interest for linguists and phoneticians studying Romance languages, and it remains under-described. There are studies on the intonational phonology of an ever increasing number of languages, usually conducted in the Auto-segmental-Metrical framework, and accounts of the intonational systems of various Romance languages including Spanish, Italian, French, Catalan, Occitan, Portuguese, etc. Many of them use the ToBI labelling system which was adapted for Romance languages (such as Prieto and Roseano 2010). However, there is an obvious gap in the literature on the intonational phonology of the Romance languages in that their eastern members are not represented. This thesis is an attempt to bridge that gap.

Dascălu-Jinga (2005; 2008) provides another analysis of Romanian intonation fit for the purposes of the two editions of the Romanian Academy's Grammar of the Romanian Language and offers a summary of the main findings in Dascălu-Jinga (1998; 2001), which lies outside the AM framework for intonation. Dascălu-Jinga (2008) gives a discussion of the functions of intonation. According to Dascălu-Jinga (2008: 947) the primary functions of intonation are:

1. *the actualisation or updating function* used to render words and group of words into communicative units (utterances).
2. *the demarcate function* used to divide utterances and segment them according to their grammatical and semantic structure.
3. *the function of identifying the information structure of the utterance* (the way in which old and new information is signaled).
4. *the modal function of intonation* by which the speaker shows intent (according to which sentences can be grouped in assertive, interrogative or imperative).

Among the optional secondary functions of intonation, Dascălu-Jinga includes:

5. *the emphatic function* which emphasizes a certain constituent in the utterance.
6. *the expressive function* which shows certain emotional and attitudinal states of the speaker, especially used in exclamative sentences.
7. *the grammatical function* used especially in cases of syntactic ambiguity.

Utterances can be syntactically ambiguous especially in writing. In oral communication intonation is used to solve global or local ambiguities by means of dividing the utterance into intonational phrases or grouping constituents. Intonation can be used to distinguish between one or two syntactically ambiguous sentences such as the singular genitive and dative in Romanian which are syntactically identical (Dascălu-Jinga 2008: 979).

(1.1) I=am da-t carte=a
3SG.D=CP.1SG give-PP book=DEF.SG.F.ACC

COPILU=LUI LUI ION.
child=DEF.SG.M.D DEF.SG.M.G PN
'I gave the book to John's child.'

(1.2) I=am da-t carte=a copilu=lui
3SG.D=CP.1SG give-PP book=DEF.SG.F.ACC child=DEF.SG.M.G

LUI ION.
DEF.SG.M.D PN
'I gave the child's book to John.'

(1.3) I=am da-t carte=a
3SG.D=CP.1SG give-PP book=DEF.SG.F.ACC

COPILU=LUI, LUI ION.
child=DEF.SG.M.D DEF.SG.M.D PN
'I gave the book to the child, to John.'

According to Dascălu-Jinga (2008: 979) if the sentence is marked by a global falling intonational pattern, *lui Ion* 'John's' is in the genitive, as the possessor of *copilului* 'to the child', which, in turn, is the recipient argument of the predicate and thus marked as dative (1.1). If, however, the noun *copilului* 'to the child' is marked by rising intonation, as in (1.2), then *lui Ion* 'to John' has a fall and is the recipient, thus an indirect object in the dative. Moreover, the two words *cartea copilului* (the book of the child) are grouped together in one accentual unit, followed by a short pause (optional), which thus corresponds to the possessive NP. In (1.2), both *copilului* 'to the child' and *lui Ion* 'to John' bear a falling accent. Both nouns are in the dative: *copilului* is the indirect object while *lui Ion* is an apposition, preceded by a prosodic pause.

Studies on Romanian intonation within the ToBI system culminated with the study of Jitcă et al. 2015 which was also the result of previous workshops on Romanian prosody. Jitcă et al. (2015) is primarily a variation study and investigated two Romanian dialects spoken in Romania: the Transylvanian and Moldavian dialects, providing a preliminary Ro_ToBI using a minimal set of ToBI labels. The study found that verb accentuations in short information-seeking yes-no questions were similar in the two dialects under investigation (and, importantly the verb may not be accented if a neighboring word carries the focus), however they exhibit an ascending contour in the Moldavian dialect and a descending contour in the Transylvanian one in yes-no questions. Wh-questions in Romanian were shown to have the nucleus on the wh-word, front falling (i.e. fundamental frequency starts falling on the initial wh-word) and show some similarities with other languages such as Hungarian, Greek and Serbian.

Jitcă et al. (2015) found that the most frequently encountered H* pattern displays a rising pitch movement during the accented syllable. The pitch accent having a high level, monotonal pitch during a whole prosodic word has been included in this category as a particular case of H* pitch event. A more prominent H* pitch accent results when the high tone of the accented syllable has a short length and is

followed by a marked fall on the next unaccented syllable, for example in wh-questions and narrow focus statements. This is the most routinely used pitch accent to describe narrow focus in initial position in both the Transylvanian and Moldavian dialects.

According to Jitcă et al. (2015) the focus in initial position, generated by an H*+L pitch accent occurs in the case of maximum accentuation when the fall occurs during the last part of the accented syllable. The H*+L pitch accent may have various prominences depending on the duration of the pitch movement at a high level. In the less prominent pattern case, it is limited to a fall from a high level. Göbbel (2003) considers it an H+!H* type pitch accent, while Jitcă et al. (2015) treats it as a particular case of the H*+L category. In the most prominent case, the H*+L pitch accent can be found in narrow focuses where the pattern during the accented syllable concatenates rising, monotonal and falling pitch segments. This type of pitch accent occurs in the final position within an IP, in non-neural statements in Romanian.

The results in Jitcă et al. (2015) are summarised in the inventories below.

Table 1.1: Inventory of pitch accent labels in Romanian - Transylvanian and Moldavian dialects (after Jitcă et al. 2015: 313)

Diagram	Label	Description
	H*	This accent is phonetically realised as a rising or approximately constant pitch movement, starting from a medium-to-high level. In information-seeking wh-questions, if the pitch movement reaches the top of the speaker's range on the accented syllable, the prosodic word containing this pattern bears the focus of the sentence.
	L*	This accent is phonetically realised as a moderately or slightly decreasing tonal segment to a low target tone or as a low plateau. It generates accents of various strengths, depending on the size of the falling slope and the length of the accented syllable. It can be found: (1) at the end of the descending intonational contours in broad focus statements, information-seeking wh-questions, and commands and (2) at the end of the ascending intonational contours in yes-no questions with the nuclear accent on the last word.
	L+H*	This accent begins with a slowly rising movement from a relatively low, audible tone and reaches a high target tone at the end of the accented syllable, following a steeper rising movement. When an extra-high level is reached at the end of the accented syllable, L+H* is replaced by L+¡H*. The L+H* pitch accent can generate narrow focuses both in ascending and in descending contours.
	L+<H*	This accent displays a slow rise on the accented syllable, starting from a low tone, and reaches a high target tone after a subsequent rising movement on the next unaccented syllable. Unlike the L+H* pitch accent, the low level at the beginning of the accented syllable is not audible here, due to the significant slope of the rising movement. When this accent occurs on the first prosodic word of a broad focus statement, command-type imperative sentence, or counterexpectational echo yes-no question, it raises the F0 contour during the duration of the prosodic word, without focusing it.
	H+L*	This accent is phonetically realised as a fall from a relatively high level to a low target tone, during the duration of the accented syllable. It occurs at the end of the broad focus statements, where forms nuclear configuration together with L%.
	L*+H	This accent is phonetically realised as a valley-type pattern which partly or fully covers the accented syllable. It generates local focuses within counterexpectational yes-no question contours.
	H*+L	This F0 contour is composed of two pitch movements: a rise reaching a high target tone and a fall during the second part of the accented syllable and possibly, during the next syllable. A plateau can be found at the target tone level between the two pitch movements. This accent generates strong nuclear accents in narrow-focus statements.

Table 1.2: Inventory of boundary tone labels in Romanian – Transylvanian and Moldavian dialects (after Jitcă et al. 2015: 314).

Diagram	Label	Description
	L%	The low boundary tone occurs at the end of the descending melodic contours of statements, information-seeking wh-questions, imperative sentences, and insistent calls.
	H%	The high boundary tone occurs in confirmation-seeking yes-no questions, imperative echo wh-questions, and imperative yes-no questions.
	HL%	The high-low boundary tone sequence was found in Transylvanian speaker's echo yes-no question intonations.
	!H%	The moderately high boundary tone was found in a vocative sentence, expressing an initial call.

There are various issues that have been raised by previous researchers in intonation concerning the state of research in intonation studies and areas in which progress is needed in order to better understand how intonation works across languages. Considering the research in intonation studies up until the late 1990s, Cruttenden (1997: 178) for instance, argued that there are certain areas of research that future studies will need to focus on, such as:

1. nucleus placement and intonational phrasing: with readjustment rules which take account of the discourse environment and which also allow for an element of speaker choice
2. a set of tones that constitute the intonational lexicon of an individual language
3. the semantics involved in matching abstract meanings to the set of tones within the intonational lexicon
4. how pragmatics works in the choice of tone and in the interaction between abstract meanings and lexical or grammatical meanings
5. the realisation rules involved in mapping the tones from the intonational lexicon onto varying stretches of segments which have pre-assigned stresses

6. a comparative study of the preceding areas to refine our intonational typology and our knowledge of universals

Ladd (2008) gives a comprehensive account of advances in intonational phonology as well as how well the ToBI system was applied to various languages and identified many areas of research that still need to be investigated in future studies. These include:

- prosodic structure and the relation between sentence stress and focus

- the typology of sentence stress patterns based on evidence from Yes-No questions, and the factors that draw an accent to the left in languages in which the nuclear accent is on the rightmost content word: "it may be that some languages (e.g. Romanian and Hungarian) treat questions and statements differently for accentuation purposes, while others (e.g. English and Italian) treat them alike. (…) there is not much reliable information about sentence stress in questions in many languages; typological research in this area lacks a broad empirical foundation." (Ladd 2008: 252-253).

Jun (2005, 2014) also contributed greatly to intonation research by providing systematic descriptions of the intonation of more than twenty languages, focusing on some issues raised previously by Cruttenden (1997) in a fresh approach to the description of the ToBI system and the evolution of the ToBI framework (Jun 2005) and opened new avenues for research, such as new methodologies that will impact on future prosodic typology studies (Jun 2014). Prieto & Frota (2015) and Jun (2005, 2014) stress the importance of a cohesive approach to intonational typology for future intonation research, including, among others:

- a methodology of data collection procedures, taxonomy of tonal categories and prosodic structure, common to future intonational phonology studies to encourage transparency across various approaches to intonation and further research in intonation typology, including dialect variation

- a refined analysis of prominence (pitch accents) and phrasing (boundary tones) that takes into account parameters such as the phrase-medial tonal pattern of an utterance and macro-rhythm (Jun 2014: 521)

Future studies in intonation research need to address some of the issues raised above. This thesis is a first step in this direction. It is hoped that by taking into account previous suggestions for research, the present study will make a positive contribution to our understanding of Romance languages and the areas of research mentioned above. This thesis will also provide the first detailed account of phonological suprasegmental features relevant for Daco-Romance, which will add to the existing studies in the literature of Romanian phonetics and segmental phonology.

1.1 Geographical and sociolinguistic data

The Daco-Romance branch of Romance languages has four main varieties:

(1) *Romanian* (*Daco-Romanian*), spoken on and around the territory of the ancient *Dacia Traiana* (north of the Danube), which was conquered by the Emperor Trajan in 102-106 A.D. (Nandriș 1961).

(2) *Aromanian* (*Macedo-Romanian*) – spoken in Albania, Bulgaria Greece, Macedonia, Serbia, and in some immigrant communities in Romania.

(3) *Megleno-Romanian* or *Meglenite* variety – spoken by a very limited number of speakers in some major cities and villages in the northern part of Greece and in a few cities in North Macedonia.

(4) *Istro-Romanian* – spoken by only a tiny number of speakers in some villages in Istria (Croatia).

Romanian is the official language of Romania and the Republic of Moldova (where for political reasons, it is sometimes called the Moldavian/Moldovan language) and is spoken by over 28 million speakers (22 mil. in Romania and 6 mil. elsewhere, including adjacent countries such as Serbia, Hungary, Ukraine and Bulgaria) and over 2.5 million Moldavians (Andreose & Renzi 2013). In terms of sub-classification, the first- and second-level subgroups of Romanian correspond geographically with the historic provinces inhabited by Romanians: Transylvanian (Banat, Crișana and Maramureș), Moldavian (Bucovina, Upper Moldova and Lower Moldova), Muntenian (Oltenia, Muntenia proper and Dobrogea). All these varieties are mutually intelligible and transition between them is gradual.

Map 1.1: Romance dialects (from www.romaniaminor.net/mapes/romania.swf).

They seem to display very robust unity, unlike the dialects of other Romance languages (see for instance Renzi and Andreose 2003: 50). Pană Dindelegan (2013: 6) suggests that this unity is due to the ease of communication beyond the Carpathian Mountains, which historically allowed trade, as well as political and cultural relations between the three Romanian-speaking regions. *Daco-Romanian* is a technical term introduced by linguists for consistency across typological studies. Modern Romanian was based on Muntenian and South-eastern Transylvanian with influences from other regions, however 'Samdard Romanian' is the variety used by educated speakers in Romania, combining a set of phonetic, morphosyntactic and lexical features that do not fully coincide with other regional varieties.

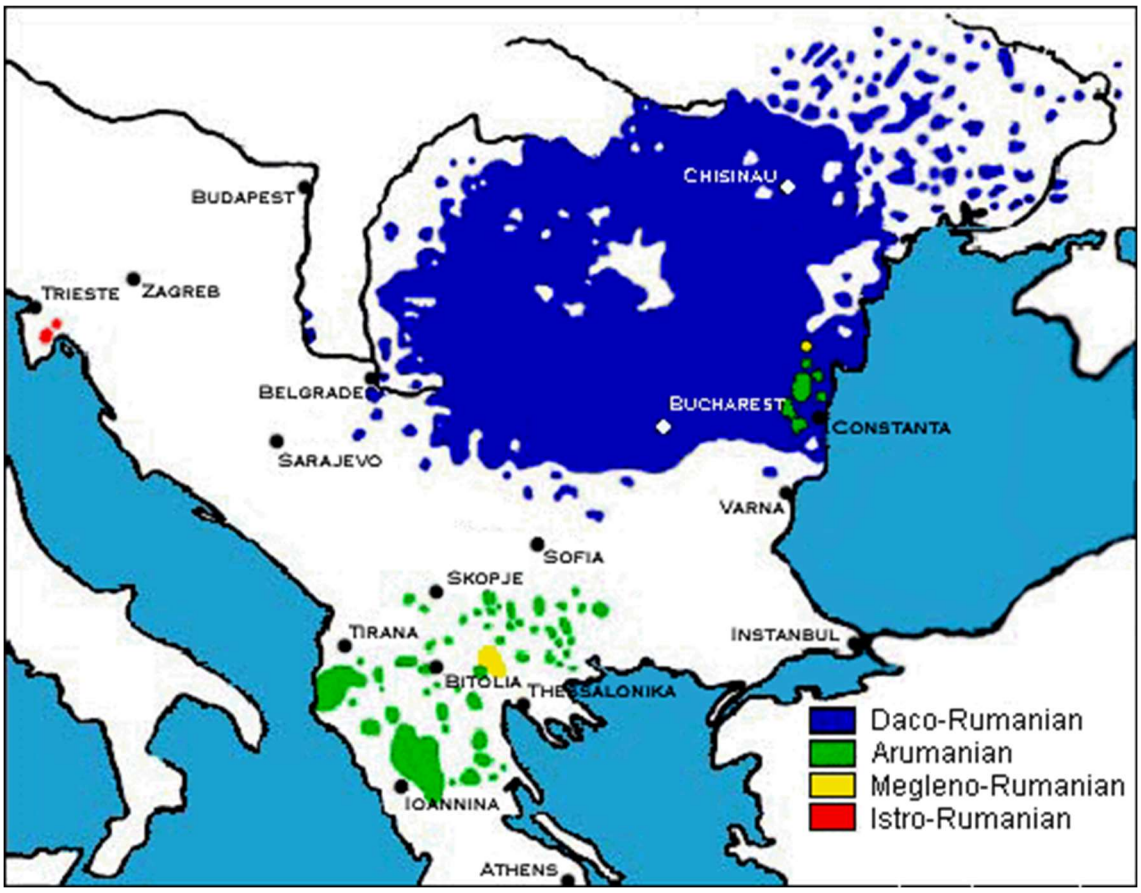
Aromanian is the main Daco-Romance variety south of the Danube River, spoken in different 'pockets' across the Balkan Peninsula, in Albania, Bulgaria, Greece, and Macedonia (Kahl 1999, Nevaci 2013). There is also a historic community of Aromanians in Romania, in the area of Dobrogea, who migrated from south of the Danube. Djuvara (2000) observes that Aromanians belong historically to different groups of speakers: *pindeni, grămoșteni, fărșeroți, grăboveni, moscopoleni* and *muzăcheari.* Aromanians refer to themselves as Arumâni, Armâni, Rămâni, Rumăni, or Vlahi (Vlachs). *Macedo-Romanian* is also used as a technical term. Most Aromanians were historically transhumant shepherds who moved their flocks to alpine pastures in the spring. The number of speakers of these communities is approximately 300,000 according to Dahmen (2005). Other researchers give different

estimates. In the absence of a recent survey of all Aromanian communities, it is almost impossible to estimate their number.

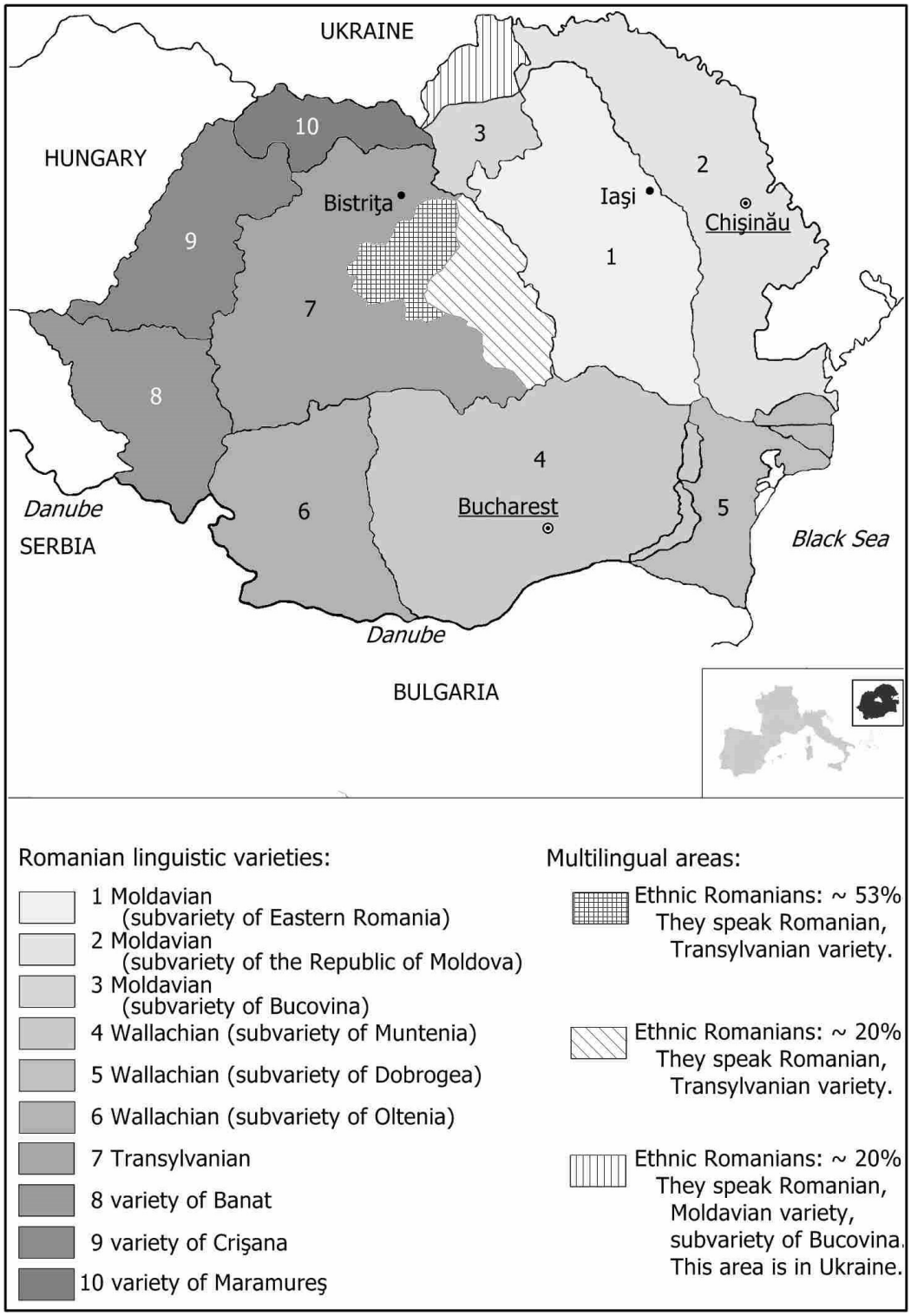
Megleno-Romanian is spoken in the plain of Meglen which is situated north of Salonica, in Greece and Macedonia. These communities have been living very close to Aromanians and the two varieties are very similar. They refer to themselves as either Vlași or Meglenites.

Istro-Romanian is spoken in very small localities in the Istrian Peninsula, Croatia. It is estimated that around 300-500 native speakers live there. Istro-Romanians are bilingual in Croatian, and usually refer to themselves as Vlași, and their language as Vlașki.

The four Eastern Romance varieties are not mutually intelligible. However, they form a well-established sub-group of Romance, the members of which are closely related. Sub-classification within Eastern Romance is somewhat more problematic but some analyses suggest an initial split between two sub-groups, which later split further into Romanian and Istro-Romanian and respectively into Aromanian and Megleno-Romanian. Over the years, different historic and political contexts gave rise to different speculations which remain to this day (Andreose and Renzi 2013). In a more recent study, Maiden (2016: 91) observes that "Aromanian and Romanian probably separated before the eleventh century, while Istro-Romanian and Romanian not before the thirteenth; the affiliation of Megleno-Romanian is debated". The four Daco-Romance varieties are believed to have already been distinct by the 13th century.



Map 1.2: The distribution of the four Daco-Romance varieties in South Eastern Europe (from Barba 2010).



Map 1.3: The Romanian linguistic varieties and sub-varieties. The grey areas correspond to the geographical regions where much more than 50% of people speak Romanian. The hatched areas are multi-lingual regions (from Jitcă et. al 2015).

Modern linguists working on genetic sub-grouping in different 'families' use terms such as 'first-level subgroup', 'second-level subgroup', 'third-level subgroup' etc. Thus, Muntenian would be a first level subgroup of Daco-Romanian, while Oltenian would be a second level subgroup of Daco-Romanian and a first-level subgroup of Muntenian. Traditionally, Romanian linguists used the following hierarchically grouped terms: *dialect* 'dialect' > *sub-dialect* 'sub-dialect' > *grai* 'speech' > *sub-grai* 'sub-speech', which allow for only four levels of sub-grouping.

Thorough sub-groupings of each Daco-Romance variety, including Romanian, are yet to be undertaken.

It is worth mentioning at this stage that due to the small number of speakers, apart from Daco-Romanian, all the other Daco-Romance varieties are included in the *UNESCO Red Book of Endangered Languages*.

Table 1.3: Geographic distribution and number of speakers of Daco-Romance varieties

Languages	No. of native speakers	Geographic distribution
Daco-Romanian	25,000,000	Romania, Moldavia, Ukraine, Hungary, Serbia
Aromanian	111,000	Albania, Bulgaria, Greece, Macedonia
Megleno-Romanian	12,000	Greece, Macedonia
Istro-Romanian	500	Croatia

1.2. The importance of intonation studies

Turculeț (2010) argues that there is a prosodic boundary between Transylvanian accents. Based on careful investigation of two accents from two different Transylvanian villages that belong to different alloglot areas, he demonstrated that a difference between the two accents is evident with respect to the melodic character of interrogative utterances, especially those ending in stressed syllables. In particular, he compared *descending* intonation preceded by a rise in tone with *ascending* intonation in the speech of a different village from outside the proposed border of the accent.

It is therefore important that a comprehensive study of Romanian intonation should describe not only what is commonly known as Daco-Romanian intonation, but

also the other varieties. Besides major differences between the accents of Romanian, research has shown (Turculeț 2008: 56) that even 'Literary Romanian' or 'Daco-Romanian' intonation shows diatopic variations.

To our knowledge, this is the first detailed account of the intonational phonology of Daco-Romance. The resulting prosodic analysis of this thesis represents a comprehensive proposal of a Ro-ToBI that offers a comparative description of the four Daco-Romance varieties and will no doubt contribute to the literature on Romanian and Romance prosody. Jitcă et al. (2015) is a first attempt to provide a preliminary intonational phonology of two Transylvanian and Moldovan dialects of Romanian spoken in Romania.

1.3 Lexicon

The lexical substratum of Daco-Romance is Thraco-Dacian (Indo-European), consisting of the language(s) spoken by the population of Dacia, Moesia and Illyria at the time and after the Roman colonization.

The main superstrate languages of Romanian are learned Latin and French. Old Church Slavonic was used as the language of orthodox Christianity and many of the Slavic items entered the language by means of language contact. According to Cornilescu (1981), the Slavic lexicon entered the language from the 7th century, although other linguists propose different dates. Cornilescu (1981: 52) distinguishes between three strata of old Slavic influence in Romanian: old lexicon that penetrated Romanian in the 7th-8th centuries; words borrowed in the 12th-13th centuries; and words borrowed after the 13th century from languages like Russian, Bulgarian, Croatian, Polish and Ukrainian.

Romanian states took shape between the 12th and 14th centuries. Following various invasions into the territory of what is now present-day Romania, there was contact between Romanian and many other languages which led to gradual borrowings from Hungarian, Old Church Slavonic, Greek, Turkish, Serbian, Polish, Russian, and later German, French and English.

According to Maneca (1966), Romanian core vocabulary is Latin and makes up 34.65 % of the lexicon, but what is remarkable is that this core vocabulary makes up 73.75% of current usage. There is also partly assimilated foreign vocabulary with borrowings from French, Italian, Greek, Turkish or German, and many unassimilated loans from English (Chițoran 2002). More recent studies (Schulte 2009: 249) show that

the Romanian lexicon has borrowed from a considerable number of languages and as a result, a large proportion of the vocabulary of present-day Romanian is not inherited from Latin as loanwords outnumber inherited ones.

Aromanian and Megleno-Romanian have Greek, Turkish and Albanian super-stratum, while Istro-Romanian has Croatian super-stratum. Some Italian influences may be present either directly (Istro-Romanian) or via Greek (Aromanian and Megleno-Romanian). Modern Romanian has culturally influenced the vocabulary of some Aromanian varieties.

1.4 Morphosyntax

Daco-Romanian is a pro-drop Romance language that displays both SVO and VSO word order, and the order of its constituent units correlates with various pragmatic and discourse parameters. Word order restrictions are usually determined by the sentence types and by the syntactic type of predicate (Pană Dindelegan 2013: 201). The dominant word order is SVO. Daco-Romanian is one of the languages that displays direct and indirect object clitic doubling that operates according to strict rules. Specificity is marked by doubling and the "PE-structure", which can be obligatory (as in the example below), optional, or excluded.

The examples below have been selected due to the characteristic intomation patterns of wh-questions in Daco-Romance which will be examined further in Chapter 5.

Clitic pronouns are common in Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian. Pronominal clitics are also optionally doubled in the Dative-Genitive or Accusative. Daco-Romanian (1.4), for instance allows clitic doubling of the direct and indirect object, according to mechanisms that follow strict syntactic rules. This mechanism can also be used to mark focus intonation across Daco-Romance, although the doubling patterns may differ across Daco-Romance.

(1.4) a. Pe cine vezi?
PREP who see.2SG
'Whom do You see?'

b. Îl văd pe Ion.
3SG.M.ACC see.1SG PREP PN
'I see Ion'

The order of pronominal clitics is rigid in various clusters, such as *dative=accusative* contexts, and it would be ungrammatical to have the opposite order.

(1.5) Ion mi=l dă azi.
PN 1SG.D=3SG.M.ACC give.3SG today
'Ion gives it to me today.'

(1.6) *Ion îl=mi dă azi.
PN 3SG.M.ACC=1SG.D give.3SG today.
'Ion gives it to me today.'

Sentential negation in Daco-Romanian is expressed by the negative marker *nu* 'not', which is placed in preverbal position. Daco-Romanian also allows double negation and multiple negation without changing the negative reading of the clause (Zafiu 2013: 597). In instances of sentential negation, expressed by single negation, the negative marker *nu* 'not' will usually be stressed, however Daco-Romanian allows for double negation (1.7) in which case the second negative element 'nimeni' in the sentence will receive the strongest stress.

(1.7) Nu a veni-t nimeni.
NEG CP.3SG come-PP nobody
'Nobody came.'

In Wh-questions, the Wh-word or phrase is placed in initial position while the subject is post-verbal.

(1.8) Cât este or=a?
how.much be.3SG hour=DEF.SG.F.N
'What is the time'

(1.9) *Cât or=a este?
how.much hour=DEF.SG.F.N be.3SG
'What is the time?'

The way Daco-Romanian uses word order to mark focus is particularly interesting. Topicalization is usually realised by fronting, left dislocation and clitic doubling. Hanging topics are sometimes accompanied by specific markers (Zafiu 2013: 570). For a detailed discussion of the morphology of sub-Danubian Daco-Romance varieties see Maiden (2016: 91-126).

1.5 Phonetics and phonology

There are few accounts of Daco-Romanian phonetics and phonology available for the modern reader. The most recent and perhaps one of the most valuable contributions to the understanding of Daco-Romanian phonology is Chițoran (2001). While this is the

first comprehensive descriptive analysis of Daco-Romanian phonology from the perspective of Correspondence and Optimality Theory, there are other accounts which deal with the interface between phonology and phonetics (Renwick 2014), with aspects of auditory, articulatory and acoustic phonetics (Coteanu et al. 1985 and Corniță 2001).

Among other Romance languages, Daco-Romanian presents several interesting features:

1. Daco-Romanian has three central vowels (/a/, /ə/, /ɨ/) including a close central unrounded vowel (ɨ) (see Renwick 2014: 33-62 for a detailed discussion).

2. A stressed schwa (see Pană Dindelegan 2013: 8 for a detailed discussion).

3. Two glides /j/, /w/, and a large inventory of diphthongs whose phonemic status has been debated (see Rosetti 1965; Chițoran 2002 for a detailed discussion); the status of these glides in Aromanian, Megleno-Romanian and Istro-Romanian has also been the subject of debate.

4. Labialisation and palatalisation (see Vasiliu 1989; Avram 1991; Chițoran 1984 for a detailed discussion) which are also encountered in other Romance languages.

Consonants of Romanian

Table 1.4: The consonant system of Daco-Romanian (after Chițoran 1984).

	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palatal	Velar	Glottal	Labial Velar
Plosive	p b		t d				k g		
Affricate			ts		tʃ dʒ				
Nasal	m		n						
Trill				r					
Fricative		f v	s z		ʃ ʒ			h	
Approximant						J			w
Lateral approximant				l					

p	/kar/	*car*	‘cart’
b	/ban/	*ban*	‘coin’
m	/mik/	*mic*	‘small’
f	/fɨn/	*fân*	‘hay’
v	/vin/	*vin*	‘wine’
t	/tir/	*tir*	‘lorry’
d	/de/	*de*	‘of’
ts	/tsar/	*ţar*	‘tsar’
n	/nor/	*nor*	‘cloud’
s	/sare/	*sare*	‘salt’
z	/zid/	*zid*	‘wall’
r	/ren/	*ren*	‘reindeer’
l	/lak/	*lac*	‘lake’
tʃ	/tʃe/	*ce*	‘what’
dʒ	/dʒem/	*gem*	‘jam’
ʃ	/ʃi/	*şi*	‘and’
ʒ	/ʒok/	*joc*	‘game’
k	/kum/	*cum*	‘how’
g	/gri/	*gri*	‘grey’
h	/han/	*han*	‘inn’

Vowels of Romanian

There has been much debate around the vowel system of Romanian. According to Rosetti & Graur (1938) Romanian has seven vowel sounds /i, e, a, ə, ɨ, o, u/ and 21 diphthongs.

Table 1.5: The vocalic system of Daco-Romanian (after Chițoran 1984).

	FRONT	CENTRAL	BACK
Close	i	ɨ	u
close-mid	e	ə	o
Open		a	

i	/mir/	mir	‘myrrh’
e	/bek/	bec	‘lightbulb’
a	/par/	par	‘pole’
ə	/mər/	măr	‘apple’
ɨ	/ɨn/	în	‘in’
o	/lok/	loc	‘place
u	/pun/	pun	‘put’

The vowel system of Daco-Romanian shows some very strong characteristics: two rather special simple vowels – i.e., those that in common orthography are noted as *â (î*) /ɨ/ (Renwick 2014: 33-62) and stressed *ă /ə/* and appear in the language much later (Pană Dindelegan 2013: 8) – and a great number of Romanian specific diphthongs, as well as nasalisation and devoicing phenomena (Lombard 1935). Some vowel inventories of Romanian include /ø/ which is found in a small set of recent loanwords from French or German such as ‘bleu’.

There are no long vowels. Listeners do not make any distinction between long or short vowels and vowel length does not mark any phonological distinction. Daco-Romanian is the only Romance language in the Balkan context that has three central vowels: /ɨ, ə, a/ (Sandfeld 1930: 12-13).

The vocalic timbres /ɨ, ə/ reflect diachronic vocalic changes under particular conditions (Rosetti 1978). Avram (1966) argues that the opposition of the phonemes /ə/ and /ɨ/ is relatively recent in Daco-Romanian (it appeared after the 16th century). The vowel phoneme /ɨ/ occurs most often before a nasal consonant and in a stressed position. Before the stressed position it appears only rarely, e.g. *scârțâi* /skɨrtsɨˈji/ ’it squeaked’. Most examples of this kind occur in onomatopoeic verbs. The phonemes /ə/ and /ɨ/ lose some of their sonority in the final position (Seivner: 1953).

According to Rosetti (1965), /j, w/ are approximants, or semi-vowels (sometimes called semi-consonants) and behave as consonants from a phonological point of view. That is, they function as consonants in diphthongs such as *ei* /ej/ or *au* /aw/ because they cannot form a syllable by themselves. There are two criteria that lie at the basis of the description of these semi-vowels, which are apparently contradicting themselves, but actually do not exclude one another (Maruşca 2012).

From an articulatory-acoustic point of view, /j/ opposes the non-consonantic (vocalic) /e̯/ in:

(1.10)	*biată*	/ˈbjatə/	‘poor’ fem.
	beată	/ˈbe̯atə/	‘drunk’ fem.

From a functional point of view, /j/ is non-syllabic in *lupi* as opposed to *lupii*, and /e̯/ is non-syllabic in *beată* as opposed to *bete* (Chițoran 2002)*:*

(1.11)	*lupi*	/lupʲ/	‘wolves’
	lupii	/ˈlupi/	‘the wolves’
	beată	/ˈbe̯atə/	‘drunk’ fem.
	bete	/ˈbete/	‘drunk’ pl. fem.

There is an ongoing debate as to whether glides and diphthongs are underlying or derived from underlying vowels with glide-vowel alternations (Chițoran 2002). The issue under debate is the interpretation of allophones of /k/ and / ɡ / which can become palatalised in certain contexts (high vowel). Some linguists (Petrovici 1956) treat all palatalised and labialised consonants as underlying and propose a very long consonantal inventory, treating diphthongs [e̯a] and [o̯a] as realisations of a vowel and a labialised consonant which resulted in a rather complicated consonantal inventory in which all consonants could become palatalised and labialised. Chițoran (2002: 11) refuted this complicated system arguing that one of its shortcomings is the fact that palatalisation in Romanian is in fact predictable, and occurs mainly before front vowels, and word-final consonants become palatalised in the presence of a front vowel morphological marker (Chițoran 2002: 11). Moreover, the diphthongs [e̯a] and [o̯a] are acoustically very similar to [ja] [wa].

An acoustic study (Chițoran 2002) of the two diphthong pairs [e̯a] and [o̯a] and [ja] [wa] based on acoustic evidence from production and perception tests, concluded that there is a difference between the distinct phonological representations proposed by Chițoran (2001) for front glide-vowel sequences and diphthongs. The complex Daco-Romanian consonant system developed by Petrovici (1956) was refuted by various linguists (Chițoran 2001, Avram 1991), because it wrongly predicts that that there is no contrast between [*pja*] *and* [*pe̯a*], and it also displays a very large phonemic inventory which contains many other inconsistencies.

Maiden (2016: 93) observes that sub-Danubian Daco-Romance varieties have lost the distinction between high and mid central vowels, ‘original [ə] becoming [ɨ] in

Aromanian, original [ɨ] becoming [ə] in Istro-Romanian, and both (when stressed) merging as [ɔ] in most Megleno-Romanian varieties: Ro. *pâine* ['pɨi̯ne], 'bread', *mână* ['mɨnə] 'hand' vs Aro. ['pɨni], ['mɨni]; IRo ['pəre], ['məra]; MRo. ['pɔi̯ni], ['mɔnə].'

Palatalisation was also an issue dealt with in much research on the phonetics of Daco-Romanian consonants (Petrovici 1956, Avram 1991, Chițoran 2001, Maruşca 2012). Consonants in final word position usually become palatalised when followed by /i/ in unstressed syllables, and the last phoneme will be a final non-syllabic /i/, which is acoustically and auditorily much shorter than the syllabic /i/ that may occur in other positions. This devoiced non-syllabic /i/ can work as a morphological marker to indicate the plural of nouns or adjectives, present indicative or subjunctive (Cazacu et al. 1982; Chițoran 2001).

Vasiliu (1965) proposes a shorter phonemic inventory that excludes the glides mentioned above as these can be predicted based on whether or not a syllable boundary is present, a view that was also supported by Belchiță (1968) and Augerot (1974). In his study, Vasiliu (1965) argues that consonants can also become palatalised in word final position when followed by di-syllabified allophones [j, e̯] of the front vowels /i, e/.

Chițoran (2002) argued against the shorter inventory of Vasiliu (1965) which supports the pronunciation of initial [oa] clusters as [wa], ['wameni] for *oamenii* 'people', showing in an OT analysis that this view wrongly predicts [w] where it does not occur such as **wite* instead of *ujte* 'look' imperative (Chițoran 2002: 8).

Learners of Romanian find it very difficult to distinguish between *pom* /pom/ (tree) and *pomi* /pomʲ/ (trees) and this final *i*-colouring has a morphophonemic function and is thus considered to have a distinctive function (Maruşca 2012).

Studies on the phonetics and phonology of Daco-Romanian diphthongs revolve around the very idea of the existence of Daco-Romanian diphthongs, their definition, and their phonological status (Petrovici 1956, Graur and Rosetti 1938, Vasiliu 1965, Avram 1991, Chițoran 2002). Though Latin did not have many diphthongs, Romanian developed a large system of diphthongs, some of which are very hard to tell apart. There are rising (semi-vowel + vowel) and falling diphthongs (vowel + semi-vowel). The rising diphthongs are spelled: *ea, ia, oa, eo, ie, io, iu, ua, uă.* The falling diphthongs are spelled: *au, ău, âu, eu, iu, ou, uu, ai, ăi, ei, ii, oi, ui.* The diphthongs /e̯a/, /o̯a/ are in contrast with /ja/, /wa/. There is a striking auditory similarity between the two pairs which had been analysed in a detailed perception-production study (Chițoran 2002). The study showed that the distinct phonological representations proposed for front glide-

vowel sequences and diphthongs in Romanian are supported by acoustic data and by the results of a perception experiment (Chițoran 2002). It was also argued that the diphthongs [e̯a] and [o̯a] are involved in morpho-phonological alternations and play an inflectional role, such as [e̯a] which is an inflectional verb suffix or an inflectional marker (Pană Dindelegan 2013).

All vowels, before and after nasal consonants, become nasalised to various degrees, but nasalised vowels are not used phonologically (Lombard 1935). Complete nasalisation occurs when the vowel is in word initial and word final position; when the vowel is between two nasal consonants; and after another vowel, but before a nasal consonant (Marușca 2012):

însă	/ɨ̃sə/	'but'
un	/ũn/	'INDEF.SG.M'.
mână	/ˈmɨ̃nə/	'hand'
m-am dus	/mãm ˈdus/	'I went'
el a-nghiţit	/jel ãŋgiˈtsit/	'he swallowed'

On the other hand nasalisation is incomplete when the vowel occurs between a nasal and a non-nasal consonant. If the second consonant of the word is a nasal, it loses its occlusion and may disappear entirely, while the following vowel becomes nasalised (Marușca 2012):

(1.12)

masă	/ˈmasə/	'table'
învaţă	/ɨ̃ˈvatsə/	's/he learns'
dânsa	/ˈdɨ̃sa/	'she'

For detailed accounts of the phonetics and phonology of Aromanian, Megleno-Romanian and Istro-Romanian, as well as their morphology and syntax particularities, see Rusu (1984).

The present thesis will focus on the phonetics and phonology of Aromanian, Megleno-Romanian, Istro-Romanian and Daco-Romanian intonation. Recordings were made of Standard Daco-Romanian intonation which is the intonation used by educated speakers of Standard Daco-Romanian. There have been many definitions of what is considered to be "the standard pronunciation" of Romanian. Dascălu-Jinga (2006) in the Romanian Academic Grammar argues for the term *exemplary intonation* whereas Turculeț (2008) prefers the term *standard intonation* which was shown to

have certain characteristics compared to other dialects spoken within Romania. Some Romanian linguists prefer the term "literary Romanian," based on the widely accepted popular assumption that Romanian is a "phonetic language" which however is not the most accurate description of the language. Here we prefer the term "Daco-Romanian". Daco-Romanian (hereinafter DR) has different meanings for different linguists. With regards to standard pronunciation, the standardisation of Romanian pronunciation was done in relation to the orthography, with minor exceptions. This variety of Romanian is called "academic" by Iordan (1956). This is what we call standard *Daco-Romanian* (also known as Standard Romanian) which is the variety taught in schools and spoken by all educated Romanians in official contexts. In real speech however, even Daco-Romanian is not entirely unitary and shows several diatopic variations. Other linguists solve this problem quite simply by arguing that the standard pronunciation is spoken by the middle-class intelligentsia of Bucharest (Preface to DOOM 2005). It was argued in Renzi and Andreose (2003: 50) that Romanian varieties situated north of the Danube, although they were separated for many centuries in three Principalities (Moldova, Țara Românească and Transylvania), exhibit a very homogenous unity, unlike many other dialectal varieties of other Romance languages. Hence, rather than attempting to account for intra-variety variation in Romanian, this thesis will focus on the intonation of Daco-Romanian as a whole in contrast with the other three varieties situated south of the Danube: Aromanian, Megleno-Romanian and Istro-Romanian.

The vowel system of Aromanian (pindean – located in and around the Pindus Mountains in Greece - and grămoștean varieties – located in the Gramos Mountains in Albania) shares some similarities with the vowel system of Romanian, and includes the same seven vowels, while the fărșerot (from Frashër, Albania) and moscopolean (from Moscopole, Albania) varieties exclude the close central vowel [ɨ], and hence have six vowels (Saramandu 1984: 428).

In addition to the Daco-Romanian consonantal inventory, Aromanian includes some consonant sounds that are not present in Daco-Romanian: a dental affricate consonant [dz], interdental fricative [ð, θ], voiced velar fricative [ɣ] and palatal fricatives [ç, ʝ], a palatal lateral approximant [ʎ], a palatal nasal [ɲ], and palatal stops [c, ɟ]. Morphologically, due to its archaic characteristics, Aromanian is closer to common Romance than Romanian (Caragiu-Marioțeanu 1975: 234).

The Megleno-Romanian vocalic system is also similar to Daco-Romanian. However, it does not include the close central vowel [ɨ]. In addition to the Romanian

consonant system, Megleno-Romanian includes palatal stops [c, ɟ], a palatal nasal [ɲ] and a palatal lateral approximant [ʎ].

Istro-Romanian has a similar vowel system to Aromanian and Megleno-Romanian and unlike Romanian, does not include the close central vowel [ɨ]. The Istro-Romanian consonantal system includes palatal consonants [ʎ], [ɲ], unlike Romanian.

The four varieties of Daco-Romance share some similarities in their vocalic phonemic inventory and a relatively uniform consonant inventory described in detail in Caragiu Marioțeanu (1975). However, they show significant differences with respect to their morphology and syntax as the sub-Danubian varieties are in contact with other languages and all speakers of the sub-Danubian varieties are bilingual.

1.6 Outline of the thesis

After an opening statement about the rarity of intonation studies on Romanian and about the current methodology and approaches to intonational phonology, this ample introduction has presented thoroughly documented information about the geographical distribution of the Daco-Romance varieties north and south of the river Danube in South-eastern Europe. It gave information about their speakers and their history and also reviewed older and newer theories about the emergence of Daco-Romance varieties as the eastern branch of the Romance family of languages and about their areal spread. The three varieties spoken in the Balkan region and the variety spoken north of the Danube were thus considered to be distinct varieties of the same Eastern Romance branch, Daco-Romance, based on the fact that they are all related. The term *Romanian* is also used in a narrower sense to refer to the language spoken in present day Romania and the Republic of Moldova. Sometimes, linguists also use the term *Daco-Romanian*, which is just a technical label used when necessary to distinguish formally between Romanian and the southern varieties, Aromanian, Megleno-Romanian, and Istro-Romanian. Some aspects of the lexicon, morphosyntax and, especially, phonetics and phonology are also discussed as necessary preliminaries for the presentation of intonation in later chapters, such as features like palatalisation, final non-syllabic /i/ which results in the shortening of the stressed vowel.

The following chapter deals with the theoretical framework, discussing the meaning and functions of intonation according to various authors, and distinguishing between grammatical and paralinguistic functions. A point is made about the

importance of using technology in intonational studies and current advances in the field are discussed. Various intonational theories and transcription methods are then presented before pointing out the advantages of the Autosegmental-Metrical theory and the ToBI transcription system, which will be used in this thesis.

Chapter 3 represents a detailed review of the main works on different aspects of Romanian prosody, discussing not only what is covered but also what is missing, thus pointing out the major gaps that this thesis aims to fill. A special subsection is dedicated to the AMPER project and the future publication of the *Atlas Multimedia Prosodique de l'Espace Romain* (*Prosodic Multi-media Atlas of the Romance Regions*), which will contain long-waited-for information about intonation in the languages discussed. The chapter also offers an overview of phrasing and prosodic structure, rhythmic structure, focus and prosodic phrasing in Romanian.

Chapter 4 details the methodology used in the collection and analysis of the data. The questionnaires, stimuli and corpora were organised in such a way as to allow comparison with other studies, in an attempt to reach a unified approach to intonation, at least in the Romance domain. A small section in this chapter mentions ongoing projects that this analysis aims to be compatible with. The field trips and recording locations are presented and information is given about the informants and helpers that took part in the data collection.

The next two chapters represent the main body of the thesis and are thus significantly longer than the previous ones. Chapter 5 offers a detailed account of the main intonational contours in all four Daco-Romance varieties. The chapter attempts to apply the ToBI framework to intonation across Daco-Romance to show how intonation is used to express different pragmatic meanings. Within this account several issues raised in the literature review are investigated, especially yes-no questions in Romanian and the position of nuclear accent in wh-questions.

Chapter 6 deals with focus in Romanian, Aromanian, Megleno-Romanian and Istro-Romanian. The first part of the chapter offers a phonological analysis of how broad and contrastive focus is realised across Daco-Romance both in statements and questions and investigates narrow focus in initial, medial and final positions. The second part of the chapter deals with the acoustic cues that mark contrastive focus and describes how pitch range, peak alignment and duration mark contrastive focus.

Finally, Chapter 7 methodically summarises the content of the thesis and lists the conclusions.

1.7 Aims and research questions

As Martin (2015) argues, any descriptive study of intonation implies a pre-existing theoretical point of view of some sort. Daco-Romanian is one of the least studied of the Romance languages. Daco-Romanian intonation is an area that has been much neglected until recently in Daco-Romanian phonetic studies. Most previous studies have concentrated on traditional descriptions of a basic inventory of Romanian intonation pitch contours with little attention paid to acoustic analysis or functions and forms. It is therefore evident that a fresh approach to Romanian intonation should be adopted. The present project will try to deal with aspects that have not been investigated in Romanian intonation and propose a model for Romanian intonation based on the Autosegmental-Metrical theory, namely a Romanian ToBI (Ro-ToBI) transcription of intonation which will serve as a basis for further contrastive studies of Romanian and English intonation, based on experimental investigations.

The primary motivation of the present study is the fact that we lack a systematic description of Daco-Romanian intonation within a contemporary theoretical framework that would allow a comparative study of Romanian and English intonation. The few studies in the field are limited in their scope and were not carried out in any specific theoretical framework. Thus, the purpose of this study is to give a working model of Daco-Romance intonation within the contemporary Autosegmental-Metrical framework. Based on this proposed model of Romanian intonation, the study will provide essential data for further comparative studies between English and Romanian intonation.

Intonation variation within the four Daco-Romance varieties will also be analysed. A special corpus will be created for this purpose, in the tradition of previous studies by Nolan (2008), namely Intonation Variation in Daco-Romance varieties, which will look at cross-varietal and stylistic variation in Romanian intonation. Using the well-known DCT methodology, which has now been applied to several Romance languages, data were elicited to provide a large corpus for a comprehensive intonational phonology description and an analysis of focus realisation.

Stress and prominence patterns are among the features of the language that impact on intonation analysis. Next, we will try to answer some common questions in relation to how stress works in Romanian. How is word stress assigned in Romanian? Does Romanian have left-headed compound stress like Germanic languages or are

compound words right-headed like in most Romance languages? Does Romanian have secondary stress and if so what is its distribution? What are phrasal prominence patterns in Daco-Romanian like (are they positionally determined, e.g., right-headed, or do they depend on syntactic-semantic configurations and/or on sentence type)? Do clitics get sentence stress and if so in what conditions?

The experiments described in this thesis were specifically designed to address the following research questions which arise from the current literature on Daco-Romanian intonation studies. Speakers of Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian produced utterances that offered a basis for a preliminary intonational phonology of the language and focus realisation in broad and narrow focus contexts. Speakers of Daco-Romanian were monolingual while speakers of Aromanian were bilingual in Aromanian and Greek, speakers of Megleno-Romanian were bilingual in Megleno-Romanian and Macedonian and speakers of Istro-Romanian were bilingual in Istro-Romanian and Croatian. The main research questions and hypotheses were developed based on the literature review and aim to bridge a gap in our understanding of intonation in Daco-Romance. The research questions, therefore, are as follows:

1. do the intonation patterns in Daco-Romanian questions match the generalisations about Eastern European question intonation made for Daco-Romanian by Ladd (2008) and Dascălu-Jinga (2001) with regard to the shift of nuclear accent to the verb in yes-no questions and to the wh-word in wh-questions, and shape of the Eastern European Question Tune (EEQT)?

2. what is the prosodic realisation of narrow focus in Daco-Romanian, compared to broad focus?

3. is there variation in the varieties under study in 1 and 2?

Research Question 1

It is hypothesized based on Ladd (1996, 2008) and Dascălu-Jinga (2001) that intonation in Daco-Romanian offers certain characteristic intonational patterns. These include: interrogatives that have nuclear stress on the main verb; and wh-questions that are front-falling like in Hungarian and Greek. An account of the main intonation patterns will provide an overview of phrasing in Daco-Romance and a clear inventory of nuclear tunes in Daco-Romanian, Megleno-Romanian, Istro-Romanian and Aromanian in

Chapter 5. The few accounts of Daco-Romanian intonation available agree that there may be an additional intonational phrase in the prosodic hierarchy at the higher levels, as in other Romance languages, like Spanish or Italian for instance. While the Intonational Phrase (IP) is clearly the main constituent of the utterance, there is also a need for an additional phrase, the Intermediate Phrase (ip). There has been some debate whether there are further prosodic phrases at the lower levels, such as a Phonological Phrase (as in Catalan), or an Accentual Phrase (which is evident in French). This thesis aims to find out whether such a unit is necessary in order to account for the phrasing patterns observed across Daco-Romance varieties. Some of the major issues in Romanian intonation deal with the shift of the nuclear accent in yes-no questions and wh-questions. Chapter 5 provides an intonational phonology of the four Daco-Romance varieties to contextualise the nuclear accent rule and how nuclear accents are assigned in questions.

Research Question 2

The Nuclear Stress Rule states that nuclear stress is assigned to the last constituent of the intonational phrase across Romance. Thus, it is expected that broad focus as well as narrow focus contexts will conform to this rule. The experiment designed in Chapter 6 was specifically structured so that the speaker produced 'out of the blue' intonation patterns for broad focus and narrow focus respectively, which shifted on various constituents of the matrix sentence to test whether this NSR rule does apply to all focused contexts. Given the syntactic structure of yes-no questions it is predicted that this rule only applies in broad focus but not narrow focused contexts. We distinguish here between the scope of focus (broad Furthermore, it is expected that speakers will use different cues and manipulate various acoustic features for focus realisation, such as pitch range, longer duration of stressed syllables and peaks that will align with the stressed accented syllables. Also, in Romanian pitch movements peaks may not always align with the stressed syllable and may not correspond to the lexically defined stress positions, which will be presented in Chapter 6.

Research Question 3

Speakers of Daco-Romanian were monolinguals while speakers of Aromanian, Megleno-Romanian and Istro-Romanian were all bilingual speakers of Greek, Macedonian and Croatian. Both linguistically and geographically, Romanian occupies an intermediary position between Slavic and Romance languages, being the only

offspring of Latin in Eastern Europe. It is hypothesized that, due to language contact with the dominant language, bilingual speakers of sub-Danubian Daco-Romance varieties will show borrowed intonational patterns from other Balkan languages and show signs of shift-induced intonational transfers from these languages. The prosodic system of Daco-Romance varieties can shed more light on the intermediate stages through which Romanian developed. These issues will be addressed in the concluding sections of Chapter 5 and also in the discussion of broad focus realisation in Chapter 6. The fact that Romanian is a bridge between Slavic languages and Romance makes it essential in our understanding of the whole Romance continuum.

CHAPTER TWO
Theoretical Framework

2.1 What is intonation?

Tone languages bear lexical tones, which are excursions in the pitch of the voice, while in stress-accent languages like Romanian stressed syllables are the landing site for pitch accents, acoustically signalled by pitch movement (Bolinger 1958). From an intonational point of view, pitch accent languages, like Swedish, Japanese, or Serbian for instance, are considered somewhat in between lexical tone languages and stress-accent languages in that they behave like lexical tone languages while, phonologically, pitch is correlated to stress. While in tone languages a tone is lexically assigned on almost every syllable of a word which will have direct bearing on lexical meaning, in pitch accent languages, tone is lexically assigned on one syllable in a word, at most. In both pitch accent and tone languages intonational patterns are also relevant at the phrasal and global level. Here we tackle the question of what intonation is in relation to stress-accent languages. There have been many definitions of intonation given by linguists, usually varying according to the point of view from which it is studied. Thus intonation can be studied both from a syntactic, pragmatic or phonological perspective. *Intonation* as a term is not easy to define, since it is difficult to grasp the multitude of factors that characterise it. There is a great deal of variety and disagreement among linguists as to what intonation really means.

Intonation and prosody are two terms that are often used interchangeably. In our view, intonation covers only certain aspects of prosody. Hirst and Di Cristo (1998) makes two distinctions between the two terms at two levels: lexical vs. non-lexical, and linguistic vs. physical. Intonation research deals at the physical level with fundamental frequency, intensity, duration and spectral characteristics, which are also common to stress, for instance, while Ladd and Cutler (1983) proposed a distinction between the concrete and abstract level of prosody. For an interesting discussion on the term *prosody* and its evolution over the last decades see Ladd (2014).

According to Jones (1960) intonation is described in terms of "the variations which take place in the pitch of the voice in connected speech, i.e. the variations in the pitch of the musical note produced by vibration of the vocal cords." Varga (2002: 19) defines intonation as "those pitch variations that are the manifestations of melodic prosodemes and upstep prosodemes, functioning in utterances. Intonation is closely

related to stress prosodemes and pause prosodemes but has to be separated from paralanguage."

Some linguists argue that intonation includes several features such as variations in pitch, loudness and duration, or even voice quality (Bolla 1980, Cheremisina 1982, Cruttenden 1997). However, most linguists define intonation as the use of pitch variation at the utterance level (O'Connor 1973: 190; Tench 1996: 2-6). Dascălu-Jinga (2001: 12) defines intonation as "the variations in pitch which play a significant role at the utterance level".

This thesis concurs with the narrower definition of intonation and adopts a phonetic and phonological approach following Pierrehumbert (1980), Beckman and Pierrehumbert (1986), and Pierrehumbert and Beckman (1988). In this approach, the contour tones are analysed at a phonological level, which is in keeping with Frota's (2000: 8) remarks that "intonation refers to the linguistically significant non-lexical pitch configurations. These pitch configurations are assumed to be formed by a string of categorically distinct entities. The phonetic representation of the abstract string of tonal categories is the fundamental frequency (F0) contour." We distinguish between definitions that refer to the scope of intonation in relation to sentence or utterance level phenomena as opposed to tone in relation to word level, and those that refer to its phonetic correlates such as pitch, duration, or intensity.

The definition adopted in this study is the one given by Ladd (2008: 4), which describes intonation as "the use of *suprasegmental* phonetic features to convey 'postlexical' or *sentence-level* pragmatic meanings in a *linguistically structured* way." Although pitch is known to be part of a word's lexical entry in many languages, intonation is only concerned with the postlexical use of pitch both in languages with lexically-defined pitch and those without. Besides variances in pitch, most contemporary analyses of intonation also cover a variety of non-tonal prosodic phenomena such as metrics – the relative prominence of syllables in a word or words in a phrase – and phrasing – the grouping of words and phrases as well as the durational phenomena related to a segment's position in a word or a phrase.

2.1.1 Functions of intonation

It is well known that intonation differs from one language to another, as do its functions. The functions of intonation have traditionally been divided into grammatical and attitudinal and there is also a distinction between linguistic and paralinguistic functions

(Crystal 1969: 272). The same tonal contour, for instance, can bear different meanings and thus different functions. For instance, the Romanian sentence *vine mama* 'Mother is coming' can be a question, an emphatic statement or a statement denoting surprise, according to the intonational contour chosen by the speaker. Dascălu-Jinga (2001: 14) distinguishes between *primary* functions (also *modal* or *contrastive*), corresponding to traditional grammatical functions, and *secondary functions* (also *attitudinal*) functions of intonation. In the same vein, Graur, Avram and Vasiliu (1963: 472) distinguish between three main functions of intonation, namely those that signal the syntactic relations at the sentence and utterance level, those that signal sentence type (considering that Romanian does not necessarily make use of word order to distinguish between questions and statements) and those that signal attitudes of the speaker. The attitudinal functions of intonation refer to the different ways in which the attitude of the speaker is coded in the message by means of intonation. For instance, it is known that boredom is usually associated in English with 'flat' or level intonation, while surprise is associated with rising intonation (Crystal 1969).

Similar to the arbitrary nature of the linguistic sign, as in Saussure's understanding of signifier and signified, the intonation contours associated with various attitudes of the speaker, are – in a sense – arbitrary or conventional and, naturally, they will be different across languages. Therefore, a particular tone contour in Romanian, if used in English, can have quite the opposite effect from that which was originally intended. But the attitudinal functions of intonation are complex features comprising a multitude of factors that play crucial roles in shaping the tonal contour of the speech signal, such as the speaker's mental state, social behaviour and status, relationship between speakers, context, etc. Computerized technology developed tremendously during the last two decades in terms of artificial speech such as that used in text to speech systems, or in healthcare contexts. However, there is still a lot of progress that needs to be made for machines to be able to artificially synthesize intonation functions such as human emotions (Velner et al. 2020). This proves how complex attitudinal functions are and how little we know in terms of understanding how all aspects of these attitudes are reflected in intonation.

Intonation can also be dependent on syntactic structure. A certain meaning can be expressed by means of syntactic features, word stress or intonation marking. A notable example that accounts for the tension between syntax and intonation is the case of yes-no questions in Romanian and English. Romanian does not make use of word

order to mark questions, as they have the same syntactic structure as statements. Yes-no questions are marked in Daco-Romanian by a specific rising intonational contour different from statements, which is described and analyzed more extensively in chapter 6. In English, on the other hand, word order changes in yes-no questions such that they have a different grammatical structure to statements, while intonation plays a more limited role. Intonation encodes syntactic meaning using grammatical means and can also resolve syntactic ambiguity.

The focusing (or informational, accentual) function is closely related to the concepts of nucleus, focus, and information structure. This function helps us identify old and new information in an utterance and, to contrast various elements within a limited set (Cruttenden 1997) which constitutes the domain of focus. By means of accent placement we can highlight different parts of a sentence which will become focused elements, while others are left in the background. When an utterance presents all new information, the speaker brings everything into focus, meaning the focus domain is the whole intonational phrase, and the nuclear accent is assigned on the last lexical item. When speakers focus on a particular part of the utterance, the relevant part of the intonational phrase is called to be under narrow focus. Old information that was mentioned previously will not be accented (Wells 2006).

Among other functions of intonation generally agreed upon by linguists (Cruttenden 1997, Wells 2006), it is worth mentioning the discourse or cohesive function, which structures intonation into tone groups or intonation groups to cohere and it signals when we have finished a sentence, whether or not we want to continue a sentence, etc. (Wells 2006: 12).

2.1.2 Technology in intonation research

Over the last six decades, research on intonation has accrued increasing interest both from a theoretical and empirical perspective. The new horizons in phonology research at the beginning of the 1950s, followed by new developments in phonological theory and the emergence of metrical phonology, intonational phonology and, more recently, laboratory phonology, prompted linguists not only to test existing phonetic and phonological models and apply the present ones to an increasing number of languages, but also to develop the tools with which acoustic data were investigated. New developments in phonological theory prompted a demand for new technological advances to provide ideal settings in which complex phonological models could be tested using more reliable and robust

acoustic data either recorded in laboratory or real-life conditions. In order to best account for intonational inflections, most scientific technological advances tried to best capture, record and measure the fundamental frequency of the acoustic signal (Martin 2015).

The screening of the very first x-ray sound film at the second International Congress of Phonetic Sciences in London in 1935 in the presence of Roman Jakobson and Nikolai Trubetzkoy changed the field of articulatory phonetics, which was mostly impressionistic and intuitive in character. Similarly, the advances in acoustic phonetic technology, the emergence of computational linguistics and software programs – and more recently, the internet – allowed for more reliable and accurate quantitative analyses of large linguistic corpora and led to a rethinking of former linguistic atlases and disparate impressionistic intonational descriptions, many of them using very different methodologies and thus isolated and insular.

Scientists were interested in recording the sound of the human voice as early as the nineteenth century. The first description of speech sounds in terms of their acoustic signal, frequency, intensity, and duration date back to Willis, 1839. The kymograph was first designed by Carl Ludwig in 1847 to measure blood pressure and it was later modified and adapted to only record speech sounds. The first known recording of the human voice was made on April 9th 1860, by the Parisian inventor Édouard-Léon Scott de Martinville (considered the 'father of practical phonetics'), with the help of the kymograph. Subjects would speak into a cone shaped rubber mouthpiece tube. The sound vibrations were captured by a stylus that pressed against a tambour covered by paper on which soot was applied. It was not until 1877 when Edison invented the first phonograph that sound could be recorded and reproduced for the first time. Rousselot (1901, 1908) and Scripture (1906) were also influential and played an important role as they obtained waveforms of the speech signal.

In the 1940s the sound spectrograph was invented which would make possible quantitative analysis of the acoustic signal and provided more complex information such as the spectrogram. Laryngeal frequency was still not displayed on either narrow or broad band spectrograms, and it was still difficult for phoneticians to study intonation since the fundamental frequency had to be measured against harmonics values. The spectrograph was soon to play a crucial role in experimental phonetics, and based on acoustical analysis carried out by the spectrograph, various descriptions of intonation patterns began to emerge, such as Pike (1948) or Delattre (1966). After 1960 one of the first pitch analyzers came into use, working reliably in a large laryngeal frequency

range, which led to the very first model of sentence intonation using the concept of prosodic structure, as applied to French (Martin 2015, 1975).

New advances in computer science meant that computers became more affordable and entered the market in 1977. By the 1980s home computers became more common and this also led to new developments in terms of new software pitch analyzers which were being used by researchers such as Goldsmith (1976) in his influential thesis on Autosegmental-Metrical phonology. However, it was not until 1990 that intonation really became the object of research for many phonologists and syntacticians. Since the 1990s, speech analysis software began to display fundamental frequency and provided much quicker access to reliable acoustic data for researchers.

By the mid-1990s recording devices began to be more sophisticated and reliable, which meant that acoustic data was now more robust. There are many speech analysis software developments used in intonation research dating from the 1990s until the present day, including PRAAT (Boersma and Weenik 2022), ProsodyPro (Xu 2013), or PitchWorks – see Fig. 2.1 below (Scicon 2022), while speech-text alignment tools which are useful for work with low quality recordings such as WinPitch (WinPitch 2004) and others.

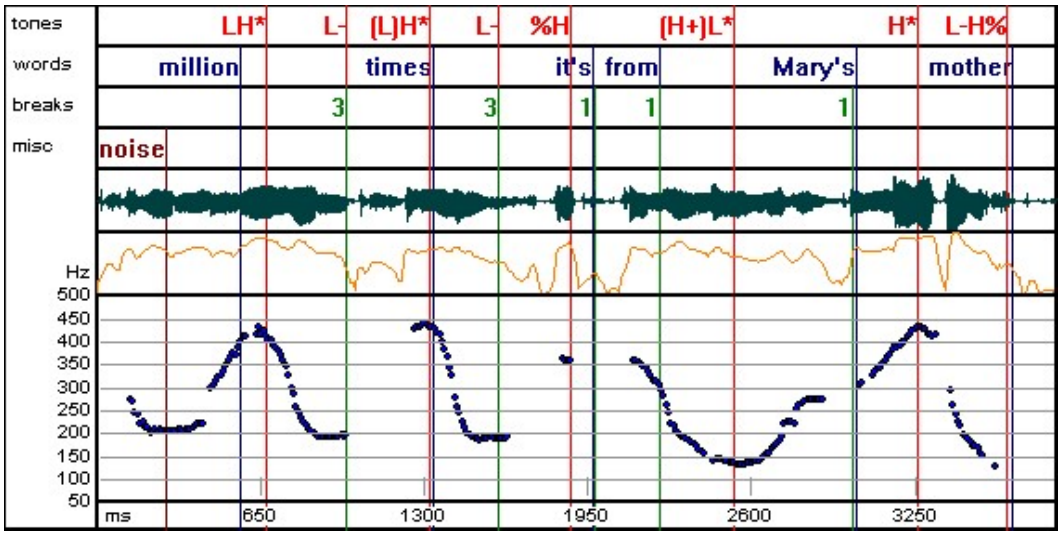


Figure 2.1: The sentence Million times it's from Mary's mother *analyzed in PitchWorks (from http://www.sciconrd.com/pitchworks.aspx).*

The example in Fig 2.1 provides a typical output of speech analysis software and shows an intonational analysis of the sentence 'Million times it's from Mary's mother' and includes a ToBI labeling, fundamental frequency, waveform and labels that can be

sorted by tiers or time. Most of these analyses are reliable and provide fundamental frequency curves although sometimes accompanied by erroneous segments as well. Since the 1990s, a large body of research on intonation was conducted in the Autosegmental-Metrical framework using PRAAT, especially after 2000 (Jun 2014), usually displaying an optional soundwave, a wideband spectrogram and the fundamental frequency (see Fig. 2.2).

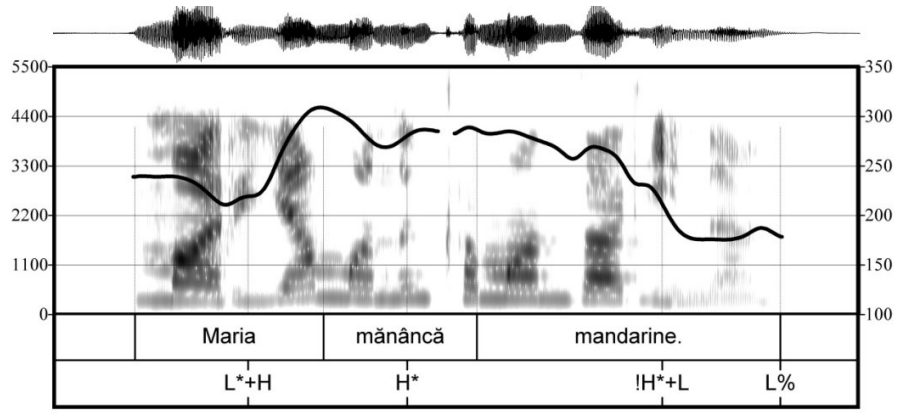


Figure 2.2: The Daco-Romanian sentence Maria mănâncă mandarine *'Mary eats tangerines' analysed in PRAAT (from Jitcă et al. 2015).*

2.2 Intonation theories and transcriptions

As Ladd (2008: 129) points out, for a unified phonological analysis it is desirable to make cross-linguistic comparison accessible: "if we give identical phonological analyses to markedly different contours, it makes cross-language and cross-dialect comparison […] at best difficult and at worst meaningless." Phoneticians and phonologists elaborated many different intonation transcriptions and analyses over the last century. Most of these try to make sense of the status of prominent syllables in sentences. Early research in intonation included musical notation, taking into account rhythm and sentence stress (Jones 1909, Fonagy and Magdics 1963). Later analyses included some detail in pitch variation by representing the melody of stressed and unstressed syllables, as well as static tones, with dots and vertical or horizontal lines on various levels, and with arrows denoting rough melody contours. Intonation was studied both from a phonetic and phonological perspective. Proto-phonological approaches (Armstrong and Ward 1926, Bolinger 1951) to intonation developed somewhat independently from phonetic studies (Ladd 2008), and it was not until the 1970s that researchers realised the potential of a more integrated approach. Initial analyses of

intonation in the phonological approach (such as Bolinger 1958, Kingdon 1958, Isacenko and Schadlich 1966, among others) developed theoretical phonological models of intonation which were either impressionistic or intuitive, and even those that provided some discussion of fundamental frequency lacked more detailed and robust phonetic analysis of pitch contours in their model. Thus, early phonological models were somewhat unreliable since the phonological theory could not be backed up by accurate phonetic measurements and instrumental data. Phonetic studies of intonation such as Maeda (1976) offered some discussion of the phonetic realisation of various intonation tunes based on their fundamental frequency.

These early studies focused on the meaning of global contours of intonation patterns rather than smaller intonational units at the phrase level, and their functional meaning, for instance distinguishing between a statement and a question. Following previous analyses in this vein, Bolinger (1951: 208) concludes that "intonation could not be a more appropriate illustration of the Gestalt" (where Gestalt refers to pitch contour properties). Arvaniti (2011: 760) rightly asserts that these approaches treat intonation melodies as gestalts and also included some more modern approaches, such as the INTSIT (International Transcription System for Intonation as per Hirst and Di Cristo 1998) and the PENTA model (Parallel Encoding and Pitch Target Approximation, as described in Xu 2005, Xu 2015) within this category.

Despite the obvious contributions of the phonetic and phonological configurational approaches prior to the 1990s, these were lacking in at least three conceptual areas. First, previous studies did not incorporate verifiable phonetic instrumental data in their phonological models; second, they focused on global pitch patterns and could not account for pitch movements that occurred in shorter segments such as a single syllable; thirdly, the relation between meaning and intonation was not fully understood and explored. In 1990 a new theory of intonation ('t Hart *et al.* 1990: Ch.4) appeared, which took into account previous approaches and solved the problems that previous accounts of intonation faced.

2.2.1 The IPO theory of intonation

The IPO is a methodology framework designed for the study of intonation proposed by the Institute for Perception Research (IPO) in Eindhoven between 1965 and 1995.'t Hart et al. (1990) researched intonation from an instrumental perspective, rather than based on impressionistic judgement and considered intonational contours as gestalts, in the

same tradition as Bolinger (1951), Jones (1972), Hirst and Di Cristo (1998) or Grabe *et al.* (2003) and in the tradition of configurational approaches (Arvaniti 2011). Originally the IPO framework was designed to serve the needs of describing Dutch intonation and for use in speech synthesis, but later developed into a more comprehensive theory of intonation. It extended to the description of other languages and is best used for pedagogic purposes. This approach combines new phonetic instrumental data in a unified phonological theory of intonation. ’t Hart et al. (1990) find that previous configurational approaches did not manage to fully account for smaller units of intonation patterns.

The IPO researchers devised a model for synthesizing Dutch intonation and made an important observation based on the principle of elasticity, namely that only some aspects of the intonational contour are relevant for listeners, and not the overall shape (Arvaniti 2011). Arvaniti (2011: 761) also notes that the elasticity principle by which certain pitch movements that appear on a single syllable are separated over a larger number of syllables, is juxtaposed with the compression principle as described by Jones (1972) thus emphasizing more uniformity across shorter and longer intonation contours. Moreover, ’t Hart *et al.* also note that there is no direct correspondence between pitch accents and meaning since the same intonational contour can render a different pragmatic meaning to the same utterance. Ladd (2008: 17) concludes that the IPO model is not concerned with the role of meanings and function in intonation due to the fact that elements are identified on the basis that they are perceptually and phonetically distinct from other elements.

In this analysis by synthesis model the main intonational contours assumed are rises and falls. The advocates of the IPO model apply the ‘motor theory’ as devised by A. Liberman and Mattingly (1985: 2) to the perception of intonation and argue that this perception is conditioned by the listener’s knowledge of what is physically possible in terms of laryngeal control and by the specific intonation rules of each language (’t Hart 1990: 70). Hence, intonation contours are linear changes produced at a much slower rate than physically possible, as ‘glides’ rather than ‘jumps’ to give listeners the impression of ‘pitch movement’ (’t Hart 1990: 71).

Based on perceptual experiments, following Cohen and ’t Hart (1967: 184), the IPO researchers observed what they call the principle of *declination* represented by the declining slope of a whole intonation pattern, drawing top and bottom lines to show the global intonation downtrend.

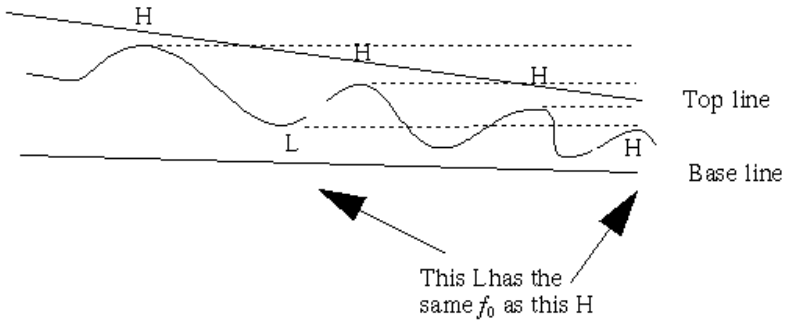


Figure 2.3: Stylised representation of fitting declination trend-lines to the F0, showing that the initial pitch movement at the beginning of the phrase is higher than the one at the end of the phrase. From Coleman (http://www.phon.ox.ac.uk/jcoleman/intonation.html).

The IPO framework is also associated with the idea of the phonologically distinctive concepts of prominence and non-prominence lending after Bolinger's (1958) claim that a word is made prominent in a sentence if the lexically stressed syllable of that word bears a pitch movement usually captured in the 'hat pattern' made of a Type 1 rise, or rise-plateau-rise and the 'pointed hat pattern' made of a Type A Fall, or rise-fall.

Drawing on data collected from Dutch, the IPO model ('t Hart *et al.* 1990: 73) proposes an inventory of ten possible pitch movements decomposed into perceptual features like direction (rise, fall), timing (early, late, very late), rate of change (fast, slow) and size of pitch movement (full, half). These features function in two ways: rising contours are labeled 1-5 and falling contours A-E. If there are two or three movements occurring on the same syllable the two labels are combined. According to the IPO model, pitch movements include four parameters:

Table 2.1: Four parameters of pitch movement within the IPO model

Direction	Rise/fall
Timing	Early in the syllable/late/very late
Rate of change	Fast/slow
Size	Full/half

The IPO theory of intonation was phonological in its approach but, as Ladd (2008) argues, although the IPO tradition was responsible for some important achievements, it has now largely fallen out of use after the Institute shifted its focus from pure to applied research in the mid-1990s.

The IPO approach differs from the traditional British one (Crystal 1972; O'Connor and Arnold 1973) in terms of their focus on the role of meaning in intonation analysis. While meaning is not crucial in determining the local and global intonational contour in the IPO tradition, in the British tradition meaning is directly related to local or global intonational contours such as the pre-head, head, nucleus, tail or tone groups.

2.2.2 The 'traditional British' system

One of the best-known descriptions of intonation in British English is based on the *nuclear tone approach* or *traditional British approach* advocated by Kingdon (1958), Schubiger (1958), Crystal (1969), O'Connor and Arnold (1973), Cruttenden (1986) and Wells (2006). O'Connor and Arnold (1973) was the most influential study within this approach, which was mainly used for pedagogical purposes with learners of English. It is phonetic in its approach and is based on a nuclear tone analysis. This system was initially devised for the analysis of English.

Within this theoretical framework, following O'Connor and Arnold (1973), the syllable can be either full (strong) or reduced (weak); full syllables are either stressed or unstressed, stressed syllables are accented or unaccented and accented syllables can be nuclear or pre-nuclear. The nucleus of an intonational phrase marks new information, which is information that was not previously mentioned in discourse and is crucial to the understanding of the message. Although it is sometimes wrongly assumed that the nucleus is supposed to be more prominent than other accents in terms of pitch height, the nucleus is just the *last* accent in an intonational phrase. The pitch levels and pitch changes which occur on accented syllables form intonation contours or tunes. There is a completed tune on each intonational phrase (IP) which helps listeners divide utterances into smaller intonational units. The intonational phrase is any stretch of speech, across which an identifiable intonation tune or contour operates and it is divided into four sub-units: pre-head, head, nucleus and tail. The only obligatory sub-unit is the nucleus. The pre-head is an optional sub-unit that represents any unstressed syllables before the head. The head is an optional sub-unit which starts from the first stressed syllable and ends before the nucleus. The last optional sub-unit is the tail which includes any syllables that follow the nucleus in a given IP; it may contain stressed syllables but not accents (O'Connor and Arnold 1973).

The nucleus is located in different places according to whether it is pragmatically or grammatically controlled. The nucleus can be located on the stressed

syllable of the last content word of the intonational phrase in an all new information sentence as in the example below. The nuclear syllable is underlined.

(2.1) What are you doing at the weekend?

(2.2) We Are going On a trip to Stonehenge.

The nucleus can be located on the stressed syllable of the last content word in an IP if the last content word contains new information, regardless of whether any earlier information is old or new.

(2.3) Are you Looking forward to the journey?

(2.4) Well, I do not like trips with such an Early start.

The nucleus is located on the last stressed syllable of the nearest preceding content word containing new information if the last content word contains old or given information.

(2.5) Sorry, what's All that about Early starts?

(2.6) I was saying I do not like early starts.

In English, a repeated item which is considered old or given information is not usually accented. Old information is de-accented. The location of a nucleus can also be grammatically controlled, for instance to mark affirmation or negation. In affirmatives the nucleus is usually located on the auxiliary verb while in negations the nucleus is put on the negative particle, as shown in the examples below.

(2.7) Jonathan can't play that tune.
He can (play it).

(2.8) Mother can play the trumpet.
She can't (play the trumpet).

In vocatives and appositives, the nucleus is located on the content word before the de-accented word.

According to O'Connor and Arnold (1973), a nuclear tone is an identifiable pitch movement which begins on the syllable of the nucleus. English nuclear tones fall into three groups: tones which fall in pitch, tones which rise in pitch and one that stays relatively steady in pitch, each with a characteristic form of being realised.

O'Connor and Arnold (1973) distinguish between seven nuclear tones in English intonation.

(2.9)

High fall (simple, falling)

Low fall (simple, falling)

Rise-fall (complex, falling)

Mid level (simple, level)

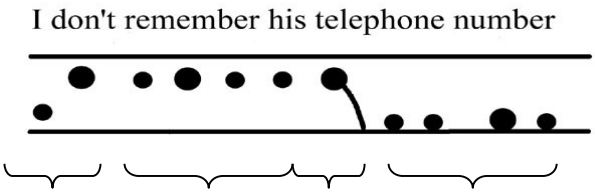
Low rise (simple, rising)

High rise (simple, rising)

Fall rise (complex, rising)

Below is an example of a complete intonation pattern with high fall nuclear tone, preceded by a low pre-head, and a high head, a high falling nuclear accent followed by a de-accented low tail.

(2.10)



Pre-head head nucleus tail

The fuller dots above represent the stressed syllables. The syllables in the above example are divided into full (strong) or reduced (weak) vowels. A syllable will be weak if it contains a weak vowel (i. e. /ə̲/ or short /i/ which occurs in unstressed syllables). The stressed syllables can be accented or unaccented. An accented syllable is made more prominent by a fluctuation in the pitch of the voice, compared to unaccented syllables. Hence, we have two accented syllables: don't and tel. There has been a misconception regarding what a nucleus/nuclear syllable is. It is generally said that the nucleus is the most prominent syllable in the intonational phrase, more prominent than other accents. A prominent syllable can be acoustically more salient in the intonation stretch, however this is not always the case. The syllable 'tel' which in this case bears the nuclear accent, can be less prominent than the pre-nuclear accent 'don't'. The nucleus is usually the last accented syllable of the intonational phrase: 'tel.' The tone (in this instance high fall) usually gives the meaning of the whole sentence.

The 'traditional British' system of intonation has several varieties, and some of them also have a different theoretical basis. For example, some scholars do not accept

the concept of nucleus, such as Kingdon (1958), who replaces it with the concept of 'kinetic tone.'

Below is an example of a basic intonation analysis in the O'Connor and Arnold's (1973) system:

(2.11) I haven't had time to read the report.
Utterance: I 'haven't had °time to \read their ₒreport |

1 There is one intonational phrase.

2 There are stresses on the first syllable of 'haven't', 'read', and on the second syllable of report'.

3 The nucleus is on 'read'.

4 This is a high fall nuclear tone.

5 It is followed by a low level tail.

6 There is a high head starting on the first syllable of 'haven't'. The head consists of the syllables 'haven't had time to'.

7 There is a low pre-head, 'I'.

This phonetic system of describing intonation has proved useful for pedagogical purposes, for training EFL teachers, and also for ear-training students of phonetics to help them recognise and produce the basic intonation patterns of English. For this purpose, O'Connor and Arnold (1973) also developed a simple way to mark the intonation of a sentence using several symbols to show tonality (| or ||), tonicity/nuclear accent (by underlining), tone or intonation pattern (by putting the symbol \ before a nuclear syllable for a fall, or / before a nuclear syllable for a rise, etc.), accent (') or rhythmic stress (°).

2.2.3 The PENTA model

Xu (2005) argues that previous approaches to intonation did not focus on two essential aspects of speech prosody: communicative functions and articulatory mechanisms. The Parallel Encoding and Target Approximation (PENTA) model of intonation (Xu and Wang 2001; Xu 2005; Xu et al. 2015) aims to address the 'lack of reference problem' in intonation, first identified in Pierrehumbert (1980, 2000), and later by Xu (2011). Due to the lack of orthographic representations of prosody, it is very difficult to infer intonational meanings based on prosodic units because the very identification of these prosodic units such as F0, peaks and valleys, turning points, etc., is very problematic (Xu et al. 2015). A prosodic unit is also referred to as an intonation unit or intonational phrase and is known to depict a single prosodic contour which is characterised by various phonetic cues such as pitch contours, fundamental frequency or rhythm. The reference problem shows that it is impossible to establish what exactly is relevant in a prosodic unit for intonational meaning. It is argued that AM approaches focused on the phonology of intonation and developed various inventories for several languages (Pierrehumbert 1980, Ladd 2008, Gussenhoven 2004) while the PENTA model focused on the communicative function of intonation such as meanings and the coding and decoding of these meanings. Xu (2005: 246) argues that "the PENTA model by itself does not stipulate the properties of the encoding schemes. It only provides a mechanistic framework for the encoding schemes to be implementable. The detailed properties of the encoding schemes (…) can be discovered only through empirical investigations in which potential contributors to surface F0 contours are systematically controlled."

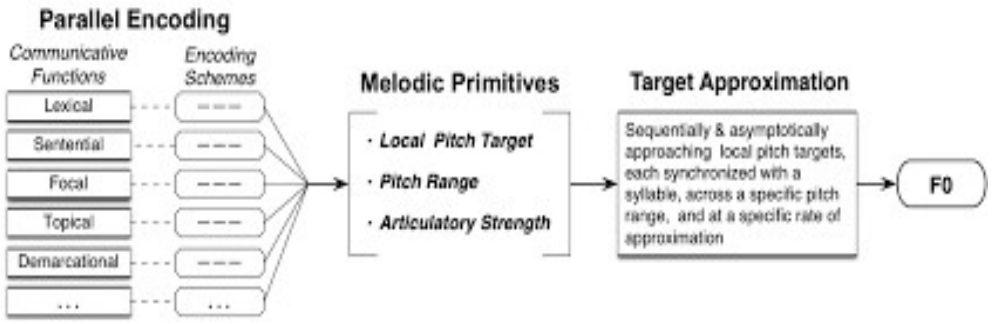


Figure 2.4: Schematic sketch of the PENTA model (Xu 2005: 243).

Communicative functions of speech are not layered hierarchically but parallel to one another, thus they are called parallel. These functions are expressed through some encoding schemes which are assumed to be highly stylised and different across

languages, although some can be more gradient and universal (Xu et al. 2015). The encoding schemes control the types of articulatory parameters represented here under melodic primitives (Figure 2.5) which can target the approximation mechanisms. This process results in surface acoustics (mainly, but not restricted to F0) which are the result of "the result of asymptotic approximation of the target in full synchrony with the syllable" as in Figure 2.5 (Xu et al. 2015).

In the Target Approximation (TA) procedure detailed in Figure 2.5 vertical lines refer to the syllable boundary. The dashed lines refer to underlying pitch targets while the thick curve refers to F0, after it had gone through the mechanical process of target approximation.

Initially proposed for lexical tones by Xu and Wang (2001), the Target Approximation (TA) model was an important component of the PENTA theory. The initial model (Xu and Wang 2001) used data from Mandarin Chinese to analyse F0 contours as the outcome of pitch targets which are represented by the dotted line (Figure 2.5). These pitch targets are idealised contours of tone, and can be linked to the phonetic value of tones. The first syllable has a dynamic underlying pitch target for the rising tone while the second one has a static pitch target for the low tone (as in Figure 2.5 below). Thus interestingly, Xu and Liu (2007: 400) argue that "the start of the articulatory effort to approach the tonal target *is* the onset of the tone, and the end of such effort *is* the offset of the tone." The taxonomy of these pitch targets varies from language to language: they can be either static [High], [Mid], [Low] or dynamic [Rise], [Fall] as in the example below (Xu 2005, 2007).

This original model (Xu and Wang 2001) was further refined to include additional phenomena and communicative meanings, rather than just lexical tones. The later model (Xu 2005) included other target approximation parameters, such as but not limited to, pitch range, articulatory strength, and syllable duration. The PENTA model builds on an articulatory-functional view of prosody in which communicative functions are expressed in parallel through various encoding schemes (or Parallel Encoding), which are simulated (Figure 2.5). Communicative functions go through a Target Approximation process giving F0 surface contours. Xu et al. (2015) gives a detailed summary of the implications of the PENTA model and concludes that PENTA does not impose an inventory or pre-defined phonological categories, but if language functions are found to be specific to a particular language, a correspondence

of the PENTA targets with the other pre-defined categories such as H, H*, L, L* in AM theory becomes possible (Xu et al. 2015).

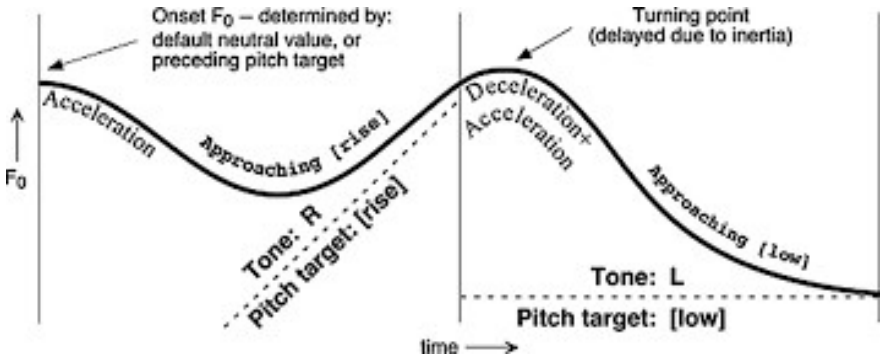


Figure 2.5: Illustration of the Target Approximation model (Xu 2007: 2).

Moreover, Xu (2005) argues for an integrated functional analysis of focus in Mandarin Chinese and English in which focus is realised as local pitch expansion followed by post focal compression. This view was refuted by Arvaniti et al (2006), which provides examples from Greek polar wh-questions in which focus seems to have the lowest F0 compared to other parts of the utterance and exhibits pitch expansion in the post focal region.

Ladd (2008) observes that, unlike most intonational phonology studies, research conducted in the PENTA framework, especially Xu (2005), assumes that intonation is different from other parts of language in that it correlates phonetic and acoustic characteristics to meaning: "they take it for granted that functions like focus will have acoustic correlates" (Ladd 2008: 19). In reply to Ladd and Arvaniti's (2009) criticism of the PENTA model, Xu et al. (2015) argues that the PENTA model can link communicative meanings to fine-grained prosodic details based on an articulatory-functional view and thus passes the criteria of abstraction, generalisation, prediction, and account for details, which, according to Arvaniti and Ladd (2009) are claimed to be essential for a unified theory of intonation.

2.2.4 The Incremental Storage Concatenation Model

In Martin's (2015) seminal work it is argued that the Autosegmental-Metrical model of intonation raises some serious questions that remain mostly unanswered and previous studies in this framework were unsatisfactory, 'naïve and simplistic': "it seems that the biggest problem pertains to the first step: how can the prosodic structure be known for a

given sentence?" (Martin 2015: 52). The author raises many questions and remarks (a list of 14) that stem from the recent literature on intonational phonology in the AM framework such as Post (1999), Jun (2005), Frota et al. (2013) and Frota and Prieto (2015), among others, of which we mention the most relevant:

1. There exists a hierarchy grouping APs into IPs (many examples are too short to observe the existence and behaviour of ips).
2. Metrical grids are seldom used, as pitch accents are associated with stressed syllables so that in the absence of emphatic stress, the number of APs equals the number of lexically stressed syllables.
3. Declarative sentences (statements) end with an L*L% sequence (L* being a pitch accent, L% a boundary tone). L* is aligned on the last stressed syllable of the sentence, whereas L% is on the last syllable, stressed or not.
4. The definition of the intonational phrase (IP) is circular: What is an IP? By definition, an IP is a segment of prosody ended with a boundary tone; what is a boundary tone? By definition, a boundary tone is a tone ending in an IP (…).
5. The only contrastive aspects of the analyses pertain to the prosodic structure modality (i.e., declarative vs. interrogative and their variants). (Martin 2015: 55).

The Incremental Storage Concatenation Model was first proposed by Martin (2015) as an alternative to the Auto-segmental Model. The main concepts of the model are applied to various Romance languages, including Romanian on the basis of a large spoken corpora (Martin 2015: chapter 6). This assumes the existence of prosodic structure, organising hierarchically minimal units of prosody and prosodic words (Martin 2015: 59) but not in their traditional framework as assumed in the AM approach, but rather, implying:

A... that prosodic words do exist, and

B.... that some prosodic markers do indicate the hierarchical organization of prosodic words in a structure (Martin 2015: 59).

One of the differences between the ISC model and the AM model is that the ISC assumes the independence of prosody and syntax, and does not handle prosodic events

like phonemes, proposing a more unified explanation for these constraints by means of neurological research on brain waves (Martin 2015: 88). Another novelty is that intonation analysis is not carried out using the ToBI symbols and the traditional prosodic hierarchy, but phonologically as a sequence of brief melodic contours. Hence, the model works with phonological descriptions in terms of prosodic and melodic contours ('C') using different functional labels such as 'Cn, C0, C1, C2, C3' for sequences of intonation contours in an IP, complex contours ('Cc') and their variants respectively, 'Cd' or 'Ci' for interrogative final contours that are organized into configurations of three successive melodic contours. Contours are local: 'C0' refers to fundamental frequency variation of the melodic contour in simple configurations with one prosodic word, the label C0 is assigned to the prosodic event on the last stressed syllable while in configurations with two prosodic words the first stressed syllable that bears the accent is labeled Cx or Cy (Martin 2015: 145). Contrast between contours is marked by various phonological features. The model has been applied to Romance languages and accounts for all possible hierarchical configurations.

2.3 Systems of prosodic transcription

2.3.1 INTSINT

INTSINT (International Transcription System for Intonation) is a modern approach to intonation initially proposed by Hirst and Espesser (1993), Hirst and Di Cristo (1998), Hirst *et al.* (2000) and Hirst (2005) in which whole melodies are relevant in that they can express various functions of intonation, such as the grammatical one. The INTSINT was initially devised to present a narrower, but at the same time language-unspecific, transcription of intonation which is language non-specific that could be applied especially in intonation typology, very close to an IPA-like type of intonation transcription, unlike the ToBI, which is compared by Hirst and Di Cristo (1998) with broad phonemic transcription. This transcription system (Hirst and Di Cristo 1998) was applied to various languages including English (Hirst), Spanish (Alcoba and Murillo), European Portuguese (Cruz-Ferreira), Brazilian Portuguese (Moraes), French (Di Cristo), Romanian (Dascălu-Jinga), Russian (Svetozarova), Bulgarian (Misheva and Nicov), Moroccan Arabic (Benkirane), or Japanese (Abe).

Pitch movement is represented using the Momel system as a quadratic function spline in which the pitch symbols are used to define pitch points or targets (Hirst and Di

Cristo 1998: 15). Pitch levels are defined as primitives: *higher*, *lower* and *same*, while global contours take the value *Top, Mid or Bottom* [inside a square bracket]. Thus, the spline function works with pitch representations of *Top, Bottom, Higher, Lower, Upstep, Downstep*, or *Same* for unmarked boundaries.

The main criticism of the system is that the transcription fails to account for more refined details of intonation: "If the main advantage pertains to the elimination of most of the micro-melodic factors in the fundamental frequency curve, the benefits are not clear compared to raw F0 data" (Martin 2015: 41).

The work of Hirst and Di Cristo (1998) also includes a chapter on Romanian intonation. This is arguably the first study of Romanian intonation couched in any particular intonation framework which will be further discussed in Chapter 3.

Although the system was first proposed more than two decades ago (Hirst and Espesse, 1993), it has mainly fallen out of use and did not manage to establish itself as a standard in prosodic typology and intonation research.

2.3.2 The IViE

The IViE (Intonational Variation in English) (Grabe et al. 2000, 2001, 2003, 2004; Slater 2007) system is based on the AM framework and the ToBI system and used for the transcription of British intonation (Gussenhoven 1984), and comparative studies (Grabe 1998). The IViE represents a modified version of the previous systems mentioned above in order to accommodate a more comprehensive transcription of intonation variation in English and comparative studies using a common labeling system. The IViE adds various changes to the ToBI system. Unlike the ToBi, the IViE does not make use of break indices and adopts a modified internal structure of pitch accents and a different tonal inventory. According to Grabe (2001) the system can also account for fine-grained rhythmic and phonetic differences across varieties. There are three levels allowed for a prosodic transcription:

- rhythmic structure
- acoustic-phonetic structure
- phonological structure

The IViE transcription comprises of five tiers: three prosodic tiers (a prominence tier, a phonetic /target tier, a phonological tier) and two orthographic tiers (an orthographic tier and a comment tier for additional comments and notes on the

transcription) (Grabe 2001, 2004). Within the prosodic tiers, rhythmically prominent syllables are identified and labeled as 'P' on the prominence tier. Instead of a phonetic transcription, the phonetic tier will include mainly the shape and alignment of F0 relative to the strong syllables. The domain for the alignment transcription which corresponds to an accentual foot and the pre-accentual syllable is known as Pitch Accent Implementation Domain (ID) and includes the pre-accentual syllable, the accented syllables and all following syllables up to the next accented syllable (Grabe 2001). Within the ID, the labels H, M, L are used for pitch levels on accented syllables, while h, m, and l are used for unstressed syllables preceding the strong syllable, and % indicates the end of an ID. The phonological tier uses the following tone inventory (Grabe 2001):

Table 2.2: The phonological inventory of IViE tone labels (from Grabe 2001).

IViE option	Description of the F0 contour
H* L	High target on prominent syllable followed by low target
H*	High target, common in initial position in so-called flat hats, e.g., IH-h
!H*L	Down-stepped high target, low target, e. g. hM-l
L* H	Low target on prominent syllable followed by high target, e.g. mLh-h, mL-h, or IL-h
L*	Low target
H*LH	IP internal or IP final fall-rise: high target on strong syllable, low, high, e.g. mHl-h

Nolan (2008) emphasizes that, although the IViE stems from the AM model, one of the key differences is that the IViE allows IP-final boundaries to be tonally unspecified (0%) even in the vicinity of no pitch movement, whereas the AM requires H% or L% to be specified (Nolan 2008: 440).

2.4 The Autosegmental-Metrical theory

Our study is couched in the Autosegmental-Metrical framework, which is presented next. Within the American structuralist tradition, research on intonation focused much more on tone-sequence and proposed a model of intonation with tonal events (Pike

1941, 1945, Trager and Smith 1951). This was later criticized by Bolinger (1951) and Cruttenden (1986) among others, for a rather arbitrary taxonomy of tonal distinctions at four levels. In the tradition of the tone-sequence approach, the Autosegmental-Metrical (AM) theory was proposed by Goldsmith (1976), Bruce (1977), Pierrehumbert (1980), and later developed by Liberman and Pierrehumbert (1984), Beckman and Pierrehumbert (1986), Gussenhoven (1984, 2004) and Ladd (1996, 2008) among others. The framework describes pitch contours which are divided into pitch accents and edge tones and, in contrast to the traditional British system, is phonological rather than phonetic in nature.

Unlike previous tone-sequence models of intonation, this new approach benefited from a more flexible representation of phonological concepts by means of phonetic correlates. This intonational model was initially applied to American English and argued for "an abstract representation for English intonation which makes it possible to characterize what different patterns a given text can have, and how the same pattern is implemented on texts with different stress patterns" (Pierrehumbert 1989: 34). As Pierrehumbert (1980: 34) noted in her seminal doctoral dissertation, the main goal of this new approach was to devise a phonology of intonation, analyzing it "in terms of melodic correlates of stress and phrasing." In this model, intonational contours are analysed in terms of H and L turning points which align with specific locations in the segmental string: stressed syllables and prosodic boundaries.

The theory was originally used to describe the tonal structure of languages but developed to cover all aspects of the sound structure and is based on the assumption that intonation has a phonological organisation. The model was also applied to several other languages.

2.4.1 Prosodic Structure

Whereas the 'traditional British' framework focuses on contours/patterns, the AM theory deals with targets and levels. Gussenhoven (2004: 123) argues that the model is "autosegmental because it has separate tiers for segments (vowels and consonants) and tones (H, L). It is metrical because it assumes that the elements in these tiers are contained in a hierarchically organized set of phonological constituents (…) to which the tones make reference in several ways."

In the original view Pierrehumbert developed a tonal inventory made up of one or two tones, or a combination of the two. These two simple tones (H, L) are distributed

into pitch accents and boundary tones. Pitch accents are associated with the metrically stressed syllable – thus giving an H* or L* (high or low pitch accent), or with the prosodic edge – thus giving an H% or L% boundary tone. If the pitch accents are preceded by another tone, that will be a *leading* tone, if they are followed by a tone, that will be a *trailing* tone.

The difference between pitch accents and boundary tones is that the presence of a pitch accent makes the syllable accented and thus give rhythmic prominence, while a boundary tone occurs at the beginning or the end of the intonational phrase.

In any given analysis, the pitch accent and boundary tones are usually mapped on a tier different to the phonetic and/or text tier, which is reminiscent of Goldsmith's (1976) study on lexical tone in autosegmental phonology.

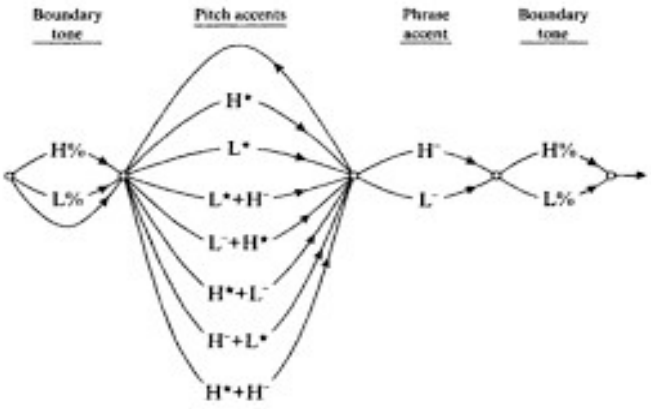


Figure 2.6: Finite-state-grammar of well-formed intonation phrases in American English (from Pierrehumbert 1980: 13).

In Pierrehumbert's view there are three well-formed tonal events in a grammar model which are related to boundary tones, represented by the percentage sign (e.g. H% or L%), pitch accents, represented by an asterisk to indicate the link to the metrically stressed syllable (e.g. H* or L*, high or low pitch accent), and phrase accents noted as unstarred tones (figure 2.6).

Boundary tones are associated with the edges of the intonational phrase and are not static points in the F0 contour, but rather, tonal targets. They behave independently from pitch accents. Boundary tones are usually assigned to unstressed syllables as mono-tonal in languages like Standard English and German (Pierrehumbert 1980; Grice and Baumann 2002). The main function of boundary tones is to signal the boundaries of the prosodic phrase; hence, they can be called final or initial boundary tones.

Pitch accents or head marking tones are associated with stressed syllables at the word or sentence level and can be mono-tonal or bi-tonal according to Pierrehumbert and Beckman (1988). The Pierrehumbert and Hirschberg (1990) system argues for seven pitch accents in English intonation and is also tri-tonal (such as a complex rise-fall L+H*+L) in Gussenhoven's (1984, 2004) view. These accents are noted with an asterisk sign (*) after the tone type L* or H* for mono-tonal accents. Bi-tonal accents are a combination of the two in which the pitch accent will occur on the stressed syllable which will be linked by a plus sign (+) to the unmarked tone. However, the phonetic realisation of the phonological tone is not always directly correlated in that, for instance: H*+L bi-tonal pitch accent is not always phonetically realised as a high fall of the fundamental frequency from high to low.

Phrase accents are not straight forward to define as there was some debate as to whether or not they can function as 'sentence accent' or stress as in Bruce's (1977) seminal work. Pierrehumbert's (1980) model suffered some changes with respect to the function of the phrase accent and Pierrehumbert (1986) noted that a phrase accent shows pitch direction of the last pitch accent towards the boundary tone. Later, Pierrehumbert and Beckman (1988) argued that they are boundary tones of the intermediate phrase (ip) at the phrase level. There is still some debate on the interpretation of phrase accents and the intermediate phrase. Ladd (1983) argues that the phrase accent is "primarily a boundary tone" and Grice, Ladd and Arvaniti (2000) interpret it as a boundary tone with a secondary association, i. e. "a stressed syllable or some other designated tone-bearing unit" (Grice, Ladd and Arvaniti 2000: 144). The Accentual Phrase (AP) is also recognized to be the smallest 'prosodically' marked phrase which occurs either on a single word or a small group of words.

According to Ladd (1996), who was the one to coin the term 'autosegmental-metrical', an intonational contour consists of a hierarchy of prosodic units (an utterance tree), each unit having its weak (non-focused) and strong (focused) pitch segments. This perspective leads to a hierarchy of sentence stress with a global focus and other local focuses at each prosodic unit level.

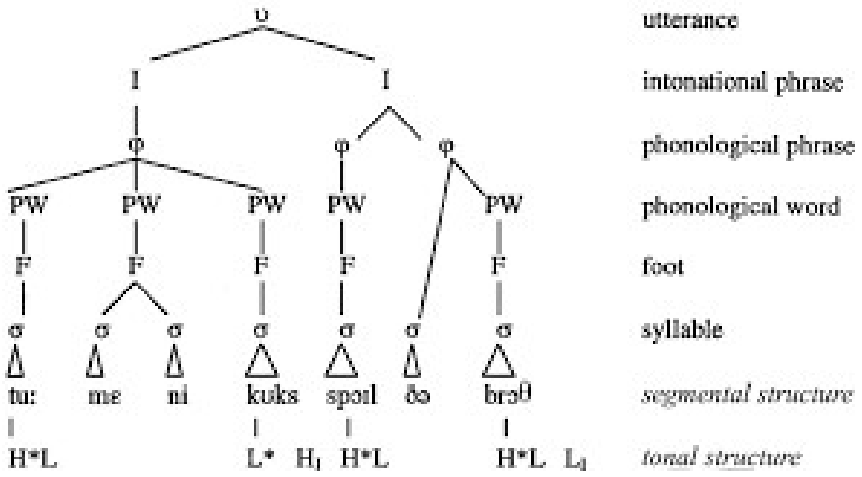


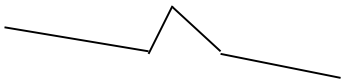
Figure 2.7: The metrical-prosodic hierarchy system for English proposed by Gussenhoven (2004: 124).

Traditionally, the prosodic hierarchy commonly accepted for English - as in the example of the analysis of the English sentence above (Figure 2.7) - consists of the syllable, the foot, the phonological word (also known as the prosodic word), the phonological phrase, the intonational phrase, and the utterance (Gussenhoven 2004: 125).

The original theory was developed and improved in further publications by Pierrehumbert and Beckman. As Gussenhoven (2004: 125f) observes, it is known that other scholars have considered the idea of having separate tiers for tones and segmental phonemes (such as O'Connor an Arnold 1973). The intonational phrase (IP) was defined from an intonational point of view even before Pierrehumbert (1980) and it basically showed that prosody was metrical as it was produced in segments which were ordered into a certain hierarchy (Gussenhoven 2004). To this, Beckman and Pierrehumbert (1986) added another phrase: the Intermediate Phrase (ip) which was subordinated to the intonational group (phrase). Pierrehumbert argued that this IP should end in a tone (T-), while intonation phrases should end in a T-T%, which meant adding two tones after the pitch accent. In his overview of the Autosegmental-Metrical framework, Gussenhoven (2004) argues that one of the obvious differences between Pierrehumbert's system and the British tradition is that "Pierrehumbert analysed the contour leading *towards* the accentual target as the pitch accent, while the British tradition isolated the part leading *off* it" (Gussenhoven 2004: 127).

The same author gives an example to illustrate the difference between the AM and the British framework, proving the usefulness of the AM theory:

(2.12) It'll be a BOWLing alley.



{ [It'll be a BOWLing alley] }

a. low pre-head | high fall

b. L+H* L- L%

The above example shows a comparison between the British theory (a) and the AM one (b) describing the sentence "It'll be a bowling alley", with the nuclear accent on 'bow' (Gussenhoven 2004: 127). Here, in the British tradition (a), the nuclear accent is on the last accented syllable of the ip ('bow'), the tone is a high fall which is preceded by the low pre-head 'it'll be a'. In the AM framework (b) there is a rising pitch accent (L+H*) on the first syllable of 'bowling' which is followed by the boundary tones L- and L%. The difference between the two is the interpretation of the nucleus/nuclear accent. As we can see from the example above, there is a rising of the idealised pitch contour between the pre-head and the nucleus, which is not accounted for in the British framework, but interpreted as a rising pitch accent in the AM framework.

In her revised model of intonation, Pierrehumbert (1986) applied this theory to English intonation and gave an inventory of pitch accents that can have one or two tones: H*, L*, H*+L, H+L*, L*+H, L+H*. This set of notational devices can be summed up as follows (Ladd 1996, Beckman and Elam 1993):

(2.13)

H	high target
L	low target
*	pitch accent
-	phrase tone
%	boundary tone

There are six pitch accents in the revised AM framework according to Beckman and Pierrehumbert (1986) listed below:

(2.14)

H* L* H*+L H+L* L*+H L+H*

Finally, here is a short comparison between Pierrehumbert's (1980) model and the British-style nuclear tones framework given by Ladd (2008: 91).

Table 2.3: Correspondence between Pierrehumbert 1980 and British-style nuclear tones (Ladd 2008: 91).

Pierrehumbert	British-style
H* L L%	Fall
H* L H%	Fall-rise
H* H L%	Stylised high rise
H* H H%	High rise
L* L L%	Low fall
L* L H%	Low rise (narrow pitch range)
L* H L%	Stylised low rise
L* H H%	Low rise
L+H* L L%	Rise-fall
L+H* L H%	Rise-fall-rise
L+H* H L%	Stylised high rise (with low head)
L+H* H H%	High rise (with low head)
L*+H L L%	Rise-fall ('scooped')
L*+H L H%	Rise-fall-rise ('scooped')
L*+H H L%	Stylised low rise
L%+ H H H%	Low rise
H+L* L L%	Low fall (with high head)
H+L* L H%	Low rise (with high head)
H+L* H L%	Stylised low rise (with high head)
H+L* H H%	Low rise (high range)
H*+L H L%	Stylised fall ('calling contour')
H*+L H H%	Fall-rise (high range)

Ladd (2008: 91) rightly observes that the most striking difference between Pierrehumbert 1980 and the British style shown in the table above lies in the way the nuclear tones are grouped. The grouping of nuclear tones makes no sense in the British system, while the grouping of the contours in the Pierrehumbert analysis show five different sets of four types, plus two additional ones.

Metrical theory also provided important clues as to what the degree of prominence was, independently of intonation criteria. Pierrehumbert (1980: 18) designed metrical strength to illustrate how the association tune-text works:

> If a foot has a pitch accent, any foot of equal or stronger metrical strength in the phrase also has a pitch accent
> EXCEPT THAT
> There are no pitch accents after the nuclear stress of the phrase.

Uhmann (1991) used metrical grids to show stress levels and explained that the lower levels (1, 2, 3) are associated with word stress, whereas the upper levels (4, 5) are associated with sentence stress. Thus the metrical grid is able to represent where pitch accents are found and, following various rules (Gussenhoven 1984; Selkirk 1984), the position of nuclear accents.

2.4.2 Prosodic hierarchy and the Strict Layer Hypothesis

The Prosodic Hierarchy is a theory of Prosodic Phonology that proposes a hierarchical organization of prosodic constituents rather than a linear one at the Utterance level, as in Chomsky and Halle (1968), and at the same time resolves previous issues such as the mismatch between prosodic and syntactic representations:

> It has become a majority view among researchers in this area, however, that syntax does not provide domains for phonological rules in a direct fashion. Both the impoverished amount of syntactic information needed by the phonological module and the variety of mismatches between phonological rule domain and syntactic constituency argue for positing another level of representation (Inkelas and Zec 1995: 537).

Prosodic structure differs from syntactic structure although it is derived from it. In autosegmental-metrical phonology speech is considered to be separated in phonologically marked segments of pitch that are ordered hierarchically in different layers in a prosodic tree. This idea was initially put forward by Liberman (1975) and Liberman and Prince (1977), who argued that an utterance is hierarchically represented on a metrical tree to account for stress and intonation on a binary branch of weak and strong categories. These include the root (R) that branches into weak and strong

segments where L and H tones are associated with strong nodes which are circled, while weak nodes are not associated with any tones, as in the figure below.

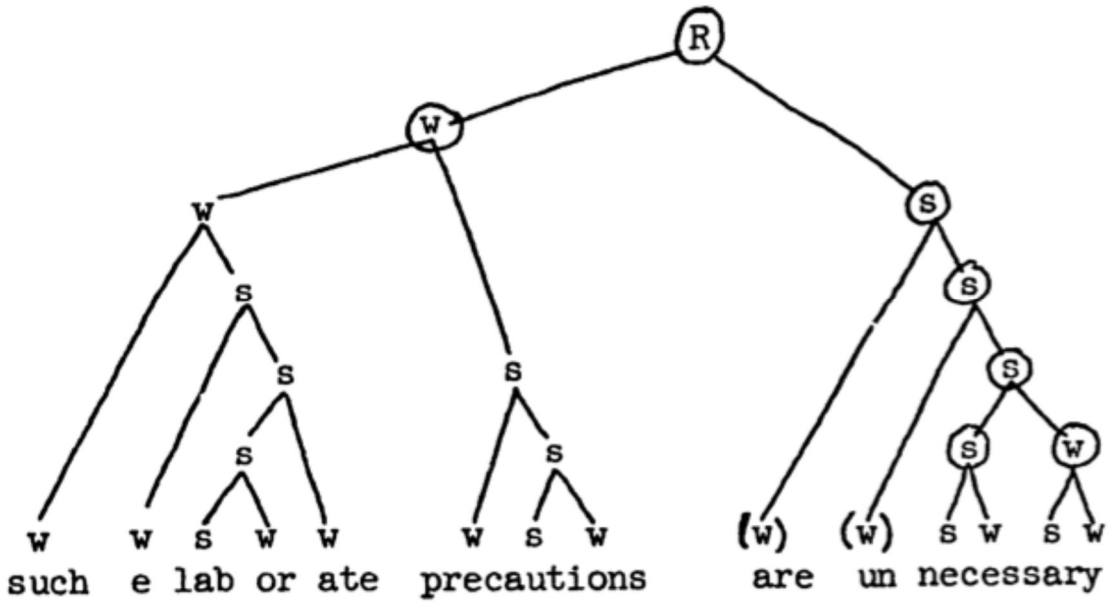


Figure 2.8: Metrical tree of the sentence Such elaborate precautions are unnecessary *(From Liberman 1975: 104).*

Based on this metrical hierarchy, Selkirk (1978, 1981), Nespor and Vogel (1986) and Hayes (1989) proposed various versions of a prosodic hierarchy for English intonation in which an Utterance is hierarchically organized such that each category is nested within the next higher category. Both the existence of the various constituents of the prosodic tree and the branching of higher categories was debated. For example, Selkirk's (1981) hierarchy included the syllable, foot, prosodic word, phonological phrase, intonational phrase, and utterance, while Nespor and Vogel (1986) argued for the addition of a clitic group nested within the phonological phrase. In a more recent study Selkirk (2005) argued that "there is a third prosodic property, involving upward pitch reset at the left edge of a phrase which appears to distinguish an Intonational Phrase break from a Major Phrase break" (Selkirk 2005: 2), making a direct correlation between the proposed 'Comma Phrase' in the syntax and Intonational Phrase (IP) in the phonology (following Potts 2003).

Initially, Selkirk (1986: 384) proposed a prosodic hierarchy with six prosodic constituents (syllable, foot, prosodic word, phonological phrase, intonational phrase, and utterance):

(2.15)

(_____)	Utt
(_____) (_____)	IPh
(_____)(_____) (_____ _)	PPh
(_____)(_____)(_____) (_____)(_____)	PWd
(__)(_____)(_____) (__)(_____) (_____)(__) (_____)	Ft
(__)(__)(__)(__)(__)(__)(__)(__)(__)(__)(__) (__) (__)	Syl

One of the features of hierarchical prosodic representation was that phonological constituents are layered in the hierarchy. This is also known as the Strict Layer Hypothesis (Selkirk 1984: 26): "a category of level *i* in the hierarchy immediately dominates a sequence of categories at level *i*-l". According to Nespor and Vogel (1986: 7), the Strict Layer Hypothesis assumes a well formed prosodic structure organized hierarchically in which any given constituent dominates a constituent at the lower level and all constituents are exhaustively dominated by a constituent at the higher level, which in turn are of the same type. One of the more controversial aspects of the hypothesis is that it does not allow constituents to dominate other constituents at the same level. Thus, the Strict Layer Hypothesis (Selkirk 1984, Nespor and Vogel 1986) allows no recursion in the prosodic structure, an aspect that has been challenged by various studies (Ito and Mester 1992; Zec and Inkelas 1991; Ladd 1996, 2008; Gussenhoven 2005; Wagner 2005; Schreuder 2006). Ladd (1996, 2008) brings evidence from phonetic cues to boundary strength to argue that the SLH is incompatible with coordination.

Selkirk (1996) investigated the SLH in an Optimality Theory framework in which it is divided into four constraints:

(2.16)

LAYEREDNESS	No C_i dominates a C_j, j>i, e.g., no syllable dominates a foot.
HEADEDNESS	Any C_i must dominate a C_{i-1}, e.g., a phonological word must dominate a foot.
EXHAUSTIVITY	No C_i immediately dominates a C_k, k<i-1, e.g. no phonological word immediately dominates a syllable.
NON-RECURSIVITY	No C_i dominates another C_i, e.g., no foot dominates a foot.

LAYEREDNESS AND HEADEDNESS are generally considered as non-dominated (Selkirk 1996), while on the other hand, EXHAUSTIVITY and non-RECURSIVITY are violable (Truckenbrodt 1995, Ito and Mester 2008). This leaves room for a more flexible analysis of recursion. Another important interpretation of the SLH is presented in Booij (1996) in which evidence from Dutch data is used to claim that the constraints of EXHAUSTIVITY and NON-RECURSIVITY can be violable, which suggests that prosodic constituents can skip prosodic levels.

The SLH has now come to be widely accepted however some researchers agree that prosodic structure must be recursive in one form or other and rejected the strict part of the SLH (most notably Frota 1998; Fery and Truckenbrodt 2005; Wagner 2005; Selkirk 2011; Ladd 2008).

There has been some misunderstanding in the literature regarding what the AM (and, implicitly, the ToBI) system is, namely that the AM theoretical framework is just a mere transcription of the fundamental frequency (F0) or a newer notational system of the old British nuclear tone tradition and that ToBI is just an equivalent of the IPA used as a notational system to transcribe intonation. The autosegmental-metrical model of intonational phonology is more than that and is a representation or mapping of the linguistically significant segments of the intonation curve. Ladd (2008: 90) argues that it is pointless to try to give a full correspondence between the two systems because the British tradition includes a range of divergent analyses of certain phenomena (for example patterns of pre-nuclear accents) and other distinctions between a high fall and a low fall which are not dealt with in Pierrehumbert (1980). Instead, the AM framework is a fresh approach that tries to give a more accurate account of intonational distinctions, using the ToBI (tones and break indices) notational system.

2.4.3 The ToBI

Within the AM theory, the ToBI (Tones and Break Indices) model was developed firstly in 1992 to be applied to American intonation. The system originally draws from seminal work by Trager and Smith (1951) in which a four tone system of analysis is employed, and subsequently from Bruce (1977) in which a novel intonational analysis of Swedish is presented. The main difference between ToBI and the system proposed by Pierrehumbert-Beckman (1986) is that in the ToBI, downstep is indicated in the transcription. The ToBI transcription system has now been successfully extended to

other languages as well (Jun 2014). A ToBI transcription includes a tone tier and break indices tier. Supplementary tiers can be used for segmentation to account for other linguistic features that provide more detail about the acoustic signal, such as an acoustic waveform, spectrogram, fundamental frequency contour and several tiers of labels (tones, break indices, orthography, miscellaneous).

There are several languages that have benefited from a ToBI transcription: American English-ToBI, German-ToBI and Korean-ToBI, Japanese, Greek, Catalan, Portuguese, Serbian, English-Glasgow variety, Mandarin, Hong Kong Cantonese, Spanish and Taiwanese to mention but a few (Jun 2014).

ToBI brought three changes to the AM framework (Gussenhoven 2004: 132): (1) a downstep symbol was introduced for pitch accents (!H*); (2) because of this, a new pitch accent was introduced: H+!H* and (3) the H*+L was removed from the symbol set in comparison to the Pierrehumbert (1980) inventory.

Table 2.4: The ToBI annotation system

Tones:
H*: high pitch accent
L*: low pitch accent
L+H*: bi-tonal pitch accent with low tone followed by high tone prominence
L*+H: bi-tonal pitch accent with low tone prominence followed by high tone
!H*: down-stepped high pitch accent
L+!H*: bi-tonal pitch accent with low tone followed by a down-stepped high tone prominence
L*+!H: bi-tonal pitch accent with low tone prominence followed by down-stepped high tone
H+!H*: bi-tonal pitch accent with high tone followed by down-stepped high prominence
L-L%: low phrase accent, low boundary tone
H-H%: high phrase accent, high boundary tone
L-H%: low phrase accent, high boundary tone
H-L%: high phrase accent, low boundary tone
!H-L%: down-stepped high phrase accent, low boundary tone
H-: high phrase accent
L-: low phrase accent
!H-: down-stepped high phrase accent
Break indices:
0: word boundary erased
1: typical inter-word disjuncture within a phrase
2: mismatched inter-word disjuncture within a phrase
3: end of an intermediate phrase
4: end of an intonational phrase

Break indices are marked at the right edge of words under the ortographic tier. These events mark phrasing at the words level and show how words can be grouped, based on prominences in the fundamental frequency and relative duration. Prodic boundaries are described as break indices marked 0-5 in the table above (Table 2.4).

The usual ToBI transcription of a given sentence will include the following tiers (not necessarily in this order), as can be seen in the example below:

A tonal tier that shows pitch accents and boundary tones
An orthographical tier
A break indices tier
A translation or comment tier

The current study will provide a first ToBI description for Daco-Romanian intonation in the AM framework that will include an overview of all pitch accents in broad focus and narrow focus, describing their particularities. The most common pitch accent is the H*+L pitch accent.

Below is an example of a neutral broad focus statement with a H*+L nuclear accent on the direct object:

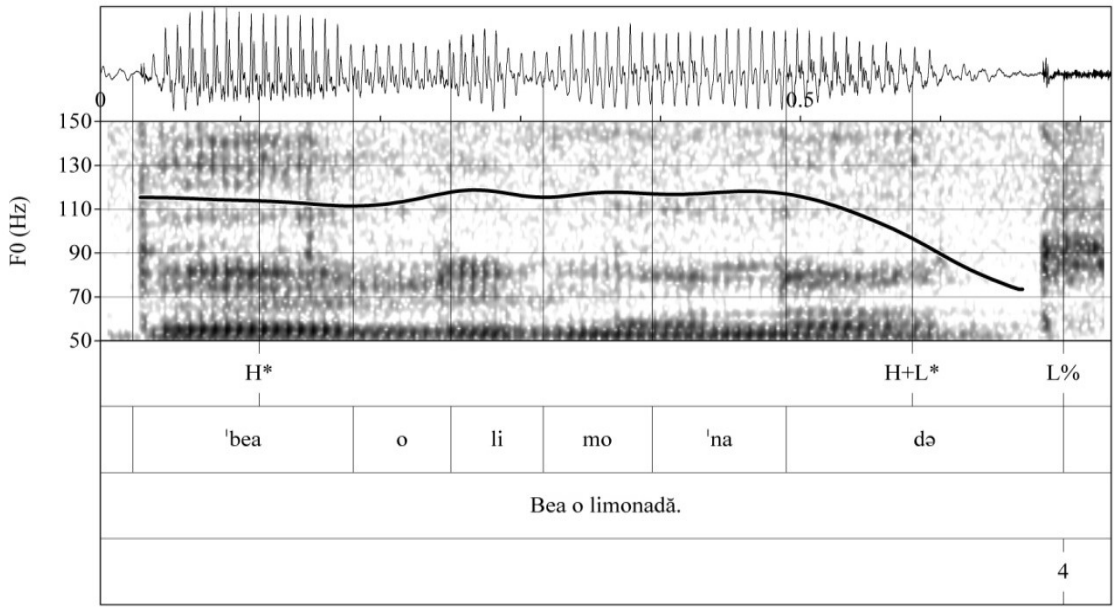


Figure 2.9: Acoustic waveform, spectrogram and fundamental frequency, the words tier, the breaks tier (4 marks a phrase boundary) and the tones tier of the Romanian statement Bea o limonadă '(S)he is drinking lemonade.'

An idealised contour of the H*+L pitch accent (accent shape of nuclear falling accent) is shown below.

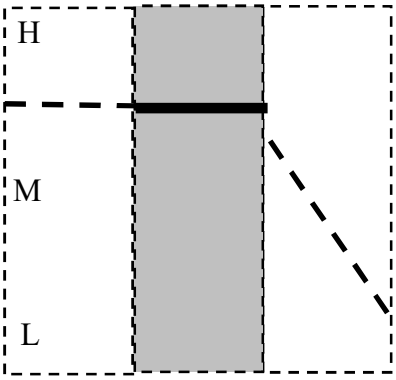


Figure 2.10: An idealised H+L contour.*

Since the first studies on intonation in the ToBI system, the system has been used to describe an ever-increasing number of languages, including but not limited to Dutch (Gussenhoven 2005), German (Baumann et al. 2001), Korean (Beckman and Jun 1996), French (Delais et al. 2015), Italian (Avesani 1995), Spanish, Catalan (Prieto 2009), Portuguese (Vianna and Frota 2007), Georgian (Vicenik and Jun 2014) and Bengali (Khan 2008).

There are some papers on Daco-Romanian intonation completed in the ToBI system, more notably Jitcă et al. (2012), Jitcă et al. (2015), but these are not fully-fledged Ro-ToBI studies, but rather, preliminary attempts in this direction.

2.4.4 Advantages of using the AM framework

Ladd (2008: 20) states that "whether we should adopt a 'phonological' approach to intonation is not primarily a matter of taste, but an *empirical question.*" The intonational model proposed in this thesis is couched within the Autosegmental-Metrical theoretical framework of Intonational Phonology, following the ToBI conventions to annotate experimental data from four varieties of Daco-Romance due to the advantages of using such a framework and its potential for further research in prosodic typology.

The levels vs. configuration debate was one of the first issues in intonation research in the early 1950s posed by Bolinger (1951) who questioned the widely accepted analyses of the American structuralists (such as Pike 1945, Trager and Smith 1951) because in their analysis intonation had four level 'pitch phonemes' (Low, High, Mid, Over-high) and occurred at certain salient points in the utterance (Ladd 2008). The rich four-level system is solved in the AM theory debate because of two factors (Ladd 2008) first, the reduction of the number of distinctive levels to two (H and L) and second, the acknowledgement of the existence of pitch accents.

The AM theory solves some important issues that remained unsolved in previous British traditional or IPO approaches. One of the most important contributions of the AM theory is the fact that it clearly draws a distinction between events and transitions (Ladd 2008: 47). The theory identifies linguistically salient features, which are localised 'events' such as pitch accents and edge tones in English, while other intonational features between these events are not given the same status (Ladd 2008). The IPO theory, on the contrary, uses line segments across several syllables, such as 'Type 4 Rise' and 'Type D Fall' which,

in the AM theory are treated as transitions from one pitch level of a local event to another pitch level at the beginning of the next (Ladd 2008: 47).

A phonological approach to intonation recognises that a unit may have multiple realisations unlike the nuclear accent in the British tradition. Ladd (2008) emphasised the need for an agreed framework for describing intonation because of the difficulty one has to face when attempting a cross-linguistic study of intonation. The AM approach is the most commonly used framework for intonation studies at the moment and the advantages of using such a framework had already been proven in studies of a comparative and typological nature such as Jun (2005, 2014) and Frota and Prieto (2015).

Jun and Fletcher (2014: 518) observe that "if intonation of various languages is described in the same framework using the same terminology, symbols, and conventions, we could compare prosody across languages more accurately and easily, developing a better model of prosodic typology." It is safe to assert that within the last two decades most studies in intonation research were conducted in the AM framework. There have been a very limited number of works on intonation in the 'traditional British' framework, the PENTA, or INTSINT, etc., in the past decade. The AM and the ToBI are now standard in intonation research not least due to its potential for prosodic typology. For this reason, I strongly believe that it is appropriate for the very first comprehensive study of the intonation system of Daco-Romance varieties be conducted in the AM framework using the ToBI annotation system.

CHAPTER THREE
Major Topics in Daco-Romanian Prosody

The aim of this thesis is to investigate whether the generalisations made for Romanian by Ladd (2008) with respect to the shift of the nuclear accent to the verb in yes-no questions and to the wh-word, and the shape of EEQT are correct. For this purpose this chapter reviews the main works on different aspects of Daco-Romanian prosody, pointing out the major gaps that this thesis aims to fill in. Due to the fact that there is little or no research about the intonation of sub-Danubian Daco-Romance varieties, this chapter focuses on the relevant literature about Romanian intonation and provides an account of the main issues in Romanian intonation with respect to stress and syllable structure, focus, prosodic structure and phrasing, the Nuclear Stress Rule, nucleus placement, Eastern European Question intonation and information structure.

3.1 Stress and syllable structure

Prosodic structure refers to the parsing of continuous speech in hierarchically organized prosodic domains – mora, syllable, foot, prosodic word, prosodic phrase and intonation phrase (Féry 2017). We distinguish between lexical stress and accent. Stress in phonology is generally the relative prominence of a syllable in comparison to other syllables (Apoussidou 2010). Stress is usually cued by different acoustic features like increased duration, greater intensity, higher fundamental frequency and hyperarticulation, and can affect segmental and syllable structure (Fry 1955, 1958; Gordon 2011). Languages differ in the phonetic cues they rely on to mark stress. While tone languages like Thai do not rely on pitch excursion to distinguish stressed syllables from their unstressed counterparts (Potsuk et al. 1996), languages like Finnish, for instance, rely on the feature of length to mark contrast between stressed and unstressed syllables. On the other hand, for many languages, particularly the so called "split-cue" languages like Welsh, Estonian and Bantu languages, among others, the location of stress is highly problematic.

Pitch accents are associated with various pitch properties. Romanian makes use of pitch accents, but not all stress languages have pitch accents. For example, stress assigned at word level can be cued by other features than F0, like increased duration, greater intensity, or hyperarticulation. Some languages such as Wolof and

Kuot do not have pitch accents on stressed syllables and stress is not cued by F0 (Ka 1988; Lindström and Remijsen 2005: 3).

It is apparent that word stress should be distinguished from phrase level stress which is associated with pitch accents, because, as Gordon (2011) points out, since a word uttered in isolation can constitute a whole phrase, stress in isolated words can be confounded with phrasal pitch accent. Phrasal stress is usually associated with prosodic peak prominence, seen as positive fundamental frequency excursion such as pitch accents. Accent on the other hand can be characterised by prominent fundamental frequency movement associated with stressed syllables and serves as a possible phonetic cue to the location of stress (Gussenhoven 2004, Hualde 2002, Ladd 2008, Xu and Xu 2005). My approach to stress is within the AM framework, as developed by Pierrehumbert (1986), Pierrehumbert and Beckman (1988) and later Gussenhoven (2002, 2004).

The study of intonation and prosody will always entail a detailed understanding of how stress works in a particular language, how the discourse is divided into strings of intonation (phrasal stress), and how sentence stress interacts with the two. Within the Autosegmental-Metrical framework it is crucial to understand the assignment and relation between pitch accents or head-marking tones on one hand, and boundary tones or edge-marking tones on the other hand, as discussed in Chapter 2. A series of stress-related questions need to be addressed before one proceeds to the description and analysis of Daco-Romanian intonation. How is stress assigned in Daco-Romanian? What are the stress patterns in Daco-Romanian and how do they interact with phrasal stress? Is Daco-Romanian a lexical stress language, like all other Romance languages? This section provides answers to these questions based on the literature available on Romanian stress.

According to Ion (1994), the analytical structure of the syllable results from the possible combinations between vocalic and consonantal segments. In Daco-Romanian, syllables that are made up of only vocalic segments are rare. However, vocalic segments can make up syllables or words by themselves (diphthongs or triphthongs) in certain cases. The possible combinations in Daco-Romanian are (Ion 1994):

(3.1)

cv	*casă*	/ˈkasə/	‘house’
vc	an	/an/	‘year’
cvc	cap	/kap/	‘head’
ccv	gri	/gri/	‘grey’
vcc	alb	/alb/	‘white’
cvcc	post	/post/	‘fast’
ccvc	prag	/prag/	‘threshold’
ccvv	clei	/klei/	‘glue’
cccv	străin	/strəˈin/	‘foreigner’
cvccc	vârstnic	/ˈvɨrstnik/	‘elder’
cccvc	splendid	/ˈsplendid/	‘gorgeous’
cccvcc	strâmt	/ˈstrɨmt/	‘tight’

Five is the maximum number of consonants that can appear in one syllable, of which a maximum of three can be grouped consecutively.

Romanian surface syllable structure is C0-3 V C0-3.

Most Romanian linguists agree that Daco-Romanian is a stress accent language (Sala 1989, Vasiliu 1965, Pușcariu 1994, Chițoran 2002 and Dascălu-Jinga 2008 among others). It is thought that Daco-Romanian has free dynamic stress (meaning that stress is largely unpredictable and entirely lexical) like most Romance languages, except French, in which stress usually falls on the rightmost syllable of the word. Daco-Romanian is different, however, because it does not follow the *three syllable window* stress rule which applies to all other Romance languages (Loporcaro 2011: 53). According to this rule, following constraints inherited from Latin, stress in Romance languages cannot fall further back than the antepenultimate syllable (Loporcaro 2011: 53). However, in Daco-Romanian, arguably due to Slavic influences, stress can fall on preantepenultimate position. Roca (1999: 690) goes even further arguing that Daco-Romanian speakers are the only ones across Romance to countenance preantepenultimate stress in foreign place names such as *ˈBratislava, Copenhaga’*.

Until relatively recently, stress in Daco-Romanian was mainly investigated in traditional grammars in which it was considered completely unpredictable, thus lexical. In line with traditional grammars, Mallinson (1987: 300) argues that in Daco-Romanian “stress is free and variable, giving rise to doublets: /m'odele/ ‘the fashions’ vs. /mod'ele/

'models'." The example of these homographs is often cited as evidence that stress is free in Daco-Romanian. Rosetti (1964) and Rudes (1977) argue that Daco-Romanian, being a descendent of Proto-Romance, will assign stress to the penultimate syllable if the final syllable is open and there is at least one consonant following the penultimate vowel. Steriade (1984), working in the generative framework, proposed a rule in the same vein as Rosetti (1964) and Rudes (1977), but she also emphasised that there are many examples of words in which stress does not follow the rule put forward by Rudes (1977).

The stress pattern of Daco-Romanian is not fixed; therefore, stress is free: any of the six syllables that can form a word can be stressed. This characteristic imposes that the place of the stress is determined in relation to the phonetic structure of the words. Though stress is not fixed, research has shown that in Daco-Romanian, stress is most frequently placed on one of the last two syllables of the words (Daniliuc 2000). Stress on the last syllable is called *oxytone* while stress on the penultimate syllable is called *paroxytone.*

Stress may occasionally mark a distinction between homographs. Also, stress shifts always occur in the conjugation of verbs. Daco-Romanian features intensity stress (a syllable is tonic or non-tonic, depending on neighbouring syllables), which affects only one syllable in the phonetic word. The intensity stress has a phonological function in words that have the same phonological structure, when the meaning of the word is given by the place of the stress in the phonetic word (Rosetti 1978).

Examples include:

/kopˈiʲ/ 'children' /ˈkopiʲ/ 'copies'

/moˈdele/ 'models' /ˈmodele/ 'the fashions'

'Modele' (the fashions) includes the definite article '-le' suffixed to it ('the fashions'. Enclitic articles are never stressed, which suggests that morphology is an important factor for the placement of word stress.

Chițoran (2002), in the first comprehensive study of the phonology of Romanian, analysed Romanian stress under Optimality Theory and found that it is in fact, to a large extent, predictable. Chițoran (2002) proposed two separate analyses:

1. nouns and adjectives are analysed based on feet;
2. verbs are analysed based on prominence (based on right-edge alignment).

She also argued that the primary stress rule is lexical and the secondary stress rule is postlexical. Another important difference between verbs and nouns is that their roots have two distinct stress patterns: final stress and penultimate stress. Being assigned by right edge prominence, the stress pattern in verbs was predicted by the ranking of rightmost above non-finality (Chițoran 2002): "in verbs the rightmost syllable of the domain can be either the theme vowel, if present, the suffix *–ez/-esk* in the present tense, or otherwise the final syllable of the root."

Earlier, in a study couched in the generative framework, Chițoran (1995) argued that primary stress is dependent on the morphology of the language, while secondary stress works independently of primary stress: the primary stress rule is lexical while the secondary stress rule is postlexical (Chițoran 1995: 47).

An interesting feature of the Daco-Romanian stress system is the importance of the theme vowel in the verb paradigm where the theme vowel attracts primary stress (Chițoran 2002: 56). While these theme vowels have no meaning in and of themselves, they attach to a verb morph to indicate the conjugation class of the verb stem (four in total) and to select the correct endings (Chițoran 2002: 56). This theme vowel may be stressed in some conjugations, but not in the less productive third conjugation:

(3.2) stress in 1st verb conjugation showing the theme vowel remains stressed

kɨnt- a	*'to sing'*	
[kɨnt- ə]	*'s/he sang'*	*simple perfect*
[kɨnt- a]	*'s/he was singing'*	*imperfect*
[kɨnt- a] -se	*'s/he had sung'*	*pluperfect*
[kɨnt- a]-se-m	*'I had sung'*	
[kɨnt- a]-se-rə	*'they had sung'*	
[kɨnt- a]-se-rə-m	*'we had sung'*	

However, in present tense paradigm, first and second person forms (/ˊkɨnt/, /ˊkɨnts/) the theme vowel is missing and therefore not stressed, while in the third person it is unstressed (*ˊkɨntə*). This generalisation is relevant for prosodic domains because inflectional material is excluded from the domain of stress, leaving the prosodic word to include the stem (Chițoran 2002: 57). This means that inflectional suffixes in verbs and nouns are attached to the prosodic word but are not themselves part of it (Chițoran 2002: 58). Chițoran (2002) also claimed that primary stress is assigned by right edge prominence in verbs, and by building one syllabic trochee on the right edge in nouns

and adjectives, where – with a few exceptions – stress falls on one of the last three syllables. She argues that an analysis in terms of feet does not capture these generalisations:

> The alignment of morphological and prosodic structure is captured by the constraint which requires the left edge of an inflectional suffix to be aligned with the right edge of the prosodic word/stem: ALIGN/(Infl, Left; PW, Right). Final stress is predicted by the ranking of RIGHTMOST (σ′) above NON-FINALITY (σ′) (Chițoran 2002).

Secondary stress is assigned independently by a postlexical rule, building trochees from left to right which requires feet to lie as close as possible to the left edge of the prosodic word (Chițoran 2002). This can occur on every following syllable.

According to Chițoran (2001: 212), word stress in Romanian is assigned by right-edge prominence, rather than metrical structure, and high vowels and low vowels such as [i, ɨ, u, ea, a, oa] usually occur when stressed. Thus, stress in Romanian is sensitive to vowel height or sonority. Based on her analysis of the stress system in Optimality Theory, the following stress assignment rules were proposed (Chițoran 2002):

- the root is assigned final stress (marked) or penultimate stress (unmarked)
- in verbs stress is located on the final syllable of the root, the theme vowel, or the suffix *-ez/esk*
- the following ranking applies to the marked patterns: NON-FINALITY [root]-S >> NON-FINALITY.

Chițoran (2002) proposed the following representation of syllable structure:

(3.3)

open			closed		
V	*a.pə*	‘water’	VC	*ak*	‘needle’
CV	*ka.sə*	‘house’	CVC	*pat*	‘bed’
CCV	*fra.te*	‘brother’	CVCC	*pork*	‘pig’
				ʒert.fə	‘sacrifice’
CCCV	*stra.də*	‘street’	(C)VCCC#	*astm*	‘asthma’

Chițoran (2002) shows that most consonants and glides constitute single onsets without restrictions. However, [w] is an exception: it is epenthetic and resolves word-internal hiatus, hence its distribution is more limited. Romanian onsets allow for two-consonant

clusters (CC) such as: sibilant-obstruent, sibilant-sonorant, obstruent-liquid, nasal-liquid clusters and consonant-glide clusters. Three-consonant clusters (CCC) are also allowed, including sibilant-obstruent-liquid. Two and three consonant clusters always agree in voicing.

Chițoran (2002) found that codas can include any consonants as well as glides [w] and [j] where the glide [j] is less restricted than [w]. Word internal [w] coda only occurs in two instances in the language. Palatalised consonants can only occur in word final coda, never word internal. Codas usually consist of two consonant clusters, such as [s]-stop, two obstruents, nasal-obstruent, obstruent-nasal, liquid-consonant, glide [j]-consonant or sonorant-sonorant. Three-consonant codas are very limited in the language and occur in word final position.

With respect to morphological structure, it is also argued that inflections never bear stress in Romanian, while derivational suffixes do (Chițoran 2002), this is due to the fact that in nouns, adjectives and verbs, the root together with derivational material constitute the stem, while the stem and inflectional material together form the morphological word (Chițoran 2002: 49).

Secondary stress is recognized to be assigned independently of primary stress, as secondary stress can assume metrical structure: all feet are required to lie as close to the left edge of the prosodic word as possible (Chițoran 2002: 92).

3.1.1 Rhythmic structure

Chițoran et al. (1984: 125) defined stress as the totality of all the different and successive phenomena which recur at approximately equal intervals of time. With respect to isochrony Chițoran et al. (1984) argued that there are at least three types of languages that make different use of rhythm: syllable-timed (which accounts for equal duration between syllables), stress-timed (where the duration between two stressed syllables is equal) and mora-timed (which postulates that the duration between two moras is equal). Chiţoran et al. (1984) rightly assert that Romanian exhibits a syllable-timed rhythm, as opposed to stress-timed rhythm or mora-timed (for a detailed study of this trichotomy (see Nespor 2011) and is organised into a cursive flow of stressed and unstressed syllables that follow at roughly equal intervals of time. Chițoran (1984: 126), in a contrastive study of Romanian and English, discusses how rhythm is related to the length of the utterance in English in that the longer an utterance, the faster the sentence is pronounced.

(3.4)

1. She's a young girl.
2. She's a nice young girl.
3. She's a very nice young girl.
4. She's a very very nice young girl.

In Romanian, word stress is not affected by an increase in the number of syllables or utterance length in the same way as in English. On the contrary, a translation of the above examples indicates that the number of syllables is mirrored by an increase in the length of the utterance which is longer in duration (Chițoran 1984: 126).

(3.5)

1. E o fată tânără.
2. E o fată tânără (și) drăguță.
3. E o fată tânără, foarte drăguță.
4. E o fată tânără, foarte, foarte drăguță.

Secondary accentuation in Romanian is also employed for purposes of sentence rhythm. Stress can grade the load of information over the whole sentence and may function as a cue to features such as 'length of sentence', making syntactic features of greater importance predictable (Chițoran 1984: 122).

Intonation languages with lexical stress do not assign tones at the word level (Féry 2017). Féry (2017: 222) argues that stress in intonation languages is dependent on sentence intonation that happens at a higher level of the prosodic hierarchy, namely at the level of prosodic phrase (ϕ-phrase corresponds roughly to a syntactic phrase) or intonation phrase (ι-phrase corresponds roughly to a clause). Romanian, like most Romance languages, is an intonation language.

3.2 Basic prosodic properties of Daco-Romanian intonation

Romanian phonetics and phonology were usually studied alongside grammar in Romanian compendia, and intonation was given limited attention. Descriptive studies were usually written to emphasize certain theoretical aspects of stress and rhythm which, compared with other Romance languages, were specific to Romanian only. The traditional studies of Romanian intonation were brief investigations that provided some basic inventories of pitch contours and dealt with some theoretical issues but most of them were included in grammar textbooks and were not based on experimental findings,

meaning that they were mainly impressionistic in their character. There are several good descriptions of Daco-Romanian intonation available (Rosetti & Byck 1945; Vasiliu 1965; Roceric-Alexandrescu & Copceag 1966; Avram 1970, 1973; Dascălu-Jinga 1971, 1979, 1980, 1981, 1986; Iordan & Robu 1978; Puşcariu 1994), but the majority are given only incidentally, and as part of the larger context of the phonetics and/or phonology of Daco-Romanian.

Daco-Romanian intonation has benefited from several larger descriptions more recently, in which it was concluded that the pitch is generally falling and rising in all types of utterances (Chiţoran et al. 1984). Falling F0 is used both in affirmative and negative sentences, exclamations and questions, and hence is the most common intonational contour. Daco-Romanian also serves very well to illustrate the claim that morphology, word order and intonation are alternative means of realising semantic structure which are hierarchical.

Few pre-intonational phonology studies are available on acoustic information. Avram (1971) has shown that interrogative sentences have a greater duration than declaratives with the same segmental structure ratio, and that the duration of the final syllable is greater in interrogative sentences than in declaratives. Apopei et al. (2006) investigated intonational structures in Daco-Romanian yes-no questions, testing Ladd's (1996) hypothesis about yes-no questions. The study concluded that yes-no question intonation is characterised by an interrogative emphasis generated by a tonal contrast within one of the intonational units that compose the F0 contour or between the average tone of two consecutive units (Apopei et al. 2006: 135). The more common pitch accents that generate an interrogative emphasis are bitonal L+H*, L*+H or H+L* which are also show an increased energy and duration. Their detailed acoustic study is within the AM framework and the conclusions can be used for further linguistic studies, forensic phonetics of Daco-Romanian and speech synthesis.

One of the first Romanian linguists to write extensively on the phonetics and phonology of Romanian intonation is Dascălu-Jinga. Her contribution to the understanding of Romanian intonation is unquestionable. Her studies vary from the syntactic functions of intonation and syntactic ambiguity (Dascălu-Jinga 1990, 1991) to the pragmatic functions of intonation (Dascălu-Jinga 1991) and the relation between the prosody of spoken and read speech (Dascălu-Jinga 1993, 1994). Dascălu-Jinga (1985, 1975, 1986, 1997, 1998) analysed specific features of the intonation of varieties of Daco-Romance within Romania but not in the AM framework.

Declination is noticeable in statements and wh-questions where the wh-word always bears the nuclear stress, unlike other Romance languages. Declarative statements, vocatives (characterised by an extra peak) and wh-questions, usually have a falling pattern. Wh-questions are discussed amply because they include the "lexical focuser by definition" (Bolinger 1986), i.e. the interrogative word, which carries the main accent. Focus in yes-no questions is marked by a low pattern, also known as 'interrogative emphasis' (Dascălu-Jinga 1998) or 'a new Balkanism' (Lehiste and Ivic 1980) similar to Croatian and Albanian. Yes-no questions are characterised by a prolonged final rise and can begin with an 'emphasised' word. Romanian tag questions, *da?* (yes?), *nu?* (no?), *nu-i aşa?* (is not it?), are always rising. Consequently, unlike English, "the expected answer is suggested not by their intonation, but by the presence or absence of the negation in the segment that precedes the tag" (Dascălu-Jinga 1998: 259), meaning that that the Romanian type of tag is more like the French tag *n'est-ce pas.*

The first book to describe the main tunes of Romanian intonation is *Melodia vorbirii în limba română* 'The melody of speech in Romanian' (Dascălu-Jinga 2001) which offers a basic inventory of Romanian intonation patterns but within no theoretical framework, based on some acoustic data collected in the 1970s and 1980s. In the first two sections of the book the author presents two basic Romanian melodic contour categories – declarative and interrogative – in terms of local and global tendencies of pitch contours, emphasis position (melodic prominence) and the shape of the phrase final contour. This is the first and only detailed account of Romanian intonation which is of paramount importance for the scope of the present study.

Dascălu-Jinga (2001) is based on data collected in extended fieldwork during the 1980s and 1990s and some acoustic analysis. The study is published in the Romanian language only, couched in the traditional Romanian framework which is common to mainstream Romanian grammars. The study provides detailed analysis of the intonation of declarative statements, interrogative statements, intonation and syntax, the expressive functions of intonation, phrase intonation, intonation and punctuation and dialectal intonation patterns. The declarative falling contour is associated with the 'intonation of finality' of declaratives, while rising intonation in declaratives is usually associated with the idea of continuity. A fall-rise is always related to enumeration, parenthesis, or pause (Dascălu-Jinga 2001: 16). Focus in positive and negative statements is described in terms of 'positive prominence' with a falling pattern. An interesting aspect of 'predicative

intonation' is the rising-falling pattern in nominal predicates. Where the verbal predicate or copula is missing, sentences are characterized by a rising falling pattern. Vocatives are marked in Romanian morphologically and intonationally. The former is redundant, the latter is distinctive as shown in 3.6 and 3.7 below (Dascălu-Jinga 2001: 28):

(3.6) Ana, va veni la noi.
PN FUT come PREP 1PL.ACC
'Ana will come to us.'

(3.7) Ana, va veni la noi.
PN FUT come PREP 1PL.ACC
'*Ana,* he/she will come to us.'

In (3.6), *Ana*, in the nominative, is unaccented, uttered with a rising accent, and the nuclear stress falls on the last syllable *noi*. In (3.7), *Ana* in the vocative which is also marked by the use of the comma indicating a separate prosodic phrase, bears a falling accent, and changes the meaning of the sentence. The call contour in Romanian is very similar to the one found in other Romance languages and the difference between the call contour vocative and the regular vocative is that in the regular vocative the fall starts on the accented syllable whereas in the call contour the fall starts in between syllables (downstep) (Dascălu-Jinga 2001: 30). A call contour is a falling in two steps even in one syllable words and longer in duration and slightly higher than the 'addressing' vocative which is characterized by a short abrupt fall.

Yes-no questions are not marked syntactically in Romanian and have mainly the same word order as sentences. They are marked by a rising intonation pattern. Interrogatives in Romanian are complex as their intonation can differ according to sentence type, subtypes, pragmatic meaning, syntax, morphophonemic constraints, stress patterns, etc. For instance, Dascălu-Jinga (2001: 33) gives a taxonomy of intonation based on their terminal intonation contours, their global contours and utterance contours and argues that certain intonation patterns are specific to the stress structure of the accented words. In particular Dascălu-Jinga (2001: 33) argues that whether a terminal contour (last accented syllable) is rising or falling is determined by the simultaneous action of two factors:

1. word order and the location of the emphasised word ('interrogative emphasis') in the sentence, be it on the last or any other preceding word.

2. the stress pattern of the last word in the utterance, whether the stress falls on the last syllable or any preceding syllables

Thus, a rising terminal contour is realised if the last word is accented on the last syllable or if the last word coincides with the emphasised element. On the other hand, when considering the whole intonation contour of the utterance, a rise fall is possible when the emphasis (focus) is in non-final position. Focus in questions is described in terms of 'interrogative emphasis' and is marked by a low and/or descending tone also called 'negative prominence' (Dascălu-Jinga 2001).

The falling contour is usually associated with questions that have an interrogative word, be it pronouns (wh-words), adverbs, etc. The interrogative word bears the nuclear accent, also described as an emphasis, where a local peak is detected on the accented syllable and descends until the end of the utterance (Dascălu-Jinga 2001: 45). What is particular to Romanian in Romance languages is that the wh-word always bears the nuclear accent and is mainly found in initial position in interrogatives.

The negative adverb *nu* 'no' is usually stressed and bears the nuclear accent except in an emphasis (or focus), which modifies the intonational pattern of the sentence where the verb may be in focus.

Dascălu-Jinga (2005; 2008) provides another analysis of Romanian intonation fit for the purposes of the two editions of the Romanian Academy's Grammar of the Romanian Language and offers a summary of the main findings in Dascălu-Jinga (1998; 2001), which lies outside the AM framework for intonation. Dascălu-Jinga (2008) gives a discussion of the functions of intonation. According to Dascălu-Jinga (2008: 947) the primary functions of intonation are:

8. *the actualisation or updating function* used to render words and group of words into communicative units (utterances);
9. *the demarcate function* used to divide utterances and segment them according to their grammatical and semantic structure;
10. *the function of identifying the information structure of the utterance* (the way in which old and new information is signaled);
11. *the modal function of intonation* by which the speaker shows intent (according to which sentences can be grouped in assertive, interrogative or imperative).

Among the optional secondary functions of intonation, Dascălu-Jinga includes:

12. *the emphatic function* which emphasizes a certain constituent in the utterance;
13. *the expressive function* which shows certain emotional and attitudinal states of the speaker, especially used in exclamative sentences;
14. *the grammatical function* used especially in cases of syntactic ambiguity.

Utterances can be syntactically ambiguous especially in writing. In oral communication intonation is used to solve global or local ambiguities by means of dividing the utterance into intonational phrases, or grouping constituents. Intonation can be used to distinguish between one or two syntactically ambiguous sentences such as the singular genitive and dative in Romanian (Dascălu-Jinga 2008: 979).

3.3 Focus intonation

3.3.1 A problem of definition

It is accepted that the pattern of sentence stress in an utterance reflects the utterance's intended focus, but there is a good deal of disagreement about just how it does this, and about what focus actually involves. Much disagreement and confusion is about issues in syntax and semantics, not phonology (Ladd 2008: 213).

It is important to note that the concept of intonational focus was given different definitions, according to the angle from which it was studied. Therefore, I will define the boundaries in which the concept of focus is to be analysed here and also attempt to give a working definition of focus that is widely accepted in phonology. Linguists make different claims with respect to focus phenomena because they are analysed from different angles, within different fields, mainly semantics, pragmatics and syntax (King 1995, Kiss 1996, Winkler 1997) but also phonology and phonetics (Frota 2000, Ladd 2008, Gussenhoven 2005, Jun 2005, 2014 amongst others). In phonology, on the other hand, it is generally agreed that there are two major types of focus, broad or wide focus where the whole sentence provides new information (also known as all-new information focus or presentational focus) and narrow focus (also known in the literature as identification or contrastive focus) (see Rochemont and Culicover 1990, Leusen and Kalman 1993, Frota 2000). Broad focus is associated with neutral/unmarked stress while narrow focus is associated with marked stress in languages like English (Gussenhoven 1984, Hayes and Lahiri 1991, Ladd 1980, 1996, 2008, Frota 2000). In semantics, pragmatics and syntax we can identify many other forms of broad and narrow focus. Focus is usually discussed as a component of

information structure, along with topic, where focus is the constituent that carries new information in a sentence (Lambrecht 1994, Gundel 1999), while topic refers to the discourse entity about which the new information is provided (see Gundel and Fretheim (2010) for a comprehensive discussion on the relation between the two, Chafe 1974). It was shown that focus is marked both syntactically and morphologically in Romanian (Dascălu-Jinga 2008, Pană Dindelegan 2014). The present investigation is mainly concerned with the intonation of focus.

By broad focus I understand the carrier of new information, namely, a sentence that introduces (all) new information in the discourse, while narrow focus expresses identification or opposition. For example, given the two sentences below, (3.8) is interpreted as broad focus while (3.9) is interpreted as narrow focus. Also in (3.8) the answer is elicited by the question "what is happening?" (an 'out of the blue question' meant to elicit neutral intonation). Statement (3.9) is elicited by the question "who is eating tangerines?" focusing the first constituent, the subject. Narrow focus is marked by capital letters (as per Ladd 2008, Göbbels 2003) and results in a larger pitch excursion and stronger intensity on the narrow focus.

(3.8) Broad focus:	
What is happening?	Ce se întamplă?
Mary is eating tangerines.	Maria mănâncă mandarine.
(3.9) Narrow focus:	
a. Who is eating tangerines?	Cine mănâncă mandarine?
MARY is eating tangerines.	MARIA mănâncă mandarine
b. So John is eating tangerines?	Deci Ion mănâncă mandarine?
No, MARY is eating tangerines.	Nu, MARIA mănâncă mandarine.

In (3.9), the subject is interpreted as identificational focus, while (3.9) is contrastive focus. In this chapter the term 'focus' designates the piece of information that is relevant from the informational point of view and avoids terms such as 'emphasis' previously used in the Romanian literature (Jinga 1998, 2000, 2008). These terms can be rather vague and make it difficult to be precise. As exemplified in (3.8) and (3.9), focus refers to a word or constituent that contributes new information to the discourse. We further distinguish between information focus, which is purely informational and not dependent on the previous context, and contrastive focus, which requires an

antecedent. The 'nuclear pitch accent' is used to designate the final pitch accent in the intonational phrase (also usually the more prominent one).

3.3.2 Normal stress view

This approach goes back to the Nuclear Stress Rule of Chomsky and Halle's SPE (1968) and states that there is one pattern of prominence (normal stress) that can be specified by rule for every sentence. The pattern assigns primary stress to the single most prominent stress: contrastive stress is any deviation from normal stress (Cinque 1993 and Zubizarreta 1998).

The Nuclear Stress Rule fails to correctly predict rules for Romance languages, as we shall see later in this section: normal stress occurs on the last accented syllable of the intonational phrase but in Romanian it can fall at the beginning, on the wh-word: *Unde mergi*? Where are you going?

Winkler and Göbbel (2002) argue that the Nuclear Stress Rule is operative in Romanian in broad focus statements, which are possible even with the 'non-canonical' word order that is generally associated with narrow focus in other Romance languages. In (3.10) the phrase which includes the first two words ends in a high accent phrase and the following falling pitch movement focuses the last word. The second intonational pattern in (3.10) has an intermediate phrase (ip) which includes the first two words and ends in a low accent phrase. The falling pitch movement focuses the object which is not in the final position of the IP. Consequently, the Nuclear Stress Rule cannot be applied as in Zubizarreta's Focus Prominence Rule (1998). Winkler and Göbbel (2002) consider the second variant a narrow focus intonation and apply the NSR on a restriction of the statement intonation contours. From our point of view, the intonation corresponding to the (3.10) response is also a broad focus intonation corresponding to the structure with the new information in non-final position.

(3.10) a. Ce ai făcu-t în grădină?
what CP.2SG do-PP PREP Garden
'What did you do in the garden?'
H* H*H- H+L* L%

b. [F Am planta-t în grădină un TRANDAFIR].
CP.1SG plant-PP PREP Garden INDEF.SG.M rosebush
'I planted in the garden a rosebush'.
H* L* L*+H- H*+L L%

c. # Am plantat un TRANDAFIR în grădină. (scramble)
CP.1SG plant-PP INDEF.SG.M Rosebush PREP garden
'I planted a rosebush in the garden'.
H* L*+H- H+!H* H+!H* L%

(3.11) a. A veni-t George la petrecere?
CP.3SG come-PP PN PREP Party
'Did George come to the party?'
L* L*+H H*+L L%

b. [F A VR-UT să vin-ă].
CP.3SG want-PP SUBJ come-3SG.SUBJ
'He WANTED to come.'
L* H*+L L%

Göbbel (2003) demonstrates that the scrambling of the circumstantial in front of the object is triggered by the NSR in Romanian. It is linked to broad focus intonation and corresponds to (3.10). In example (3.11) scrambling does not occur and the NSR does not apply.

The intonation pattern used in (3.10b) is interpreted in the present study as broad focus corresponding to the structure with new information. Information structure can be used in all cases to decide the position of the nucleus.

Göbbel (2003) argues that there is a phrasal stress rule in Romanian which requires sentence-final prominence in broad focus contexts, but this rule is obviously a violable intonational constraint as not all broad focus sentences will be characterized by sentence final prominence. Göbbel (2003) also shows that broad focus intonation in Romanian is compatible with non-canonical word order. Göbbel (2003) claims that defocused constituents cannot scramble or undergo deletion without violating conditions on movement or recoverability in broad focus interpretations. He also observes that the phrasal stress rule is not applicable in narrow focus contexts. The NSR applies only in broad focus contexts, while if adverbials do not scramble, a narrow focus interpretation will be available, as in (3.10).

Where the adverbials scramble in front of the object, a broad focus interpretation is available, while where the adverbials do not scramble, a narrow focus interpretation is given.

In order to account for scrambling, Göbbel (2003) states "that a word bearing NS (i.e. right peripheral prominence in the intonational phrase) is a focus or part of the focus." and that "the domain of the NSR is the intonational phrase." He goes on and suggests an NSR for Romanian (2003: 89):

a. A word bearing NS is a focus or part of the focus.

b. NS is assigned to the rightmost lexical item in the intonational phrase.

Protopopescu (2014: 17) and Alboiu (2002) suggest a similar interpretation to Göbbel's. They argue that there are two types of scrambling, both semantically restricted and both of which represent non-feature driven movement: VP-scrambling, i.e., de-focusing, which has A-movement properties, and IP scrambling i.e., topicalization, which has A-bar movement properties. Protopopescu (2014) concludes that VS(O) word order is the unmarked order in Romanian, and it is impossible to adjoin the post-verbal subject to VP.

Göbbel (2003) makes some important contributions using Romanian examples showing that:

1. non-canonical order is associated with narrow focus in Romance languages. In Romanian, adverbials scramble in front of the direct object, giving a broad focus interpretation as scrambling is a functional equivalent of deaccenting and allows broad foci to contain defocused material.
2. focus intonation in Romanian can be handled with the AS approach.
3. NSR is active in broad focus contexts and affects the position of adverbials and direct objects.

More evidence from data is needed to account for a more comprehensive NSR rule operating in Romanian as well as the relation between the two rules AS and NSR active only to a certain extent in Romanian. Similarly, Göbbels' (2003) study is mainly theoretical, and gives a semantic and syntactic analysis of focus, without detailed acoustic data. The paper lacks a methodology section, recording procedure, details on subjects and questionnaire rationale, how and why the sentences were elicited, and it also lacks a detailed statistical analysis to account for the results, that would provide more robust findings. Also, the question raised by Ladd (2008) regarding the relation between sentence stress and broad focus in the normal stress view remains unaddressed. The puzzling phenomenon is that in English, for instance, the same sentence stress pattern can signal broad focus (on the larger constituent) or narrow focus (on a single final word). For instance, consider the following example:

(3.12) I did not give him A dollar, I gave him five francs.

Ladd (2008) remarks that there exists an asymmetry in the interpretation of sentence stress in the above example. If the main accent is on *five*, it is clear that this is the contrasted constituent, and signals narrow focus, with five bearing the main accent. But if the main accent is on *francs*, this gives way to two possible interpretations: (1) narrow focus on *francs* (as opposed to dollars) or (2) broad focus on the whole phrase. The question raised by Ladd (2008: 215) is "if the sentence is intended to convey focus on a whole phrase or constituent, on what basis is a single word selected to bear the main accent?" He also notes that although broad focus is intended as focus on the whole utterance, here it is clear that a constituent of any size, or phrase can bear broad focus. A similar phenomenon is encountered in Romanian.

(3.13) Q: Un călător ved-e o femeie frumoas-ă?
INDEF.SG.M traveler see-3SG.PRES INDEF woman beautiful-SG.F
'A traveller sees a beautiful woman?'

A: Un călător nu ved-e o femeie frumoas-ă,
INDEF.SG.M Traveler NEG see-3SG.PRES INDEF woman beautiful-SG.F
'A traveller does not see a beautiful woman,

ved-e un căpitan elegant.
see-3SG.PRES INDEF.SG.M captain elegant
he sees an elegant captain.'

In the above example the focused phrase is *capitan elegant* 'elegant captain'. If the main accent is on *căpitan* 'captain', the intended meaning would be narrow focus on *căpitan*. But on the other hand, if the main accent is on *elegant* 'elegant', this gives rise to two possible interpretations: (1) narrow focus on *elegant* or (2) broad focus on the whole phrase. It was found that across all Daco-Romance varieties, since the adjective comes after the noun in Romanian, informants usually have trouble deciding which word to assign the main pitch accent to, although most of them placed the main accent on the adjective, at the end of the sentence, giving a broad focus interpretation on the whole phrase which was contrasted with *femeie frumoasă* 'beautiful woman' (Turculeț et al. 2006).

3.3.3 The highlighting view

This view goes back to the Prague School (Danes 1967, Bolinger 1972, Chafe 1976 and functionalist linguists). Bolinger particularly rejected the idea that nuclear stress is assigned by a linguistic rule in his famous paper 'Accent is predictable (if you're a mind reader)' and argued that any word from a sentence can be accented and bear nuclear stress. Any word can be highlighted by an accent if it introduces new information or is more salient or informative.

Ladd (2008: 217) argues that the argument this view makes is circular, by giving the following interpretation to this example:

(3.14) A: What did they give you for participating in the experiment?
B: Five francs.

According to the highlighting view interpretation, *francs* is the more salient accent and thus bears nuclear stress. But it is clear that the information of interest is *five* which should bear the nuclear accent.

3.3.4 The Focus-to-Accent view

The Focus-to-Accent view (FTA) has its roots in the generative tradition in semantics and syntax (Chomsky 1972, Jackendoff 1972). The main proponents of this view were Gussenhoven (1983), Schmerling (1976), Ladd (1980) and Selkirk (1984), among others. One of the main benefits of this approach is that it distinguishes between the notion of focus from a semantic and pragmatic point of view and focus analysed from a phonetic and phonological point of view in that it allows focus to apply to larger constituents, not just an individual word (Ladd 2008, 2017). The central idea of work on focus-to-accent is how sentence stress can signal broad focus and how *focus projection* is employed to do that (Selkirk 1994, Steedman 1991, 2000, Buring 1997, 1999, Esteschik-Shir 2007, Ladd 2008). This view interprets sentence/normal stress from the 'normal stress' view as broad focus on the whole sentence and contrastive stress as narrow stress. Despite the fact that the FTA theory is generally accepted, there is still debate on the idea of focus projection in the literature. Usually, the issue is that accents are assigned to individual words rather than larger constituents.

This thesis accepts the FTA view as the most accessible and best of the three as it can better account for the relation between focus and sentence stress in Romanian. Ladd (2008) analysed sentence stress patterns across various languages, including yes-no questions in languages like English and Russian, wh-questions in English,

Hungarian, Bengali, Greek, Romanian and Italian, and deaccenting and contextual deaccenting amongst others, and proposed a typology of sentence stress patterns. Ladd (2008) discovered that even in languages that tend to be left-headed, like Hungarian, the tendency is for the last accented item to bear the nuclear stress, However, he found a great deal of variability in sentence stress patterns which differ from one language to another, for instance, amongst Romance languages. These findings make it difficult to adopt either the highlighting or normal stress view. Furthermore, the FTA view allows for two main pitch accents in a stretch, without affecting the focus of the whole sentence, which works well for Romanian in cases like wh-questions and longer yes-no questions where the main accent lies on the wh-word. This also applies in long wh-questions where there may be one or more accents later in the sentence.

Swerts (2007) argued in an experimental comparative study of contrast and accent in Dutch and Romanian that compared to Dutch, the Romanian data did not yield any clear evidence of interaction between contrastive factors and accent distributions. Swerts (2007) also concluded that although Romanian was considered to be positioned between Romance and Germanic languages (Winkler and Göbbel 2002), with respect to the prosodic marking of information status, Romanian behaves just like Italian and Spanish in that it resists deaccentuation inside syntactic constituents. The data from Swerts (2007) suggests that, unlike Dutch (representative of Germanic), Romanian does not show any evidence of a relation between contrast and accent, but rather, prominence patterns have a demarcative function, marking the right edge of the speech unit (Swerts 2007). The statement used in the experiment is of contrastive type (*Pătratul ALBASTRU atinge pătratul roșu.* 'The BLUE square touches the red square') and the intonation is special in that it has to convey the contrast between two words or two groups of words using tonal meanings (Swerts 2007: 389). One of the modalities used to express the contrast is to hold the first element(s) at relatively low level during the accented syllable and to bring the tone(s) of the contrasted element(s) to a high level on the accented syllable. During the initial NP (*pătratul albastru* 'the blue square') the intonation has to generate the low turning point of the contrast. The small pitch range close to a low minimal tone needed for that, explains the lack of the prominence pattern on the constituents of the first NP. It is impossible to overlap the contrast generation with the accentuation of the words within the first NP by using high pitch accents. The accent was marked by increasing the length of the corresponding accented syllable. The

speaker had to choose another intonation pattern which synchronizes the high turning point of the contrast with the required accent.

Frota and Prieto (2015: 415) argued in a cross-linguistic analysis of intonation in Romance languages that the intonational grammar of Romance languages differs from the intonational grammar of English proposed by Pierrehumbert (1980) (and also Ladd 2008) in four respects:

1. Phrase accent. The status of the intermediate phrase and intermediate phrase edge tone is different in Romance compared to English. The ends of IPs use either simple or complex boundary tones, and no phrase accent.

2. The internal structure of intonation contours. In Romance, pre-nuclear accents and nuclear accents constitute two sets of pitch accents.

3. Not all possible sequences of pitch accents and boundary tones are assumed to be legal in the respective Romance language. Many legal pitch accents and boundary tones found in English are not attested in Romance languages.

4. Unlike English and West Germanic languages, Romance languages tend not to be de-accented in statements.

It was previously shown that besides syntactic and semantic marking of focus such as word order, there are also various prosodic means to mark the distinction between broad and narrow focus. It was argued (Frota 2000, Face 2001, 2002, Ladd 2008, Manolescu et al. 2009, Jun 2014) that duration, fundamental frequency (including pitch excursion and pitch range which is relevant for deaccented material in Romanian), and peak alignment can distinguish between focus types in German (Baumann et al. 2007, Braun 2007).

3.3.5 Focus in Daco-Romanian

Broad focus (BF) and Contrastive focus (CF) in Romanian intonation represent another issue that was tackled only in the latest research. There are no studies that give a comprehensive account of the major pitch patterns of broad focus and contrastive focus in statements or questions in Romanian. There are, however, some impressionistic studies on BF and CF in Romanian (Dascălu-Jinga 1998, 2006; Winkler and Göbbel 2002; Swerts 2007, Manolescu et al. 2009). Dascălu-Jinga (1998) provides a first inventory of pitch patterns in Romanian following the International Transcription

System for Intonation (INTSINT) developed by Hirst and used in a larger comparative study of intonation in 20 languages (Hirst & Di Cristo 1998). Within the basic inventory of intonation patterns in Romanian, Dascălu-Jinga (1998) argued that in BF statements there is a single nuclear accent on the last accented lexical element; the intonational contour is placed on the last constituent, and the pitch level of the rest of the group before the nuclear accent remains the same. In these types of sentences Dascălu-Jinga (1998: 241) argues that the intonation pattern is a falling-rising one, and that the duration of the fall is prolonged in longer sentences. Dascălu-Jinga (1998) agrees with Iordan & Robu (1978) when she suggests that the falling pattern can be used to modify any word in the CF statement, in which the contrast is expressed through an increased prominence - also known as 'positive prominence' in Dascălu-Jinga (1998) - of a rising or falling nuclear accent. The intensity of the whole group is bigger, and the nuclear accent has a different pitch pattern compared to the BF statement. The descriptive study gives an inventory of basic intonation patterns in Daco-Romanian and sets out the terminology that future research should refer to. For instance, focus and emphasis (or interrogative emphasis) are used interchangeably, while contrastive focus is also called assertive emphasis.

Manolescu et al. (2009) studied the intonation patterns of BF and CF in Romanian for declarative sentences and provided a detailed description of the pitch contours linked to the issue of focus in Romanian. In this experiment, Manolescu et al. (2009) measured F2 movements, duration, pitch range and pitch alignment to find out what cues Romanian listeners rely on to produce a contrastive focus vs. a broad focus statement. Manolescu et al. (2009: 14) argue that "Romanian speakers highlight the accented word in contrastive focus by contrasting the large pitch excursion of the CF pitch accent against the flat F0 trajectories of pre- and post-focal contexts, especially in those words that are adjacent to the CF. They also make the word under CF sound longer, not by lengthening the segmental durations of the word under focus, but by compressing the durations of the words adjacent to the CF." The conclusion of this study is consistent with Swerts (2007): broad and contrastive focuses in declarative sentences in Romanian are very similar to those of Spanish and Italian, as they have a high density of pitch accents and each lexical stress in the sentence bears a pitch accent.

There is an increasing divide between those who study syntactic/semantic issues surrounding focus and those concerned with phonological and phonetic questions (Beaver et al. 2007). It is generally agreed that languages differ prosodically in the type

of prominence marking used, and more recently it was shown that they also differ in macro-rhythm (Jun 2014). Romance languages vary with respect to the mechanisms employed in focus realisation. European Portuguese, for instance, uses a special pitch accent type to mark a word under narrow focus intonation, H*+L, while it uses an H+L* for nuclear accents in broad focus statements (Frota and Prieto 2014).

Frota (2002) argues that there is a contrast in European Portuguese between H+L* for nuclear accents in broad focus utterances and H*+L (a later fall that positions the peak closer to the middle of the accented syllable) for a word in narrow focus. D'Imperio (2002) claims that a similar contrast exists for Neapolitan Italian between H+L* for broad focus and L+H* for narrow focus. As Beckman et al. (2002) remark, "in both of these languages, the marking of narrow focus on a non-final word is accomplished by the use of the special focal accent, accompanied by deaccenting i.e., the suppression of accents on any following words within the same intonational phrase." Frota and Prieto (2014) also observe that broad and narrow focus statements in Romance languages are usually distinguished by the use of only two basic patterns, each divided into two sub-patterns: "nuclear falls (high fall and low fall, typically H* + L L% and L* L%), and circumflex contours (with H* and L* as the accentual tone)." The authors conclude that most Romance languages with circumflex contours display either L+H* L% (the most common pattern) or L*+H L% patterns. One question that arises with regard to Daco-Romanian is whether or not there is any deaccenting of post-focal material when the context calls for narrow focus on a non-final word.

With respect to the relation between sentence stress or nuclear stress and focus, it is generally agreed that the sentence stress in an utterance reflects the utterance's intended focus, or broad focus (Ladd 2008: 213, Göbbel 2002). Thus, it is important to consider how nuclear stress is assigned in the language and why.

There are also several studies at the syntax-phonology interface. Zubizarreta (1998) proposed a 'modularized Nuclear Stress Rule' theory for Romance, including Romanian, based on Chomsky and Halle (1968) and Cinque (1993) that applies in both narrow and broad focus statement contexts. Zubizarreta's modularized Nuclear Stress Rule (MNSR) is sensitive to selectional ordering (S-NSR) and constituent ordering (C-NSR, the only one which is operative in Romance) (Winkler and Göbbel 2002). This theory was partly refuted by Winkler and Göbbel (2002) who argued that the Nuclear Stress Rule does not apply in languages that allow contextual deaccenting since the Nuclear Stress Rule "does not see defocused material if the language allows contextual

deaccenting" (Winkler and Göbbel 2002). In addition, bringing evidence from Romanian, which allows contextual deaccenting, Winkler and Göbbel (2002) reach the conclusion that the Nuclear Stress Rule is operative in Romanian in broad focus statements. Interestingly, these are possible even with the 'non-canonical' word order that is generally associated with narrow focus in other Romance languages.

Pană Dindelegan (2013) argues that word order change in Romanian can mark topicalization by placing a constituent in initial position (at the left periphery) to mark its topic role. This is realised by:

(3.15)

a. fronting or proper topicalization (change in word order) – left dislocation, accompanied by clitic or demonstrative doubling:
   CARTE=A o citesc.
   book=DEF.SG.F 3SG.F.ACC read.1SG.PRES
   'THE BOOK I read'.
b. A hanging topic, a suspended theme, accompanied or not by specific markers.

3.3.6 Nucleus placement

Regarding nucleus placement, the consensus view is that in Romanian intonation the nucleus is placed on the accented syllable of the last item of the intonational phrase (Dascălu-Jinga 1998, 2001, Chițoran et al. 1984; Ladd 2008). However, Chițoran et al. (1984) argue that the nucleus is not automatically assigned to the last item of the intonational phrase, but the word 'with the maximum load of information' and this word does not have to be characterized by extra emphasis, but occurs against a background of topicalised information (Chițoran et al. 1984). It seems that in Daco-Romanian, nucleus placement is governed by the information structure of the utterance. If the utterance contains old information in final position, the principal pitch prominence is assigned to an earlier item containing rhematic information. Romanian belongs to the category of languages that allow the main accent to be placed earlier in the sentence named by Bolinger (1986) 'accent of interest' (Ladd 2008). Also, the nucleus can move towards the beginning of the intonational phrase in the case of emphatic or contrastive focus statements (Iordan & Robu 1978):

(3.16) Ion era dus afară.
PN be.IMPRF.1SG carry-PP outside
'John was brought outside.' (broad focus)

(3.17) Ion era dus afară.
PN be.IMPRF.1SG carry-PP outside
'*John* was brought outside.' (not anyone else)

(3.18) Ion era dus afară.
PN be.IMPRF.1SG carry-PP outside
'John was brought *outside.*' *(*not anywhere else)

(3.19) Ion era dus afară?
PN be.IMPRF.1SG carry-PP outside
'*John* was the one brought outside?'

(3.20) Ion era dus afară.
PN be.IMPRF.1SG carry-PP outside
'John was *brought* outside.'

(3.21) Ion era dus afară?
PN be.IMPRF.1SG carry-PP outside
'John was *brought* outside?' (he did not go by himself?)

(3.22) Ion era dus afară?
PN be.IMPRF.1SG carry-PP outside
'John was brought *outside*?'

Within the AM theoretical framework, Winkler and Göbbel (2002) claim that in BF statements syntactic arguments are associated with bitonal accents L+H* and H+!H, and verbs are usually associated with an H* accent.

3.4 Prosodic phrasing

Any utterance is segmented into a sequence of stress groups that correspond to accented and stressed syllables. The parsing of the utterance into such intonation categories is called prosodic phrasing. The term *prosodic constituent structure* is also used for prosodic phrasing. Prosodic structure is projected from syntactic structure but differs from it and follows the rules of prosody. Most inventories and typologies of tonal structures and pitch accents at the prosodic phrase or intonation phrase level include: lexical stress languages such as English and most Romance languages, pitch accent languages like Japanese and Swedish and, more recently, phrase languages like French (Féry 2017), Georgian (Sopeteas, Féry and Asatiani 2009), Finnish (Arnhold 2016) and West Greenlandic (Rischel 1974 and Arnhold 2014) that differ from intonation languages in that they do not associate pitch accents with stressed syllables.

Féry (2017) observes that a taxonomy of three or four different categories of intonation, such as the one based on their tonal structure: intonation languages, tone languages, pitch accent languages or phrase languages, is insufficient, and that sentence intonation also needs to be taken into consideration.

Intonation languages like Daco-Romanian are able to manipulate the contour of their pitch accents and boundary tones and also the pitch of individual syllables by giving them more prominence according to their information status (Féry 2017: 232). There can be wide differences between intonation languages as they can assign different pre-nuclear, nuclear or post-nuclear accents, and make use of different pragmatic meanings.

Prosody is known to be divided into hierarchically organized speech chunks that help the listener decode the message. Prosodic constituents are metrically organized in a prosodic hierarchy discussed above, following various phonological rules (Nespor and Vogel 1986/2007).

The Strict Layer Hypothesis was developed by Selkirk (1984) and Nespor and Vogel (1986/2007) and is governed by well-formedness properties such as the Strict Layer Hypothesis.

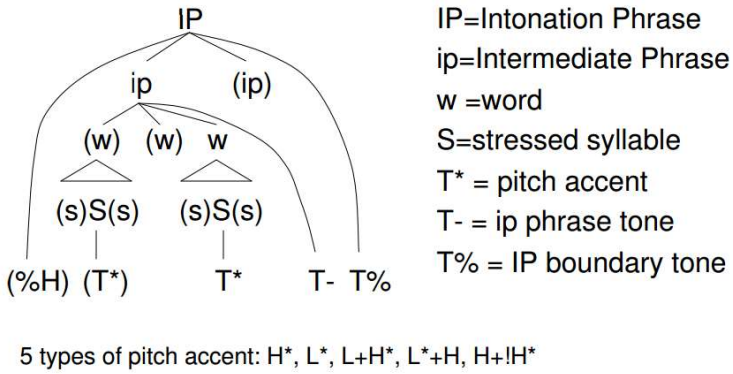


Figure 3.1: The Strict Layer Hypothesis (after Beckman and Pierrehumbert 1986)

Ladd (1996) argued that the Strict Layer Hypothesis (SLH) involves various limitations, such as non-recursivity, which fail to account for some fine-grained phonological phenomena. Subsequently, there were some attempts to adapt the SLH in order to better describe various phonological phenomena (Ladd 1992; Selkirk 1996).

The clitic group (CG) was another development of the prosodic hierarchy proposed by Hayes (1989) which occurred between the Prosodic Word and the

Phonological Phrase. Daco-Romanian prosodic structure and phrasing was relatively little studied (Grice, Ladd and Arvaniti 2000; Ladd 2008; Jitcă et al. 2015).

The present account of Romanian intonation is based on the following prosodic domain types at the higher levels of phrasings in the prosodic hierarchy: the intonational phrase, the intermediate phrase and the phonological phrase.

The first attempt at applying functions to prosodic units at the communicative act level was presented in Jitcă et al. (2009). This system of prosodic phrasing is also adopted in work on information structure and information packaging in a functional framework by Jitcă (2019). There is another account of prosodic phrasing (Jitcă et al. 2009) from a that includes the intonational phrase (IP), the intermediate phrase (ip), the phonological phrase and the accentual unit (AU). In Jitcă et al. (2009) the intonational phrase and intermediate phrase domains have the same properties as given by the ToBI annotation system. The ip type prosodic domain corresponds to a major phonological phrase (MaP), while the phonological phrase domain corresponds to a minor phonological phrase (MiP), both used by Selkirk (2005) in defining the prosody-syntax interface. The AU represents a more general case of a prosodic word since it may contain cliticised words in addition to the accented word. The difference between an ip and a phonological phrase stems from the presence/absence of a functional AU representing a prosodic predicative element. This definition requires a functional perspective in Daco-Romanian intonation modelling.

Most Romance languages show evidence of two prosodic constituents above the prosodic word in the prosodic hierarchy, namely the intonational phrase (IP) and the intermediate phrase (ip). Evidence from our data in Romanian shows that Romanian, like most other Romance languages, includes an Intonational Phrase (IP) and an intermediate phrase (ip) above the word level.

The present account of Daco-Romance intonation is based on the following prosodic domain types at the higher levels of phrasings in the prosodic hierarchy: the intonational phrase, the intermediate phrase and the phonological phrase.

3.4.1 The intonational phrase

An intonational phrase in Daco-Romanian is usually at the highest level of the utterance hierarchy and consists of at least one pitch accent followed by a boundary tone at the edge of the constituent. Pause and juxtaposition mark the beginning or the end of an intonational phrase in connected speech, while a string of intonational phrases can be

marked by pitch range reset. Our data shows that phrase ends are associated with various phonetic correlates such as pauses, smaller amplitude, longer duration of the last syllable in the intonational phrase. However, this is valid for broad focus statements only, as the nuclear accent does not follow the NSR rule in yes-no and wh-questions in Daco-Romance.

In the ToBI annotation system the contour presented in Figure 3.2 is described by applying a low phrase accent (L-) followed by 3 break index after the focused verb *vedi* and no other label, until the L% boundary tone that ends the intonational phrase (4 break index). The contour corresponds to a contrastive focus statement with nucleus and narrow focus on the verb.

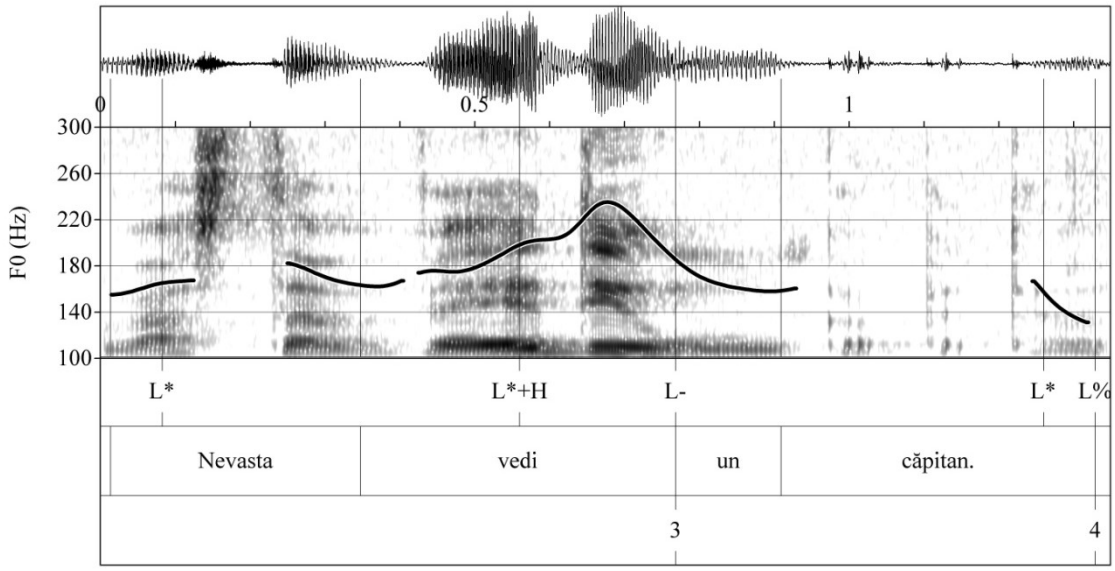


Figure 3.2: Waveform, spectrogram, and F0 contour of the contrastive focus statement Nevasta VEDI un căpitan*. 'The wife sees a captain.' produced by a speaker of Megleno-Romanian).*

3.4.2 The intermediate phrase

The intermediate phrase is also present in Daco-Romanian under the intonational phrase. The right edge of an intermediate phrase is usually cued by final lengthening and a reduced final pitch excursion in comparison to an intonational phrase. It ends in a phrase accent.

Similarly, the main stress of an intermediate phrase is the last accented syllable. An additional intermediate phrase can be instantiated by various syntactic structures and the additional phrasing helps in instances of ambiguity.

The intonational phrase and intermediate phrase are acoustically marked by the downstep tendency of pitch contours which is present and spans until the end of the IP

or ip. Ladd (2008) discusses wh-questions in Greek and Romanian and argues that in long wh-questions a second pitch accent is visible, which is evidence for the existence of an intermediate phrase.

Below the intermediate phrase in the prosodic domain hierarchy, there is also a potential further level of phrasing, namely the *phonological phrase*, but this is not a straightforward addition, and the question remains open as to whether or not subtle evidence can be found in Romanian to show some manifestation of the phonological phrase. There is evidence to indicate that in some Romance languages, such as certain varieties of Italian, French or Brazilian Portuguese, phonological processes such as Final Lengthening or Stress Retraction are present at the phonological phrase level (Frota and Prieto 2015).

The prosodic hierarchy adopted here is in line with the prosodic hierarchies of Selkirk (1984) and Nespor and Vogel (1986, 1989) in which the number of grid marks is associated with a specific number of phonological types. Moreover, the hierarchy adheres to the rules of the Strict Layer Hypothesis (SLH). Ladd (2009: 291) pointed the fact that the SLH is too restrictive: "there is a hierarchy of prosodic domain types such that, in a prosodic tree, any domain at a given level of the hierarchy consists exclusively of domains at the next lower level of the hierarchy."

The adjustment of the hierarchy to allow recursion provides a more complex correspondence between the metrical grid and prosodic hierarchy, with an increased number of phonological layers and grid marks.

Ito and Mester (2009) propose a prosodic hierarchy with two groups: a lower level of word-internal units such as the syllable, foot and mora, and a higher level of units that includes the prosodic word, phonological phrase and intonational phrase. Parsing of the higher-level units is regulated by constraints. Higher level units are called *interface* categories while lower units are *rhythmic* categories. Following evidence from Japanese, it is argued that a single phonological phrase category can replace two distinct phrasal categories as they are not necessary. The distinction between the categories of major phrase (MaP) and minor phrase (MiP) do not need to be postulated as two separate interface categories, but rather, a single category, 'phonological phrase' which allows recursion. We have not yet identified a distinction between minor and major phonological phrases in the data.

However, there are some arguments for the existence of a *phonological phrase* in Romanian. One argument is that there is some acoustic evidence that could be

associated with the phonological phrase. IP and ip are acoustically characterised by downstep which continues until the end of the IP or ip. The phonological phrase could potentially be marked by a final tone that will remain close to the tone of the last accented syllable, similar to a continuation tone.

Daco-Romanian, like other Romance languages, is different from French and Occitan with respect to prosodic phrasing as it does not include the Accentual Phrase (AP) in its prosodic hierarchy. French and Occitan (Frota and Prieto 2015) show evidence for an Intonational Phrase, an Intermediate Phrase and an Accentual Phrase. The smallest of the three can include more than a lexical word and clitics and is encoded by a break index assigned to the right edge of the AP and a pitch accent associated with the last metrical syllable (Delais-Roussarie et al 2015: 68). Romanian intermediate phrases only consist of two or three prosodic words and are not encoded by a further constituent between the two groups to indicate initial or final tonal features. Ladd (2008) suggests additional accents for intermediate phrase constituents, namely compounds of prosodic words, to account for the phrasal accent suggested in Grice et al. (2000).

The data presented in this thesis shows that intonational phrase (IP) are associated with boundary tones and intermediate phrases (ip) are associated with phrase accents. Any IP will have an implicit ip, and a phrase accent is present. Phrase accents are usually associated with an H tone, frequent in yes-no questions and boundary tones are usually asociated with a L%. In YNQ that end in an accented syllable (oxytone) the last syllable corresponds with a phrase accent H- and a boundary tone H%.

The prosodic word (PrWd) includes a content word and its clitics. Prosodic words bear one stress and can thus receive a pitch accent.

3.5 Information Structure and Intonation

The general consensus among studies about information structure at the syntax and discourse interface is that information structure is a discourse-level structure which encodes a dichotomy between givenness, i.e. focus on the other hand, and aboutness, i.e. topic/comment of an utterance (Kuno 1972, Firbas 1966, Halliday 1967, Prince 1981, Chafe 1976, 1993, Lambrecht 1986, 1994, Rooth 1985, Vallduvi 1990, Erteschik-Shir 1997, 2007, Zimmerman and Féry 2009, Krifka 2006, Krifka and Musan 2012, Büring 2005, 2006 and Steedman 1991, 2000, 2014, Pană-Dindelegan 2013, among others).

Romanian, like Spanish or Hungarian, has two simultaneous focus positions: one that is sentence-peripheral and one that is verb-adjacent. Both the focus and the right-adjacent verb are raised to the left periphery (Balazs 2016: 429).

Jitcă (2017) proposes a new approach to information structure in Romanian, namely a functional analysis from an information packaging perspective in which an utterance is organised as a hierarchy of nested communicative units which are related to information structure partitioning. The new analysis works with information structure at two independent levels: topic-focus structure and the communicative units (predicate and argument structure).

The main unmarked word order in Romanian is SVO (Ledgeway 2001: 408), although this view has been debated more recently (Alboiu 2002). Romanian is a "discourse configurational language" (Kiss 1995) and makes use of word order to mark topic-comment and focus.

Wh-phrases are always placed at the beginning of the phrase and the subject is obligatorily postverbal if different from the wh-word or phrase, while indirect wh-questions have the same word order as direct interrogatives, i.e. with a postverbal subject (Zafiu 2013: 568), hence the ungrammaticality of (b) in the examples below.

(3.23) a. Ce a găsi-t Ion?
what CP.3SG find-PP PN

b. *Ce Ion a găsi-t?
what PN CP.3SG find-PP
'What did John find?' (Pană-Dindelegan 2013)

There is not a fixed word order for objects, but indirect before direct object word order is preferred if objects are DPs to avoid the genitive-dative ambiguity (Zafiu 2013). Dative shift on the other hand is considered a case of A-movement and dative shift feed binding of variable pronouns (Göbbels 2002). Dative always shifts before accusative for pronominal clitics.

(3.24) Arăt publicu=lui tablou=l.
show.1SG.PRES public=DEF.M.SG.D painting=DEF.M,SG.ACC
'I show the painting to the public.'

(3.25) Arăt tablou=l publicu=lui.
show.1SG.PRES painting=DEF.M.SG.ACC public=DEF.M.SG.D
'I show the painting to the public.'

(3.26) I-l arăt.
3SG.M.D=3SG.ACC show.1SG.PRES
'I show it to him/her'

Topicalization is realised by various constructions such as fronting (also known as proper topicalization), left dislocation accompanied by clitics or demonstrative doubling and hanging topics (Zafiu 2013). Prepositional objects and adverbials change word order, which leads to fronting or topicalization. A hanging topic (see 3.27) is usually prosodically isolated by specific markers (such as *cât despre, în privința, referitor la* 'as far as x is concerned').

(3.27) Cât despre cafea, este destul de proastă.
as for cofee is quite bad
'As for the coffee, it is quite bad'

Right dislocation is realised by adding a prosodically isolated phrase. Left dislocation is realised in the case of direct and indirect objects (DPs and pronouns) (Zafiu 2013: 571). Notice the pronominal clitic resumption in the second sentence.

(3.28) a. Citesc carte=a.
read.1SG.PRES book=DEF.SG.F.ACC
'I read the book.

b. Cartea o citesc.
book=DEF.SG.F.ACC 3SG.F.ACC read.1SG.PRES
'It is the book that I read.'

(3.29) a. (Îi) scriu băiatu=lui.
(3SG.D) write.1SG.PRES boy=DEF.SG.M.D
'I write to the boy.'

b. Băiatu=lui îi scriu.
boy=DEF.SG.M.D 3SG.D write.1SG.PRES
'It is the boy to whom I write'

Contrastive focus can be marked by intonation and is sometimes associated with non-canonical word order such as fronting or focusing adverbs. The topic and rheme/focus occur in initial position in the example below: the topic is unmarked while the focus bears phrasal stress and can take focusing adverbs to its left (Zafiu 2013: 574).

(3.30) Deocamdată au mânca-t [CIREȘ-E=LE]
so.far CP.3PL eat-PP [cherry-PL=DEF.PL.F.ACC]

și Au lăsa-t căpșun-i-le.
and CP.3PL leave-PP strawberry-PL=DEF.PL.F.ACC
'So far, they have eaten the cherries and left the strawberries.'

Jitcă (2018), in a recent study of information structure argues that information structure can be partitioned at the information packaging level into two components at the highest level by including left-branching into hierarchy: one corresponds to the subject and the second to the verbal phrase. In order to better understand Jitcă's (2018) functional approach to information structure, I have provided examples of narrow focus contexts also found later in Chapter 6, to show how these can be described following Jitcă's (2018) functional model of information structure. The example below illustrates this view (Figure 3.3). The verb is related to the new information element within the verbal phrase and bears the local nuclear function marked by emphasis. The verb subordinates the object which has lower level at the F0 contour level. An L- phrase accent must be applied after the subject and a 3 break index. The ip of the verbal phrase ends in a L% boundary tone which also includes a L- phrase accent. The intonational phrase at the global level pairs the subject and the verbal phrase. The IS partitioning view uses intonational contours in order make correct deductions of the nuclear element at each level of utterance trees. The prosodic unit realisation tree is not different from the IS partition hierarchy.

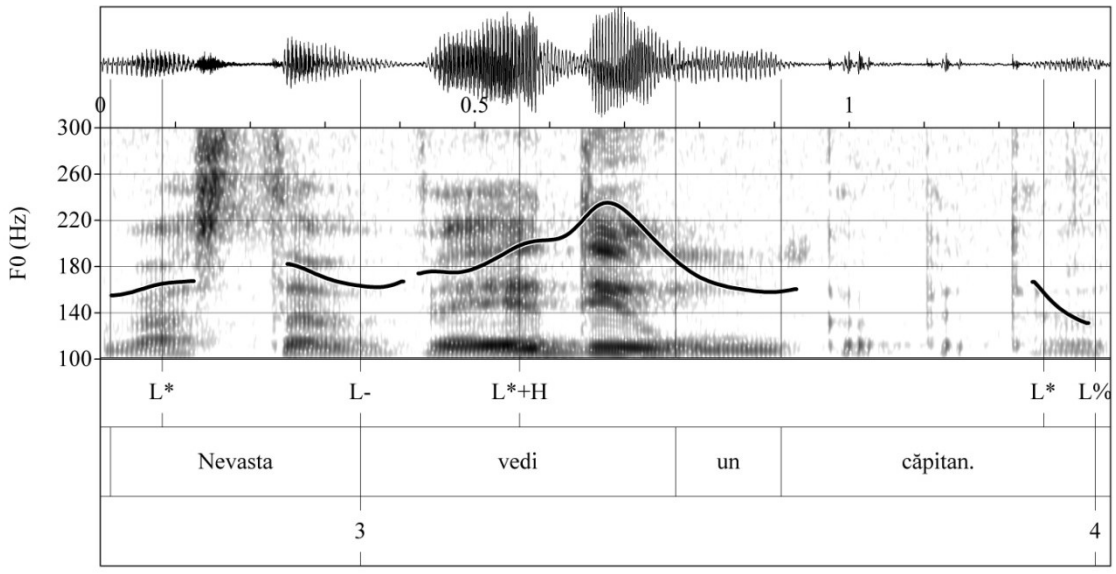


Figure 3.3: Waveform, spectrogram, and F0 contour of the contrastive-focus question Nevasta VEDE un căpitan with medial focus. *'The wife sees a captain' produced by a speaker of Daco-Romanian.*

Daco-Romanian, as most Romance languages, shows evidence of two prosodic constituents above the prosodic word in the prosodic hierarchy, namely the intonational phrase (IP) and the intermediate prase (ip). Jitcă (2018) also argues for annotating lower

level prosodic phrases (phonological phrase). The contour in Figure 3.4 of Aromanian contrastive focus statement the post-focal part is not compressed and it includes three constituents with pitch accents organized into nested units (phrases): the low level phrase pairs the negation and the verb and the article *un* and the high level phrase (the second ip) pairs the embedded phrase with the object. Following Jitcă's (2018) view the low level phrase is a phonological phrase where the negation particle bears the nucleus (by emphasis). In the second ip the object is also subordinated by the negation particle *nu* which is the local emphasized word. The first ip includes the subject. At the global level the two ips are sister constituents and the subject subordinates the rest of the sentence by emphasis. It has higher isolated tonal space and it is bears global nucleus.

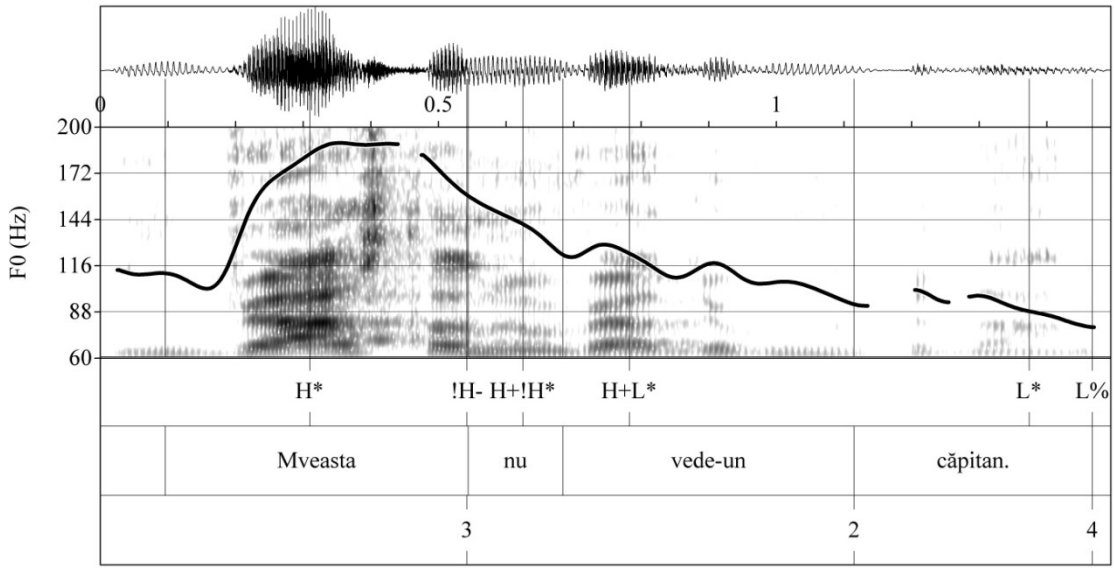


Figure 3.4: Waveform, spectrogram, and F0 contour of the contrastive focus statement NEVASTA vede un căpitan *(initial contrastive focus). 'The WIFE sees a captain.' produced by a speaker of Aromanian.*

According to Jitcă (2018), in intonational analysis, phonology accounts for events which can be perceived at the auditory level. The contour in Figure 3.5 is perceived as a sequence of three constituents isolated in three ips. The subject and the verb are followed by break with 3 indices in a ToBI annotation but the representation of contour as a sequence of three ips is not useful in identifying the nuclear accent. Further acoustic cues can be identified in the F0 contour.

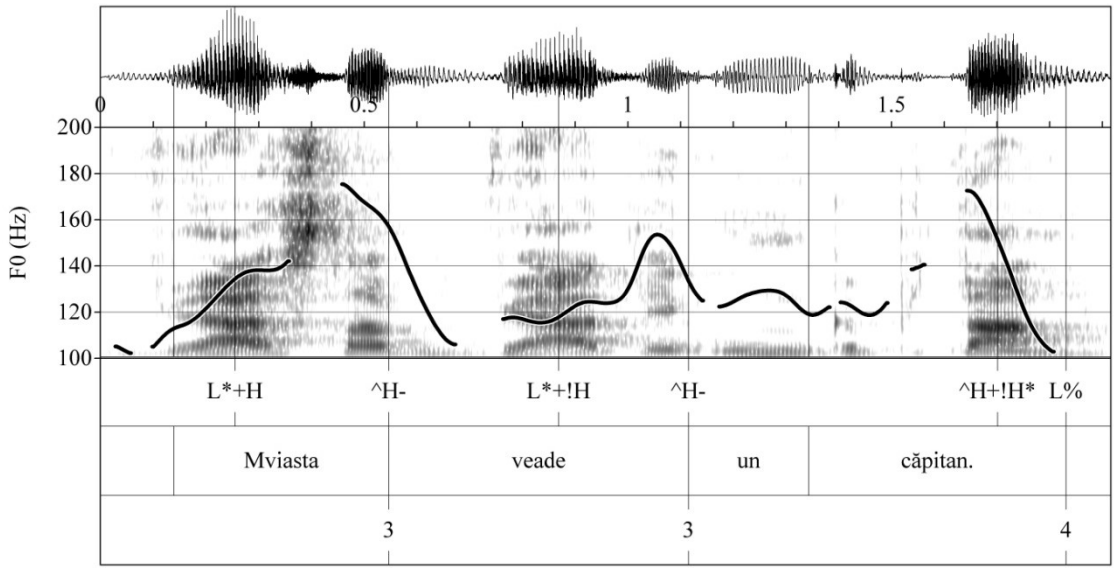


Figure 3.5: Waveform, spectrogram, and F0 contour of the broad focus statement Nevasta vede un căpitan (initial contrastive focus). *'The wife sees a captain.' produced by a speaker of Aromanian.*

There are also acoustic cues for the IS partitioning of contours. Contrast between certain acoustic cues leads to functional contrast identification between constituents and functional contrast are the basis for pairing them into an IS partition unit. As it is annotated in figure 3.6 the first two constituents, the subject and the verb *veade* may be grouped having different time variation patterns during their accented syllables: with abrupt pitch movement in the former case and slow pitch movement in the latter case. The verb is the constituent with low prominence accent having the lowest tonal target and it bears the local nuclear function. In annotation we keep the 3 break indice and the H- phrase accent only after the verb. At the global level the ip is paired with the object, the latter one having high target tone because has high tones in the most part of the accented syllable. The low prominence is carried by the ip and its local nuclear element (the verb) that is also nucleus at the intonational level.

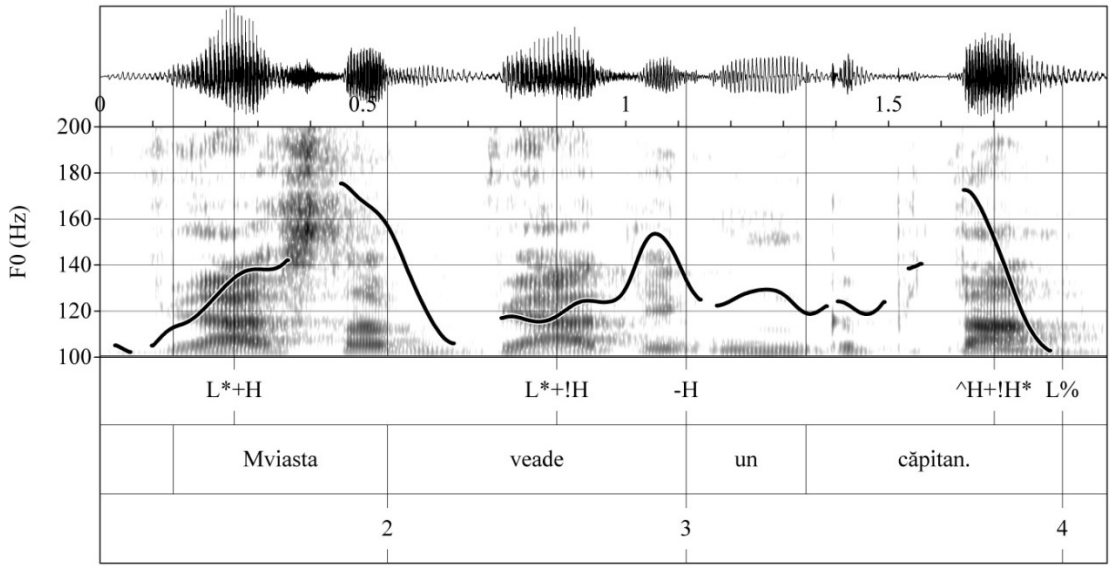


Figure 3.6: Waveform, spectrogram, and F0 contour of the broad focus statement Nevasta vede un căpitan*. 'The wife sees a CAPTAIN.' produced by a speaker of Aromanian.*

3.6 Eastern European question intonation

Ladd (2008) points out a few interesting facts about Eastern European question intonation (yes-no questions and wh-questions), Romanian included. Among other things, the author addresses issues in relation to the location of the nuclear accent, the shape of the nuclear accent and boundary pitch movement, presenting a phonological analysis of the question tune. Romanian is argued to pattern like Slavic languages and crucially not like Romance languages. This thesis will explore how pitch accent is distributed in Romanian (i.e. whether every lexically stressed word receives a pitch accent) and whether there are any post-nuclear accents in Romanian, which is what Ladd (2008) suggests.

Ladd (1996) carried out a crosslinguistic analysis to point out several intonation universals using the AM framework. According to Ladd (1996: 171-172), the location of the nuclear accent in wh-questions can depend on the length of the sentence. Thus, in short wh-questions the nuclear accent would be located on the wh-word, whereas in longer wh-questions there may be another accent falling on sentence-final position. He compared question intonation in Hungarian and other Western European languages, including French and Romanian, and notes that in Hungarian as in Romanian yes-no questions, the "neutral location for the nuclear accent ... is on the finite verb." Although the pitch on the verb is low, Ladd (1996: 82) notes that the question tune (3.31) ends

with a high falling pitch movement that, to the Western ear, sounds like a declarative falling accent and is not associated with a stressed syllable.

(3.31) Ai văz-ut rege=le?
CP.2SG see-PP king=DEM.SG.M.ACC
'Did you <u>see</u> the king?'

Turculeț (2008) seems to suggest that the emphasis on the verb is just a diatopical characteristic of Daco-Romanian spoken in Transylvania, but not in Bucharest. In this particularly interesting example, Ladd (2008: 83) states that differences in focus and emphasis are achieved by changing the location of the nucleus; however, the location of the nucleus stays on the verb if no special focus is intended. Nucleus shift and word order can also change the pragmatic meaning of these types of questions both in Hungarian and Romanian.

Another particularity of Romanian intonation discussed by Ladd (2008: 145-6) is the 'Eastern European Question Tune' (EEQT hereafter) or the phenomenon of postnuclear accents (Grice, Ladd and Arvaniti 2000, Ladd and Arvaniti 2009) found in languages such as Romanian, Hungarian, Greek and Croatian. The contour consists of an L* (or L*+H) nuclear pitch accent and an H_L% edge tone, which in Hungarian is not a pitch accent, despite the fact that it is acoustically more salient. The sequence H_L% is problematic in the EEQT because the line between edge tones and pitch accents is blurred (Ladd 2008: 145). It is argued that in some Eastern European languages such as Hungarian, the H_L% sequence is associated with the edge of the phrase, whereas in others, the H of the H_L% phrase may be associated with the stressed syllable of the word that follows the focused word (Ladd 2008: 146). It is likely that in Romanian this sequence is associated with the phrase edge as in Hungarian.

(3.32) Xorév-i?
dance-PRES.3SG
L* HL%
'Is s/he dancing?' Lit. 'S/he dances?'

(3.33) Xorévi apópse?
L* H L%
'Is she dancing tonight?' (Lit. 'S/he dances tonight.')

(3.34) Xorévi apópse?
H* L* HL%
'Is she dancing tonight?'

Ladd (2008: 225) concludes that the main accent in YNQ is on the verb in languages like Russian, *regardless of the fact that the sentence contains nouns*, whereas in languages like English, and other Germanic and Romance languages, the main accent in YNQ is on the verb *only if* there is no following lexical noun. Romanian is an exception to this rule and falls under the category of 'languages like Russian'.

Ladd (2008: 227) also gives Romanian as an example of a language that treats wh-questions and statements differently. In Romanian, the pitch comes down quickly on the unstressed syllable of the wh-word, and there is no further movement on the following word. Native speakers have the intuition that the wh-word bears the main accent. There is a special descending tune for wh-questions: "more relevantly for the comparison with ordinary English WHQs, there are languages where wh-movement puts the nuclear accent on the wh-word, so long as the sentence is fairly short" (Ladd 2008: 227). Romanian and Hungarian are used as examples where the first wh-word bears the main accent:

(3.35) UNDE merg-i?
where go-PRES.3.SG
'Where are you going?'

(3.36) CÂȚI ban-i ai?
how.many coin-PL.M.ACC have.PRES.2SG
'How much money do you have?'

(3.37) CÂND a pleca-t?
when CP.3SG go-PP
'When did she leave?'

(3.38) CINE a chema-t?
who CP.3SG call-PP
'Who called?'

Importantly, two typological patterns emerge in the cross linguistic analysis of wh-questions. Firstly, WHQ follow the same sentence stress principles as other sentence types, as they would do in English. Secondly, WHQ follow a special rule in which the neutral location of the main accent is on the wh-word as in Romanian and Greek (Ladd 2008: 227). Moreover, Romanian poses some difficulties in determining how sentence length affects this special rule as it is not always obvious to phonetically identify the most prominent word or syllable. One of the special features of Romanian intonation is

that in long WHQ there may be one or more accents later in the sentence, and either of the two versions are accepted:

(3.39) Unde ai cumpăra-t cravat=a ASTA?
UNDE ai cumpăra-t cravat=a asta?
where CP.2SG buy-PP tie=DEF.SG.F.ACC this.F
'Where did you buy this necktie?'

(3.40) Cu cine ai vorbi-t la FACULTATE?
Cu CINE ai vorbi-t la facultate?
PREP who CP.2.SG speak-PP PREP Faculty
'Who did you talk to at the university?'

It is important to distinguish between primary sand secondary accents in such sentences. The wh- word is accented by default and bears primary stress, however, if 'asta' or 'facultate' are contrasted with another element, they will receive primary stress. A clear understanding of how accent works in Romanian may shed more light on the broader question, i.e. what are the mechanisms that can identify the most prominent syllable in YNQ. Ladd (2008: 228) argues that YNQ intonation in languages like Russian have a high peak accent on the most prominent syllable (H+H*_L) and the question peak is aligned with the most prominent syllable, whereas in many Eastern European languages including Romanian, the normal intonation is L*_H_L%, and the most prominent syllable is actually phonetically low, followed later in the sentence by a peak-and-fall which may be acoustically more salient than an L*. This analysis of a low syllable as nuclear accent followed by a peak-and-fall pitch movement is still debated in the literature, especially by researchers that approach the subject from a narrower phonetic perspective, such as Gosy and Terken (1994) and Xu (2005) who argue that pragmatic prominence is associated with acoustic salience.

3.7 The AMPER project

The first linguistic atlases appeared towards the end of the nineteenth century in order to account for dialectal varieties within various languages. Within Romance languages most atlases date back to the beginning of the twentieth century. The methodologies were relatively simple, and included lists of words eliciting various pronunciations which were then recorded in transcription, maps, etc. These atlases proved to be very useful and important not only for future linguistic research, but also for political reasons in Romania. For instance, Gustav Weigand's work on Romanian dialects that spanned

more than two decades (1887-1910), contained maps of Romania, such as the *Völkerkarte des rumänischen Sprachgebietes* which was used to establish the borders of the new independent state of Romania that was born in 1918, after WWI (Arvinte 1993: 41).

There have been several efforts to document regional variation in the Romanian domain. *Atlasul Lingvistic Român* (1938-42), *Atlasul Lingvistic Român* (1956-69) and *Atlasul Lingvistic român pe regiuni* (1969) and Neiescu (1997) and Saramandu (2005) were atlases to focus on dialectal variation in Romanian and provide valuable data on phonetic variation across Romanian. The idea of a unified linguistic atlas of the Romance languages sprung from these atlases. The AMPER (Atlas Multimedia Prosodique de l'Espace Roman, *Prosodic Multi-media Atlas of the Romance Regions*) tries to overcome the shortcomings of previous atlases of Romance languages and provide comprehensive intonation models of the Romance languages (French, Italian, Portuguese, Romanian, Spanish, Catalan, Provencal, Occitan) with the goal of comparing the intonation of all Romance languages and accounting for intonation variation across Romance languages and within each Romance language respectively, together with their relevant maps (Contini et al. 2002). Thus, in Romanian, under the international AMPER project, the Romanian team worked on the AMPEROM (Romanian Atlas of AMPER) project which built on the *Atlas Lingvistic Roman* or *ALR* (Romanian Linguistic Atlas) by adding information about the prosody of the language. The AMPER project covers not only Romance languages and dialects from Europe but also varieties from Latin America.

AMPER aims to give an online atlas of the prosody of Romance languages and investigate the fundamental frequency, intensity and duration, rhythm and pause in three different speech styles (Turculeț, Bibiri and Panaite 2008). The so-called 'fixed corpora' contain an intonation questionnaire of 45 declarative and interrogative SVO sentences which follow a certain stress pattern. The semi spontaneous corpus makes use of a Map Task and elicits a dialogue between informants, while the spontaneous corpora contain various short conversations or short stories. The utterances are then segmented and labelled by transcribers to include all vowels, their duration, energy (dB), and F0 respectively. Global contours are statistically normalised after three repetitions and each of them comes with graphs depicting their intonational contours making comparative research more accessible. Pitch curves are aligned with syllables and thus the rhythm parameter is removed (Martin 2015: 36). Antonio Romano and Albert Rilliard use other

acoustic analysis routines including Matlab and PRAAT in their methodology that are used in the AMPER project. Mertens (2004) uses a PRAAT script to develop an automated prosodic transcription, or prosogram based on the assumption that F0 is perceived as static tone or pitch movement according to the speed of variation of F0 and of the frequency change in the syllable per unit of time (Martin 2015: 36), very similar to the methodology used in AMPER.

Turculeț (2008) describes the diastratic particularities of speech intonation used in Focsani, known as the Moldavian dialect, in which he argued that there is a certain degree of variation in intonation within the standard pronunciation of Romanian within different regions of Romania. Turculeț is the editor of *La variation diatopique de l'intonation dans le domaine roumain et roman* (2008), which comprises a study of the intonation of total declarative statements and yes-no questions with different lexical stress patterns within Daco-Romanian and its regional varieties as wells. Turculet (2008) also developed a preliminary tonal inventory of Romanian intonation within the international project AMPER (*Atlas multimedia prosodique de l'espace roman*) which aims at providing a comprehensive intonation system for all Romance languages with an online database available for future research.

So far work in progress within the AMPERom project has resulted in various publications on Romanian intonation, most of them dealing with diastratic particularities of some varieties of Romanian spoken in various regions within Romania, such as Panaite & Turculeț (2012), Panaite (2011), Turculeț, Apopei and Jitcă (2006), Turculet, Botoșineanu and Mihuț (2006) and others that studied aspects of Daco-Romance varieties such as the interrogative intonation of Aromanians from Macedonia (Turculeț 2010).

The AMPER and AMPERom projects aim to provide a modern multimedia atlas, in the tradition of older Romanian atlases, collecting data from the same places as previously collected for the traditional Romanian atlases. One of the main contributions of the project is that it provides extensive data on the dialects of Romanian spoken in Romania which can encourage further research into intonation variation within Romanian. The project also offers an alternative to previous Ro-ToBI international workshops using a different methodology and a wide range of materials collected.

CHAPTER FOUR
Methodology

4.1 Corpora

The present thesis aims to provide an analysis of the intonational phonology of Romanian and of any variation across the prosodic systems of Daco-Romance varieties and to investigate how focus is produced across Daco-Romance, as this is interrelated with prosodic phrasing and phrasal prominence. In order to to this, the process of data collection was specially designed to make this work comparable across varieties and varieties of Daco-Romance and also across Romance languages. The fact that studies in Romanian intonation are sparse and do not have a common methodology or theoretical framework means that Romanian is underrepresented within intonational studies of Romance languages. To ensure comparability and encourage further reasearch on Romanian prosody, all data were collected and analysed in a theoretical framework that is used extensively in prosodic typology and intonational phonology studies. In all cases, common methods were used that are found in the current literature on Romance intonation.

One of the main difficulties in documenting the prosodic system of a language is that intonation can be variable and subject to contextual influences, which means it can be difficult to recognize and distinguish between phonological patterns. This is why it is useful for researchers to elicit the same utterance produced by a number of different speakers or possibly record the same utterance multiple times (Himmelmann 2006: 163). While it is almost impossible to elicit spontaneous data in order to describe the prosodic system of a language, various techniques were proposed in the literature to elicit data that would be as spontaneous as possible, avoiding reading tasks which can be unproductive especially in endangered languages, in which many or most speakers may be illiterate. The three Daco-Romance varieties spoken south of the Danube are heavily endangered.

There are few studies on intonational variation of Daco-Romance, and the remarks made on the subject are found in works on the phonetics and phonology of these varieties. It is very important to emphasise that the aim of the thesis is to use the ToBI system in a consistent way, so that if two Romance languages share the same pitch contour, this contour will share a similar prosodic interpretation and will be analysed in the same way in order to increase comparability across languages.

This work is both theoretical and laboratory-based. Based on previous research (Turculeț et al. 2008), there are significant differences in intonation patterns between geographical varieties in Romania, hence diatopical variations will be analysed in a later chapter. Audio recordings of semi-spontaneous speech were collected from a total of 12 speakers (three speakers of each variety).

4.1.1 Ongoing research projects on Daco-Romanian intonation

The AMPER project (L'Atlas Multimedia Prosodique de l'Espace Roman) was briefly presented in Chapter 3. This research project aims to document the main prosodic patterns of all Romance languages, including Daco-Romanian and local varieties spoken within Romania. It was intended as a follow-up to previous studies, the Romanian Linguistics Atlas (ALR) and the New Romanian Linguistic Atlas (NALR), which were comprehensive atlases documenting phonetic differences across Romania, but did not include intonation.

The AMPER atlas is an online database which makes collected data freely available online and provides a useful basic tool to identify local intonation contours of Romanian local varieties. At present the project is still ongoing and a team of Romanian linguists gathered data from 11 cities and 12 villages in various geographical areas in Romania (data was collected from the same places as previous atlases). However, as mentioned in Chapter 3, the atlas does not cover geographical territories outside Romania, hence there is little or no data on sub-Danubian varieties spoken in the Balkan area. The present methodology is compatible with the AMPER project which will facilitate future research of a comparative nature.

4.1.2 Localities and speakers

Extensive fieldwork was undertaken in various countries in the Balkan area to cover all four varieties of Daco-Romance respectively. The localities where interviews were conducted are detailed below together with details of some of the main issues related to the status of the local language and speakers that took part in the surveys. The data used in this chapter were recorded in these areas and also constituted the main body of data for the chapters describing the intonational phonology of Daco-Romance and focus across Daco-Romance varieties. All interviews and data were collected by the author of this thesis during the summer of 2012 and 2013.

Bucharest, Romania (Daco-Romanian)

Bucharest is the capital city in the south-eastern part of Romania. Three speakers of Daco-Romanian, two male and one female, were recorded in this city. As with all speakers, these subjects were chosen because they were more than 60 years of age, and had spent all their life in the capital, Bucharest. Two of them were educated to degree level but were by then retired. Data was gathered in August 2012.

Veria, Greece (Aromanian)

Veria is a small ancient town of about 50,000 inhabitants situated east of the major city Salonika in Greece. Most Aromanians came from the mountain and hill villages surrounding the town. There is a very strong close-knit community of Aromanians living as a minority group of a few hundred speakers in Veria. They also have their own Folklore Association and try to keep this endangered language alive by organising various activities and meetings. Older generations speak the language fluently amongst themselves, although children rarely speak it. Four speakers aged 55-75 were initially recorded in the area, three males and one female, during the summer of 2013, however one of the interview sessions was abandoned as it was difficult to communicate with the informant (male speaker) due to old age and it emerged during the interview that the speaker had some speaking impediments, which is why the recording was deemed unusable. Only three recordings were used (two male, one female). Most Aromanians were shepherds in the past and now own their own companies and dairy farms. The speakers were educated to degree level and were in their late 50s, 60s and early 70s. Although it was reported that this variety is not mutually intelligible with Romanian, no translating or interpreting was needed to conduct the interview in Aromanian. The informants were able to communicate in Aromanian and had some understanding of Romanian. All three interviews were successful. This variety is in contact with Greek, the dominant language of the region. All Aromanians are bilinguals in Aromanian and Greek, and only the more senior generation was brought up learning Aromanian as a mother tongue.

Gevgelija, Macedonia (Megleno-Romanian)

This little town lies in the South of Macedonia, and most speakers come from neighbouring villages from the mountains surrounding this town. There are just a few dozen speakers of Megleno-Romanian in the town. Due to financial hardships most

youngsters learn Greek and English as foreign languages and have left the town for better life opportunities elsewhere. There are no children in the area that speak this severely endangered language. The speakers interviewed included farmers and peasants, but also a teacher who acted as an interpreter when needed. All interviews were conducted in Romanian. Interpreters were rarely used as they were only needed to clarify minor aspects. Three speakers were recorded during 2013, two female and one male, aged 40-70.

Žejane, Croatia (Istro-Romanian)

Žejane is situated in the mountains of the Istrian Peninsula in Croatia. Istro-Romanian was spoken by some 100 speakers when I visited the village in 2013. There are other linguists working in the area to try and document the language, and it is also encouraging that children learn the language through various activities and programmes organised at the local school where all of the community is engaged. However, children do not speak Istro-Romanian as a mother tongue, which makes it a severely endangered language. All speakers were in their 60s. Three speakers were recorded, two female and one male, one former teacher (retired at the time) and the other farmers. The only other place where this variety is spoken, by less than 100 speakers, is the neighbouring village Šušnjevica. Istro-Romanian is the most severely endangered of all Daco-Romance varieties.

Table 4.1: Numbers of speakers recorded for this study.

Daco-Romance variety	Number of speakers	Age	Sex
Daco-Romanian	3	60+	two male, one female
Aromanian	3	55-75	two male, one female
Megleno-Romanian	3	40-70	two female, one male
Istro-Romanian	3	60+	two female, one male

Interviews lasted between 3-5 hours in total. All questionnaires were repeated 3 times. Speakers were invited to accept a 15euro participation fee, but few accepted. Only speakers that have normal speech and hearing abilities were chosen to participate in the interviews.

It is worth mentioning that all speakers of Daco-Romanian (Daco-Romanian) were monolingual speakers of Romanian, while speakers of Aromanian were bilingual speakers of Greek and Aromanian, Megleno-Romanian speakers were bilingual speakers of Macedonian and Megleno-Romanian, and Istro-Romanian speakers were bilingual speakers of Croatian and Istro-Romanian.

Each interview started with an informal discussion and presentation of the questionnaire, followed by a recording of oral consent. The spontaneous part was followed by the AMPER and ToBI questionnaires which are found in the appendix of this thesis. All questionnaires were carefully and professionally translated and adapted to each dialect. Given the very basic structure of the elicited material, there was little or no syntactic difference among varieties when compared to Daco-Romanian.

A future, more comprehensive intonation variation study will need to take into account a number of representative dialects of Romanian spoken within Romania as well as all varieties Aromanian (such as Albanian- speaking Aromanians), Megleno-Romanian (to include Greek-speaking Megleno-Romanians), and Istro-Romanian (to include speakers from neighbouring village, Šušnjevica). However, as this is a preliminary study of the intonational phonology of Daco-Romance, speakers were recorded from only one representative locality in each Daco-Romance variety.

The data reported in this thesis are general across all informants surveyed for the relevant Daco-Romance variety. The spectrograms provided in the phonological investigation in Chapter 5 and Chapter 6 were selected as representative examples for each Daco-Romance variety as follows: one female speaker aged 55 for Daco-Romanian (samples were taken from the same speaker in Chapter 5 and Chapter 6), one male speaker aged 63 for Aromanian, one male speaker aged 60 for Megleno-Romanian and one female speaker for Istro-Romanian, aged 52.

The data presented in the second part of Chapter 6 show mean values of three repetitions per informant for three speakers in each Daco-Romance variety (thus 12 speakers in total).

4.1.3 Data types and collection procedure

For the purposes of this thesis, extensive fieldwork was carried out to investigate and record all four Daco-Romance varieties in Romania, Greece, Macedonia and Croatia. To collect representative data, the elicitation was achieved by creating the appropriate speech context between the interviewer and the surveyed person. This way the

interviewer exercised a maximum degree of control over the survey, and was able to control for contextual factors in order to ensure that the relevant prosodies are representative of the test contexts.

Two types of materials were used as the basis for an analysis of Romanian intonation: a fixed corpus and a semi-spontaneous corpus. The recordings start with an informal introductory conversation between the informants and the researcher, after which the informants are asked to give oral consent and to tell a story they know well. This is intended to verify and complement the data collected in the fixed corpus.

The fixed corpus comprises of two intonation questionnaires. The informant reads the first half of the questionnaire silently and is prompted by the researcher to say how he would react in certain situations. The purpose of these materials is to document in detail the distribution of intonational pitch in a wide variety of contexts and speaking styles. The data in the two corpuses was analysed in PRAAT (Boersma and Weenik 2022).

4.1.4 Intonation questionnaires

Two types of questionnaires were used to gather data: an intonation questionnaire based on the Discourse Completion Test (Billmyer and Varghese 2000; Blum-Kulka, House, and Kasper 1989; Felix-Brasdefer 2010; Frota and Prieto 2015) which elicits robust semi-spontaneous data by providing ample context for the informant to produce semi-spontaneous utterances of different illocutionary forces with controlled semantic and pragmatic meanings, and a second questionnaire that follows the AMPER methodology making use of simple SVO sentences.

In the first part of the intonation questionnaire, the informant is presented with various situations in order to elicit the data envisaged by the researcher. After reading the questionnaire silently, the informant is given a context and asked to read the sentence in bold aloud. For example, in order to elicit the sentence ‘Mary is eating tangerines’, thus eliciting broad focus in a declarative sentence, the informant is prompted with a photo of a woman eating tangerines and the researcher creates a context: “Look at the photo and tell me what you see.” After the informant is provided with the context, the speaker utters the target sentence, and the researcher concludes whether or not the intonation of the informant corresponds to the accompanying context. If prompted by the researcher, the informant repeats the same target sentence. In this case the researcher either repeats the target sentence in a monotonous voice

("robotic voice", in order not to influence the informant's choice of intonation contours) prompting the informant to use the correct intonation or creates the same context again. This technique was only used when it became apparent that the informant did not understand the context and thus did not provide the relevant intonation pattern. This part of the intonation questionnaire is used to test a large number of different intonational contours and different locations for contrastive focus. Each questionnaire was repeated three times in order to obtain robust data. The first intonation questionnaire is shown below (see also Appendices 1 and 2)

Table 4.2: Example sentences elicited in the first DCT intonation questionnaire.

Situation	Type
10 declarative sentences	4 neutral, 6 biased
15 yes-no questions	6 neutral, 9 biased
11 wh-questions	5 neutral, 6 biased
6 echo questions	4 neutral, 2 biased
3 imperative sentences	2 orders, 1 request
2 vocatives	1 neutral, 1 insistent

The intonation questionnaires were also applied to other Romance languages in the AMPER project and Romance ToBI project mentioned previously in the literature review. This thesis uses the Discourse Completion Test methodology (DCT) which was used successfully in other Romance languages, such as Catalan, French, Friulian, Galician-Portuguese, Italian, Occitan, Sardinian, Spanish (Frota and Prieto 2015).

Intonation is a very complex phenomenon and it is almost impossible to study all aspects of it. Hence, this study is limited to certain general aspects of intonation. The second questionnaire tests neutral/broad focus in general contours for neutral sentences and yes-no questions, sentences where the subject is implicit in the third person with the structure of SVO, narrow focus and contrastive focus (by new information theme-rheme). In this thesis, the term 'focus' is used as in Ladd (2008) and refers to the prosodic pitch event (pitch accent, emphasis) that makes a word the most prominent in a sentence or group of words, corresponding to an intonational phrase (IP) or intermediate phrase (ip).

Special attention was given to yes-no questions and wh-questions that were reported to be different in Romanian compared to other Romance languages. This is

because the neutral location for the nuclear accent in yes-no questions was reported to be on the finite verb (Ladd 2008), like in Greek and Hungarian, but different from other Romance languages, as discussed in section 3.3.4.

Daco-Romanian involves the use of the negative adverb *nu* before the verb, which appears to be stressed and emphasised (Turculeț 2008) and therefore attracts the intonation peak of the sentence in BF statements and questions but, surprisingly, not in wh-questions (Dascalu-Jinga 1998). Therefore the negative counterparts of the above sentences and yes-no questions will also be tested. SVO sentences were chosen because they are associated with broad focus where S and O get adjectival and prepositional determiners. Trisyllabic words will be used with different stress patterns (oxytone, paroxytone, proparoxytone) in order to illustrate the prosodic behaviour of stressed vowels in different parts of the word and sentence. The first part of the questionnaire comprises 45 sentences (repeated several times) with three syllable nouns: *nevasta* [ne'vasta] 'the wife' (paroxytone), *pasărea* [ˈpasərʲa] 'the bird' (proparoxytone) and *căpitan* [kəpiˈtan] 'captain' (oxytone), which together with the definite article make up a three syllable accentual group. The noun could be modified by one of the following seven adjectives: *frumoasă* [fruˈmoa̯sə]'beautiful (F)*, harnică* [ˈharnikə] 'hard-working (F)'*, tinerea* [tineˈrʲa] 'young (F)'*, galbenă* [ˈgalbenə] 'yellow (F)'and *elegant* [eleˈgant] 'elelegant'*, amabil* [aˈmabil] 'hospitable'*, repede* [ˈrepede] 'quick'. Negation and narrow focus are also tested after each repetition, when the researcher asks questions to elicit a sentence with negative narrow focus. '

Researcher: *Who does not see a captain?*

Informant: *The wife does not see a captain.*

Table 4.3: Example sentences elicited in the second intonation questionnaire for each Daco-Romance variety.

Situation	type	Element tested
45x3 (repetitions) positive statements	Neutral, marked	Broad focus, contrastive focus
45x3 negative statements	Neutral, marked	Broad focus, contrastive focus
45x3 positive questions	Neutral, marked	Broad focus, contrastive focus
45x3 negative questions	Neutral, marked	Broad focus, contrastive focus

The recordings were made during extensive fieldwork. Data were recorded in WAV format with a professional portable digital recorder connected to a Sennheiser MKH 40 P 48 microphone fixed on a metal desk stand which was placed in front of the speaker at

an appropriate distance from the mouth. The segmentation, labelling and acoustic analysis of the vowels was achieved using PRAAT.

This type of methodology and the approach used in these two questionnaires has certain advantages. One of the benefits is that the first questionnaire elicits semi-spontaneous data, and it provides a very wide array of intonation types as a basis for the phonological categories of pitch accents and boundary tones. This material will provide evidence of pitch accent distribution in Romanian in semi-spontaneous speech.

All data were elicited orally by prompting questions and creating context around the intended intonation type. All contexts were repeated three times. The repetitions occurred only after each questionnaire ended. We tried to avoid consecutive repetitions of intonation types after each utterance, as this may result in a 'continuity' intonation on many utterances, which would be different from the intonation type that I intended to elicit. The first questionnaire is in line with the DCT methodology whereas the second questionnaire is in line with the AMPER methodology which facilitates cross-linguistic comparisons and typological research across Romance. The first questionnaire was used for a preliminary inventory of pitch accents and boundary tones over a wide range of intonation types, as presented in Chapter 5, while the second questionnaire was used to describe focus across Romanian as presented in Chapter 6. The second questionnaire produced a lot of data on many aspects of intonation. However, only some features of the second questionnaire were needed for Chapter 6 which is an analysis of focus across Romanian.

4.2 Data analysis

4.2.1 Comparative analysis of the intonational phonology of Daco-Romance varieties

In order to illustrate and phonologically describe the main trends of Daco-Romanian intonation patterns, representative sound files were chosen and labelled in PRAAT using the ToBI annotation system within the AM framework of intonation (Beckman & Pierrehumbert 1986, Pierrehumbert & Beckman 1988, Ladd 2008) as discussed in section 2.3.3.

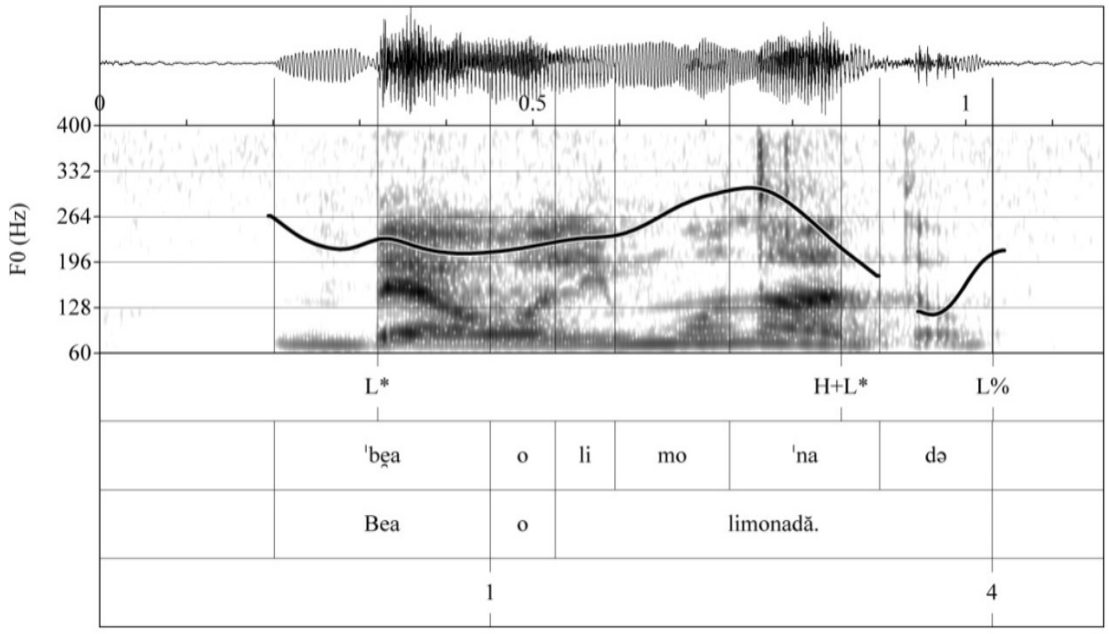


Figure 4.1: Representative annotation of a sound file of the intonation survey in a TextGrid with PRAAT. Waveform, spectrogram, and smoothed F0 contour of the broad-focus statement Bea o limonadă *'S/he is drinking lemonade' produced by a female speaker of Daco-Romanian.*

In order to annotate all events that generate foci in Daco-Romanian utterances, it was necessary to use a more general concept of pitch accent that includes *broad pitch accents* related to prosodic words, in addition to the local pitch on accented syllables. For the broad pitch accents, I have taken into account that, in particular cases, the whole pattern of a prosodic word generates a melodic prominence that leads to the focalisation of the corresponding text. By allowing for this type of event, it is possible to label even the accentuation events with small pitch variations during a prosodic word. These variations, when they occur around a minimum or maximum tonal level, generate 'negative or positive prominences' (a term coined by Dascălu-Jinga 2001) giving rise to the focalisation of words. It is important to analyse even the narrow pitch accents within the prosodic words to which they belong, to understand how the prominence is generated: by a pitch variation during the accented syllable or by a tonal contrast between two successive syllables. Both broad and narrow focus events were labelled.

To account for a wider variety of pitch accents and boundary tones, one can start from the ToBI label set and extend it by several new labels to make the annotation more accurate in certain pitch contexts. Labels used in this study were adopted from other ToBI systems, like the Cat_ToBI annotation system (Prieto 2011). A detailed summary

of the labels and inventory of pitch accents across Daco-Romance varieties is provided in chapter 5.

4.2.2 Acoustic analysis of focus across Daco-Romance varieties

The methods, the techniques of acoustic analysis, data gathering and the corpus included in this thesis largely correspond to the AMPER matrix framework. However, the corpus also includes some additional data. For example, various types of focus in different positions were elicited, and speakers were also instructed to repeat the first sentence (*Nevasta vede-un căpitan* 'The wife sees a captain') as a declarative and an interrogative sentence uttered in the affirmative and negative.

The analysis in Chapter 6 was performed on the following corpus:

Table 4.4: Corpus of sentences used in the present study (Chapter 6).

Focus type	**Statements**
BF	1. Ne'vasta 'vede un căpi'tan. [The wife sees a captain]
NF	2. NE'VASTA 'vede un căpi'tan. [THE WIFE sees a captain]
	3. Ne'vasta 'VEDE un căpi'tan. [The wife SEES a captain]
	4. Ne'vasta 'vede un CĂPI'TAN. [The wife sees a CAPTAIN]
	Questions
BF	5. Ne'vasta 'vede un căpi'tan? [Does the wife see a captain]?
NF	6. NE'VASTA 'vede un căpi'tan? [THE WIFE sees a captain]?
	7. Ne'vasta 'VEDE un căpi'tan? [The wife SEES a captain]?
	8. Ne'vasta 'vede un CĂPI'TAN ? [The wife sees a CAPTAIN]?

All 12 speakers of Daco-Romance varieties produced three repetitions of the eight examples above, giving a total of 288 tokens. The acoustic data presented in chapter 6

provides mean values of pitch range, relative duration, intensity and peak alignment of these tokens across Daco-Romance.

The above statements were then turned into interrogatives. As Romanian does not use word order for polar questions, the orthography remained the same as above. To collect representative data, the elicitation of the sentences was achieved by creating the appropriate speech context between the interviewer and the surveyed person. This way the interviewer exercises a maximum degree of control over the survey, in that he is able to constrain an informant to produce the desired response. For example, to initiate the first sentence with 'neutral' intonation, *Nevasta vede un căpitan* 'The wife sees the captain', the interviewer asked the speaker "*Ce se întâmplă*, *dacă nevasta stă la fereastră şi pe stradă trece un căpitan*..." 'What happens if the wife looks out the window and a captain walks down the street…'. The answer of the informant is an objective description of the situation with an unmarked or neutral intonation, without any emphasis on a focus or on the verb. From an informational point of view, the sentence represents the 'new' element, or, if we take into consideration Ladd's accepted terminology (1996), we can identify it as a "broad" focus.

The dataset is comprised of 288 items overall:

- 2 sentence types (questions/statements)
- 4 focus conditions (BF/NF1/NF2/NF3)
- 3 speakers per variety
- 4 varieties (DR/AR/MR/IR)
- 3 repetitions

The successive focalisation of each constituent was possible by using speech contexts that excluded the existence of another alternative referent proposed by the interviewer for the same syntactic function "Dacă la fereastră stau *nevasta* şi *o fată,* cum (îmi) spui că *nevasta* şi nu *fata* este cea care vede un căpitan?" 'If there are a wife and a girl near the window, how do you say that the wife is the one who sees the captain, and not the girl', "Vrei să (-mi) spui că nevasta vede *un căpitan*, nu *un sergent* sau *un ţăran*..." 'How do you say that the wife sees a captain, not a sergeant or a villager...'; "Cum (îmi) spui că nevasta (doar) *vede* un căpitan, nu-l *salută*, nu-l *strigă*..." [How do you say that she only sees a captain, that she does not greet nor call him]; "La fereastră sunt două neveste: una *frumoasă* şi alta *urâtă;* spune-mi că cea *frumoasă* vede un căpitan" [At the window there are two wives: one that is beautiful and another that is

ugly; how do you say that the *beautiful* one is the one who sees a captain]; "Spune-mi că nevasta vede un căpitan *elegant*, nu un căpitan *oarecare,* (îmbrăcat) *neglijent* ..." [Tell me that the wife sees an *elegant* captain, not an *ordinary* captain, *badly dressed*]. For the fourth sentence, the participants had to emphasize both adjectives: *frumoasă* 'beautiful' and *elegant* 'elegant'.

In broad focus statements, I selected three productions per speaker with similar melodic contours. Furthermore, in statements with narrow focus, it seems that there are differences, not only when we compare various speakers, but also when we use different utterances from a single speaker. For these reasons, we ought to compare the individual contours of these sentences with the broad focus contour.

Perceptual and acoustic analysis of the recorded data shows that the speakers used at least one type of focalisation: contrastive focus (although some linguists such as Turculeț et al. (2008) also use the term 'corrective focus' interchangeably). The contrastive focus features in narrow focus sentences, where the surveyed people produced the typical focalisation for a contradiction in a sequence question-answer like this: "*Fata* vede un căpitan?" [Does *the girl* see a captain?] - "(Ba) nu, *nevasta* vede un căpitan" [No, *the wife* sees a captain] and shifted the focus in initial, medial and final position.

Chapter 6 discusses the results of this study and presents how focus is realised in different contexts, including broad focus (BF) and strategies for corrective/contrastive focus (CF).

Vowels were segmented manually (where diphthongs were found, both vowels are taken together) and based on the spectrogram and waveform we looked at duration, intensity and fundamental frequency of the vowel. Based on this, graphs were made to show duration, pitch range and intensity. A special PRAAT script was designed to extract the main intonational features such as mean pitch peak, while the ToBI labels to pitch movements were manually recorded. Where utterances consisted of an intermediate phrase or more, the tonal density and the nature of pitch accents and boundary tones in non-focal domains were also taken into account.

The methodology regarding the acoustic analysis of focus across Romanian is also briefly outlined in Chapter 6. The phonological discussion of the main intonation features precedes the acoustic data presented. The methodology used in Chapter 6 provides an account of the pragmatic differences between broad focus and constrastive focus in statements and questions by analysing the relationship between pitch range,

peak alignment, duration and intensity in expressing contrastive focus and how they overlap with pre- and post-focal compression and de-accentuation to distinguish between broad and contrastive focus in various basic contexts such as initial, medial and final word positions. The reason these particular acoustic parameters were chosen in this investigation is because they were shown to have significant effects in focus realisation across Romance languages (Frota 2002; D'Imperio 2002; Face 2002; Manolescu et al. 2009). To take one element, peak alignment was proved to be significant in Romance languages in distinguishing narrow focus from broad focus in languages like Spanish (Face 2002) where focused pre-nuclear early rising accents like L+H* is phonologically distinct from a late rise L*+H. Nuclear falls of focused elements can have an earlier peak than their unfocused counterpart.

All of the speakers produced mainly the same utterance with different intonation contours and showed no significant syntactic or phonetic variation that would have a bearing on the intonation with which the utterance was produced. There is also a phonetic transcription provided on a separate tier in PRAAT.

As far as possible, I attempted to provide first a presentation of the sentence type together with any optional non-intonational features such as word order changes or lexical markers for instance. Prosodic and phrasing patterns are described in terms of pre-nuclear, nuclear pitch accents, boundary tones and phrase accents. Additional commentaries are provided on other significant aspects such as variation or specific details of the utterances illustrated in the figures. The data suggests that while many sentence types did not present relevant intonational differences between varieties, others did deserve a closer look in order to check for mutual influence between languages in contact.

This permitted us to develop a preliminary intonation inventory across Romanian and mark any significant variation, using the ToBI labels. At the same time, this methodology allowed us to delineate a model for focus and describe how broad focus and information and contrastive focus is realised across Romanian. This, in turn, reveals the nature of the relationship between phrasing and focus and nucleus placement and information structure. It also shows which phonological properties are associated with the heads and edges of each constituent type in Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian.

CHAPTER FIVE
Intonational phonology of Daco-Romance

The data presented in this study are original and, as detailed in the methodology chapter of this thesis, the ToBI annotation consists of six parts: an audio recording of the utterance, the F0 contour with its corresponding spectrogram, and four transcription tiers: tones, phonetic transcription, words and break indices. The tones tier shows tonal events from the phonological viewpoint: pitch accents and boundary tones. The phonetic transcription represents the transcription of the respective utterance in IPA. The words tier contains the spelling of the particular segments of the utterance. The break indices include numbers corresponding to the juncture size of the words.

As discussed in Chapter 4, the data presented here are new and were elicited using the DCT methodology developed by Prieto (2001) to elicit everyday situations.

5.1 Intonational inventory

Above the prosodic word level in the hierarchy of the prosodic domain, the phonological categories used in this intonational analysis corresponds to prosodic phrases related to different types of prosodic domains (intonational phrase, intermediate phrase, phonological phrase) and to tonal events within prosodic phrases. I use three types of tonal events in Daco-Romanian: *pitch accents* always correspond to the metrically strong syllable which in turn becomes accented (accentual prominence); *boundary tones* which are tonal events that correspond to the boundary of a prosodic domain, e.g. intonational phrase; and *phrase accents* which mark the end of an intermediate phrase.

The ToBI analysis presented in this chapter does not aim to transcribe each and every aspect of prosody, but only phonological and categorical aspects of intonation: prosodic structure and the related nuclear or pitch accent hierarchy and intonation patterns following the same criteria and principles adopted in other ToBI analyses such as Jun (2005, 2013).

5.1.1 Pitch accent distribution and boundary tones

Most Romance languages are shown to have a relatively dense distribution of pitch accents in non-question intonation, meaning that every prosodic word receives a pitch accent, unlike other languages which have a more sparse distribution (Frota and Prieto 2015: 397). Hellmuth (2006) argues that languages can select various levels in the prosodic hierarchy, such as the prosodic word, phonological or intermediate phrase and intonational phrase, as the domain for pitch accent distribution. It is argued (Ladd 2008: 225) that Romanian patterns like Slavic languages and not like Romance languages with respect to pitch accent distribution. Data presented in this chapter suggests that Romanian has a dense distribution of pitch accents as can be seen in the examples used in this chapter showing that almost each prosodic word will receive a pitch accent. It is also argued (Ladd 2008: 229) that Romanian allows post-nuclear accents, but that these are not limited to long wh-questions.

Pitch accents do not always surface when a high peak is reached in the intonational phrase. Lexically stressed words do not automatically receive a pitch accent. For instance, a pitch accent may reach the maximum tonal space or a prominent peak may be realised as a nuclear accent and the following stressed word remains at a similar level until the end of the intonational phrase marked by a fall (see for example Fig. 5.13, Fig. 5.14, Fig. 5.15). Similarly, the first constituent may be focused, in which case the following prosodic words follow a falling global pattern and lexically stressed words do not receive a pitch accent. This will be illustrated later in the realisation of broad focus in Megleno-Romanian below.

In broad focus and narrow focus contexts, unless a given constituent is focused, stressed syllables will not exhibit large pitch movements and may not receive pitch accents unless it is a phrase accent or boundary tone. This will be discussed in more detail in Chapter 6 especially in the context of broad focus questions. Our data also confirms Ladd's (2008) claims that Romanian allows an additional post-nuclear accent in long wh-questions, especially when focus is in initial position.

Below is a short inventory of the most common nuclear pitch configurations found in Romanian. A more complete inventory is provided at the end of this chapter.

Table 5.1: Inventory of tune types in Daco-Romanian

Meaning/usage	Daco-Romanian Nuclear configuration
Declarative	H+L* L%
Declarative (focused)	H*+L L%
Continuation	L*+H H%
Wh-question	H* L* L%
Yes/no question	L* H+L* L%
Yes/no question (focused)	L* L*+H H%
Request	L+H* L%
Command	H* H-L* L%
Vocative chant	L+H* !H%
Insisting call	L+H* L%

5.1.2 Phonetic implementation of intonation

The phonetic implementation of intonation across Romanian is mostly straightforward. As Romanian has a relatively dense pitch accent distribution, the main factors that affect the phonetic realisation of phonological tones and pitch contours in Romanian are tonal crowding and proximity to prosodic edges.

Some labels were adopted such as the !H% label to indicate a mid-boundary tone instead of the M% boundary tone. Similarly, we find that a potential L+H* L% nuclear configuration can appear consistently for interrogatives.

The F0 contour of an IP displays a downstepping tendency in statements and lengthening of the final boundary tone and can be followed by a long segment of silence. In the ToBI system, a level 4 break marks the end of an IP.

At the beginning of a new ip, F0 reset occurs and a new downstepping trend begins. In the ToBI annotation system, the end of an ip is marked by a level 3 break and a phrase accent label.

An IP/ip can consist of a linear sequence of prosodic words and may also contain prosodic groups. These prosodic groups mark the morpho-syntactic structure of the text or can be prosodically motivated. The end of a prosodic group is marked by a level 2 break when it does not coincide with the end of its parent IP/ip. A prosodic group which does not lie in initial position continues the downstepping tendency of its

parent phrase. An example of an IP containing a prosodic group is the intonational variant of the exclamatory sentence *Ce miros de pâine bună!* 'What a pleasant aroma of fresh bread!', with the wh-word *ce* 'what' prosodically related to the noun *miros* 'aroma' and the last two prosodic words continue the downstepping trend of the IP and of the implicit ip:

(5.1) Ce miros de pâine bună!
'What a pleasant aroma of fresh bread!'
(H* L+!H*)$_2$!H* !H* L%

This approach is also adopted by Jitcă et al. (2015: 289) which relies on a three level domain hierarchy: utterance-intonational phrase, (IP) – intermediate phrase, (ip) – prosodic word. Unlike French and Occitan, Romanian does not include a separate accentual phrase (AP) (Jitcă et al. 2015). The following sections present an analysis of nuclear accent placement for each sentence type. This is an issue that comes up in previous literature and that is argued to distinguish Romanian from other Romance languages, especially in the case of question intonation. Naturally, this relates to phrasal prominence patterns in the language.

5.2 Main intonation contours across Daco-Romance varieties

This section presents an analysis of five sentence types: statements, yes/no questions, wh-questions, imperatives, and vocatives which are compared between Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian. Chapter 6 discusses focus in more detail. However, broad and narrow focus statements and questions are also presented here. The present analysis also draws on the previous account of the main intonation features in Romanian (Jitcă et al. 2015). The main aim of this thesis is to present and capture the fundamentals of an intonation system across Eastern Romance and provide unitary prosodic transcriptions.

This study follows the general framework used in previous intonational studies, such as Jun (2005, 2013) and Frota and Prieto (2015), and provides a unitary analysis of Daco-Romance varieties in the same tradition, thus allowing for cross-linguistic comparison.

5.2.1 Intonation in statements

5.2.1.1 Broad-focus statements: continuation and finality

One of the research questions presented in Chapter 1 relates to how intonation is used to express different semantic and pragmatic meanings and whether the nuclear accent can shift to the verb. This section provides a provisional analysis of how focus is expressed pragmatically in various nuclear configurations across Daco-Romance by identifying nuclear accents and presents a detailed discussion of affirmative sentences intonation and later in this chapter (section 5.2.2), question intonation is discussed across Daco-Romance.

Statements are known to assert information by various means. In Romance languages like Spanish, for example, taxonomies of Spanish statement intonation (Prieto and Roseano 2010) were outlined which included two main trends: on the one hand there are statements that build up tension associated with fall-rise and rise intonation contours, and on the other hand, there are statements that relieve tension associated with fall and fall-rise contours. Brazil (1997: 68) makes a similar observation in pragmatic terms arguing that there is a distinction between 'what we are talking about' and what had been 'freshly introduced into the conversation', a distinction that was subsequently developed in further studies on information structure as given (old)-new information and topic-focus. Thus, continuity is encoded by specific intonational contours like L+H* H% that imply a sense of incompleteness and lack of assertion, as in Bolinger (1986), while finality is generally expressed by falling intonation configurations such as H+L* L%, as in Figures 5.1-5.4 below. These devices are known to be operating in English (Bolinger 1986) but also Romance languages like Spanish (Prieto 2005), French (Delattre 1966), Occitan (Sichel-Bazin et al. 2015), and Daco-Romanian (Dascălu-Jinga 2001).

Information in broad focus statements is presented as new. This particular type of intonation is characterised by the presence of a finality contour which shows that the assertion is complete. Broad focus statements are uttered in a 'neutral' declarative intonation in the examples below (Figures 5.1-5.5). This particular type of intonation is characterised by the presence of a nuclear configuration which is a sharp fall H+L* L% in DR, MR, and !H+L* in AR, and H* L% in IR as in the examples below (Figures 5.1-5.5). There is no difference in meaning but pre-nuclear accents differ across varieties: these are either peak accents H* in Ro and MR or rising peak accents L+H* in IS and

L+H* in AR. The realisation of the pitch accent is different in Aromanian, where a downstepped !H+L* is observed which occurs after a H, but it is lower than the previous accent. It is also apparent that the varities differ in their realisation of pre-nuclear accents. More specifically, Figures 5.1-5.5 show that in Aromanian this is realised as a L+H*, which is also common to other broad focus contexts in Daco-Romanian, whereas in Istro-Romanian it is a H+L*, where both accents are aligned with the accented syllable compared to a H* in Romanian and Megleno-Romanian. These pre-nuclear peaks from Aromanian and Istro-Romanian are not marked pragmatically for focus and they exhibit a difference in realisation among Daco-Romance varieties. It appears that these are a dialectal feature of Aromanian and Istro-Romanian, spoken in Greece and the Istrian Peninsula. The H target which is present on the pretonic syllable features in both pre-nuclear and nuclear accents in Aromanian.

The peak in the word *bea* 'drinks' can be delayed in Daco-Romanian. Also, when there are no preceding syllables, and in longer stretches, as discussed by Göbbels (2003), it is possible to also have a L tone before. In all varieties the initial pre-nuclear accent (such as L+H* in Aromanian), the initial L, can also be truncated and the peak can be delayed in most L+H* pitch accents.

Broad focus statements are uttered in a 'neutral' declarative intonation. This particular type of intonation is characterised by the presence of a finality contour which shows that the assertion is complete. This particular type of intonation is characterised by the presence of a nuclear configuration which is a fall H+L* L% where all new information is provided in DR, MR, and !H+L* in AR, and H* L% in old-new information contexts in IR as in the examples below (Figures 5.1-5.5). There is no difference in meaning, but pre-nuclear accents differ across varieties: these are either peak accents H* in Ro and MR or rising peak accents L+H* in IS and L+H* in AR. As a general tendency, H* final pitch accents tend to be preceded by a pre-nuclear L* pitch accent, while H+L* final pitch accents can have a H* or L+H* pre-nuclear accent. The realisation of the pitch accent is different in Aromanian, where a downstepped !H+L* is observed which occurs after a H*, but it is lower than the previous accent. It is also apparent that the varieties differ in their realisation of pre-nuclear accents. More specifically, Figures 5.1-5.5 show that in Aromanian this is realised as L+H*, which is also common to other broad focus contexts in Daco-Romanian, whereas in Istro-Romanian it is H+L*, where both accents are aligned with the accented syllable compared to a H* in Romanian and Megleno-Romanian. These pre-nuclear peaks from

Aromanian and Istro-Romanian are not marked pragmatically for focus and they exhibit a difference in realisation among Daco-Romance varieties. It appears that these are a dialectal features of Aromanian and Istro-Romanian. The H target which is present on the pretonic syllable features in both pre-nuclear and nuclear accents in Aromanian.

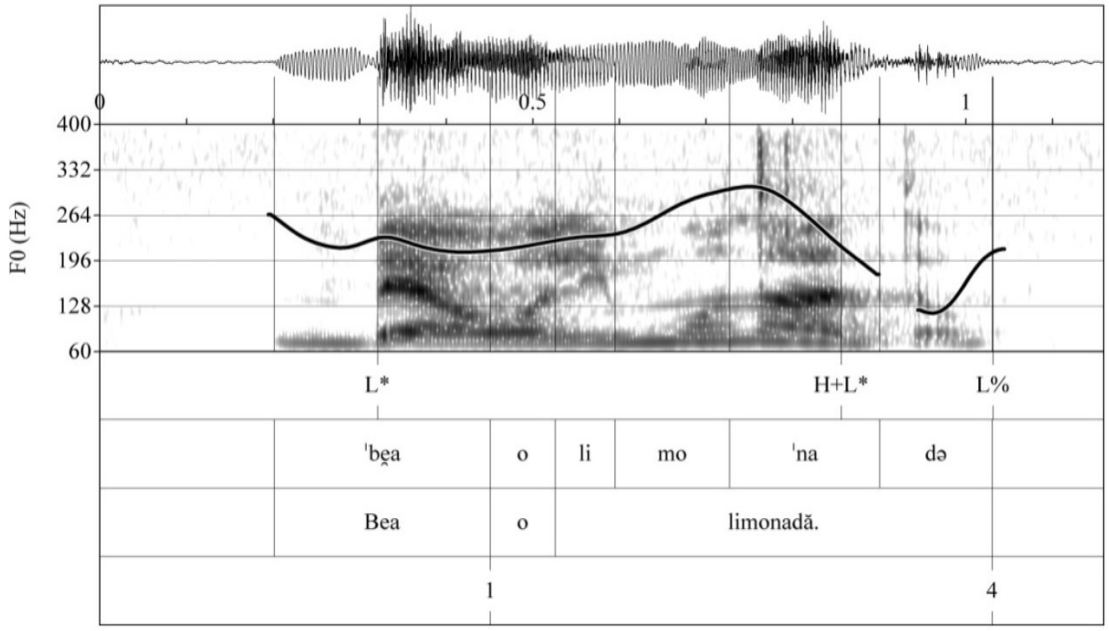


Figure 5.1: Waveform, spectrogram, and F0 contour of the broad-focus statement Bea o limonadă *'She is drinking a lemonade' produced by a speaker of Daco-Romanian.*

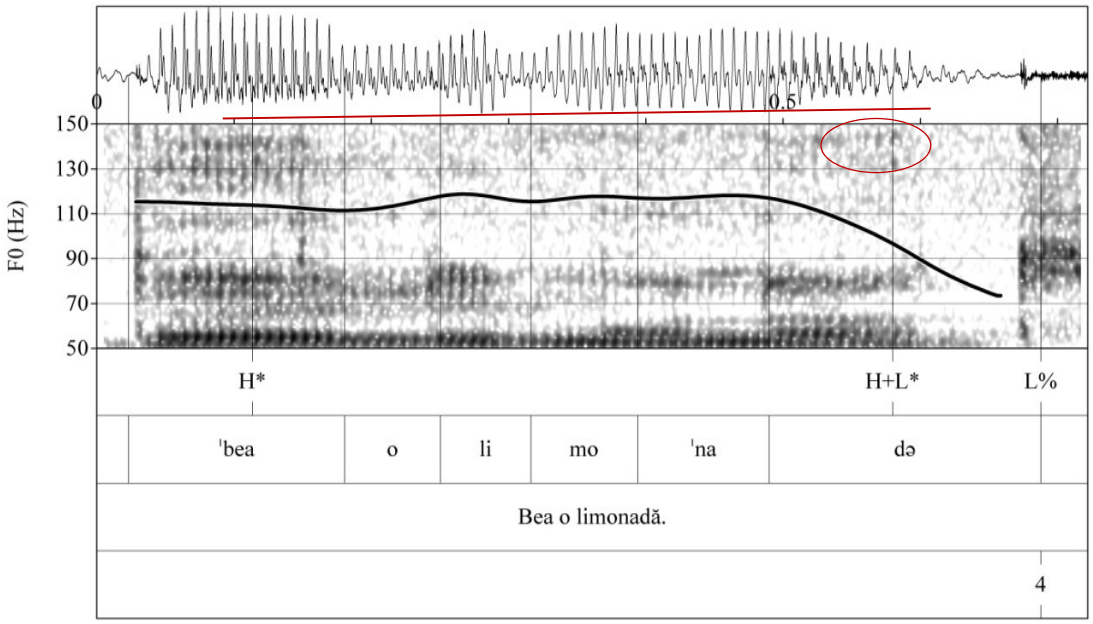


Figure 5.2: Waveform, spectrogram, and F0 contour of the broad-focus statement Bea o limonadă *'She is drinking a lemonade' produced by a speaker of Megleno-Romanian.*

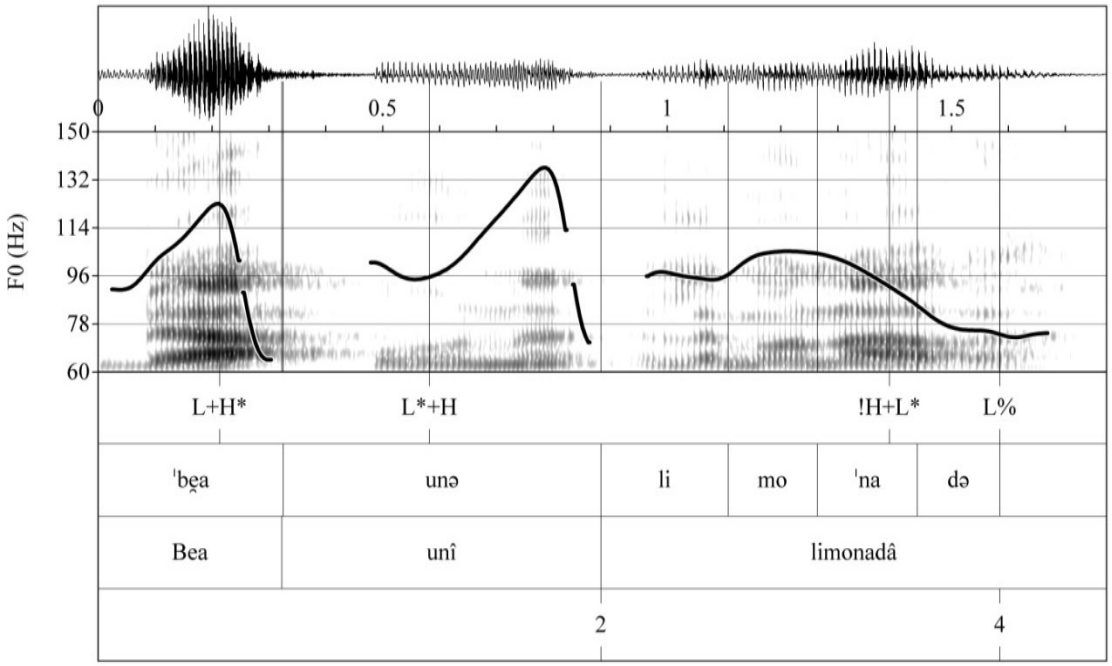


Figure 5.3: Waveform, spectrogram, and F0 contour of the broad-focus statement Bea unî limonadâ *'She is drinking a lemonade' produced by a speaker of Aromanian.*

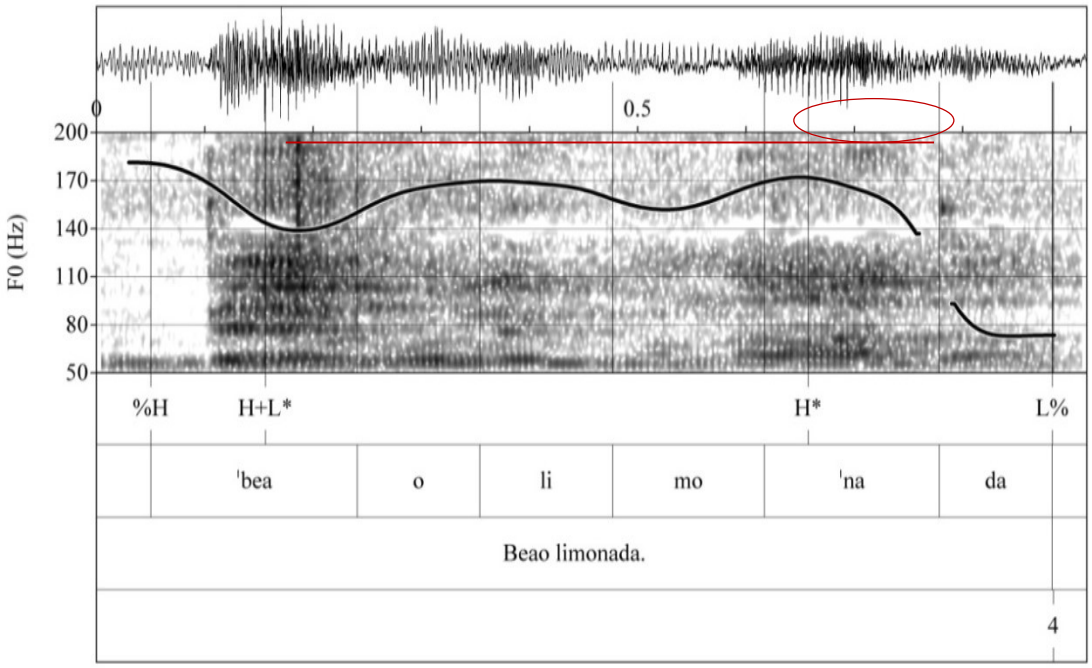


Figure 5.4: Waveform, spectrogram, and F0 contour of the broad-focus statement Bea o limonadă *'She is drinking lemonade' produced by a speaker of Istro-Romanian.*

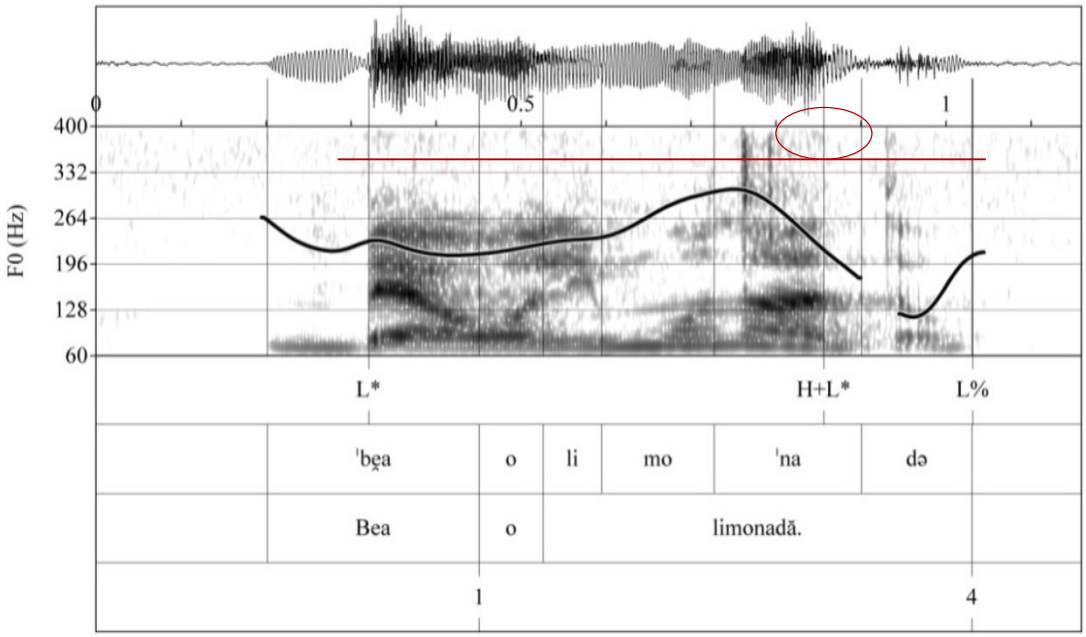


Figure 5.5: Waveform, spectrogram, and F0 contour of the broad-focus statement Bea o limonadă *'She is drinking lemonade' produced by a speaker of Megleno-Romanian.*

Megleno-Romanian shows a very common pattern for broad focus across Daco-Romance, namely the sequence H* H+L* L%. With respect to phrasing, a more unusual pattern is found in the Aromanian example above where both pre-nuclear accents are bitonal and the nuclear accent is !H*+L or H+L*.

In Istro-Romanian there is a change in the rapport of the target levels of the two constituents however the nucleus remains on the last word.

Göbbel (2003) also identified that in longer broad focus utterances the nuclear accent is realised as H+!H* where the last two accents form a 'hat pattern', while the overall intonation contour is declining showing compression of pitch range. The data presented confirm that compression is present in longer utterances, and I have also found that across speakers of Daco-Romance the H+!H* nuclear accent is present in broad focus contexts. The data suggests that in this context, the common target is a low tone L*, following Dascălu-Jinga (2001), Jitcă et al. (2015), which is present in most Romance languages. Göbbel (2003: 86) argued that only bitonal accents signal focus and broad foci may contain defocused material, like English. Thus, Romanian intonation conforms to the rules of the Argument Structure (AS) approach. Focus marking will be discussed in more detail in the next chapter.

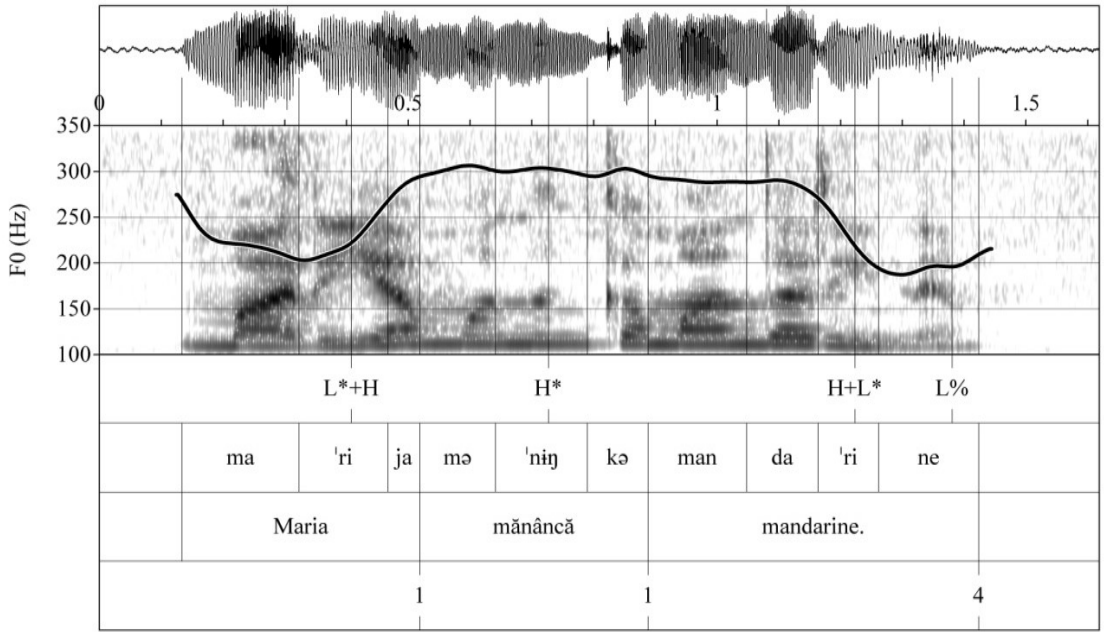


Figure 5.6: Waveform, spectrogram, and F0 contour of the broad-focus statement Maria mănâncă mandarine *'Mary is eating tangerines' produced by a speaker of Daco-Romanian.*

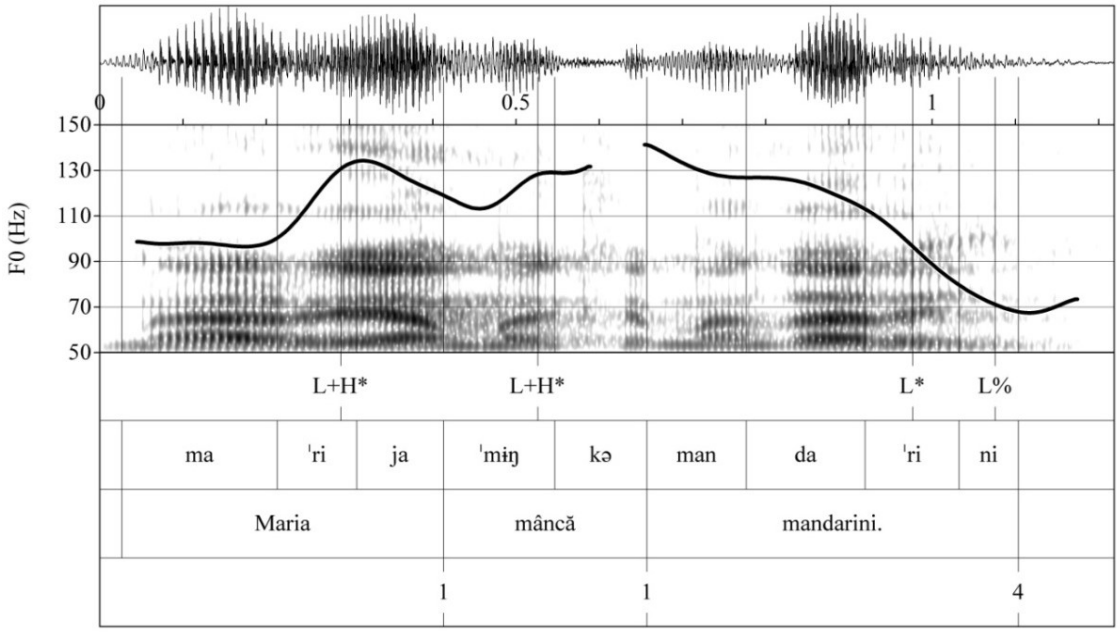


Figure 5.7: Waveform, spectrogram, and F0 contour of the broad-focus statement Maria mănâncă mandarine *'Mary is eating tangerines' produced by a speaker of Aromanian.*

A common example of broad focus is the Daco-Romanian example above (Figure 5.6) in which the nucleus bears the lowest minimum tone on the last accented syllable. The

intonation contour is 'asymmetrical' as described by Dascălu-Jinga (2001). The Aromanian example shows a similar interpretation.

Differences between Daco-Romanian and Megleno-Romanian on one hand showing a break 3 in between each item individually and Aromanian and Istro-Romanian showing a break 4 between each item may be due to the fact that informants felt more familiar with the interviewer and also due to differences in style rather than systemic intonation differences. However, H* tones are present in lists in pre-nuclear positions. This context is associated with continuity intonation which implies that the sentence is unfinished. Daco-Romanian uses falling intonation across the whole intonation stretch with a fall on the last element which signals assertiveness as shown in Figure 5.8.

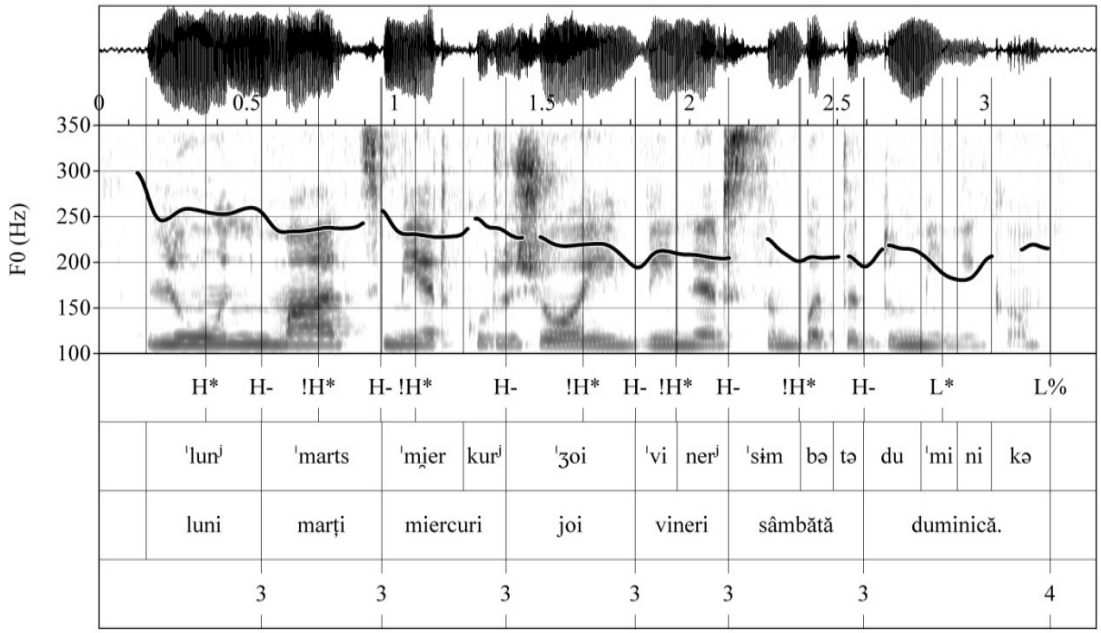


Figure 5.8: Waveform, spectrogram, and F0 contour of the broad-focus statement Luni, marți, miercuri, joi, vineri, sâmbătă, duminică *'Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday' produced by a speaker of Daco-Romanian.*

Also, in the lists below we can observe lengthening of the final syllable of the elements in the list. This occurs on all elements except the last pitch accent. Pragmatically, these will signal that the narrative is incomplete. In the examples below from Aromanian, Istro-Romanian and Megleno-Romanian, all elements from the list are marked by a continuation rise and each element of the list corresponds to an intermediate phrase across varieties, marked by a high phrase tone and a final low boundary tone. In each intermediate phrase the intonation of each element rises on the

accented syllable and falls to a lower level than the initial element or remains high as in Istro-Romanian (Figure 5.11) where each element mirrors the previous one. It could be argued that each of the elements forms an independent intonational phrase with a 4 break index (Figure 5.11).

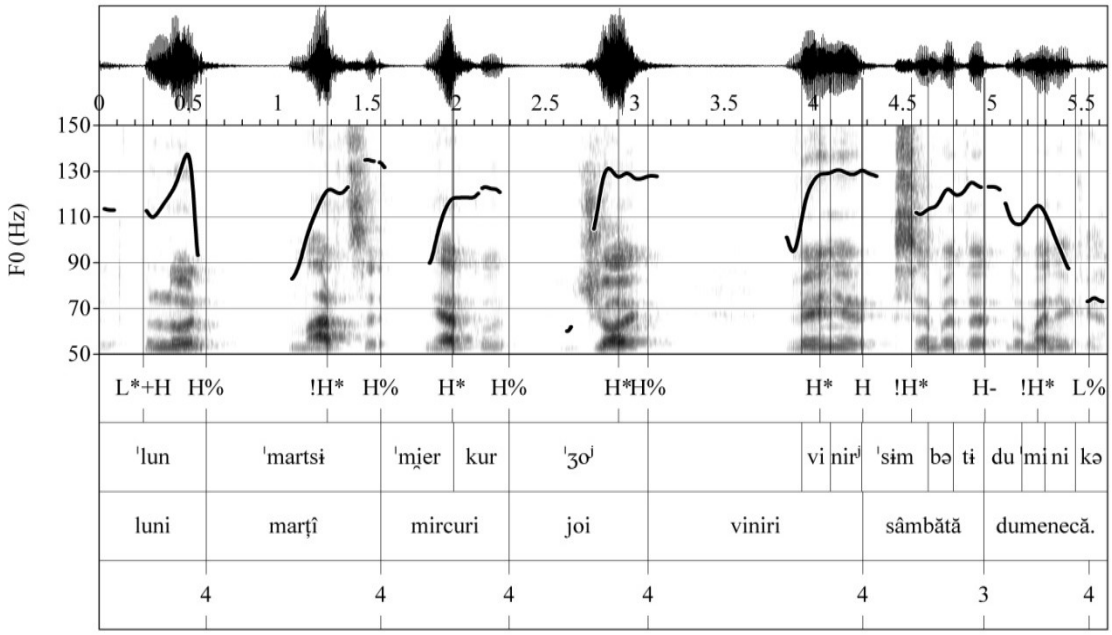


Figure 5.9: Waveform, spectrogram, and F0 contour of the broad-focus statement Luni, marți, mircuri, joi, vineri, sâmbătă, dumenecă *'Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday' produced by a speaker of Aromanian.*

However, the height of any resulting boundary tones does not seem to bear any pragmatic meaning which is why they were marked as intermediate phrases in the examples below. The more common tendency is to have H* or L+H* pre-nuclear accents in lists, repetitions, or enumeration contexts where these accents will occur at almost regular intervals, and each pre-nuclear accent is identical. Lists can also include falling tones on each element which are pragmatically associated with contrast or emphasis. The alignment of tones is different in Daco-Romanian compared to the other varities in that the high tone of rise aligns not with the stressed syllable, but the following one.

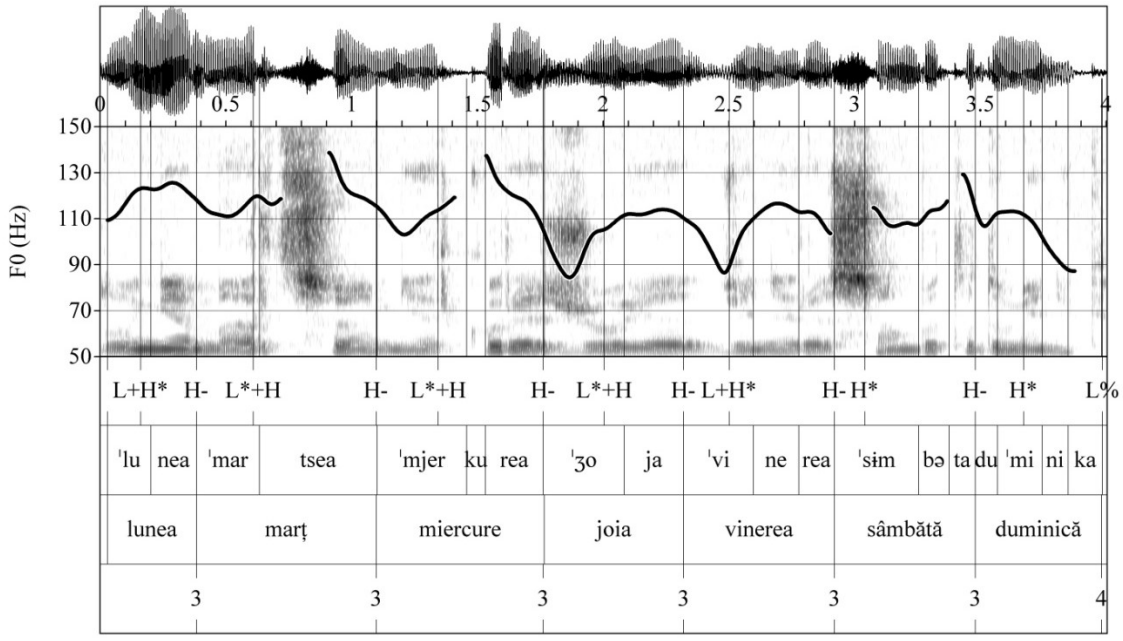


Figure 5.10: Waveform, spectrogram, and F0 contour of the broad-focus statement Lunea, marțea, miercurea, joia, vinerea, sâmbătă, duminică. 'Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday' *produced by a speaker of Megleno-Romanian.*

Continuation contours are also found in final declaratives in Daco-Romanian, characterized by a sustained tone on the last syllable which is lengthened. Long statements that are composed of more than one intonational phrase can also include enumeration clauses marked by a high final tone and high boundary tone, where the last pitch accent of the last intonational phrase will be a descending contour, marking finality.

In Istro-Romanian the intonation of the initial elements of the list may be realised using rising accents, usually L*+H when the edge of the intermediate phrase is rising and the last constituent marks finality using an H* accent.

The intonational configurations described above are found in all varieties of Daco-Romance. It is worth noting that Istro-Romanian is in contact with Croatian, Aromanian is in contact with Greek and Megleno-Romanian is in contact with Macedonian, but none of the varieties are in contact with Daco-Romanian. This is apparent from the degree of variation between Daco-Romanian and the other varieties. It is possible that falling intonation contours found in initial elements of lists in Istro-Romanian is the result of contact with Croatian.

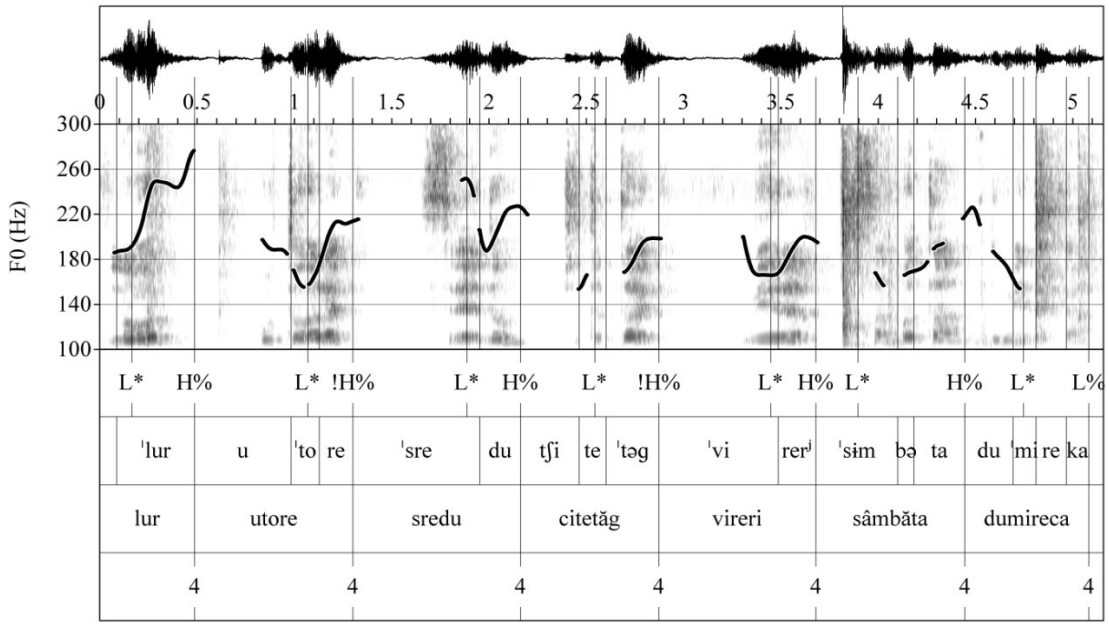


Figure 5.11: Waveform, spectrogram, and F0 contour of the broad-focus statement Lur, utore, sredu, cietăg, vireri, sâmbătă, dumirecă*. 'Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday' produced by a speaker of Istro-Romanian.*

5.2.1.2 Narrow focus: contrastive and corrective

Focus in Romanian is expressed both by syntactic means, such as word order, and intonational means. Intonation and syntax interact in information structure in Romanian. However, intonation plays a more important role in marking focus across Daco-Romance varieties than syntax. There are various types of foci in Romanian statements which are discussed in more detail in Chapter 6. This section is concerned with only two types of narrow focus across Daco-Romance in statements: contrastive and corrective focus. Contrastive focus is a semantic event which is associated with the nuclear accent in statements.

The nuclear pitch accent found in corrective focus is realised as H*+L (Figures 5.12, 5.13, 5.14) in most varieties in epistemically biased statements. As we will see in the next chapter, Romanian exhibits some post-focal compression and accents that follow the focus will usually be realised as plateau L*L%. Constituents are usually de-accented if they follow the focus accent. Figures 5.12-5.14 show narrow contrastive focus which is triggered by the question 'Do you want a kilogram of tangerines?" where the direct object receives the focus, *de lămâi* 'of lemons' which is contrasted with 'tangerines'.

Previous studies (Pușcariu 1976, Iordan and Robu 1978, Dascălu-Jinga 2001) showed that the contrastive focus nuclear accent is usually characterized by a rise on the stressed syllable of the accent, followed by a fall.

Focus is marked in Daco-Romanian, Aromanian and Megleno-Romanian by a H+L* where the syllable under focus is longer in duration and has a higher pitch range. When the negation adverb *nu* 'no' is marked by a H*+L the second pitch accent H+L* of the focused word can be less prominent where the vowel in the accented syllable tends to be longer in duration on the H part of the accent. The H+L* is marked by negative prominence because the tonal spaces of the accents H+L* and H*+L overlap and H+L* becomes nuclear. In Aromanian the negation bears a L*+H accent.

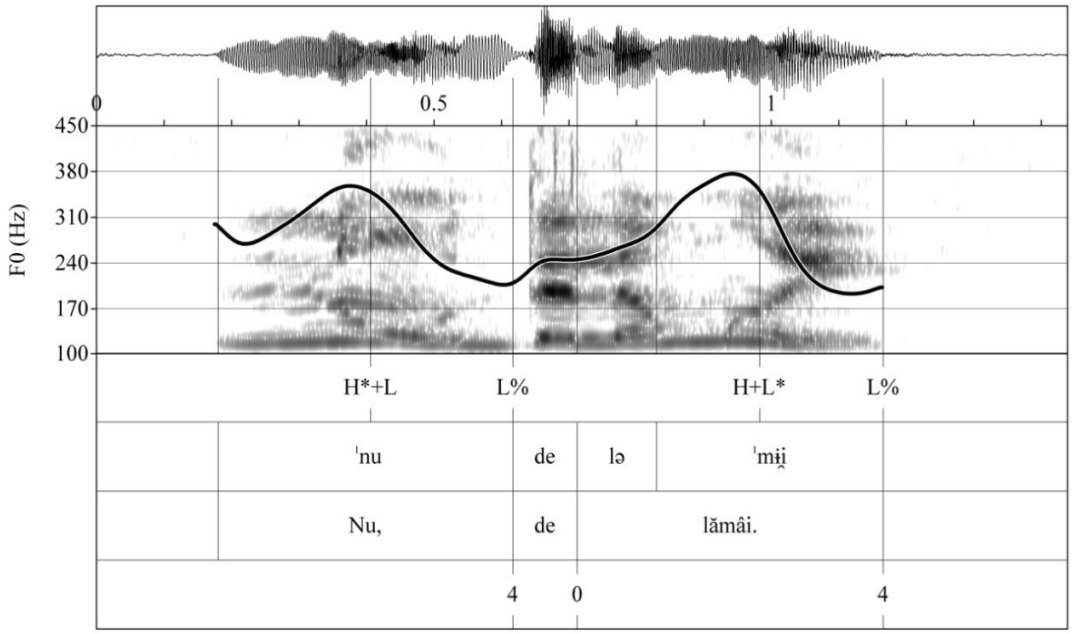


Figure 5.12: Waveform, spectrogram, and F0 contour of the contrastive-focus statement Nu, de lămâi *'No, of lemons' produced by a speaker of Daco-Romanian.*

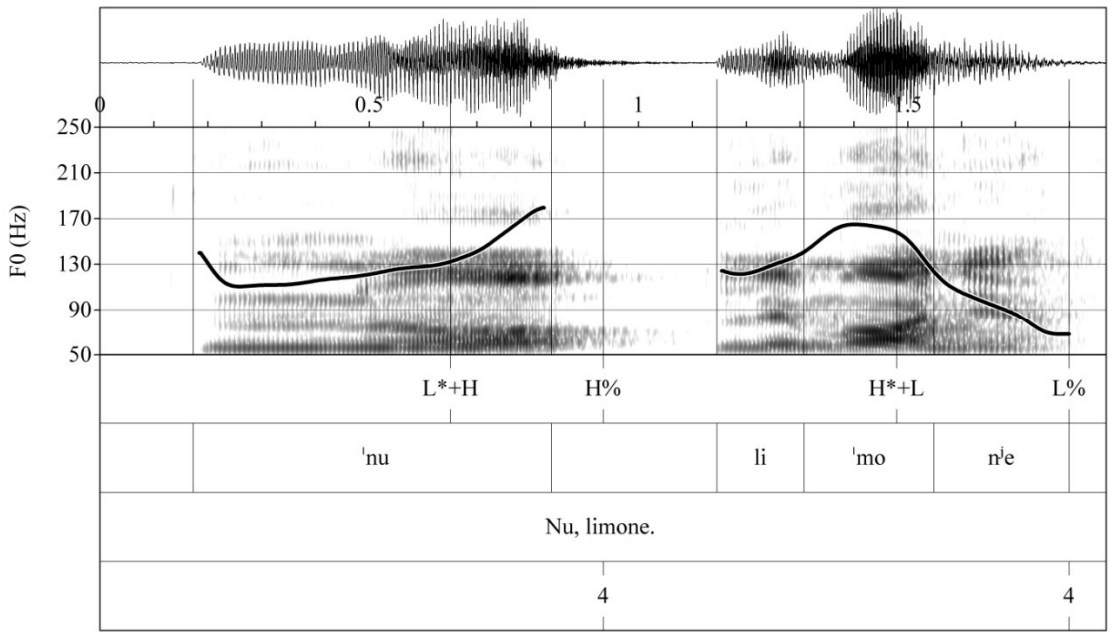


Figure 5.13: Waveform, spectrogram, and F0 contour of the contrastive focus statement Nu, limone *'No, of lemons' produced by a speaker of Aromanian.*

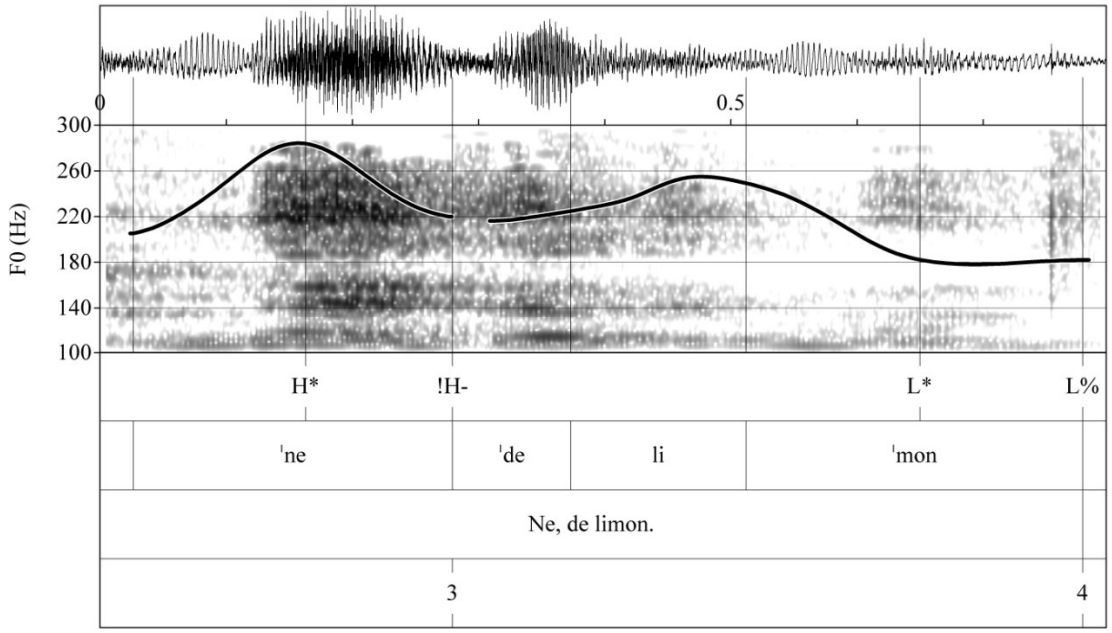


Figure 5.14: Waveform, spectrogram, and F0 contour of the contrastive focus statement Ne, de limon *'No, of lemons' produced by a speaker of Istro-Romanian.*

In negative contexts, the negation adverb *nu* 'no' usually bears the H*+L nuclear stress of the intonational phrase, regardless of the length of the IP, as seen in Figure 5.9. Daco-Romanian also allows double negation, in which case the nuclear stress is usually assigned to the second negation adverb.

In corrective focus negative contexts the nuclear accent is placed on the word with the maximum load of information, and not the negative. Aromanian seems to be an exception. In this instance the negation bears the minimum target level although in initial position. Interestingly, Aromanian seems to use a L*+H pitch accent on the negative adverb *nu* 'no' in the first IP followed by a prosodic break as shown in Figure 5.13, which implies continuity as the negation word receives the nucleus and the focused word's tonal level remains higher.

Only when the verb constituent is under focus does the verb receive stress. However, there is also an option for the negative adverb to receive nuclear stress, though this is not a phonological distinction. This will be further discussed in Chapter 6.

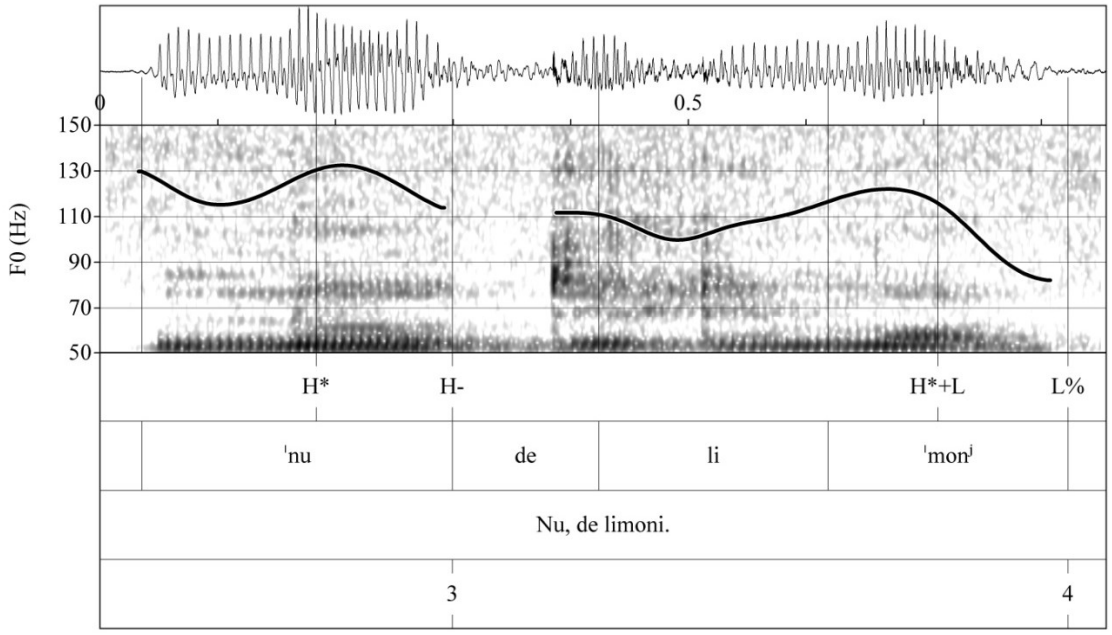


Figure 5.15: Waveform, spectrogram, and F0 contour of the contrastive focus statement Nu, de limoni *'No, of lemons' produced by a speaker of Megleno-Romanian.*

5.2.1.3 Epistemically biased statements

The below figures show that in epistemically biased statements, associated with narrow contrastive focus statements, there is a distinction between Daco-Romanian and Aromanian on the one hand, where focus is represented as H*+L L%, and Megleno-Romanian and Istro-Romanian on the other hand, where focus is expressed by means of an H+L* L% falling nuclear configuration, and a peak that is not aligned with the main stress in the nuclear syllable. The most important factor is common to all Daco-Romance varieties, namely the focused word is marked by negative prominence and

thus receives the nuclear accent, except in Figure 5.16 where the negation bears the nuclear accent and the H+L* can also be interpreted as a H + !H and is not marked by negative prominence.

Focus in Daco-Romanian (Figure 5.20) is expressed by a downstepping falling accent !H*+L L%, preceded by the first intonational phrase with H* realised using a larger pitch range. This downstepping feature relates to the negative prominence on the focused word.

Both contrastive focus and contradiction statements tend to be characterised by negation but they also involve differences in meaning. In contrastive focus, the focused constituent is the direct rejection of an alternative, which tends to appear previously in the discourse (it is the antecedent). On the other hand, in contradiction statements the speaker expresses his/her conviction in the untenability of what has been asserted by the interlocutor. That is, it is a statement expressing that the speaker is certain about the truth value of his/her proposition. The statements above will commonly exhibit a H* accent on the first constituent followed by an abrupt fall, whereas the last constituent bears the nuclear accent commonly marked by an !H*+L!. Downstepping marks the last accent as nuclear and the last word for focus.

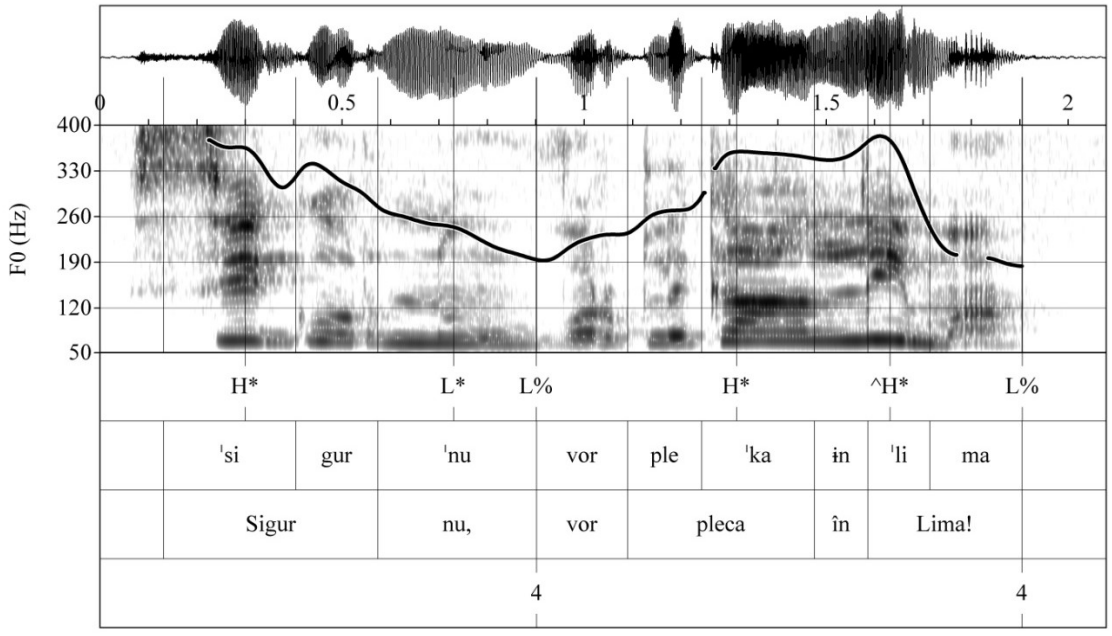


Figure 5.16: Waveform, spectrogram, and F0 contour of the contradiction statement Sigur nu, vor pleca la Lima! *'Of course not, they will go to Lima!' produced by a speaker of Daco-Romanian.*

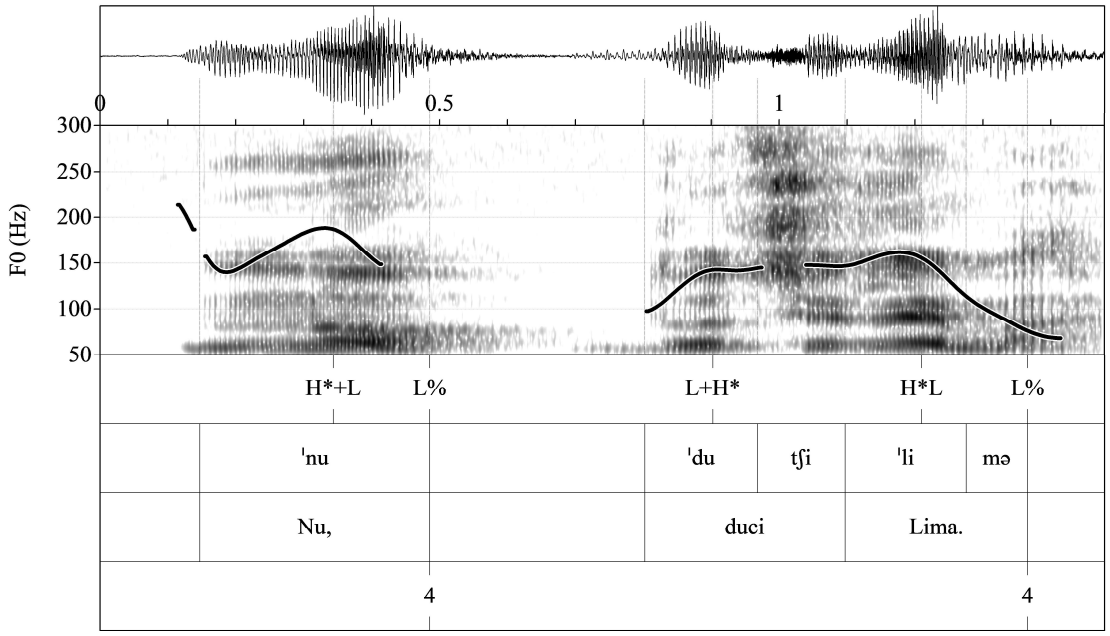


Figure 5.17: Waveform, spectrogram, and F0 contour of the contradiction statement Nu, duci Lima! *'No, to Lima!' produced by a speaker of Aromanian.*

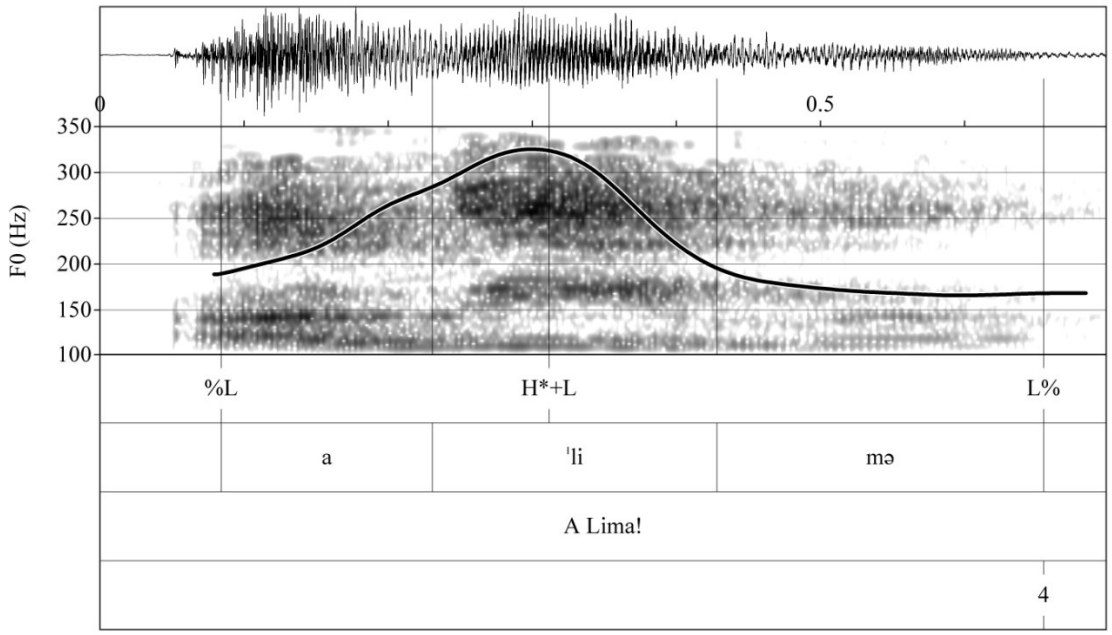


Figure 5.18: Waveform, spectrogram, and F0 (final contour only) of the contradiction statement A Lima! *'To Lima!' produced by a speaker of Istro-Romanian.*

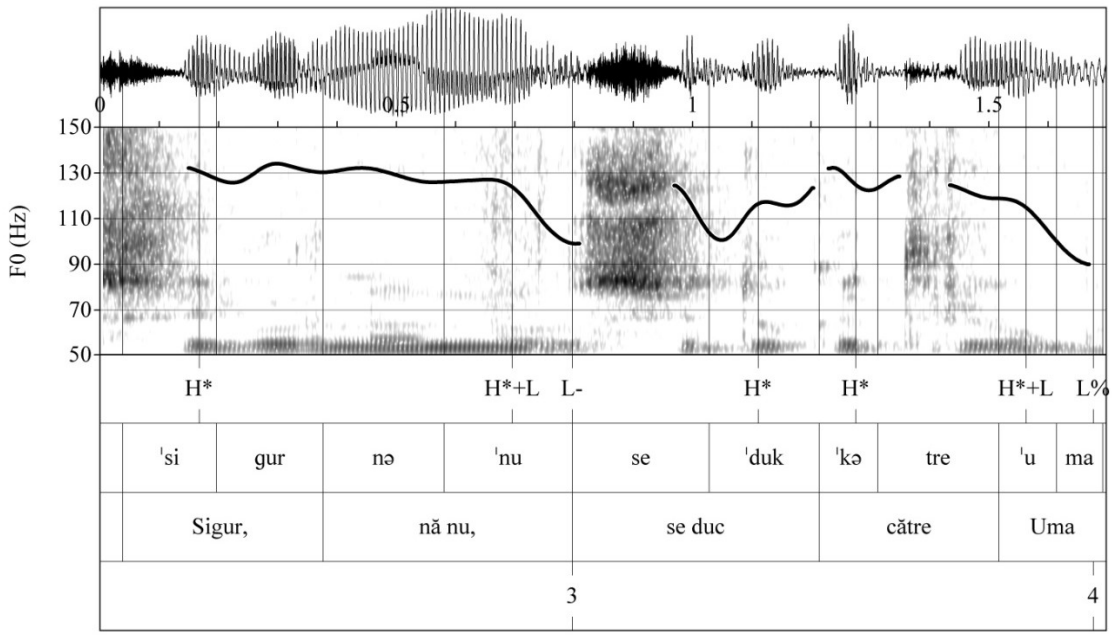


Figure 5.19: Waveform, spectrogram, and F0 contour of the contradiction statement Sigur nă nu, se duc către Uma! *'Of course not, they will go to Uma!' produced by a speaker of Megleno-Romanian.*

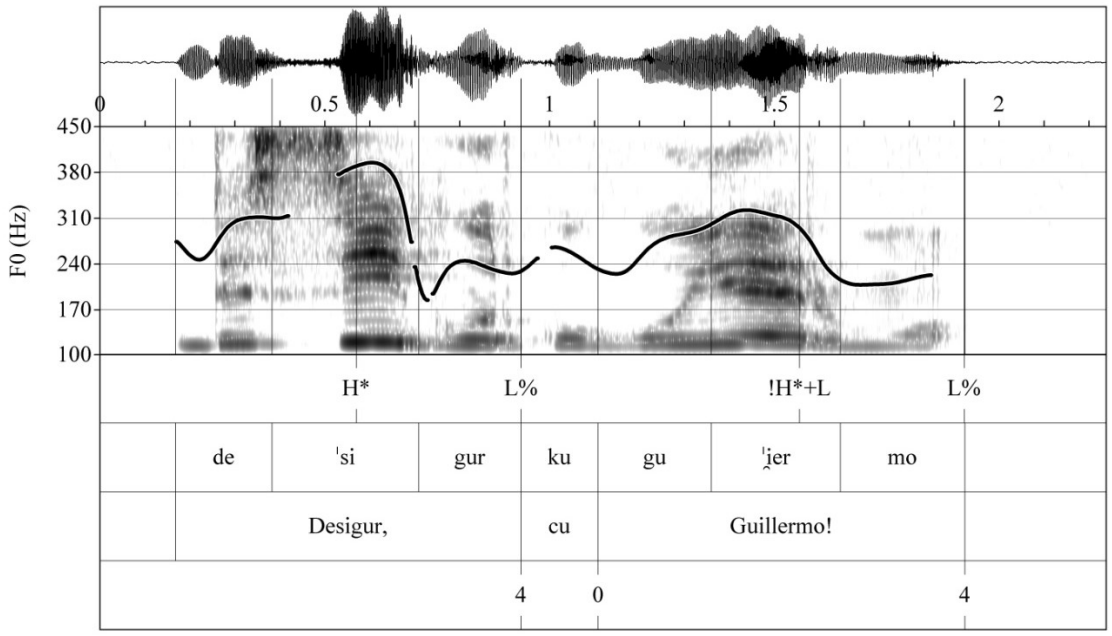


Figure 5.20: Waveform, spectrogram, and F0 contour of the narrow-focus statement Desigur, cu Guillermo! *'Of course, with Guillermo!' produced by a speaker of Daco-Romanian.*

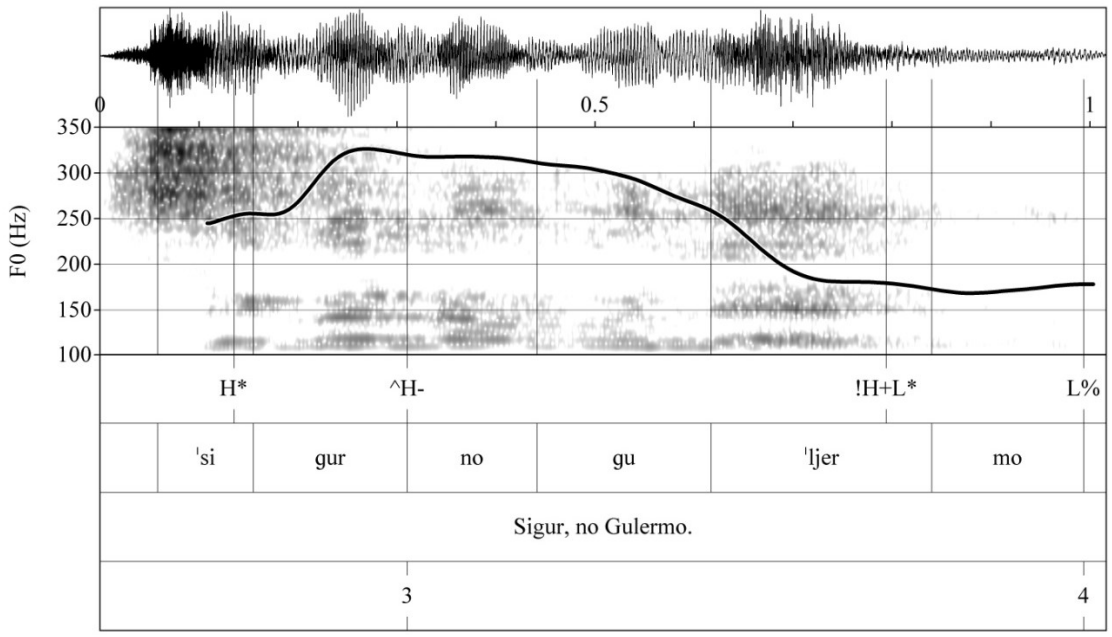


Figure 5.21: Waveform, spectrogram, and F0 contour of the narrow-focus statement Sigur, cu Gulliermo! *'Of course, with Guillermo!' produced by a speaker of Istro-Romanian.*

5.2.1.4 Uncertainty statements

There are instances when speakers show a certain degree of uncertainty in statements. Examples of uncertainty statements are exemplified below clearly showing hesitation which is evident from the !H+L* accent on the negative adverb *nu* 'no' in Figure 5.22 in Daco-Romanian. In this type of statement, the negative word is marked by emphasis within the negative clause *să nu-i placă cadoul pe care l-am cumpărat*! *'not like the present I have bought him/her!'* (also supported by Dascălu-Jinga 2001) and forms a peak in the F0 contour with the highest target tone which is above the tonal level of the other pitch accents of the clause (^H*). The verb is marked by a L* and makes pairs with the negation within an emphasized group. The L- in the first intermediate phrase is not the lowest in the intonation stretch. The second intonation phrase shows an !H* which is maintained until the last fall on the second L*. The negative intonation phrases are phrased in two intermediate phrases with a 3 boundary tone, which represents a main clause and a subordinate clause. The main clause *S-ar putea* bears low prominence at the global level where it is paired with the negative clause and the former receives the global nucleus because the local nucleus is higher than the modal verb target tone.

The intonational contour in Figure 5.22 shows that the negative particle has a higher target tone compared to the verb *s-ar putea* 'she may' and at the global level the verb bears the negative prominence and also the nuclear accent. At a semantic level this is due to the fact that it expresses uncertainty about the statement. The first intermediate phrase *s-ar putea să nu-i placă* includes the verb in the emphasised stretch of the utterance. The second phrase thus forms a group of low tonal level constituents where the verb is marked by negative prominence. This contour (Figure 5.22) shows that at the verbal phrase level, the tonal level of the negative particle and the verb overlap, however the first one has a lower target level and thus bears the nucleus. This is different from negative yes-no question contours described later in this chapter, where the constituents of the first group show that their tonal levels are not overlapping and thus the last element bears the emphasis and thus the nuclear accent.

This emphasis is also present in Istro-Romanian (Figure 5.23) on the word *nu* 'no' although not as prominent as in Daco-Romanian because the fall is not produced on the verb, but rather a downstepping tendency is maintained towards the end of the utterance. The global nucleus is on the verb *sper* which has the lowest tonal level compared with the negation in the negative clause when it bears the local nucleus. The global nucleus on the first verb outlines the uncertainty aspect of the statements in both Daco-Romanian and Istro-Romanian.

Figure 5.22 shows that in Daco-Romanian F0 starts from a high tone followed by some pitch variation in the first phrase, whereas the pitch remains steady with a rising movement over the final accent H+L* on the final 'rat' syllable. The last pitch accent H+L* is the nucleus of the second intermediate phrase only.

In Istro-Romanian (Figure 5.23) the F0 starts from a rather low level (the verb *sper*) and has an abrupt rising movement to reach the highest target tone on the negation (H*). Then the downstepping tendency of the contour begins and produces an !H* pitch accent on the verb. Negative words usually bear an accent in Daco-Romanian. Note that downstep is present throughout, the pitch shows a steady overall falling movement until it reaches a sharp fall on the nuclear syllable *rat* and ends in a L* L% configuration.

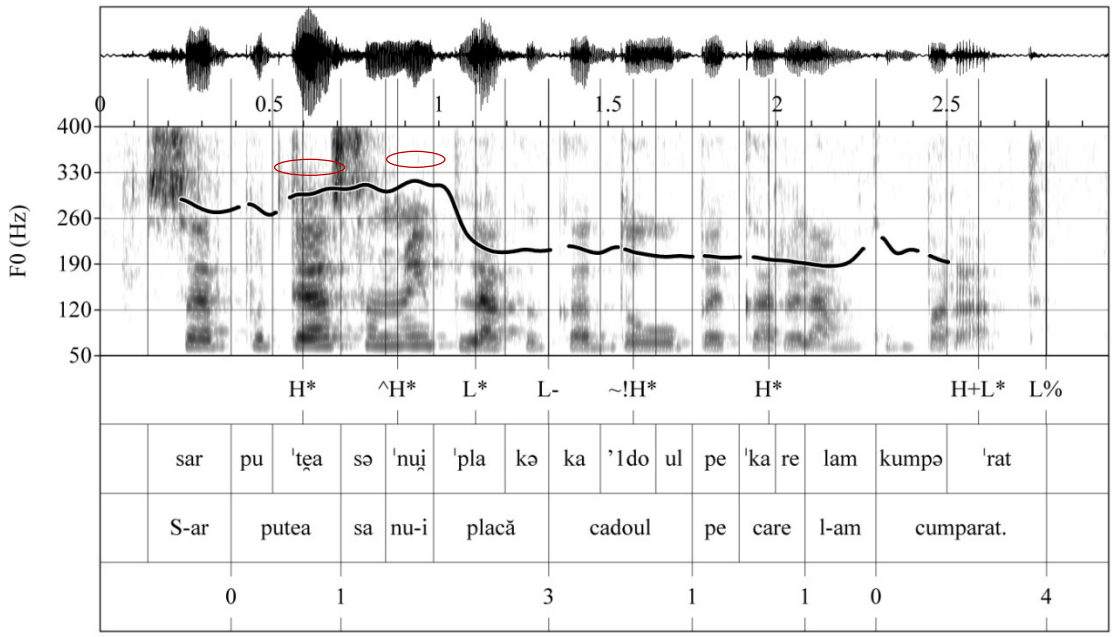


Figure 5.22: Waveform, spectrogram, and F0 contour of the narrow-focus statement S-ar putea să nu-i placă cadoul pe care l-am cumpărat! *'S/he may not like the present I have bought him/her!' produced by a speaker of Daco-Romanian.*

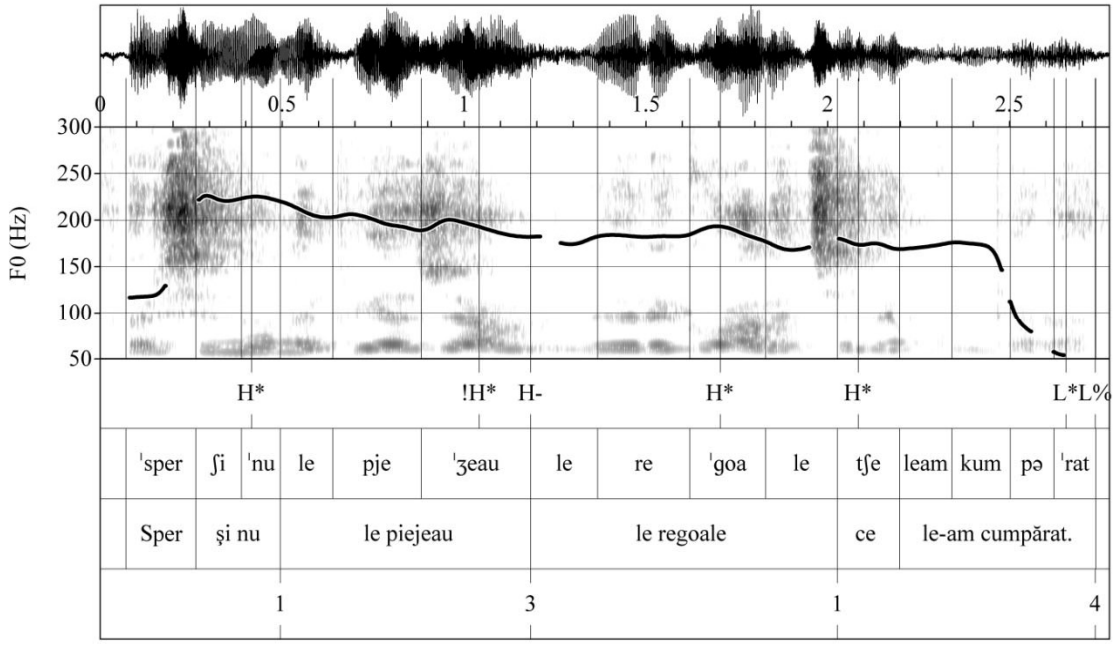


Figure 5.23: Waveform, spectrogram, and F0 contour of the narrow-focus statement Sper și nu le piejeau le regoale ce le-am cumpărat! *'S/he may not like the present I have bought him/her!' produced by a speaker of Istro-Romanian.*

5.2.1.5 Mirativity statements

The concept of mirativity as a grammatical and pragmatic category was first addressed in the literature by Jakobson (1964) (who referred to it as 'mirative'), but it was not until DeLancey (1977) (who referred to it as 'admirative') that mirativity was defined as a category associated with surprise. Where the new speaker is presented with new or old information, expected or not expected information, the speaker will express a particular surprise marked by exclamation, showing that the information is "new to the speaker, not yet integrated into his overall picture of the world" (DeLancey 1997: 96).

Daco-Romance varieties present particular lexical and morphological devices to express mirativity and a particular intonation pattern, also common to exclamations. Exclamations have the form of interrogative sentences but bear exclamatory force marked by the specific exclamation intonation and, like mirativity sentences, employ syntactic devices such as clefting and fronting. Word order and verbal constructions in mirativity and exclamation sentences are also different from positive statements in that they follow the grammar of interrogatives. Though grammatically restrictive, exclamations follow a similar intonation to mirativity statements across Daco-Romanian.

Notice in the examples below that where mirativity statements use a wh-word in initial position, the wh-word does not always bear the main nuclear accent, as in questions. The position of the nucleus can be either on the wh-word or on the following word. Also, all varieties of Daco-Romance employ an intermediate phrase. The first one is characterized by a high density of rising accents, and the second one by downstep.

Daco-Romanian uses pitch movement at the highest tonal level on the wh-word in initial position which becomes nuclear by emphasis and, like in wh-questions, its peak is in a separate high tonal space than the following peak on the word 'miros' 'smell' leading to emphasis.

Other varieties below also show a nuclear accent on the initial wh-word, as in questions. Jitcă et al. (2015) also found that Daco-Romanian can place the nuclear accent on the second syllable of the word *miros* 'smell'. In this variant, the wh-word *ce* 'what' has a low level in a low separate tonal space and the word *miros* 'smell' is in a high tonal space and bears the emphasis and nuclear accent at both the local and global level. However, this does not appear to be a dialectal difference because both contour types are available for Daco-Romanian.

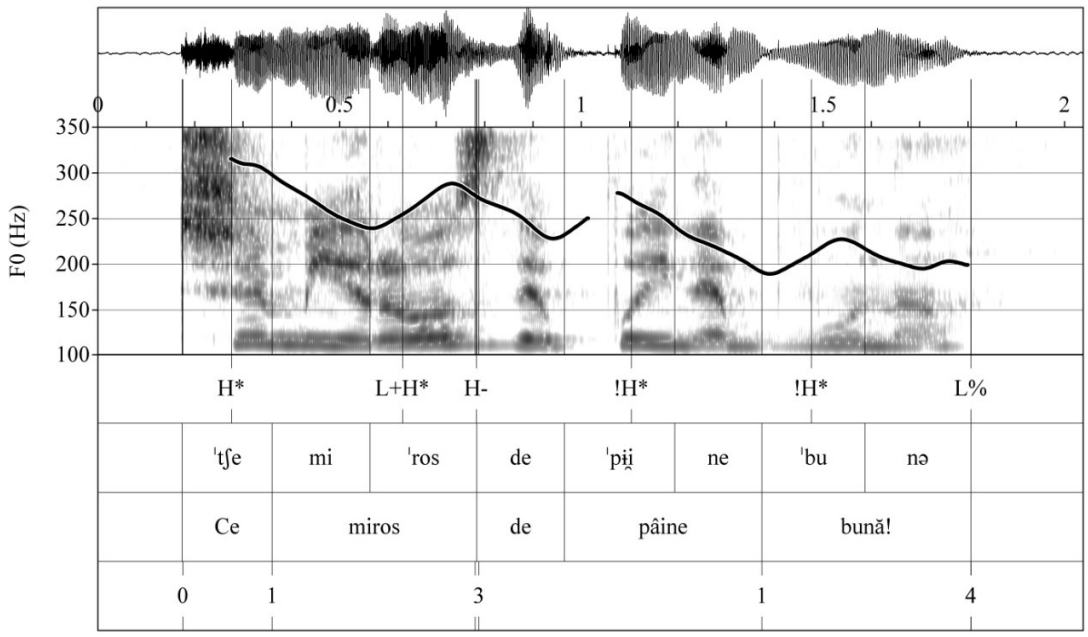


Figure 5.24: Waveform, spectrogram, and F0 contour of the mirativity statement Ce miros de pâine bună! *'What a nice smell of good bread' produced by a speaker of Daco-Romanian.*

Downstepping is clearly seen in Daco-Romanian. In Daco-Romanian (Figure 5.24) the second intermediate phrase shows two falling pitch accents, downstep and a low boundary tone. The whole stretch is marked by a progressive fall until the end of the utterance in !H*.

In contrast, Aromanian (Figure 5.25) and Istro-Romanian (Figure 5.26) are marked by a combination of falling and rising accents and a high boundary tone. The first intermediate phrase has an abrupt fall to a L-. The second part differs from broad focus intonation in statements, and is more like a yes-no question intonation which ends in an H%. However, the accented wh-word is characterized by a lower pitch range in statements compared to wh-questions.

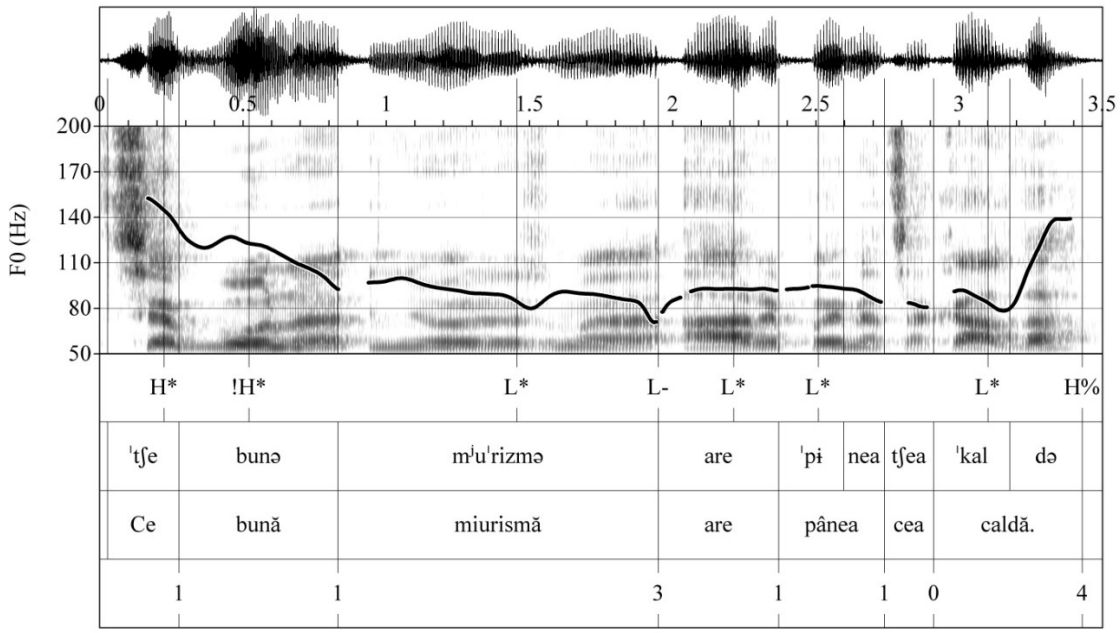


Figure 5.25: Waveform, spectrogram, and F0 contour of the mirativity statement Ce bună miurismă are pânea cea caldă! *'What a good smell of hot bread' produced by a speaker of Aromanian.*

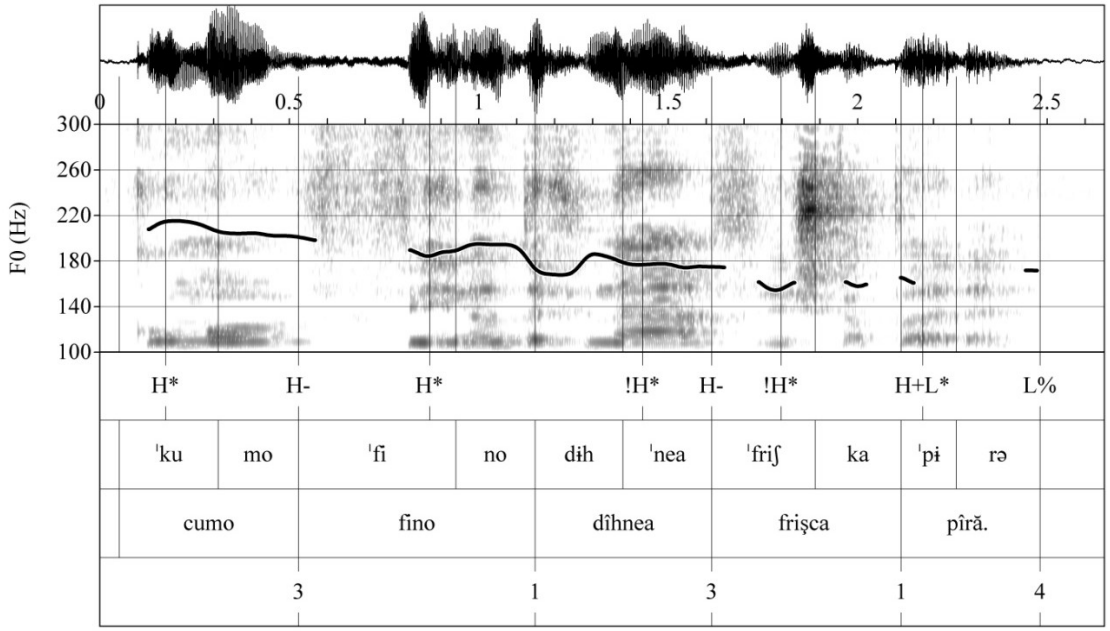


Figure 5.26: Waveform, spectrogram, and F0 contour of the mirativity statement Cumo fino dîhnea frișca pîră! *'What a good smell of fresh bread' produced by a speaker of Istro-Romanian.*

It is worth mentioning that Dascălu-Jinga (2001) introduced the term 'predicative intonation' to refer to a type of intonation that functions as a replacement of the predicate or an element such that a word in isolation can be treated as a sentence. This 'predicative intonation' does not have a particular configuration or nuclear pattern which is why Alexandrescu (1978: 51) argued that "in the absence of a predicate, the status of a sentence which these sequences are attributed to is marked by the communicative intonation (predicative intonation), by the lack of syntactic links to the constituents of the sentence in which they exist."

Mirativity and exclamation intonation could fall under this 'predicative intonation'. However, the variation in mirativity and exclamation intonation suggests that predicative intonation remains an abstract concept that does not relate to one particular grammatical type.

All Daco-Romance varieties share the same common nuclear configuration for mirativity statements.

5.2.2 Intonation in questions

A question may either require the speaker to provide information or confirmation, in which case the whole answer will usually have broad focus, or it may require the speaker to answer using new information in which case the elicited answer will be in focus. It is now commonly accepted that information is associated with yes-no or polar questions while confirmation relates to wh-questions.

Previous Romanian grammars noted that intonation is a means of marking questions, however, intonation patterns are difficult to establish in questions because there are other grammatical forms, morphosyntactic devices and word order that can mark interrogativity. Nonetheless, some question types, like yes-no questions and declarative sentences, share a very simlar grammatical structure and the only available device to distinguish between the two types is intonation. This was also described in Hungarian, where the morphosyntax of yes-no questions and declaratives is also similar and intonation is the only feature that marks the distinction between the two utterance types (Gosy and Terken 1994; Varga 2002).

Studies on question intonation in Romanian (Dascălu-Jinga 1998; 2001; 2008; Göbbel 2003; Ladd 2008) showed that there is a characteristic intonation pattern employed in questions, the LH or LHL pattern, in which the nuclear accent is realised on the main verb. Ladd (2008: 145) discussed the phenomenon of post-nuclear accents in

relation to phrase accents in the context of the Eastern European Question Tune (EEQT) and argued that languages that use EEQT, like Hungarian, Greek or Romanian, use a L* (or L*+H) nuclear pitch accent and an H_L% edge tone. He claims that in Hungarian, for instance, the H_L% sequence which occurs after the nuclear accent involves only edge tones and is not nuclear or pitch accent, despite the fact that it is characterised by acoustic salience. Ladd (2008: 146) also adds that yes-no questions in Eastern European languages show a L* or L*+H on the stressed syllable of the focused word followed by a H_L.In Romanian, the H of the H_L% may be associated with the "stressed syllable of a word that follows a focused word."

Giurgea (2017) has argued recently that these facts present some incongruences, especially for polar question intonation. This is because yes-no questions may have a similar configuration as statements, namely L* H* L%. Firstly, the focus has a L* and the final accent is a H* followed by a L% boundary tone which shows that polar questions and early focused statements share a similar configuration. Secondly, the nuclear stress always occurs rightmost in Romanian if there is no pre-final narrow focus.

A similar argument was raised in Göbbel (2003: 81-85), who argues for a focus projection rule following Selkirk's rules and Zubizarreta's (1998) modified NSR rule. This states that non-canonical word order in Romanian is associated with focusing strategies, as in Spanish, Portuguese or Italian.

Göbbel (2003: 90) concludes that focus intonation in Romanian follows to some degree the rules of the argument structural approach (Cinque 1993) and takes into account the focus rules of Selkirk (1995) in the asymmetry in prominence assignment to predicate + internal argument vs. predicate + external argument, in order to explain that broad focus may contain defocused material.

On the other hand, Jitcă et al. (2015: 298-302) argued that the L..H(L) pattern is neutral, similar to Greek (Arvaniti et al. 2006), and that the final accented syllable on the verb in yes-no questions can bear the nuclear accent. They also claim that the verb may be characterised by 'negative prominence' following Dascălu-Jinga (2001).

The particularities of Romanian question intonation were analysed by Dascălu-Jinga (2001: 33) who argued that it is difficult to utter a polar question with unmarked intonation, i.e. without stressing the word about which the whole question is asked.

Hence, the main difference between polar questions and their statement counterparts is that any statement can be uttered with an unmarked intonation in broad focus or neutral contexts, but a question will usually be marked by intonation and focus

on one of the constituents which is the element the question refers to: "emphasis is a constituent element in questions while in declaratives, it is only optional." In yes-no questions the intonational contour is emphasized. Dascălu-Jinga (2001) interprets 'positive emphasis' as the nuclear accent in yes-no questions, while negative emphasis is not associated with the nuclear accent. However, the analysis below shows that negative emphasis is also present in yes-no questions on the verb which receives a low prominence and thus becomes the nuclear accent. Neutral yes-no questions receive a nucleus on the word with the lowest tonal level on the accented syllable. In yes-no questions and statements the nucleus is associated with low prominence, rather than positive prominence as argued by Dascălu-Jinga (2001).

5.2.2.1 Yes-no questions

The main issues in the intonational phonology of Romanian is to explain how the verb at low level can bear nucleus in information-seeking questions and how information structure interacts with question tunes. For this purpose, this section analyses information-seeking and confirmation seeking yes-no questions and echo questions.

5.2.2.1.1 Information seeking yes-no questions

Until relatively recently, intonation in yes-no questions was considered to be mainly rising across Romance languages. However, it is now apparent that this is not the case across all Romance languages (Frota and Prieto 2015) as there are other factors at play which affect the realisation of intonational patterns such as syntax, word order and pragmatic meanings. Vasiliu (1965) and Dascălu-Jinga (2001) argue that in Romanian the nuclear pitch accent is falling in confirmation-seeking question contexts, while Turculeț (2013) shows in a socio-linguistic study that regional varieties of Romanian exhibit a falling intonational pattern after reaching the tonal peak on the final stressed syllable.

However, the data of this thesis suggests that the difference between declarative and interrogative intonation is that in questions the pitch is considerably higher than in declarative sentences. This was proved to be true for many other languages (Haan 2001, Gussenhoven 2002) and is explained by means of a 'frequency code' which underlies the use of high pitch with smaller stretches intonation and low pitch with larger ones.

This code suggests that questions start from a high pitch and involve rising movements while assertions are associated with low pitch and falling contours.

Daco-Romanian declaratives and interrogatives share some similar intonation patterns. Continuity intonation is used both in enumerations and yes-no questions. One of the similarities is that the last nuclear accent is realised as H* or L+H* in enumerations that consist of long intonation phrases denoting continuity. However, one of the main differences between yes-no questions and enumerations is that the peak height of the pitch accent relative to the height of the final high boundary tone appears to be pragmatically relevant. It appears that the peak of the nuclear accent in questions is much higher than that found in enumerations or lists in statements. The data presented in this chapter suggests that yes-no questions usually start from a higher pitch than statements in Daco-Romanian.

Studies that investigated intonation patterns in Romanian wh-questions and declaratives suggested that falling intonation patterns are identical in wh-questions and declarative sentences (Dascălu-Jinga 2008). However, Dascălu-Jinga (1998: 243) argued that the difference between the two is that wh-question intonation is more like statements under focus (declaraive contours with positive emphasis) where the focused word is in the same position as the interrogative word in wh-questions.

There are various other linguistic factors that are used to express questions in Romanian, Aromanian, Megleno-Romanian and Istro-Romanian. Information structure and questions can be realised by means of both word order and prosody across Daco-Romance varieties and there is also an interesting relation between focus and word order that also governs focus prosody. As Göbbels (2003) pointed out, Romanian can use VP-internal scrambling operations and defocused material can move in front of the direct object. On the other hand subject inversion can mark questions in Romanian.

Romanian is a pro-drop and null-subject language, where certain pronouns can be omitted in subject position and no clitic pronouns are used as subjects. The examples below (Figures 5.27 – 5.30) show canonical word order in statements and questions in Daco-Romanian (*Aveți marmeladă?* ‘Do you have marmalade?’). In other contexts, non-canonical word order is also possible, and attracts narrow focus on the object (*Marmeladă aveți?* ‘Do you have marmalade?’).

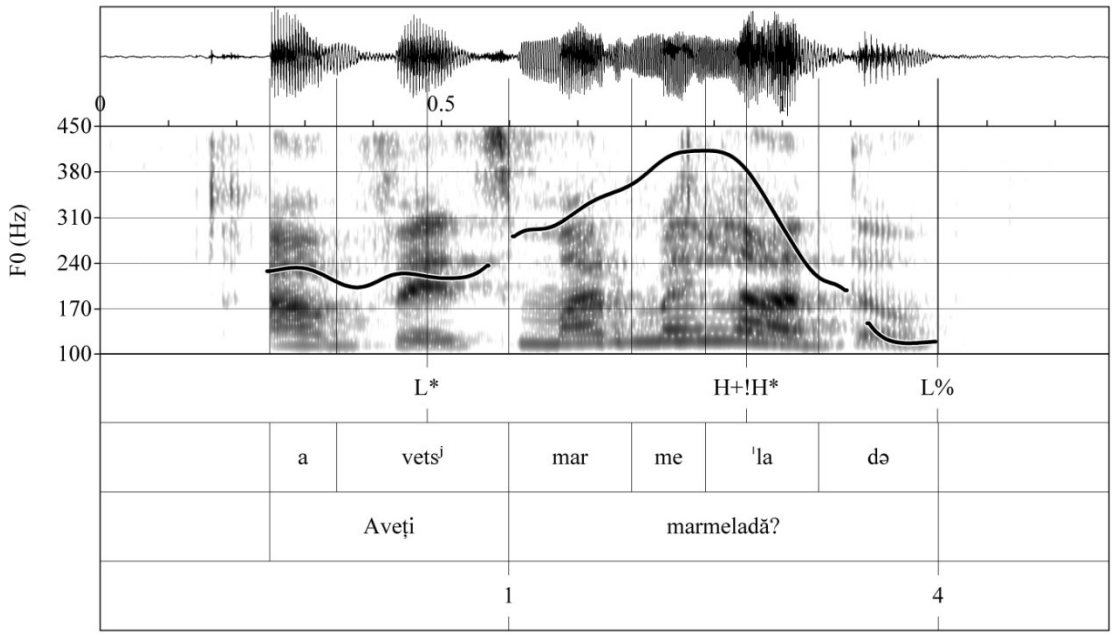


Figure 5.27: Waveform, spectrogram, and F0 contour yes-no question Aveți marmeladă? *'Do you have marmalade?' produced by a speaker of Daco-Romanian.*

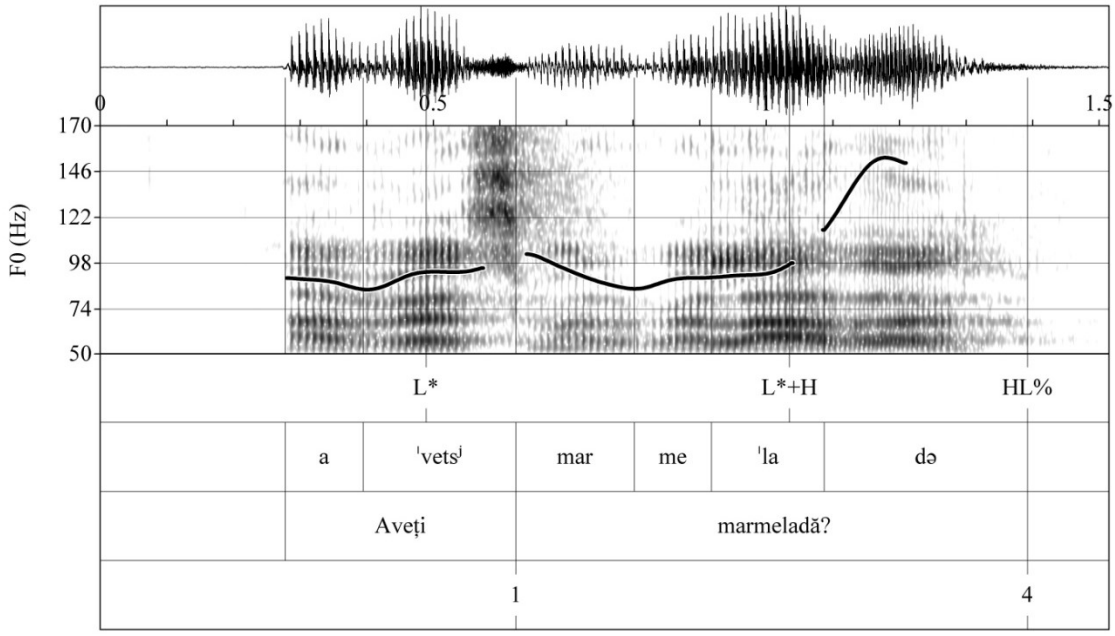


Figure 5.28: Waveform, spectrogram, and F0 contour yes-no question Aveți marmeladă? *'Do you have marmalade?' produced by a speaker of Aromanian.*

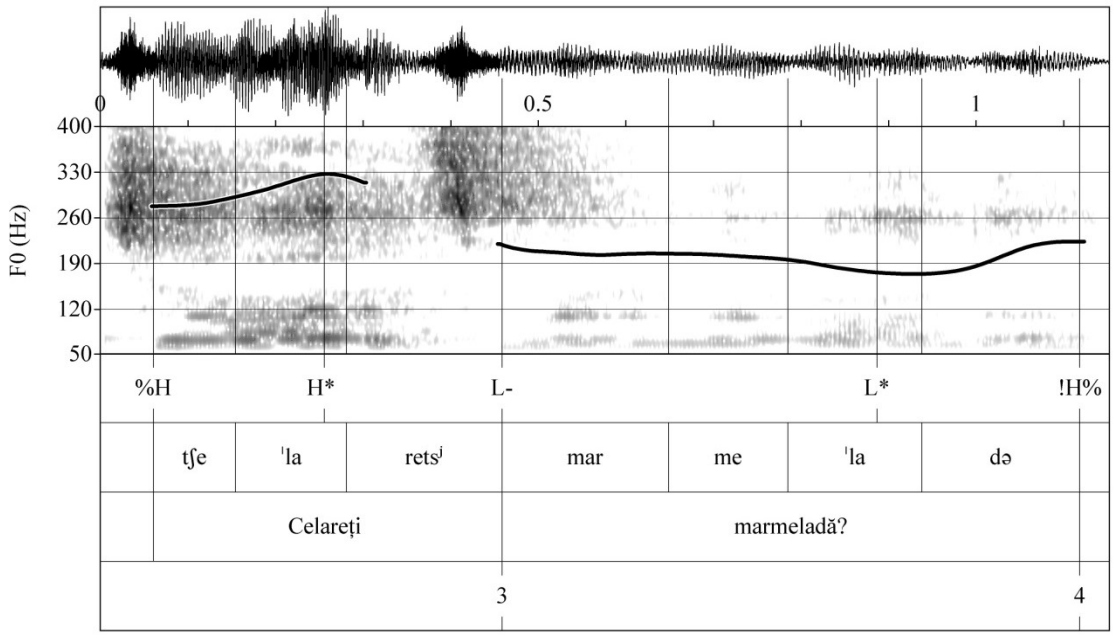


Figure 5.29: Waveform, spectrogram, and F0 contour yes-no question Celareți marmeladă? *'Do you have marmalade?' produced by a speaker of Istro-Romanian.*

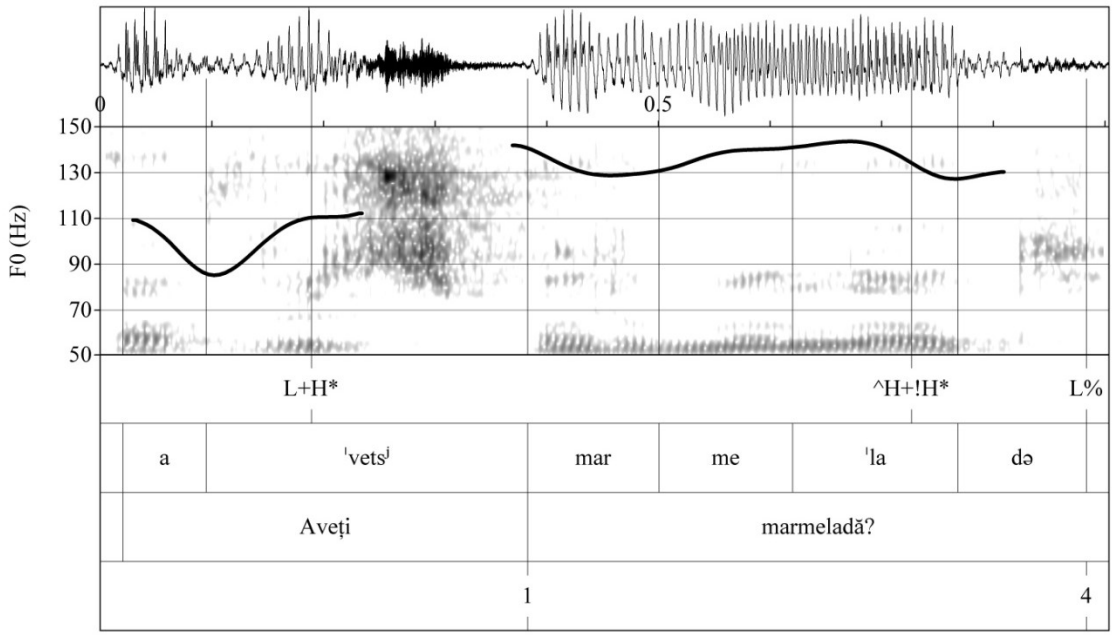


Figure 5.30: Waveform, spectrogram, and F0 contour yes-no question Aveți marmeladă? *'Do you have marmalade?' produced by a speaker of Megleno-Romanian.*

Ladd (2008: 225) argued that unlike English, languages like Russian, Hungarian, Greek and Romanian accent yes-no questions on the verb, even when the sentence contains a noun. This was also reported in Apopei (2006) and Jitcă et al. (2015). Dascălu-Jinga

(2001) described yes-no questions as marked by 'interrogative emphasis' which can be either 'positive emphasis' (a regular peak in the intonational phrase) or 'negative emphasis' (a valley or minimal tonal target). This analysis supports the claims made by Ladd (2008), and Jitcă et al. (2015) that the nuclear accent falls on the verb.

The above examples show that the main verb receives the nuclear accent at the beginning of the intonational phrase, where it is always characterized by the lowest target tone in a L* pitch accent or L+H*. In Istro-Romanian the contour has a descending contour like for wh-contours until after the last accented syllable. The nucleus is produced by emphasis (positive high prominence), that is a H* pitch accent in an initial ip. The contour is ascending only on the last non-accented syllable reaching an intermediate high level (!H%).

In ascending contours, after the post-nuclear accent, the phrase final contour ends in a high boundary tone H% in instances of oxytonize stress, while it continues in a descending movement generating a L% boundary tone in non-oxytocin constituents. This is a case of truncation. Examples are found in most Daco-Romance varieties (Figures 5.27-5.30) and support this analysis of non-oxytocin stress, except in Istro-Romanian which shows a H% boundary tone as a result of contact with Croatian.

In default or neutral yes-no questions the nucleus is on the verb, but there are cases where some other word is in focus, and in those cases the L* nucleus aligns with the focused word. Cases in which non-canonical word order is used (e.g. *Marmaladeă aveți?* Do you have marmelade?) apply focus on the noun. The nuclear accent is assigned on the word that bears the lowest tonal level.

Information seeking questions display two main post-nuclear configurations in Daco-Romance varieties. Daco-Romanian displays a falling configuration H+!H* L%. Aromanian shows a L*+H HL% (where the low is associated with the boundary syllable). Istro-Romanian's post-nuclear sequence is a falling-rising one: falling during the pitch accent L* and rising during the boundary tone !H%. Falling intonation is considered to be more informal while rising intonation is thought to be used in more formal contexts.

The nuclear accent of the sentences, illustrated in Figures 5.27 – 5.30 is on the finite verb *aveți* 'do you have'. The intonational pattern is described here as a L* pitch accent on the finite verb (*aveți*) followed by a rising-falling boundary tone sequence (HL%) aligned with the final syllables. This is in fact what is proposed by Ladd (1996: 117). Ladd (1996, 2008) also provides examples from Hungarian (*Vettél szódát?* 'Did

you buy soda?') in which the same pattern as the one appearing in Figure 5.27 is transcribed as a sequence of a L* pitch accent and a bitonal HL% boundary tone. This is an interesting topic that raises some important questions regarding how the Nuclear Stress Rule is applied in this language. These results are also relevant for languages such as Sardinian in which nuclear stress can be assigned on elements that are not in clause-final position (Frota and Prieto 2015).

Giurgea (2017) arrived at a similar conclusion in a study which presented an analysis of broad focus and 'verum focus' in questions and found that in broad focus contexts the first accent on the verb is pre-nuclear and rising (L+H* or L+H*), whereas in verum focus it is the nucleus which falls on the verb as a L* accent in an L… H(L) pattern. Auxiliaries are clitics in Romanian which is why the only accent of the Aux+V constituent is on the V. The results of the experiment in Giurgea (2017) suggest that speakers tend to use an unmarked LH pattern, an environment which allows for verum focus. Polar interrogatives have the same word order as declaratives and instances of VS order represent polarity fronting, licensed by focus on polarity which was interpreted as either information in unbiased questions and emphatic in biased questions (Giurgea 2017: 38).

5.2.2.1.2 Confirmation seeking yes-no questions

When the first word does not bear the nuclear accent, confirmation seeking intonation is used to mark the nucleus while word order remains the same. The information seeking question tune is also kept which relates to the lowest tone on the accented syllable of the relevant nucleus. The examples below show that confirmation-seeking yes/no questions followed by a tag question can either be separated by a 4 boundary tone, resulting in a separate intonational phrase as in Daco-Romanian, or by a 3 boundary tone, indicating an intermediate phrase. This is due to the fact that these confirmation-seeking questions have tag question intonation in the second part and declarative intonation in the first part.

Confirmation seeking questions employ a different contour than those used for information-seeking questions. In instances where the tag is not present, these questions show a L*+H final accent where the nucleus is located.

The tag part of the question has a rising contour, just like in yes-no questions. Daco-Romanian and Aromanian use a L*+H H% contour. The negation word *nu* 'no' in Daco-Romanian receives a rising accent and conveys a high degree of presupposition on

behalf of the speaker if the preceding accent on the main verb *veni* ‘coming’ is high, as in Figure 5.31 while Istro-Romanian and Megleno-Romanian employ a H+L* L% contour.

In Figure 5.31 a ^H+!H* accent on the verb implies a lower degree of presupposition of the truth-value of this sentence as a higher fall indicates a higher degree of uncertainty and ignorance about the answer. The nucleus in this example is on the verb *veni* which bears the lowest prominence, and it is also the information about which the question is asked.

Daco-Romanian and Aromanian show similar contours while Istro-Romanian and Megleno-Romanian show an identical intonation pattern. The example in Figure 5.32 in Istro-Romanian involves an intermediate phrase which shows an alternative. This is expressed by means of the nuclear accent H* on both the main verb *veri* ‘come’ and *ali* (which can be translated ‘or’, ‘are not’). The two intonational phrases in Daco-Romanian and Istro-Romanian are both separated by a low boundary tone.

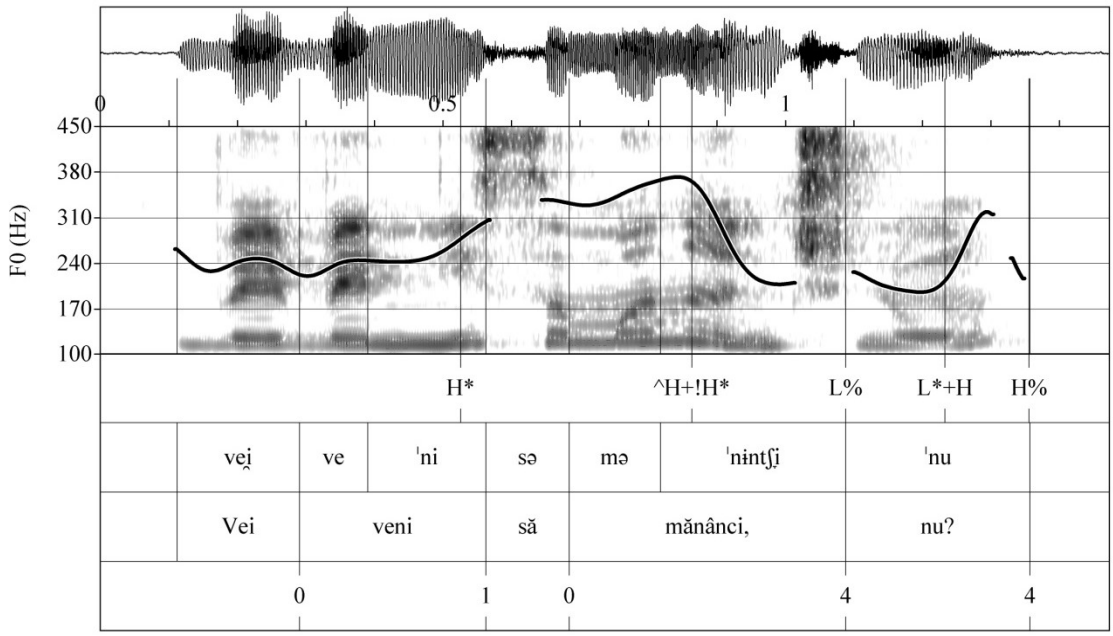


Figure 5.31: Waveform, spectrogram, and F0 contour of the confirmation-seeking yes/no question Vei veni să mănânci, nu? *‘You are going to come and eat, aren’t you?’ produced by a speaker of Daco-Romanian*

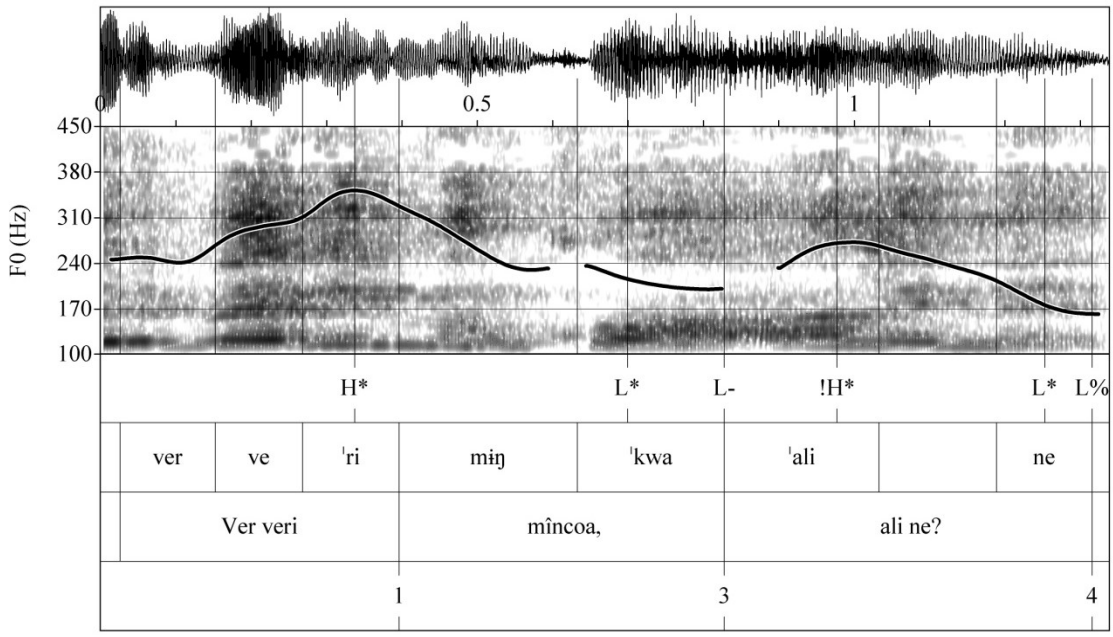


Figure 5.32: Waveform, spectrogram, and F0 contour of the confirmation-seeking yes/no question Vei veri mancoa, ali ne? *'You are going to come and eat, aren't you?' produced by a speaker of Istro-Romanian.*

5.2.2.1.3 Disjunctive questions

Disjunctive questions are not a request for confirmation of given information, rather they are a request for new information about which of the two alternative the addressee prefers. The examples below show the intonational contours of confirmation-seeking yes/no questions (*with alternatives*) like 'would you like melon or ice-cream?' in all four varieties. All varieties end in a low boundary tone L% except Istro-Romanian where a high boundary tone is used following a paroxytone pitch accent L*. The question seeks confirmation and offers an alternative. Notice that the last pitch accent in the first intermediate phrase is rising in most varieties, followed by a high boundary tone H- or H%, and the first pitch accent in the following phrase is usually falling. Thus the pitch traces clearly show a mirror shaped intonation pattern between the two phrases, such as a L* L* H-(H%) or L* L+H* H-(H%) and H+!H* (!H*) L* L% or !H* H* L%. Short confirmation seeking yes-no questions that are not divided by an intermediate phrase are characterised by a final high boundary tone H%. In Istro-Romanian (Figure 5.35) the intonation rises slightly towards an !H% which is similar to information seeking questions in Figure 5.36.

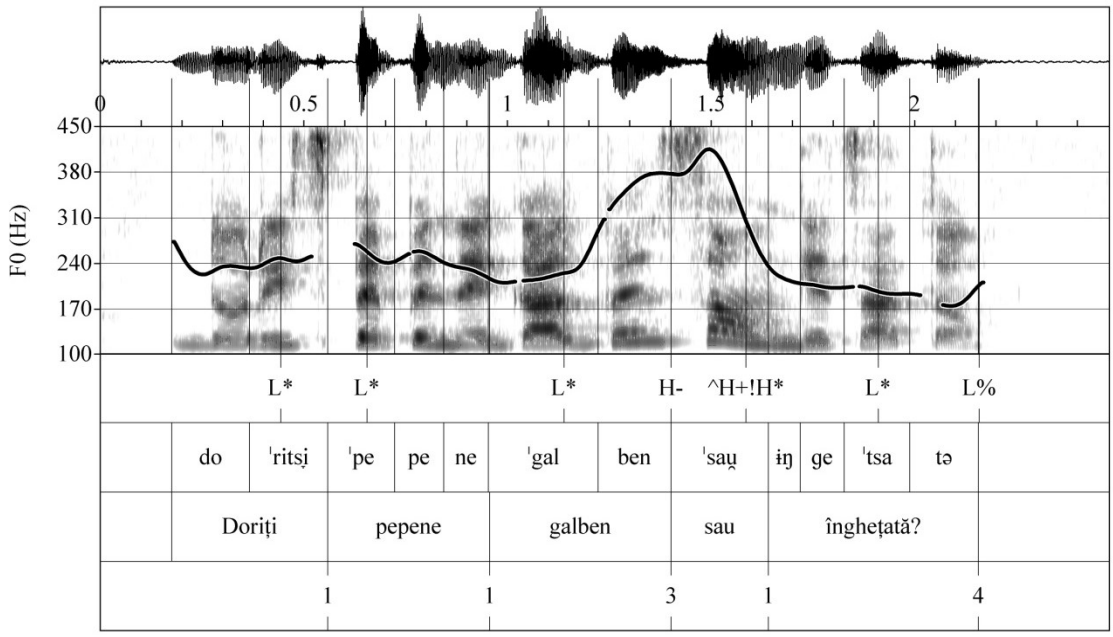


Figure 5.33: Waveform, spectrogram, and F0 contour of the disjunctive question Doriți pepene galben sau înghețata? *'Would you like melon or ice-cream?' produced by a speaker of Daco-Romanian.*

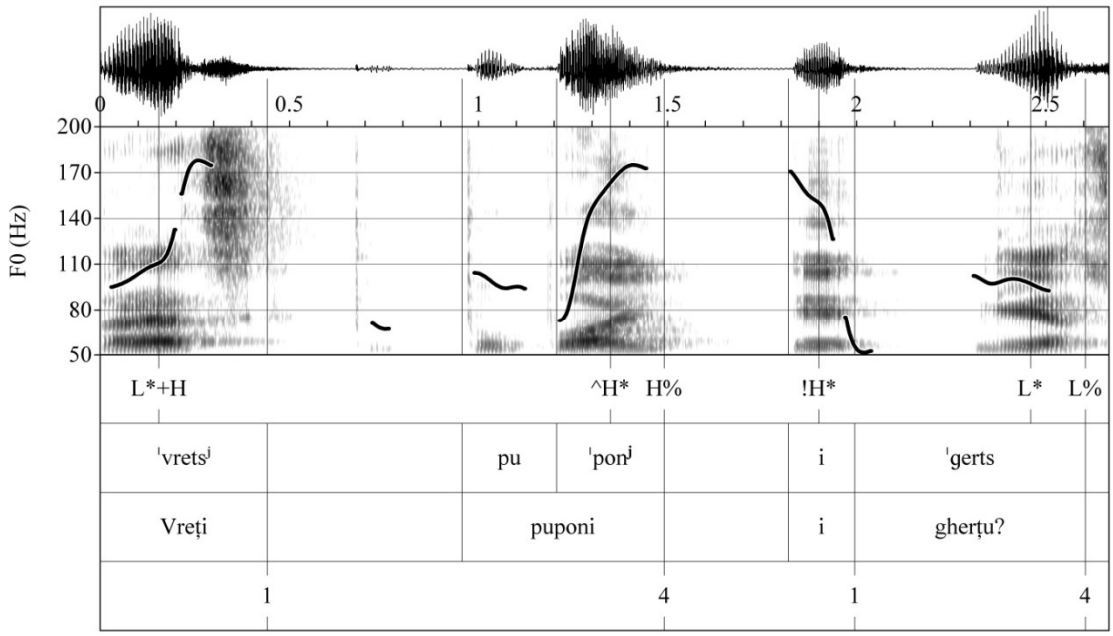


Figure 5.34: Waveform, spectrogram, and F0 contour of the disjunctive question Vreți puponi i gherțu? *'Would you like melon or ice-cream?' produced by a speaker of Aromanian*

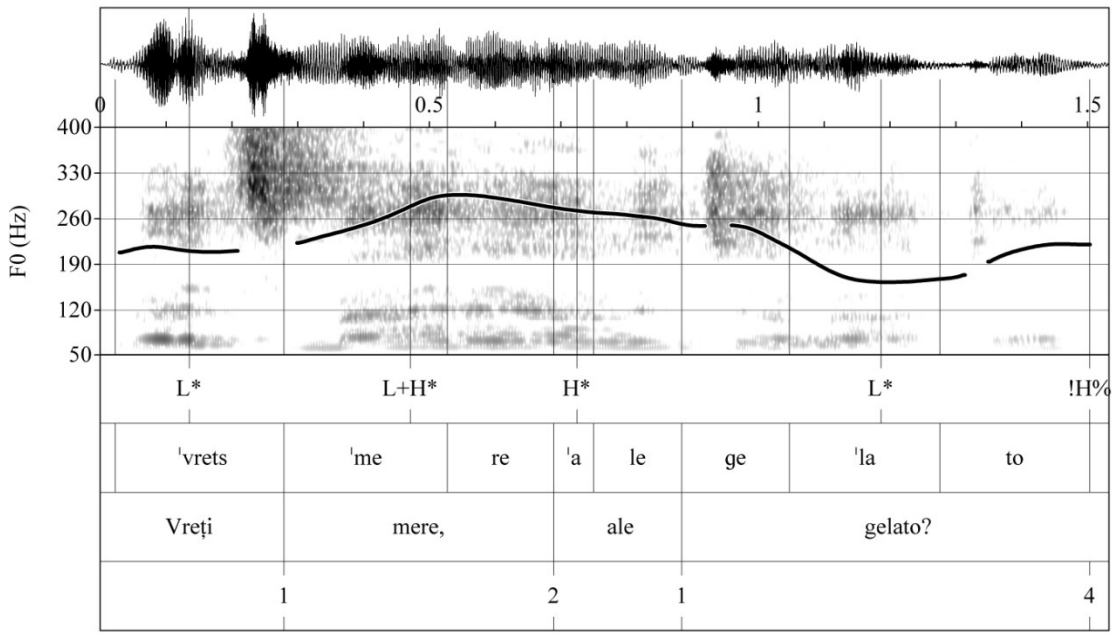


Figure 5.35: Waveform, spectrogram, and F0 contour of the confirmation-seeking yes/no question Vreți mere, ale gelato? *'Would you like apples or ice-cream?' produced by a speaker of Istro-Romanian.*

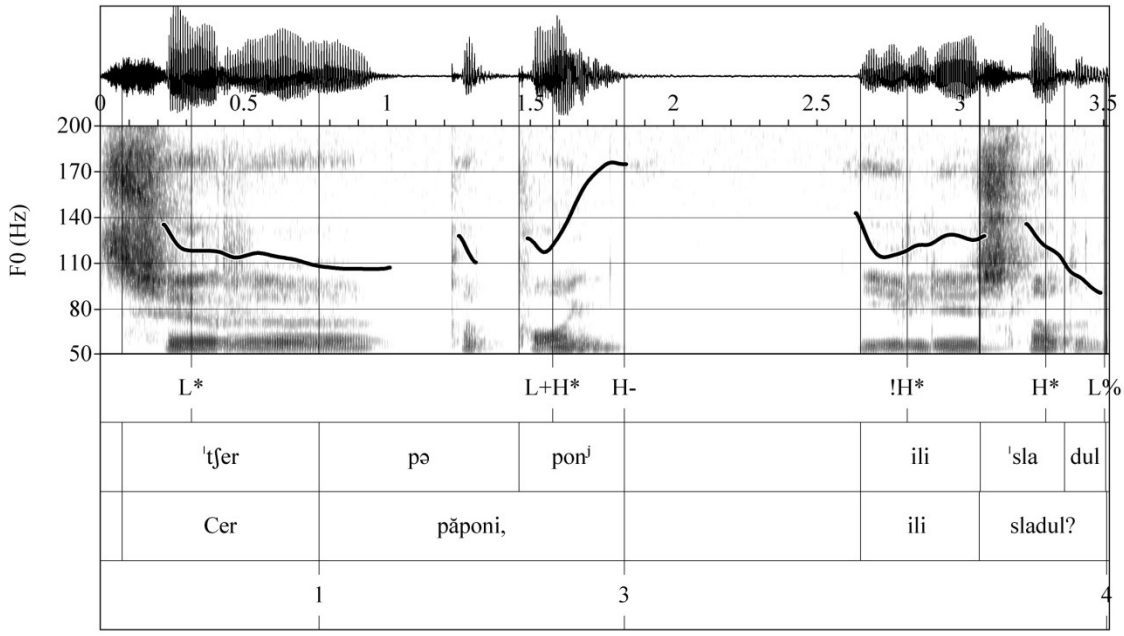


Figure 5.36: Waveform, spectrogram, and F0 contour of the disjunctive question Cer păponi, ili sladoled? *'Would you like melon or ice-cream?' produced by a speaker of Megleno-Romanian.*

5.2.2.1.4 Echo question

Echo or biased questions are mostly used when a speaker has already received new information and wants to validate it by repeating old information using different intonation patterns.

Some echo questions express a low degree of certainty. Dascălu-Jinga (2001: 41) argued that echo questions can repeat in whole or in part old information, and this question can be either identical or modified compared to the original question. Its structure depends on the context of the dialogue, especially the speaker's intentions. There are various types of echo-questions following different initial sentence types, such as statements, imperatives, polar questions or alternative questions. If an echo question follows an initial statement with falling intonation, the echo question will repeat the old information using rising intonation, whereas if an echo question follows polar or alternative questions, the echo question will use falling intonation patterns.

Echo questions seem to show some variation across varieties and nuclear contours where most of them have an ascending phrase-final contour as in Daco-Romanian. Figures 5.37-40 show that in Romanian the nuclear accent is final (L*+H) and is rising. Aromanian also shows a final rising accent (L*+H). However, the nucleus is on *ora* 'time'. In Istro-Romanian the nuclear accent is on *nouă.*

In Daco-Romanian the old information which is repeated has a repetitive accentuation pattern L*+H with high target levels (above the tonal level of the last word) which is placed on a downstepping tendency towards the last constituent which reaches the lowest tonal level in an L* and thus bears the nucleus.

In Aromanian the accentual group forms a local nucleus and global nucleus on the lowest target tone word *ora*.

In Istro-Romanian an echo question is composed of a wh-question intonation with the nucleus on the wh-word in the first part and a yes-no question intonation with the nucleus on the word *deve* in the second part, as this bears the lowest tonal level in the intonation stretch. Megleno-Romanian shows that word *nouă* 'nine' has the lowest tonal level and the intonation pattern in this example is similar to yes-no question intonation in Megleno-Romanian.

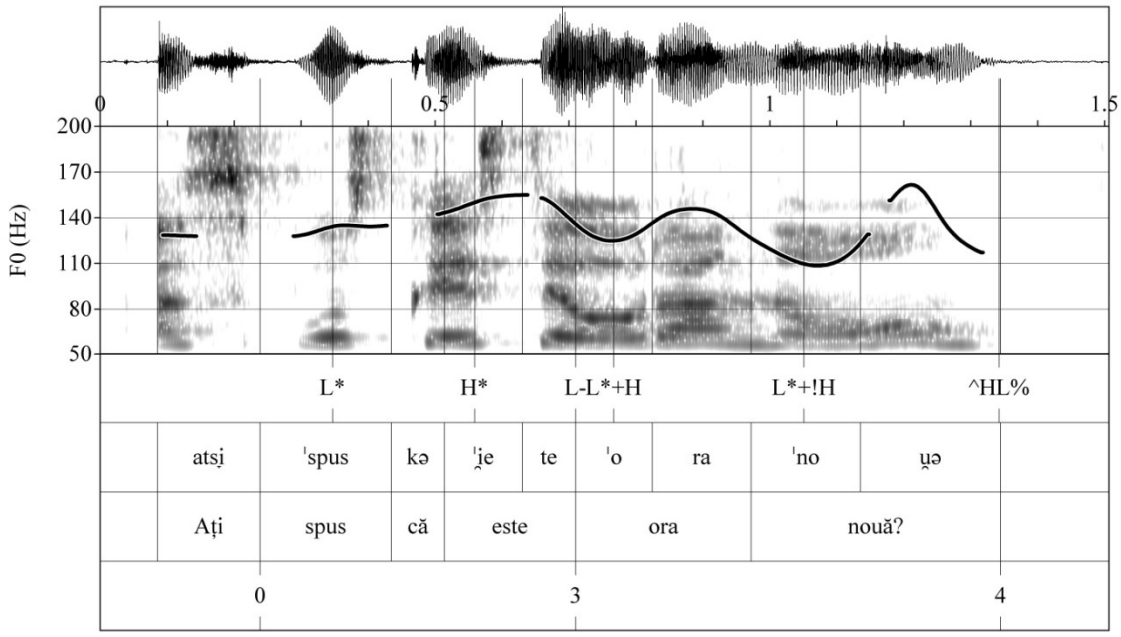


Figure 5.37: Waveform, spectrogram, and F0 contour of the confirmation-seeking echo yes/no question expressing a low degree of certainty Aţi spus că este ora nouă? *'Did you say it is nine o'clock?' produced by a speaker of Daco-Romanian.*

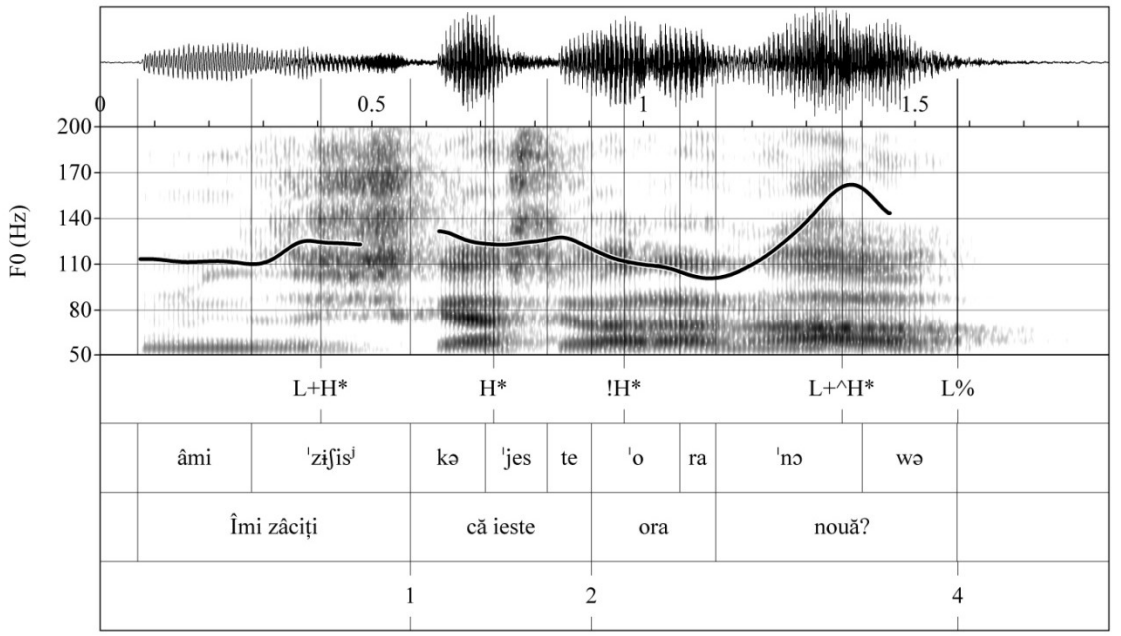


Figure 5.38: Waveform, spectrogram, and F0 contour of the confirmation-seeking echo yes/no question expressing a low degree of certainty Îmi zâciţi că ieste ora nouă? *'Did you say it is nine o'clock?' produced by a speaker of Aromanian.*

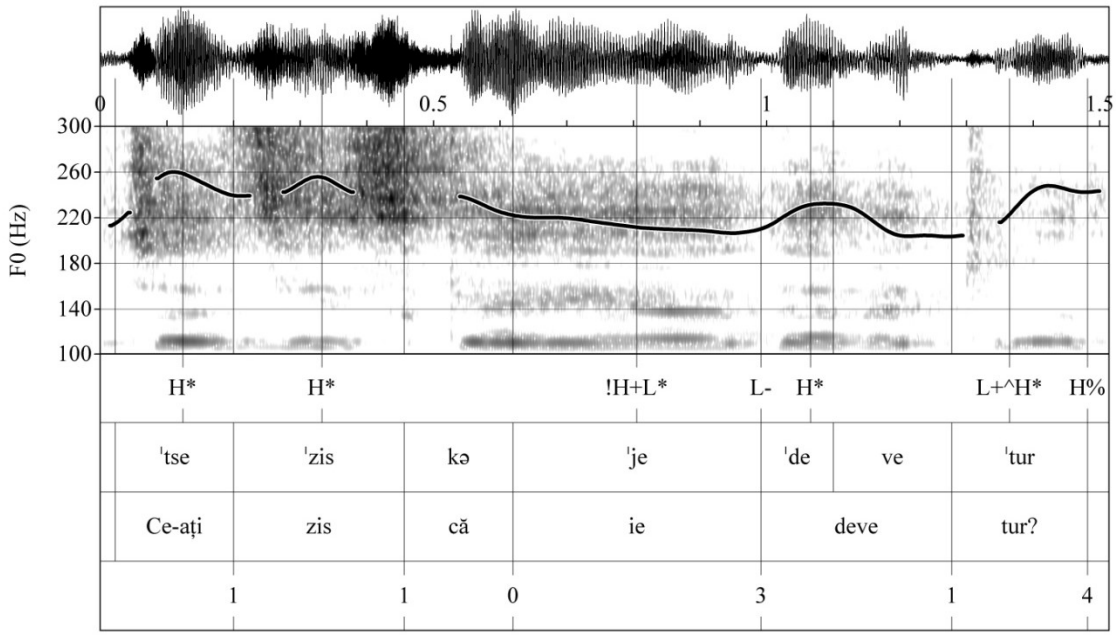


Figure 5.39: Waveform, spectrogram, and F0 contour of the confirmation-seeking echo yes/no question expressing a low degree of certainty Ce zis că e deve tur? *'Did you say it is nine o'clock?' produced by a speaker of Istro-Romanian.*

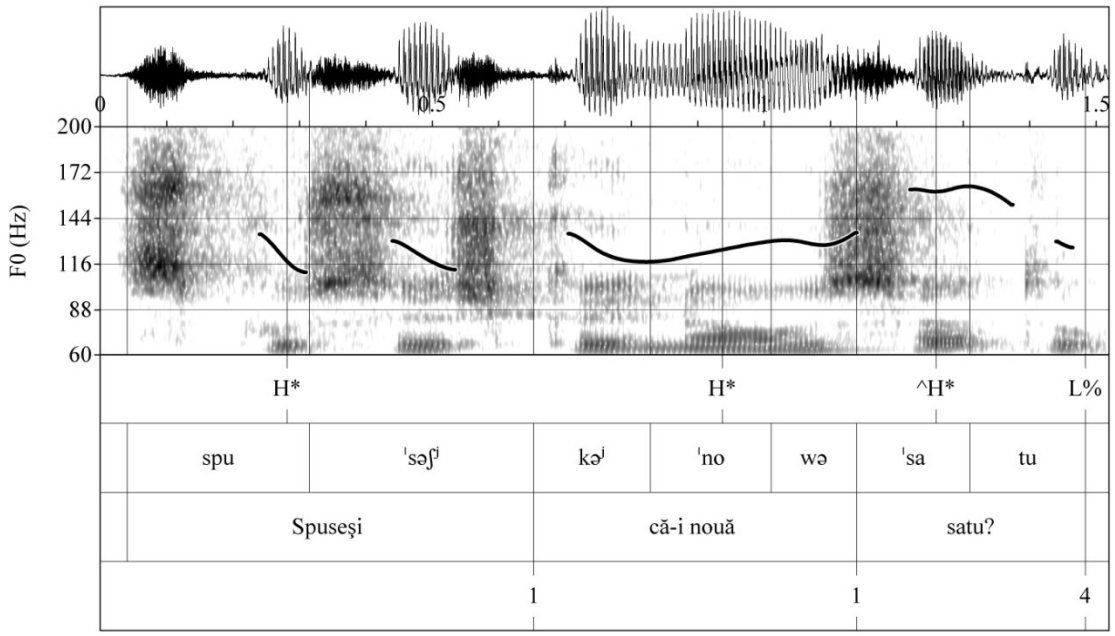


Figure 5.40: Waveform, spectrogram, and F0 contour of the confirmation-seeking echo yes/no question expressing a low degree of certainty Spuseși că-i nouă satu?*'Did you say it is nine o'clock?' produced by a speaker of Megleno-Romanian.*

A speaker can express surprise in a question by means of various intonation devices, such as a plateau in Daco-Romanian which is present in both neutral and mirativity contexts. For example, L*+H on the word *Mario* in Figure 5.41 has a downstepping tendency on the last accented syllable of the first intermediate phrase, a downstepped high accent in Aromanian, a L+H* in contexts where one of the constituents is under emphasis in Istro-Romanian and a H* with a high target (above the level of the preceding nuclear accent) in Megleno-Romanian. The examples below show that these types of questions are made of two intermediate phrases. There is considerable variation in the realisation of this tune across Daco-Romance.

Daco-Romanian exhibits a large frequency of pitch accents and an expanded pitch range to express surprise, where the configuration L*+H H- is found in both intermediate phrases. Aromanian on the other hand shows a !H* L- and a !H* ^HL% configuration in the two intermediate phrases and also exhibits less variation in pitch range. Istro-Romanian shows a general falling intonation pattern with a clear valley after the main pitch accent L+H* !H- (emphasised word) in the first intermediate phrase. Megleno-Romanian shows even less pitch range fluctuation and the nuclear configuration of the IP is L+H* L%.

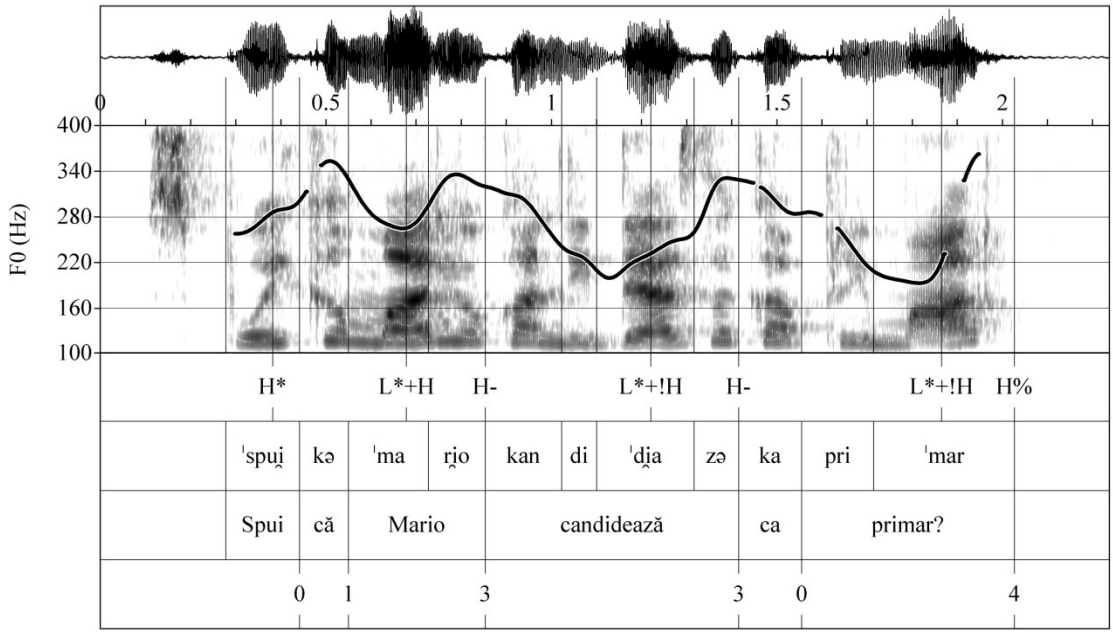


Figure 5.41: Waveform, spectrogram, and F0 contour of the surprise echo yes/no question Spui că Mario candidează ca primar? *'Did you say that Mario is running for mayor?' produced by a speaker of Daco-Romanian.*

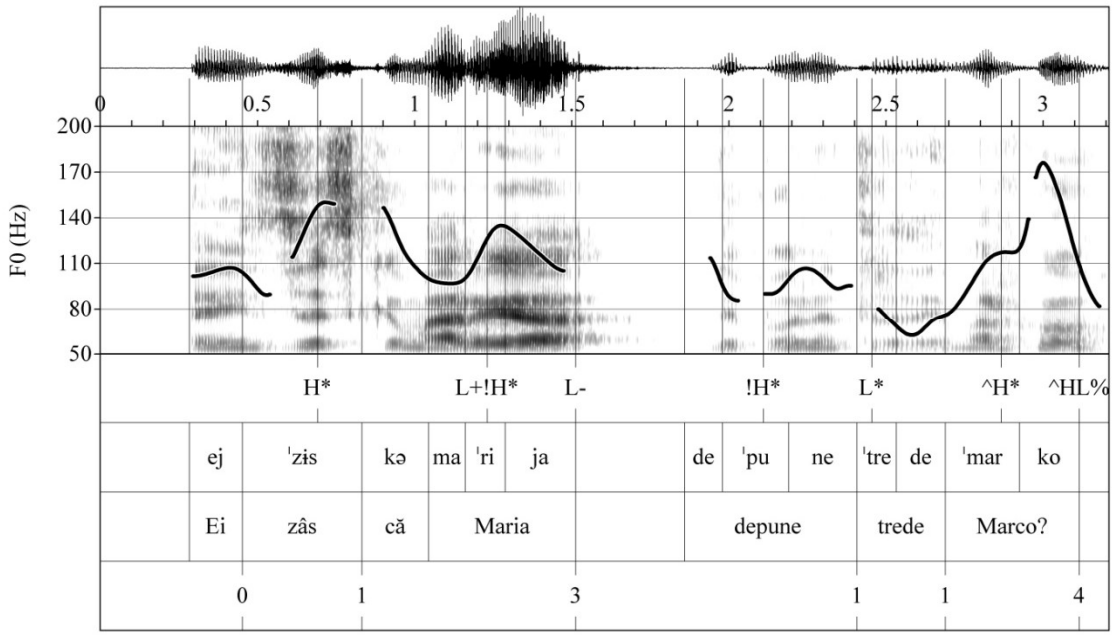


Figure 5.42: Waveform, spectrogram, and F0 contour of the surprise echo yes/no question Ai zâs că Maria depune trede marco?*'Did you say that Maria is running for mayor?' produced by a speaker of Aromanian.*

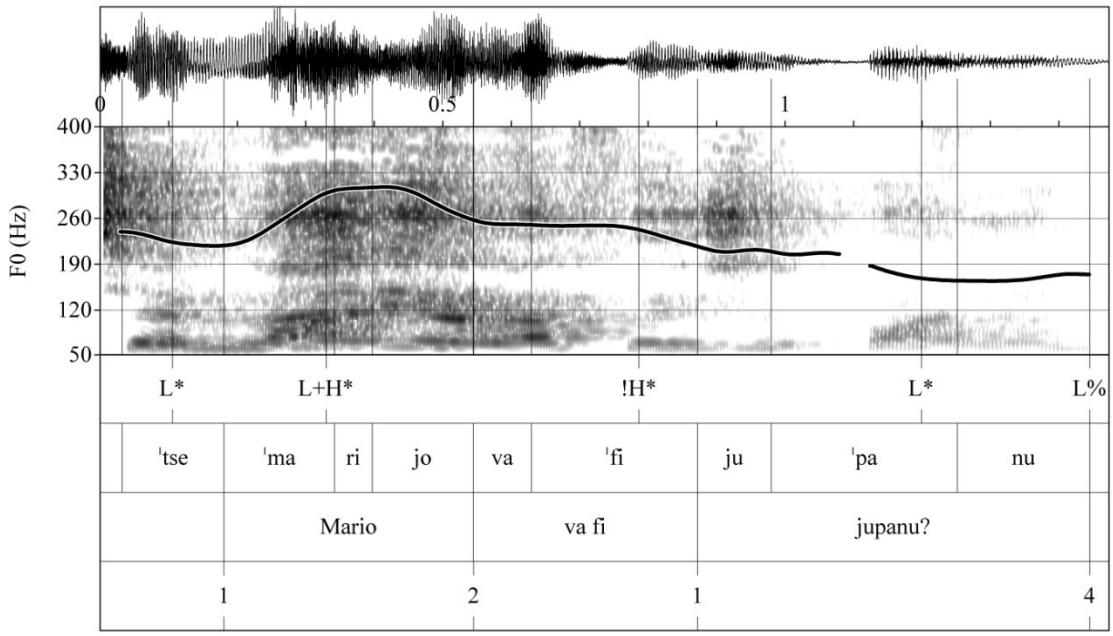


Figure 5.43: Waveform, spectrogram, and F0 contour of the surprise echo yes/no question Ce Mario va fi jupânu?*'Did you say that Mario is going to be mayor?' produced by a speaker of Istro-Romanian.*

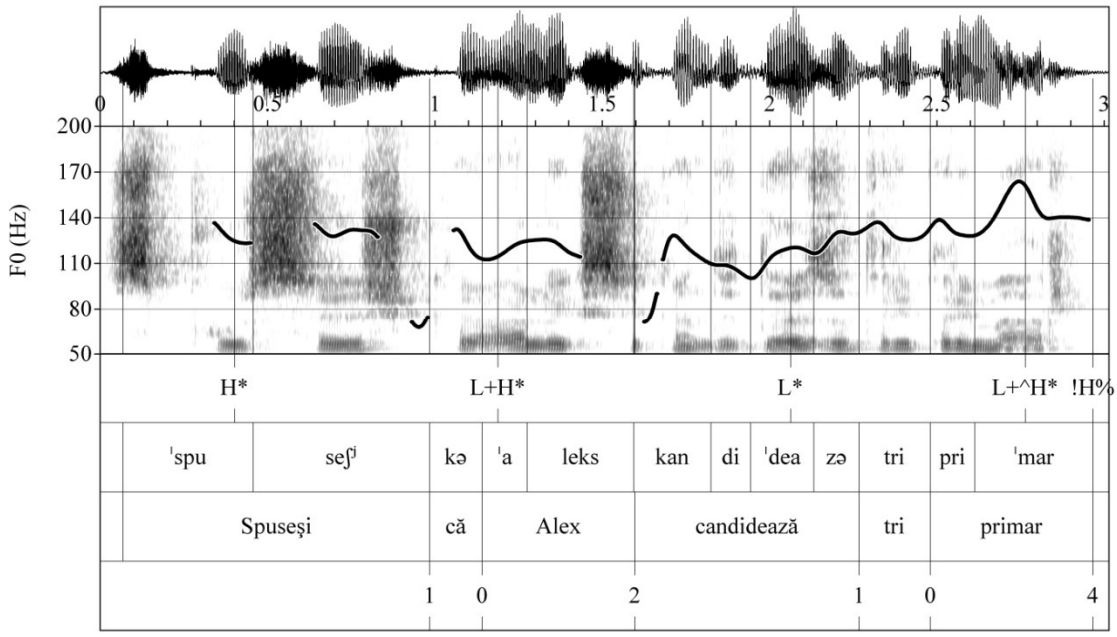


Figure 5.44: Waveform, spectrogram, and F0 contour of the surprise echo yes/no question Spuseşi că Alex candidează tri primar? *'Did you say that Alex is running for mayor?' produced by a speaker of Megleno-Romanian.*

5.2.2.2 Wh-questions

Wh-questions are very different in Romanian compared to other Romance languages and have long been a subject of debate (Dascălu-Jinga 2001; 2008; Alboiu 2002). This question type is generally used by a speaker when new information is needed to convey complete understanding of a proposition. The gap is expressed by the interrogative word, or the wh-word which is a relative pronoun in Romanian that bears the most important information and bears the nucleus.

The interrogative word across Daco-Romance varieties is situated in the C-domain on the left edge of the matrix clause. Romanian allows wh-movement, which is responsible for the position of the wh-phrase. Alboiu (2002: 155) offers an account that explains the lack of wh-in-situ and ordering constraints in Romanian and shows that in order to check the [+wh] feature, Romanian wh-phrases have to raise from their base-generated position. This movement triggers focus attraction on the wh-word.

In addition, Romanian clitic clusters cannot intervene between the raised wh-phrases and appear to the right of the moved interrogative elements, which indicates that the wh-phrases have moved to a single scopal position. However, cross-linguistic evidence suggests that the IP serves as the host for wh-movement in Romanian (Alboiu

2002). Below is an example of clitic clusters that are placed at the right of the wh-phrase. Example (5.3) is not grammatical.

(5.2) Cine ce i=a da-t?
who what 3SG.DAT=CP.3SG give-PP
'Who gave her what?'

(5.3) *Cine i=a ce da-t?
Who 3SG.DAT=CP.3SG what give-PP
'Who gave her what?'

Thus, in Romanian movement of more than one wh-word out of the clause in which they originate is fully normal and often obligatory. Wh-movement may or may not attract subject inversion across Romanian. Comorovski (1997) argues that Romanian allows extraction of multiple wh-words and that wh-movement out of the clause is possible as they are fronted to the main clause and a subordinate clause will use a word that is not interrogative. All wh-words appear in clause initial position in Daco-Romance.

Romanian does not employ subject-auxiliary inversion in the wh-clause matrix, but the wh-word is in nuclear position. According to Ladd (1996: 171-172; 2008), the location of the nuclear accent in wh-questions can depend on the length of the sentence in Romanian. Thus, it is claimed that in short wh-questions the nuclear accent is located on the wh-word, whereas in longer wh-questions there may be another accent in sentence-final position.

Wh-questions that are 'reminding questions' are marked by a specific intonation pattern in Romanian (Dascălu-Jinga 2001). The wh-phrase is uttered with a rising pitch accent, followed by a high plateau until the last accented syllable in the intonational phrase, where a final rise is found:

(5.4) Ce ți=au da-t?
what 2.SG.D=CP.3PL give-PP
'What did they give you?'

On the other hand, if the nuclear accent is followed by one or more unstressed syllables such as in oxytone or paroxytone words, the final accent will be a falling one. Jitcă (2019) argues that in longer wh-questions which are usually divided into two intermediate phrases, the first phrase places the main accent on the wh-word while the second phrase contains the word that bears the lowest prominence in the intonation stretch, which is usually the last accented syllable in the intermediate phrase.

Romanian is a language where wh-fronting or even multiple wh-fronting is possible, which allows for an additional element to appear between fronted wh-constituents. Examples of wh-questions in Romanian, Aromanian, Megleno-Romanian, Istro-Romanian are given below.

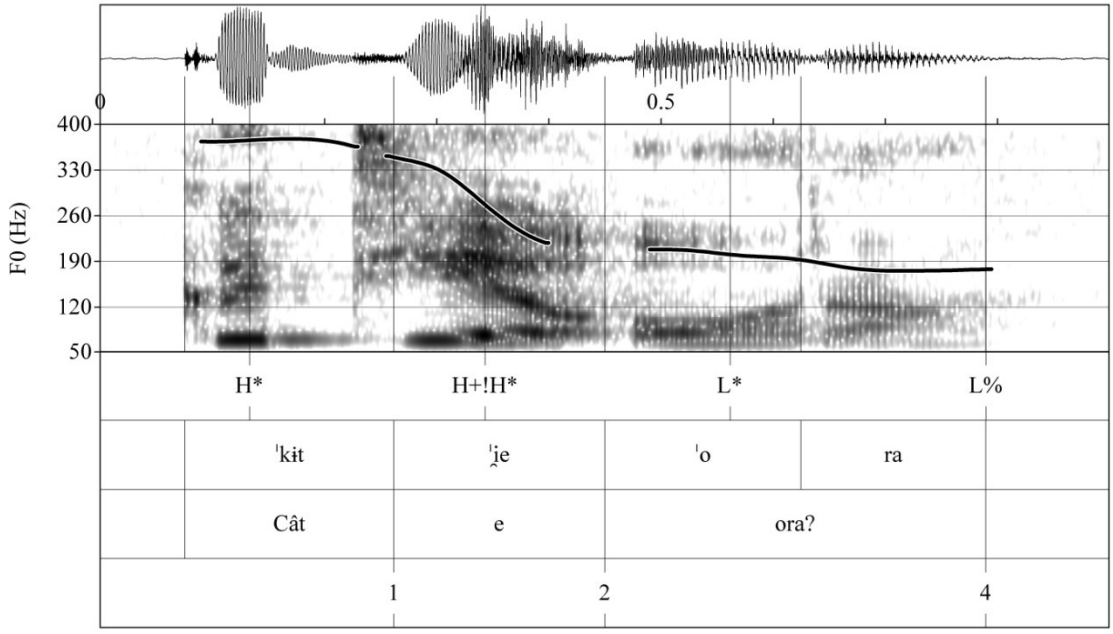


Figure 5.45: The question Cât e ora*? What time is it? produced by a speaker of Daco-Romanian.*

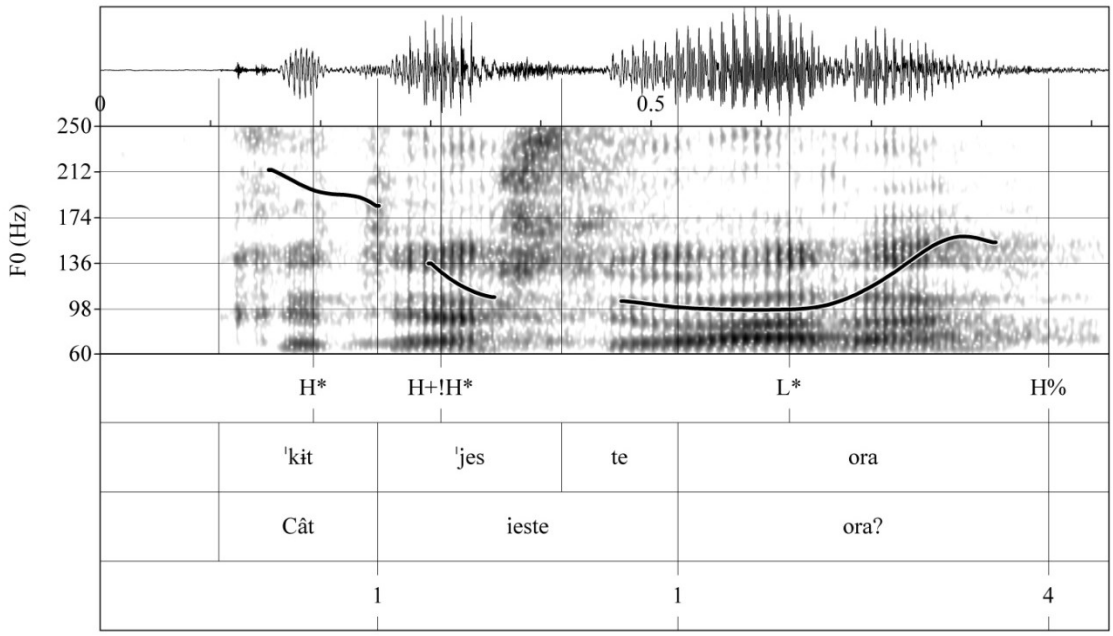


Figure 5.46: The question Cât ieste ora? *What time is it? produced by a speaker of Aromanian.*

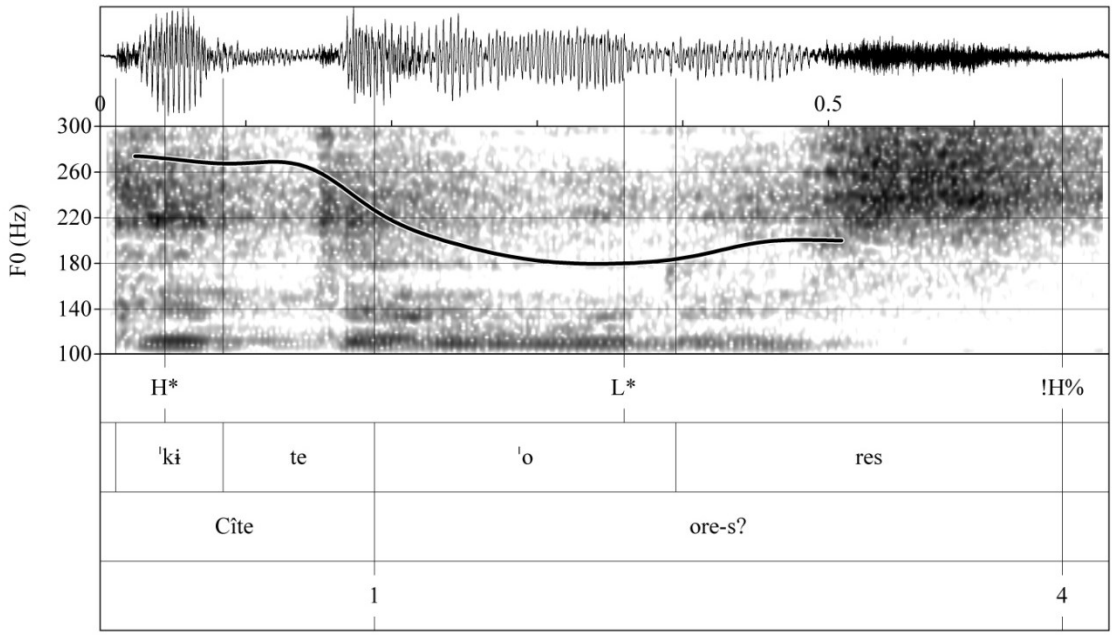


Figure 5.47: The question Câte ore-s? *What time is it? produced by a speaker of Istro-Romanian.*

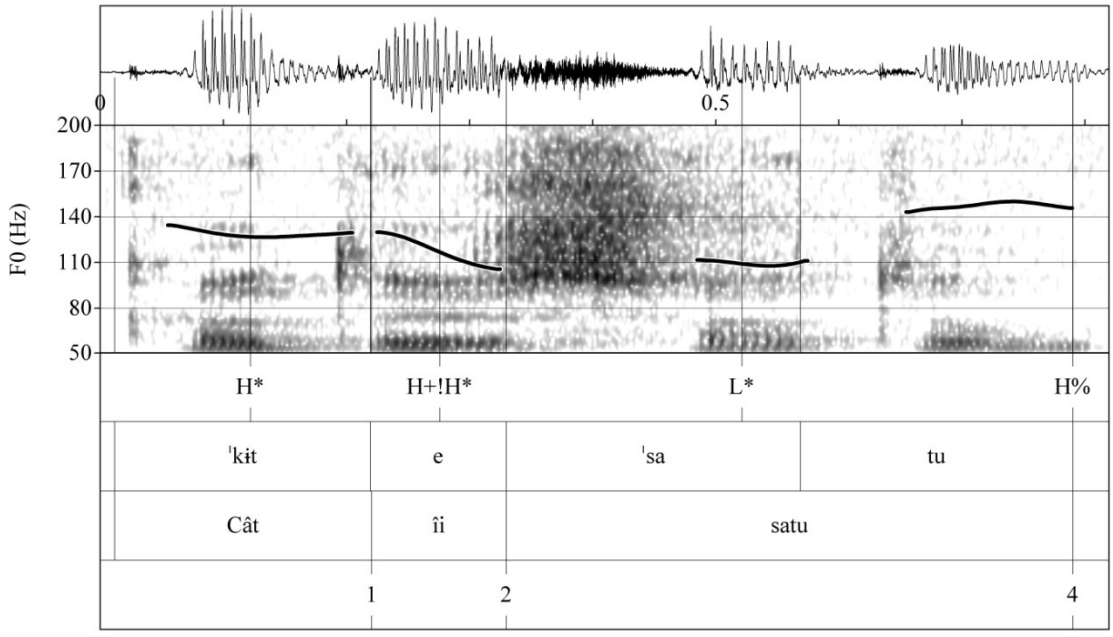


Figure 5.48: The question Cât e satu? *What time is it? produced by a speaker of Megleno-Romanian*

The examples above show that the wh-word is usually characterised by a high level plateau in oxytone contexts and has a separate high tonal space, with a high level on the accented syllable that falls slightly in non-oxytone contexts. Also, the wh-word is

usually followed by an abrupt fall on the next word and forms an tonal group and reaches a low tone on the last L* accent.

Wh-questions can also be repeated by the speaker as an echo question. In these instances, the initial wh-question is produced using falling intonation with the nuclear accent on the interrogative wh-word, while in the echo question, although syntactically identical, the terminal contour bears the strongest accent and thus the nucleus.

Thus the nuclear accent is on the wh word 'cum' *how* in all new information in the wh-question (5.5), while in the echo question which repeats previous information, focusing the word *supa* 'the soup' (5.5) bears the nucleus as focus carries new information, and is realised as an abrupt rising accent starting from the lowest point in the F0 (also known as negative prominence in Romanian) in an abrupt rise on the last stressed syllable. This pattern remains the same even in longer wh-questions where the nucleus is final.

(5.5)	Cum se face supa? (wh-question)	How do you make the soup?
	Cum se face supa? (echo question)	How do you make the soup?

An interesting feature of Daco-Romanian intonation is that short wh-questions can have a similar intonation pattern to positive statements. This is usually when their answers start with a word referred to in the corresponding question (5.6).

(5.6)	Când ai venit? (short wh-question)	When did you come?
	Ieri am venit. (statement)	I came yesterday.

Note that the wh-word in the question needs to have a similar accentual structure as the noun in the statement. The answer (one syllable in this example) follows the same intonation pattern.

5.2.2.3 Imperative

Across Romance languages, the imperative mood is used to express commands. Intonation in commands follows some common pitch accents across Daco-Romance varieties where pitch rises on the nuclear syllable (Figure 5.49) producing a jump to high level at the beginning of the accented syllable followed by a falling H+!H* pitch accent until the L% boundary tone. This configuration indicates a very sharp command. In commands the nuclear syllable is marked by a high sustained pitch and higher intensity as well as longer duration: compare the lenghening of the first syllable in *vino* 'come' in Fig. 5.51 to the one in *vino* 'come', Fig. 5.50.

In soft commands (Figure 5.50) the pitch falls to a low level towards the end of the utterance. In this example, the command is *vino aici* 'come here' with a rise on the verb towards a high target followed by a high plateau on the adverb. The verb is the local nucleus in the intermediate phrase and is marked by a low prominence. At the global level *rog* 'please' bears the global nucleus due to its global low prominence. This nuclear configuration is shared between the four varieties. The peak of the initial pitch accent is aligned at the beginning of the unstressed vowel. The difference between this soft command and a strong one is that the nuclear syllable is usually time lengthened in strong commands.

Requests are exemplified in Figure 5.51. The same contours associated with requests were found across all varieties. This contour is used for exhortative requests annotated as a L+H* L% and shows a later alignment: the rise starts at the end of the syllable *vi* and the peak is realised on the following unstressed syllable *no.* The intonation pattern comprises two intermediate phrases: the peak in the second one is higher than the first, which signals insistence. The nucleus is on the first word *hai* with low target tone. It has longer duration and conveys a request.

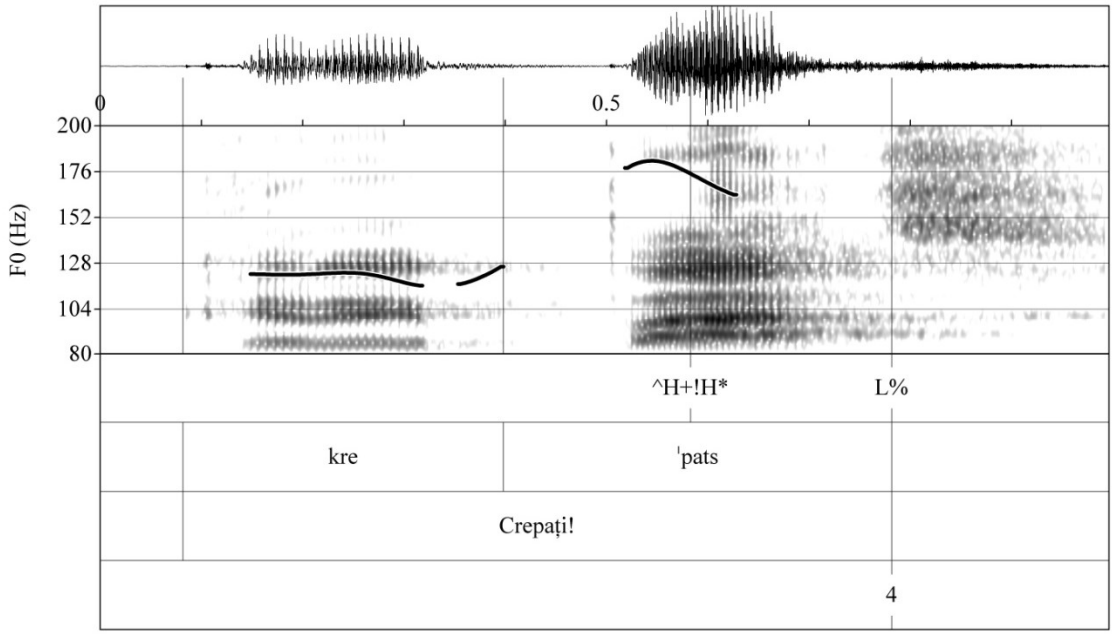


Figure 5.49: Waveform, spectrogram, and F0 contour of a strong command: Crepați! *'Be silent!' produced by a speaker of Aromanian.*

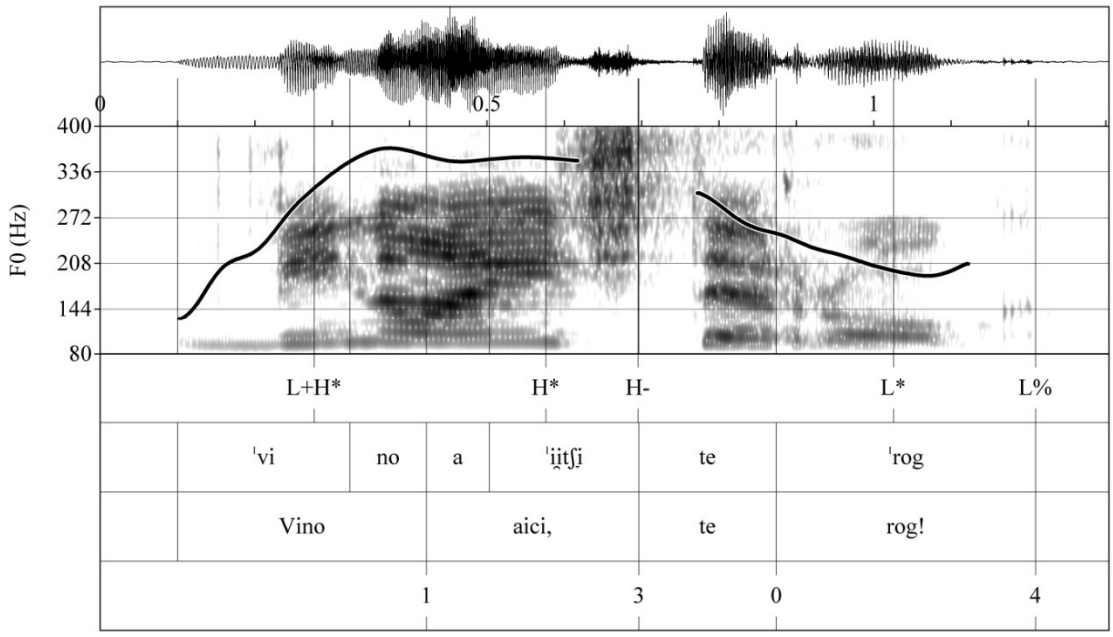


Figure 5.50: Waveform, spectrogram, and F0 contour of a soft command: Vino aici, te rog! *'Come here, please!' produced by a speaker of Daco-Romanian.*

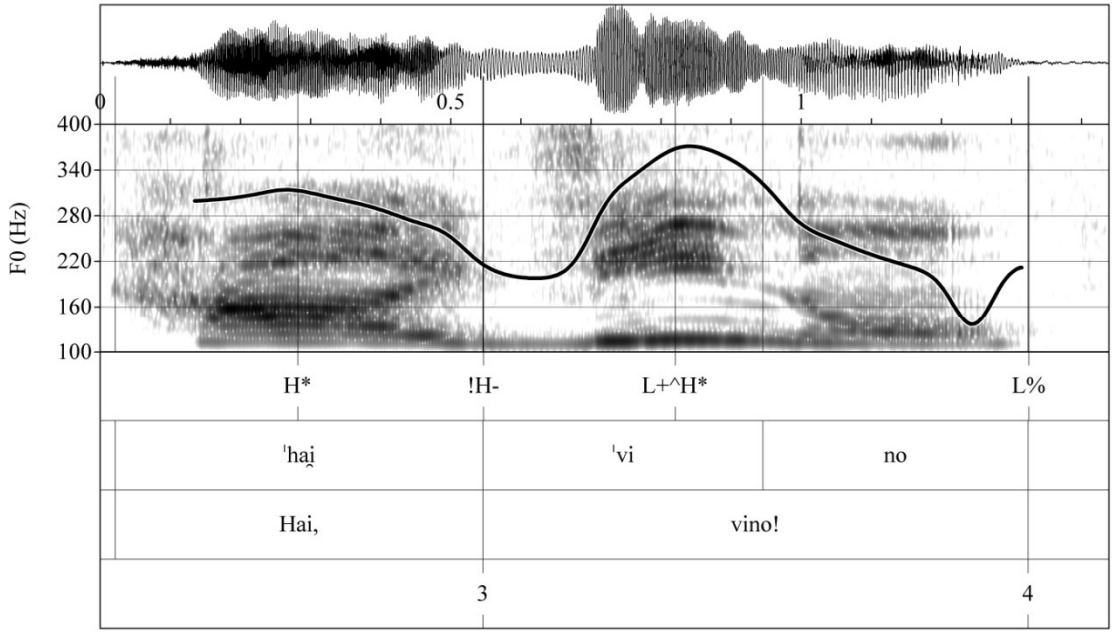


Figure 5.51: Waveform, spectrogram, and F0 contour of an exhortative request: Hai, vino! *'Please come' produced by a speaker of Daco-Romanian*.

5.2.2.4 Vocatives

In vocative contexts, speakers were prompted to identify the addressee by calling them by name. It was argued that Romance languages make use of several different call contours associated with pragmatic meanings (Frota and Prieto 2015).

Two vocatives with two degrees of insistence were analysed: first calls and insistent calls. We found three main intonational patterns in our data: a rising contour L+H* (!)H% in Daco-Romanian which resembles the usual vocative chant in Romance languages in Figure 5.51; a rising contour L*+H HL% in Aromanian and an rising contour L+H* !H% in Istro-Romanian and a H* !H% in Megleno-Romanian. Contours are generally rising with no final fall as pitch either remains high or continues rising or ends in a downstepped H% boundary tone.

We also found that initial calls in Istro-Romanian exhibit an intonational pattern which consists of a rise followed by a high level plateau. This is a stylised contour also known as a vocative chant which has been documented cross-linguistically, especially in Romance languages (Frota and Prieto 2015). The rise in this contour is aligned with the nuclear syllable and the post-nuclear string is realised as a high plateau in initial calls and as a mid plateau in insistent calls (Figure 5.54).

Various studies (such as Dascălu-Jinga 2001) argued that with respect to the semantics and situational aspects of the call contours this expresses some degree of familiarity on behalf of the speaker. The vocative call contour is marked by a rise in between syllables as in the most usual contour exemplified in Figures 5.52-55, where pitch falls to a mid-sustained level, other instances of the so-called addressing vocative are characterized by a fall within the same accented syllable. In one-syllable words and oxytone, two intonation call contours are found, where the syllable is marked either by a 'split' (L+H*!H%) or an abrupt fall (L+H* L%). Also, the call contour vocative has a higher pitch than the addressing vocative where the pitch only falls by approximately 20-50Hz. The final F0 value of a call contour is always higher than the initial F0 value at the beginning of an addressing vocative and is generally longer in duration than an addressing vocative.

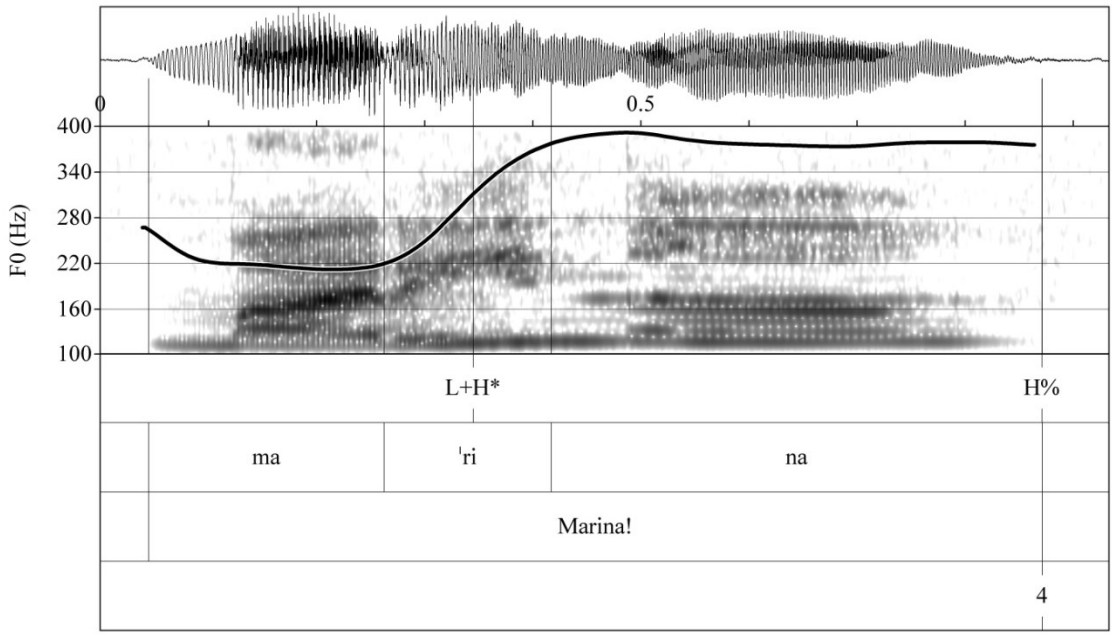


Figure 5.52: Waveform, spectrogram, and F0 contour of initial call vocative: Marina! *produced by a speaker of Daco-Romanian.*

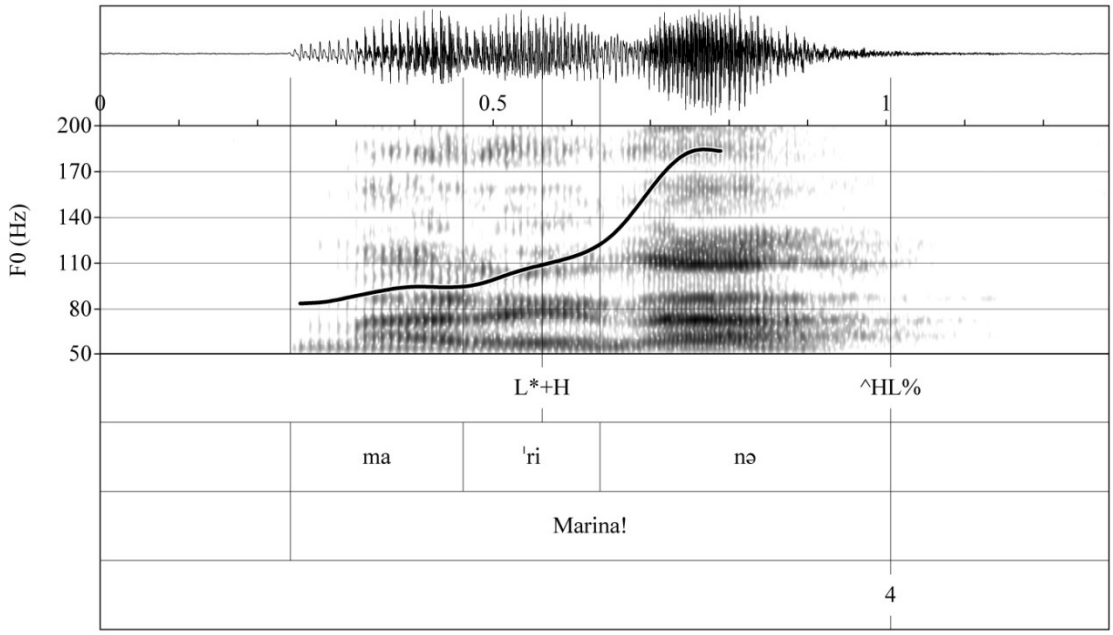


Figure 5.53: Waveform, spectrogram, and F0 contour of initial call vocative: Marina! *produced by a speaker of Aromanian.*

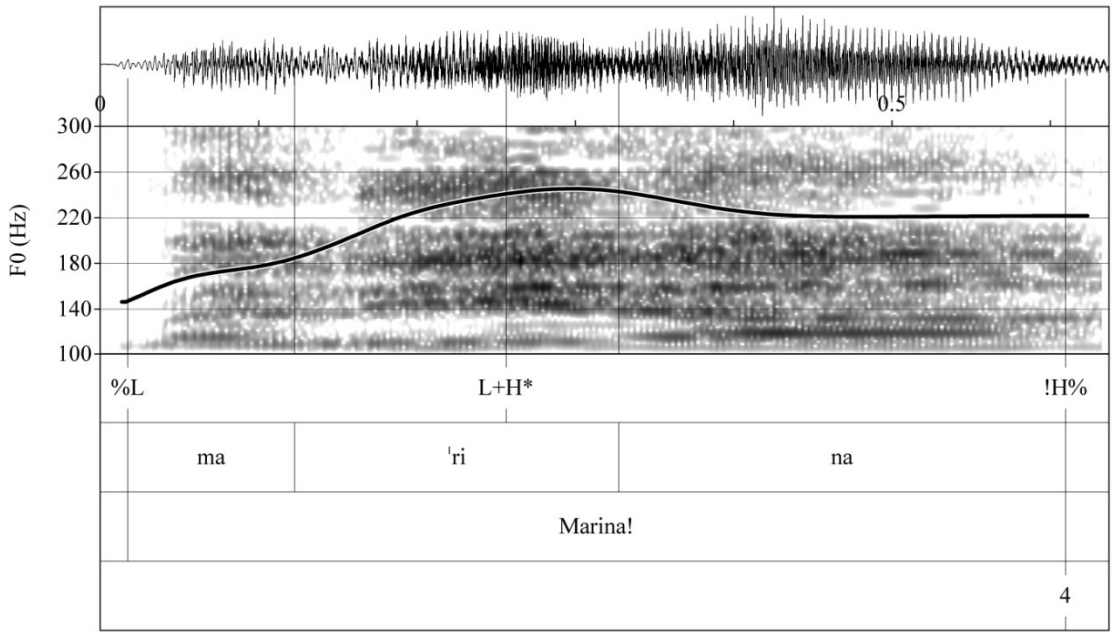


Figure 5.54: Waveform, spectrogram, and F0 contour of initial call vocative: Marina! *produced by a speaker of Istro-Romanian.*

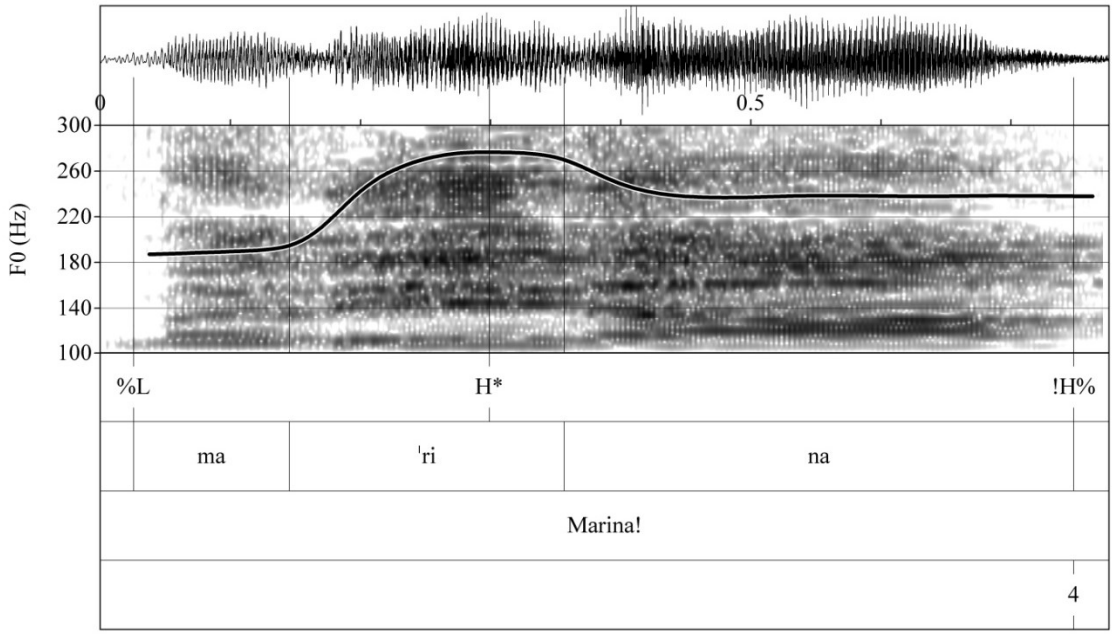


Figure 5.55: Waveform, spectrogram, and F0 contour of insistent call vocative: Marina! *produced by a speaker of Istro-Romanian.*

5.3 Summary and conclusions

This chapter has provided an intonational phonological analysis of the main intonation tunes for various sentence types across Daco-Romance varieties. Some intonational patterns are common to all varieties, particularly H+L* accents found in broad focus contexts and L+H* H% in vocative call contours. Other nuclear configurations show more variation across varieties.

The alignment of phrase accent in Daco-Romanian is determined by the position of the nuclear accent in the intonational phrase: where this occurs in initial position, the phrase accent falls on the next post-nuclear accented syllable (Dascălu-Jinga 1975; Ladd 1996; Grice, Ladd, Arvaniti 2000).

The contradiction focus statement contour in Daco-Romanian is characterized by 2 IPs: H*+L% and H* H*+L% which is similar to a variety of European Portuguese (Frota and Prieto 2015).

Daco-Romanian has a special EEQT where the main accent is placed on the verb. There are two possible nuclear configurations in our data as presented above, a usual L* L% and an L* H% (L* H* L%) configuration in Daco-Romanian, with their variants and phonetic variations as H+L* !H% in Istro-Romanian or and L* HL% in Aromanian, respectively. Unlike Grice, Ladd and Arvaniti (2000), I consider the Romanian standard configurations of L* H* L% (which is documented in Jitcă et al. (2015)) and L* L% as neutral intonations which do not convey different pragmatic meanings. The differences in EEQT in Daco-Romanian are arguably due to dialectal influences (Jitcă et al. 2015).

Daco-Romanian intonation is in many aspects similar to Hungarian and Greek, especially with respect to questions where the nuclear accent falls on the verb, rather than in final position (Grice, Ladd, Arvaniti 2000). However, our data shows other contours beside the two question terminal contours, rising and rising-falling, attested in Dascalu-Jinga (2001). There are two other contours: high falling and expanded rising. Question intonation exhibits a wide variety of contours and it is difficult to propose a unified choice of pitch accents across varieties.

Falling question intonation is characterized by tonal expansion realised as a low plateau along the whole interrogative phrase leading to the rising terminal contour. This is more evident in narrow focus contexts in questions, which will be discussed in the

next chapter. Nuclear accents are usually characterised by a higher pitch range in questions than in statements.

Intonation in questions is used even when other markers of interrogativity such as non-canonical word order, wh-fronting, focus fronting, etc., are in place. Also, in questions, after the post nuclear accent, the phrase-final contour either ends in a high boundary tone (H%) in oxytone cases, or continues by a descending movement, generating a L% boundary tone in non-oxytone cases. This appears to be evidence of truncation.

Echo questions that repeat a wh-question are always realised with a falling contour, and the wh-question is subordinated to the yes-no question.

It was argued that wh-questions are characterized in Daco-Romanian by two particularities: the nuclear accent is always on the interrogative word which is in initial position, and that in longer wh-questions there is an additional post-focal accent towards the end of the question (Ladd 2008). Our analysis did not use large data and did not test for contexts where an additional prominence is placed in long wh-questions. This is still an understudied area of Daco-Romanian wh-questions. However, based on the data presented in this chapter it is apparent that emphasis (both positive and negative emphasis of low and high prominence) plays an important role in the way nuclear stress is assigned, namely in long wh-questions two intermediate intonation phrase are found, phrasing the first with the nuclear accent on the wh-word and the second with a word final nuclear accent which is emphasised by the local nuclear accent.

However, in longer echo-questions that start with a wh-word, like in Istro-Romanian, the main accent is a H*, followed by a low boundary tone L- which creates an additional L+^H* accent towards the end followed by a final H% (all echo questions end in an H% across varieties apart from Daco-Romanian). Thus, there is some evidence that this accent exists in long wh-questions and Varga (2002) used the term ‘minor stress’ for a similar occurrence in Hungarian which uses similar question intonation to Romanian.

Pre-nuclear accents are usually L+H* across varieties, L*+H in broad focus statements in Aromanian and H+L* in Istro-Romanian or H* across varities, but they can also occur in final positions. Nuclear accents show a wide range of categories presented below. Across varieties we found H* and L* monotonal accents in a variety of contexts such as wh-questions, lists, broad focus statements, two falling accents

H+L*, H*+L with their phonetic implementations and three rising accents L+H*, L+H* and L*+H. Four main boundary tones are found, L%, H%, HL%, !H%.

Daco-Romanian shares many intonational properties with European Portuguese especially with respect to broad focus, statement and yes-no question intonation and Greek (yes-no questions) and Hungarian (wh-questions) with respect to question intonation.

This chapter contributes to the previous literature by providing a more detailed intonational phonology of the main tunes in Daco-Romanian, Aromanian, Megleno-Romanian, Istro-Romanian, showing that Daco-Romanian intonation is closer to Aromanian intonation across all sentence types. Also, it was observed that in yes-no questions in sub-Danubian varieties the nuclear accent is placed on the penultimate constituent, rather than on the last word, as in Romanian. This is shown in the tables below which summarise the inventory of pitch accents and nuclear tones found across Daco-Romance in this chapter.

The data presented in this chapter show that the generalisations made by Ladd (2008) about Romanian with respect to the shift of the nuclear accent on the verb in yes-no questions and to the wh-word in wh-questions are not only valid for Romanian, which follows the same Eastern European Question Tune as Greek and Hungarian, but also for Aromanian, Istro-Romanian and Megleno-Romanian.

Table 5.2: Daco-Romanian Contours in Different Sentence Types
(nuclear accents in bold)

Phonological Description	Sentence Type
H* **(H)+L*** L%	Broad focus statement with final nucleus
L*+(H) [H*] H+!H* L%	Broad focus statements with non-final nucleus
H* H-.....**L*** L%	Enumeration
(H*+L L%) (**H+L*** L%)	Narrow-focus statement (Contrastive-focus statement)
(H* L* L%) (H* **^H*+L** L%)	Narrow-focus statement (corrective-focus statement)
H* L% **!H*+L** L%	Narrow-focus statement
([H*] **^H*** L* L-) (L*L%)	Negative statement (uncertainty statement)
(**H*** L+!H* H-)(!H* [!H*] L%)	Exclamative or mirativity statement
L* L+H* L%	Information seeking yes-no question with non-final nucleus
L* **L*+H** H%	Information seeking yes-no question with final nucleus
L* H+!H* L%	Information -seeking yes-no question
([H*] **L*** H-)(**H*** L* L%)	Information seeking yes-no question with alternatives
L* **L*+H** H%	Confirmation- seeking yes-no question
[L*+H] **L*+!H** H%	Echo yes-no question
[L*+H] **L*+!H** ^HL%	Echo yes-no question
(**H*** H+!H*) L* L%	Information-seeking wh-question
(**L+H*** !H*)(H* **L***L%)	Commands
H* L+^H* L%	Request
L+H* H%	Initial/First call

Table 5.3: Aromanian Contours in Different Sentence Types
(nuclear accents in bold)

Phonological Description	Sentence Type
L+H* [L+H*] **(!H)+L*** L%	Declarative in „broad focus" statements with final nucleus
L*+H/H* H%.....!H* L%	Enumeration
L*+H H% H*+L L%	Narrow-focus statement (Contrastive-focus statement)
(**H*** [!H*]L*L-)(L* L*H%)	Exclamative or mirativity statement
L* **L*+H** HL%	Information seeking yes-no question with final nucleus
(**L*** L+H* H-)(!H* **H+!H***L%)	Information-seeking yes-no question with alternatives
[H*] (**!H*** L+^H* L%)	Echo yes-no question
(**H*** H+!H*) L* !H%	Information –seeking wh-question
L*+H ^HL%	Initial/First call

Table 5.4: Istro-Romanian Contours in Different Sentence Types
(nuclear accents in bold)

Phonological Description	Sentence Type
H% **H+L*** H* L%	Declarative in „broad focus" statements with non-final nucleus
L* H%.....**L*** L%	Enumeration
H* !H- **L*** L%	Narrow-focus statement (contrastive-focus statement)
H*+L L%	Narrow-focus statement (corrective-focus statement)
H* ^H- **H+L*** L%	Narrow-focus statement
(H* **!H*** H-)(H* [H*] L* L%)	Negative statement (uncertainty statement)
(**H*** !H* H-)(!H* H+L*] L%)	Exclamative or mirativity statement
(H% **H*** L-) (L* !H%)	Information seeking yes-no question
(**L*** L+H*) (**H*** L* !H%)	Interrogative in information-seeking yes-no question with alternatives
H* **L*** L%	Interrogative in confirmation-seeking yes-no question
(**H*** !H+L* L-)(**H***L+^H* H%)	Echo yes-no question
H* L* !H%	Information-seeking wh-question
L+H* !H%	Initial/First call
H* !H*	Insistent call

Table 5.5: Megleno-Romanian Contours in Different Sentence Types
(nuclear accents in bold)

Phonological Description	Sentence Type
H* H+L* L%	Declarative in „broad focus" statements with final nucleus
L*+H/L+H* H%.....H* L%	Enumeration
H* !H- **H*+L** L%	Narrow-focus statement (Contrastive-focus statement)
(H* H*+L L%)(H* !**H*+L** L%)	Narrow-focus statement (corrective-focus statement)
L+H* ^H+!H* L%	Information-seeking yes-no question
(**L*** L+H*) (!**H*** H+!H* L%)	Information-seeking yes-no question with alternatives
[H*] H* ^H* L%	Echo yes-no question
H* **L*** H%	Information-seeking wh-question

CHAPTER SIX
Focus in Daco-Romance

6.1 Aims

It is still unclear in the literature on Romanian intonation (1) whether or not the position of nuclear accents is assigned according to specific rules and if so, what the relation is between the realisation of focus events and nuclear stress; and (2) whether or not focus intonation conforms to the Argument Structural approach. According to Göbbel (2003), both the rule developed by the Argument Structural (AS) approach (Schmerling 1976, Gussenhoven 1984, 1992, Selkirk 1984, 1995, Rochemont 1986) and some version of the Nuclear Stress Rule (NSR) (Cinque 1993, Zubizarreta 1998) are active in Romanian, at least in the sense that the NSR applies in broad focus contexts and affects the position of adverbials and indirect objects (Göbbel 2003). This study considers how nuclear stress is assigned in Daco-Romance and its relation to focus intonation. In particular, there have been divergent views as to whether or not Romanian allows verbal or contextual de-accenting: although the studies did not all investigate the same domain, Dascălu-Jinga (2001, 2005, 2008) and Winkler and Göbbel (2002) show some evidence of de-accentuation while studies like Swerts (2007) and Manolescu (2009) found that verbs did not show a tendency to be de-accented. A more comprehensive account of how broad and narrow focus intonational contours are realised across Daco-Romance is needed to clarify these issues. Hence, the present study of focus intonation across Daco-Romance will incorporate several different areas of linguistics: pragmatics, semantics, syntax, phonetics and phonology.

Focus is highlighted by different syntactic and prosodic means in Romance languages. In particular, many languages use particular pitch accents to distinguish between narrow and broad focus. For instance, in Italian broad focus accents are usually falling H+L*, while narrow focus is realised as a rising accent L+H* (D'Imperio 2000). In Romance languages such as Italian, Spanish or European Portuguese when focus occurs *in situ* (i.e. focus is not marked syntactically), it is realised by means of particular pitch accents, contrasting broad focus intonation, and various other mechanisms such as de-accentuation, truncation or post-focal compression. It is a well-known fact that Romance languages do not generally allow direct de-accenting (Ladd 2008: 235).

However, I will only briefly touch on this aspect as more research is needed on this subject.

There are also many accounts of Romance languages in which it is shown that the main acoustic factors marking narrow focus intonation as opposed to broad focus are pitch range, peak alignment and duration in pre- and post-focal positions (Face 2002, D'Imperio 2002; Frota 2002; Göbbel 2003; Swerts 2007; Manolescu 2009).

Some questions arise based on the previous literature about focus in Daco-Romance, namely:

- how is focus prosodically marked in Daco-Romance in broad focus compared to contrastive focus in statements and yes-no questions? Are there other mechanisms employed in focus realisation, is there evidence of de-accentuation of post-focal material or post-focal compression?

- does the Nuclear Stress Rule (NSR) as proposed by Zubizarreta (1998) for Romance languages apply in both broad and narrow focus contexts in statements? What are the implications for question intonation? Are there any meaningful differences across Daco-Romance in their realisation of focus given that Daco-Romanian is a non-contact language variety of Daco-Romanian, whereas Aromanian, Istro-Romanian and Megleno-Romanian have been in contact with other languages for centuries?

- how is narrow focus marked acoustically in terms of pitch range, peak alignment and duration in statements and questions?

In order to address the questions about focus we will delineate a model for focus intonation across Daco-Romance and provide a preliminary phonological analysis of focus in declarative and interrogative sentences with a simple SVO structure of the type (*Nevasta vede un căpitan* 'The wife sees a captain' and *Nevasta vede un căpitan?* 'The wife sees a captain?' Context was provided to elicit different intonation contours, related to one broad focus statement and three narrow focus statements with focus on one of the three words, one broad focus YNQ (information-seeking YNQ) and three narrow focus YNQ (confirmation-seeking YNQ) with focus on one of the three words. Once a phonological analysis is provided for all varieties (with a focus on the Daco-Romanian variety, but highlighting any significant variation), the acoustic parameters of

pitch accent realisations of narrow focus compared to broad focus are presented, with special reference to pitch range, peak alignment, and duration.

As discussed in chapter 3, the view adopted here is that focus cannot solely be defined in terms of phonology but in terms of semantics, and this is expressed by means of intonation and exhibits an acoustic prominence (e.g. emphasis).

The goal of the present chapter is to provide a descriptive analysis of the main intonation patterns used to express broad focus and narrow focus intonation in statements and yes-no questions in the four sub-divisions of the Daco-Romance branch from a phonetic and phonological point of view, within the Autosegmental-Metrical framework, using the ToBI (Tones and Break Indices) system (Pierrehumbert 1980; Pierrehumbert and Beckman 1988; Ladd 1996, 2008; Gussenhoven 1983, 1992, 2004; Jun 2005, 2014; Beckman et al. 2005, Jitcă 2019, among others). The chapter also aims to account for variation in focus realisation across Daco-Romance.

6.2 Methodology

To collect representative data, I created the appropriate discourse context between the interviewer and the surveyed person. Collection procedures are detailed in Chapter 4. Special context was provided following the DCT methodology to elicit broad focus and narrow focus (contrastive focus only) in statements and questions. The selected materials used from the corpus were presented in the previous chapter. Narrow focus in the examples below refers in particular to contrastive focus:

Table 6.1: Sentences used for the study of focus (across Daco-Romance)

Focus type	**Statements**
BF	9. Ne'vasta 'vede un căpi'tan. [The wife sees a captain]
NF	10. NE'VASTA 'vede un căpi'tan. [THE WIFE sees a captain]
	11. Ne'vasta 'VEDE un căpi'tan. [The wife SEES a captain]
	12. Ne'vasta 'vede un CĂPI'TAN. [The wife sees a CAPTAIN]
	Questions
BF	13. Ne'vasta 'vede un căpi'tan? [Does the wife see a captain]?
NF	14. NE'VASTA 'vede un căpi'tan? [Does THE WIFE see a captain]?
	15. Ne'vasta 'VEDE un căpi'tan? [Does the wife SEE a captain]?
	16. Ne'vasta 'vede un CĂPI'TAN ? [Does the wife sees a CAPTAIN]?

6.2.1 Measurements: pitch range, peak alignment, relative duration

Previous studies (such as Frota 2000, Prieto et al. 2005, Ladd 2008) have shown that pitch range, peak alignment and duration are relevant and salient features that mark intonation focus and that these parameters are cues to indicate contrastive focus. For these reasons, this section investigates the role of pitch range, peak alignment and duration in broad and narrow focus intonation across Daco-Romance.

Pitch range was investigated in this research to measure the difference between the maximum high tone of the tonic syllable, or the post-tonic syllable and the minimum tonal level reached at the beginning of tonic syllable or at the end of pre-tonic syllable. In nucleus identification within utterances, maximum tone or minimum tone within phrases are relevant.

Peak alignment is defined as the time interval between the onset of the vowel within the stressed syllable and the time moment when the peak (or the maximum tonal level) is reached during the accented syllable or the next non-accented syllable (T_{peak}). T_{end} is the time elapsed between the onset vowel and the syllable boundary (Figure 6.1).

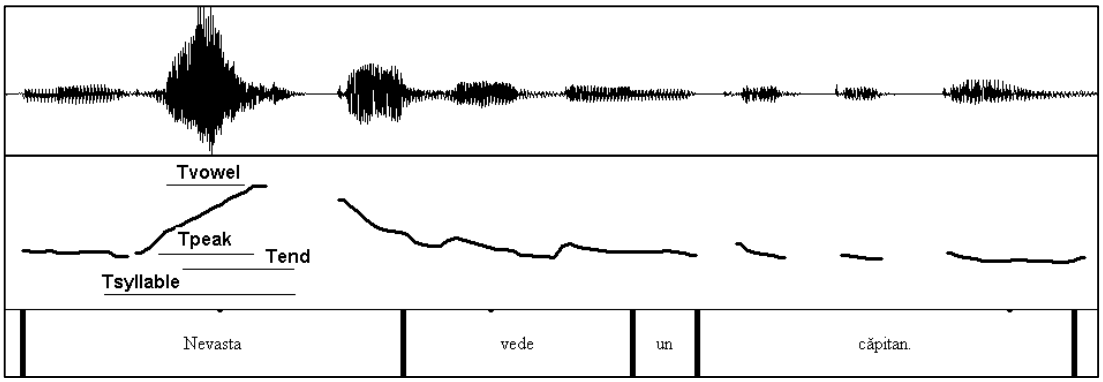


Figure 6.1: Schematised diagram with time on the x axis and F0 on the y axis showing peak alignment in the stressed syllable vas *in* nevasta *in Daco-Romanian.*

PeakAlign = (T_{peak}/T_{end})*100

When T_{peak} is greater than T_{end} this means that the intonation peak occurs on the post tonic syllable. This usually occurs in a sentence-initial non-oxytone word. When T_{peak} is lower, then T_{end} peak is produced within the tonic syllable. When T_{peak} and T_{end} are equal and the PeakAlign is 100 the maximum tone is reached at the end of the accented syllable.

Duration as a parameter in our investigation is taken as a relative duration of the vowel length in the stressed syllable that bears the main pitch accent in respect to the duration of the whole word. I call this parameter relative duration (RelDuration) defined as below.

RelDuration = (T_{vowel}/T_{word})*100

The RelDuration parameter is a relative measure of vowel length which is sensitive to the focus-non-focus context change of the respective word. The relative measure is useful to keep the parameter values within a smaller interval and to make RelDuration parameter less dependent on the particular phonetic and syllabic structure of words or on their sentence and phrase position. The intention is to reflect the increasing length of the accented syllable in narrow focus compared to broad focus by using RelDuration which has to be less sensitive to word length.

6.3. Phonology of focus

The declarative intonation of broad focus statements is usually characterised by a falling contour where the pitch starts at the mid-level of the tonal space, after which it rises to reach a maximum on the tonic or post-tonic syllable of the first word followed by a

steady decline in pitch, ending in a low nuclear accent and a boundary tone where the minimum tonal level is reached. The (nuclear) last accent usually has a falling pitch movement, which was found in all four varieties of Daco-Romance. Broad focus in *positive statements* was discussed in more detail in Section 5.2.1.1.

In *negative statements* (Figure 6.2) an emphasis occurs on the negation particle *nu* within the verbal group *nu vede un căpitan* 'does not see a captain'. Its tonal space is high and does not overlap those of the subordinated word - the verb *vede* and the object *un căpitan*. The negation is a local nuclear element at the verb phrase level produced by high prominence that subordinates both the verb and the object. Thus, the last L* pitch accent with the minimum target tone lost the nuclear position because the phrase has high prominence and the minimum tone does not produce prominence. At the global level the negation does not subordinate the subject *nevasta* and does not transfer its nuclear function at the global level.

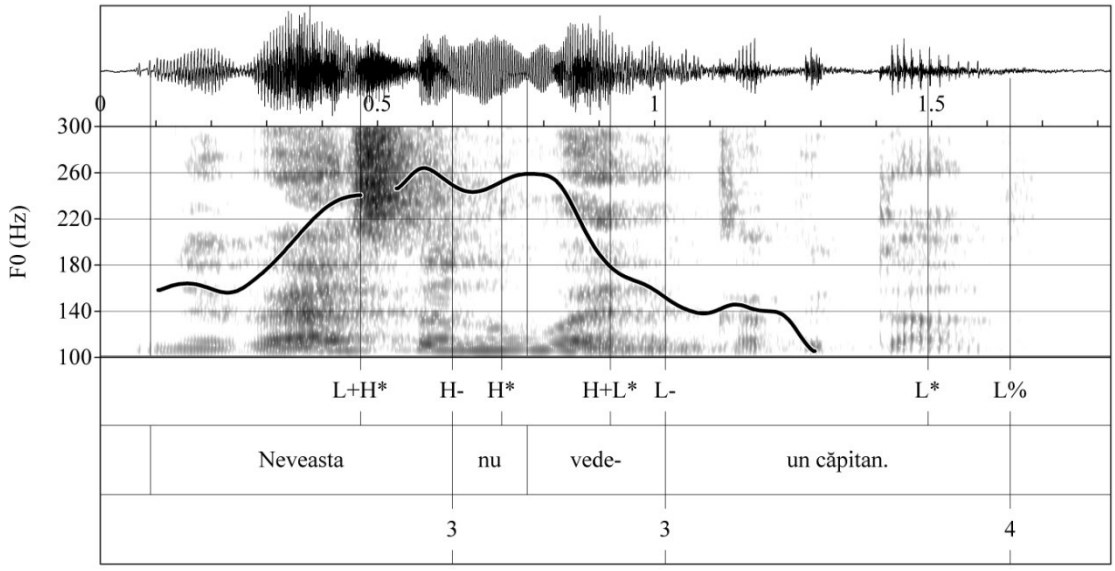


Figure 6.2: Waveform, spectrogram, and F0 contour of the broad-focus negative statement Nevasta nu vede un căpitan*, 'The wife does not see a captain' produced by a speaker of Istro-Romanian.*

The global nuclear function is carried by the subject having a lower target tone (L+H* pitch accent) which produces low prominence (this is also supported by Jitcă 2019 who argues for a modified version of the NSR rule which applies in Romanian). This is a broad focus statement with a partially emphasised contour (at the verb phrase level).

Dascălu-Jinga (2008) argues that negative statements are characterised by 'positive prominence' on the negative adverb *nu* 'not' (also called a semi-adverb in Dascălu-Jinga 2008), or a peak in the intonational contour. Dascălu-Jinga (2001) states

that an emphasis occurs on the negation particle. Notice in Istro-Romanian broad focus negative statements (Figure 6.2) that the pitch accent with the highest tone of the sentence is on the negative adverb *nu* 'no' which receives a noticeable peak due to the following fall during the stressed syllable of the verb (notice the phrasing of the H+L* pitch accent followed by an L-). The negative adverb *nu* 'no' is realised in a high tonal space separated from the tonal space the following words and bears emphasis. Notice the phrasing in Figure 6.2 where the subject and the verb phrase are two sister constituents while the global nucleus is on the constituent with the minimum tonal target level (the subject *neveasta* 'the wife'). This pattern is common across all varieties of Daco-Romance. The RelDuration parameter values for the three words of the contour are: 0.33, 0.36 and 0.24 and maximal value corresponds to the nuclear word in the phrase-mid position.

Figure 6.3 shows a negative polar question contour where the adverb *nu* is emphasised at the local level of the phonological phrase, compared with the verb. In the contour of the whole verb phrase it bears the low prominence in respect to the last word which has a L+^H* pitch accent with a higher target tone. The pitch range of the last pitch accent is not as wide as in a typical Romanian variant and the preceding contour of the phrase-final contour is not a low stretch at low level.

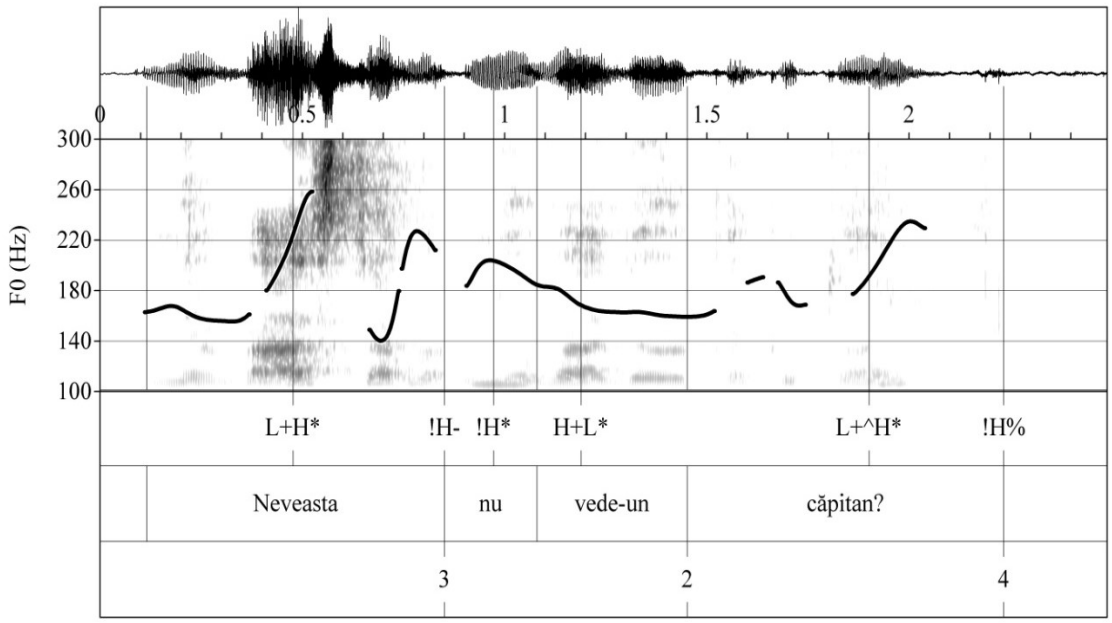


Figure 6.3: Waveform, spectrogram, and F0 contour of the negative question Nevasta nu vede un căpitan? *'Doesn't the wife see a captain?' produced by a speaker of Istro-Romanian.*

The adverb is the nucleus of the verb phrase and is also nuclear at the sentence level where it also bears low prominence when compared with the subject *nevasta* which has high target tone due to its L+H* pitch accent.

Daco-Romance varieties allow double negation. Where double negation is used, any of the negative constituents can receive a nuclear accent and it is still unclear how accent placement works in these contexts. Dascălu Jinga (2008) argues that any of the two negative words can be characterised by a peak or prominence in the intonation pattern, according to the speaker's intention to focus one constituent or another.

Dascălu-Jinga (2001) used the term *accent frastic* 'sentence stress' for nuclear accent, also known as syntactic stress and phrasal stress in Romanian. Zafiu (2013: 568-575) replaces the term used in previous studies and used *emfaza interogativă* 'interrogative emphasis' (an intonational pitch contour event) which relates to a peak on the most acoustically salient word in the sentence to which the question refers. In this example (Figure 6.6), although it is not marked by interrogative emphasis, the verb bears the semantic weight of this information – and this coincides with the semantic focus. In Aromanian it appears that the nucleus on the verb is the lowest peak in the intonation phrase which is triggered by the negative adverb *nu* 'not'. In yes-no questions Dascălu-Jinga (2001) uses the term interrogative emphasis which is to be distinguished from the emphasis in confirmation-seeking questions as this has the property of focusing various constituents marking nuclear elements.

6.3.2 Initial focus

The discourse provided to the informant was such that contrastive focus will be produced on the first constituent in order to introduce one alternative and to distinguish it from the other possible alternatives related to the respective constituent. Initial contrastive focus on the word *nevasta* 'the wife' shows a very high F0 peak which carries the nuclear H* accent of the statement, whereas the last pitch accent has a L* accent as in Figure 6.4.

In this example (Figure 6.4) the narrow focus elicited is a contrastive focus on the first element, characterised by positive prominence where the first constituent *nevasta* 'the wife' has a higher tonal space and subordinates the following two constituents. When the first constituent *nevasta* 'the wife' is under contrastive focus, the high prominence is marked by a wide range in the F0 peak, showing greater duration

and greater intensity on the stressed syllable. The constituents following initial contrastive focus tend to be de-accented and have a compressed pitch range and their tonal spaces are separated from that of the word under focus as there is a lack of pitch movement, while the lexical stress is perceived through relatively long duration of the stressed vowel.

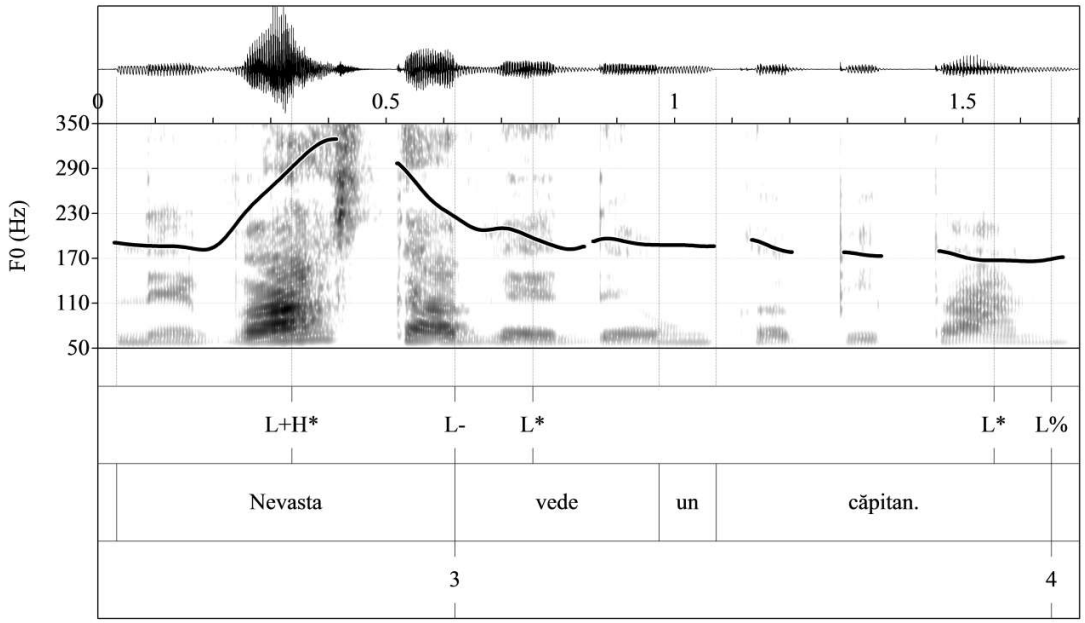


Figure 6.4: Waveform, spectrogram, and F0 contour of the narrow-focus statement NEVASTA vede un căpitan*. 'The wife sees a captain' produced by a speaker of Daco - Romanian.*

The contrastive focus is characterised in statements by additional sub-phrasing created by focus, and added intensity on the stressed syllable *vas,* compared to questions. Also, pitch range is an important cue for contrastive focus in statements in relation to broad focus statements. Narrow focus in statements has a L+H* pitch accent.

In Figure 6.5, a confirmation seeking yes-no question contour is presented where the subject *nevasta* 'the wife' is in contrastive focus. The contrastive focus in statements produces emphasis as mentioned above, however in questions it is marked by low prominence. Figure 6.5 shows that very low tonal levels are kept on the first constituent which bears focus. After the focus element the contour has a continuous rising movement during the L*+H and H* ending the first ip in a H- phrase accent.

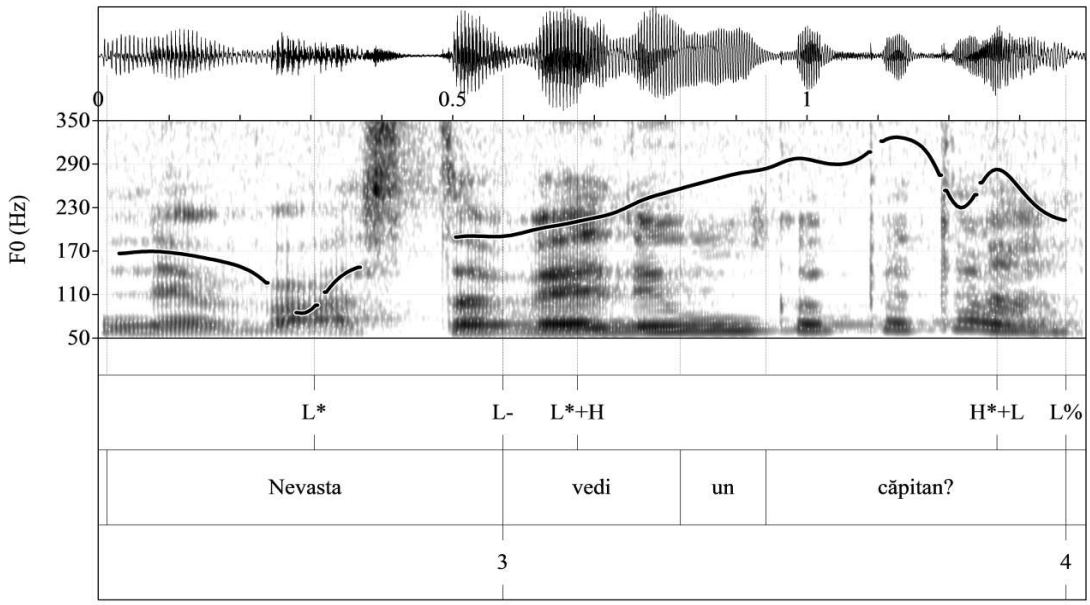


Figure 6.5: Waveform, spectrogram, and F0 contour of the narrow-focus question Nevasta vedi un căpitan? *'Does the wife see a captain?' produced by a speaker of Megleno-Romanian.*

The contour also rises on the last constituent during the non-accented syllable which precedes the accented syllable and then falls during the last accented syllable. An example of the information-seeking yes-no question intonation contour is represented in Figure 6.6 where the subject is separated within the first ip. It is not focused and has a high target tone. The second ip including the verb phrase is the actual yes-no contour where the verb has the lowest target tone and bears the nucleus at the local and global level. After that the contour has rising movement until the last accented syllable where the falling movement begins and ends in a L% boundary tone.

The contour of a yes-no confirmation seeking question (first element is under focus), as in Figure 6.5, has an increased pitch range compared to the information seeking yes-no question in (Figure 6.6).

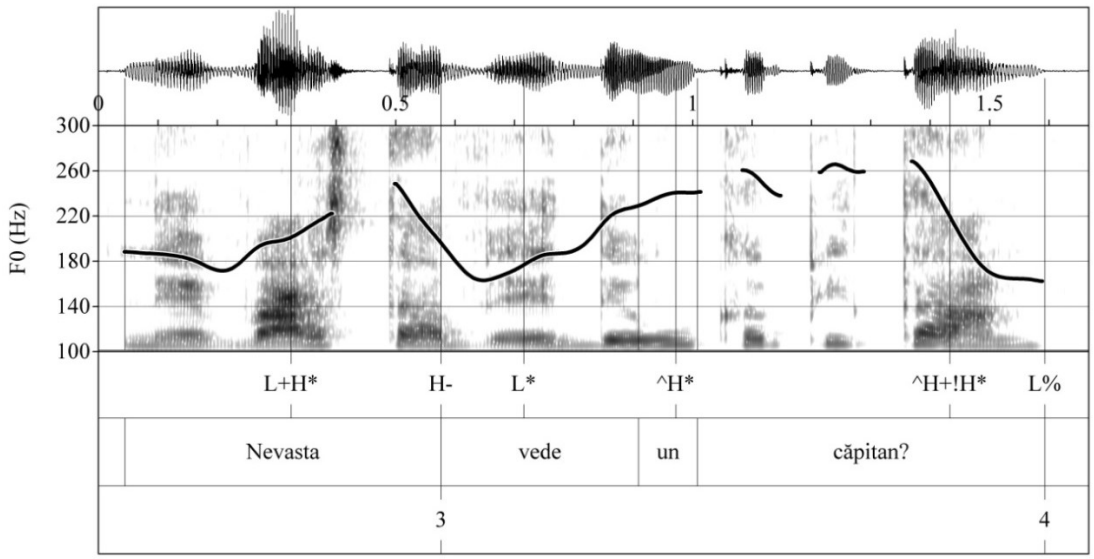


Figure 6.6: Waveform, spectrogram, and F0 contour of the narrow-focus question Nevasta vede un căpitan? *'Does the wife see a captain?' produced by a speaker of Daco-Romanian.*

The more common pattern found in questions with narrow focus on the first element is that they exhibit a 'negative emphasis' as predicted by Dascălu-Jinga (2001; 2008) on the focused constituent. The example above (Figure 6.5) is representative of initial contrastive focus in questions across Daco-Romance. The speaker is asking a genuine yes-no question to check whether the previous information that he received is true or false. The word *nevasta* 'wife' is the focus of the question and receives a L* nuclear accent. This is a case of a confirmation seeking question where the focus indicates which part of the information needs to be confirmed. Note that in Figure 6.5 this is marked by a dip in the F0 of approximately 90Hz, highlighting that this is the word that bears the maximum weight, where the speaker is asking for confirmation as to the veracity of his understanding. The question is also phrased differently with *căpitan* as a minor ip. The nucleus is followed by a L*+H accent on the verb *vedi* 'sees', keeping a general rising trend up to almost 330 Hz and ending in a global H*+L L% configuration. Notice the F0 dips sharply on the focused word and rises from 75 Hz to 330 Hz reaching the maximum pitch on the global pitch accent H*+L on *căpitan* 'captain'. I have also found that contrastive focus in questions can also be marked by 'positive prominence' in Istro-Romanian, when the first constituent is in focus, marked by a L+H*. However, the context in which the question was elicited means that the contrastive focus was interpreted as expressing surprise which is defined by high pitch prominence.

Interrogative utterances across Daco-Romance are characterised by a wide variety of diverse intonational contours. Interrogative intonation was defined as being marked by a rise in pitch or prominence towards the end of an independent intonational unit. This becomes prominent in the terminal contour. Our data shows that interrogatives are marked by two distinct intonation types with respect to their terminal contours: *rising contours*, which take into account the last constituent of the sentence matrix - if the last constituent has an oxytone stress, this last constituent will not bear the nuclear accent unless under narrow focus - and *rising-falling contours* where the last constituent is non-oxytonic.

6.3.3 Medial focus

Narrow contrastive focus in mid position in Figure 6.7 is realised by lowering the beginning of the H* pitch accent on the subject leading to an L+H* accent on the verb which is also the nuclear accent as this accent is under the tonal target of the first constituent. The following ^H*+L pitch accent also has a dominant high target tone above the focus word target tone. The most common pattern used to signal focus in medial position is a rising movement which dips to a lower level of the tonal space on the stressed syllable and has a high target. The pitch movement on the verb begins with the low tone which marks the nuclear function, then it continues its rising movement until the end of the accented syllable and falls to indicate the end of the tonal group before the subordinated last word. When narrow focus produces post-focal compression and the focal element is not in the same group as the post focal element, a type 3 break occurs. Compared to contexts in which the verb is not in focus, such as Figure 6.6 above, the focused verb below (Figure 6.7) shows a longer duration on the accented syllable and a broader pitch range. However, the most salient feature marking contrastive medial focus is the sharp dip to a low tone.

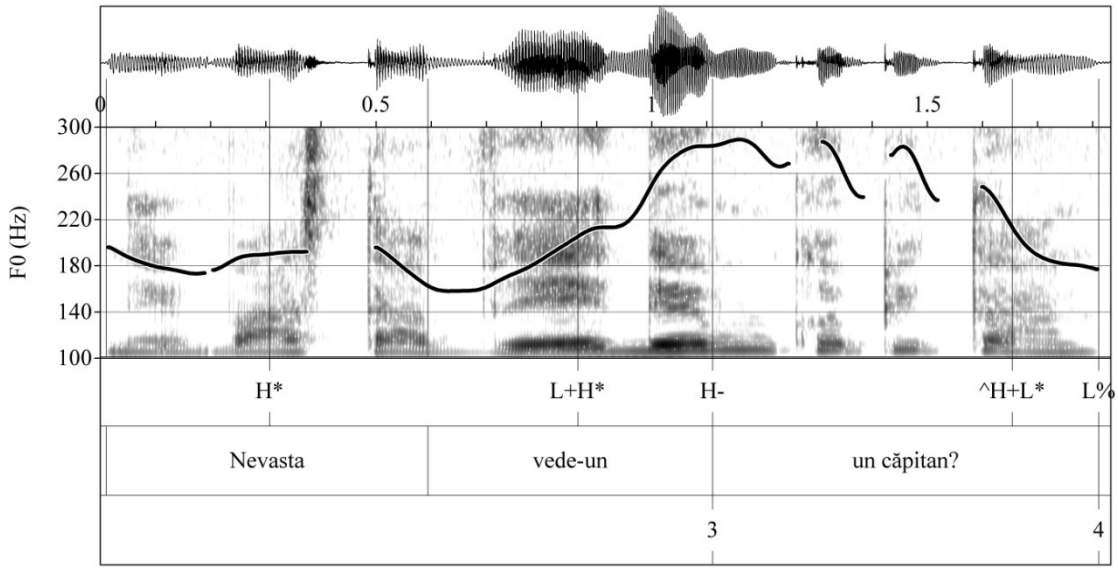


Figure 6.7: Waveform, spectrogram, and F0 contour of the contrastive-focus question Nevasta VEDE un căpitan. *'Does the wife see a captain' produced by a speaker of Daco-Romanian.*

The data show that medial narrow focus is marked by 'positive emphasis' in statements (Figure 6.8) and 'negative emphasis' in questions (Figure 6.7), thus confirming Dascălu-Jinga's observations (2001) that in statements focus is characterised by a peak positive prominence or rising contour on the middle constituent, while the opposite is true for questions, where the pitch drops on the verb and the stressed vowel is lengthened.

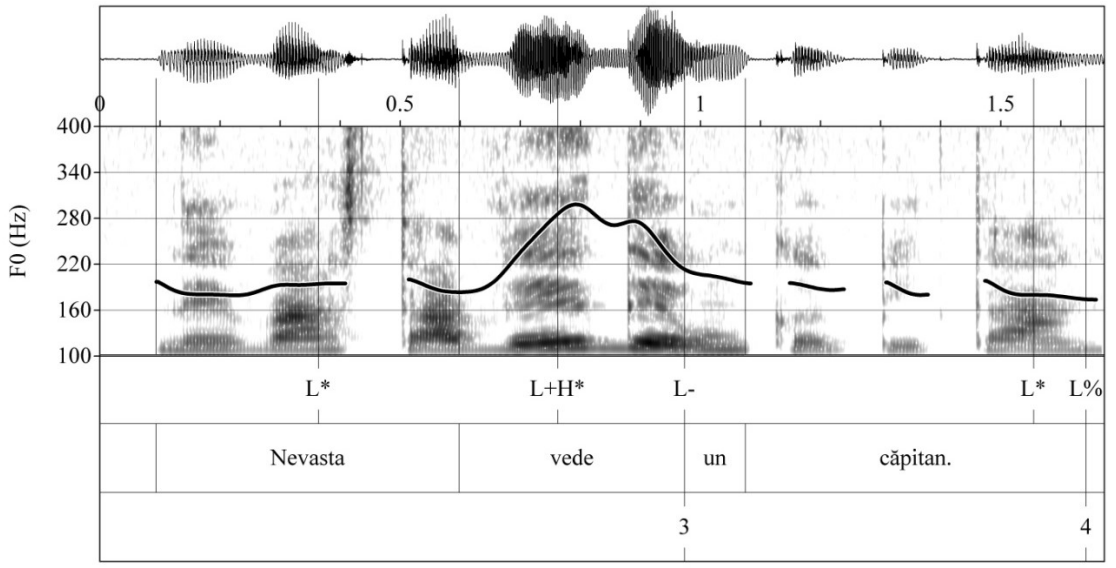


Figure 6.8: Waveform, spectrogram, and F0 contour of the contrastive-focus statement Nevasta VEDE un căpitan. *'The wife sees a captain' produced by a speaker of Daco-Romanian.*

6.3.4 Final focus

In statements, narrow focus in final position is characterised by one pitch accent across the four varieties, the ^H*+L, as exemplified here in Daco-Romanian and Istro-Romanian (Figures 6.9-6.10) ending in an L%. Statements also include L* and L+H* pre-nuclear accents which start an ascending slope until the maximum tonal height is realised on the last lexically stressed syllable where a high peak is observed. The peak is approximately 50Hz higher than the initial pitch height in statements and the nuclear fall is no more than 30Hz below the initial pitch value. The relevant factor is the duration under the target tone of the first constituents as the last word is in focus.

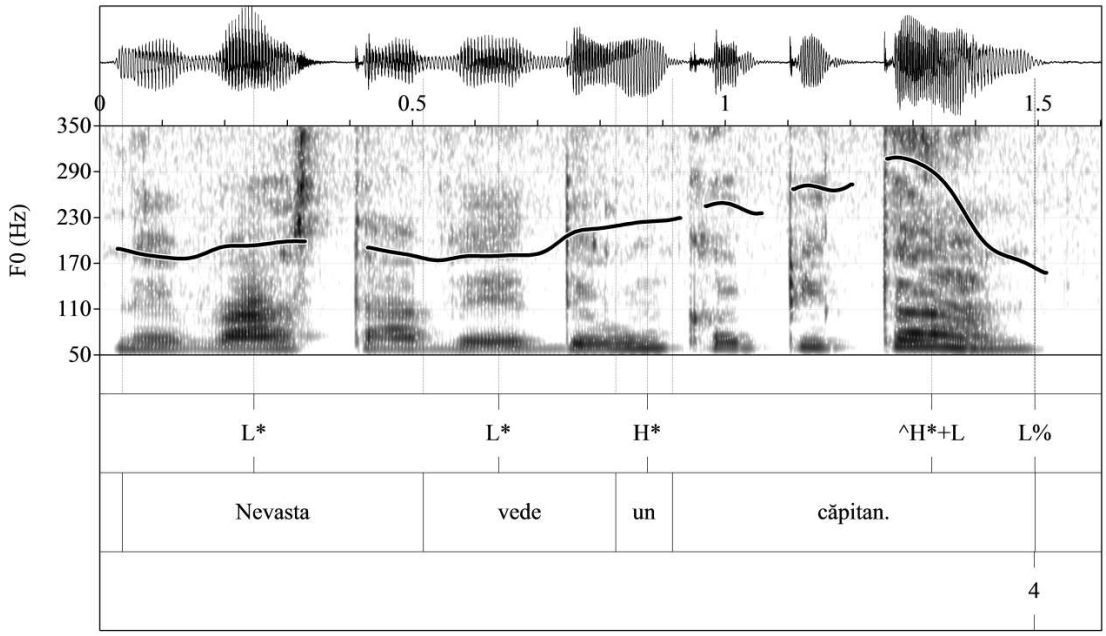


Figure 6.9: Waveform, spectrogram, and F0 contour of the contrastive-focus statement Nevasta vede un CĂPITAN. *'The wife sees a CAPTAIN.' produced by a speaker of Daco-Romanian.*

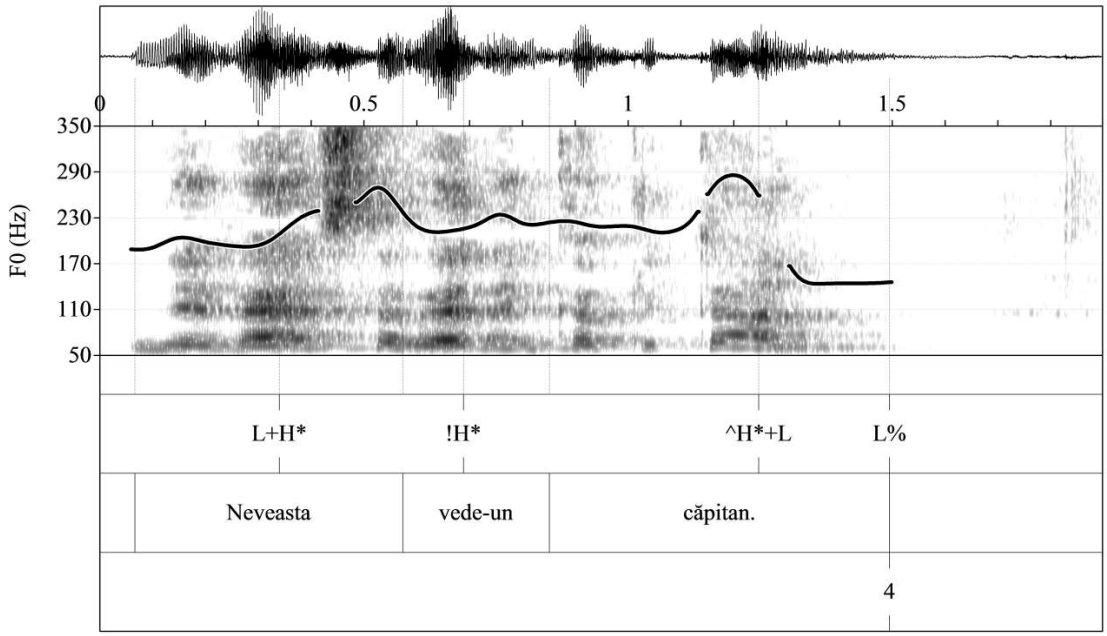


Figure 6.10: Waveform, spectrogram, and F0 contour of the contrastive-focus statement Nevasta vede un CĂPITAN. *'The wife sees a CAPTAIN.' produced by a speaker of Istro-Romanian.*

In questions (Figure 6.11) the last pitch accent is of L*+H type because it characterises the confirmation seeking YNQ contour with focus on the last word. The focused word is less prominent on the last syllable and we note that at its height the peak is only 30Hz higher than the initial pitch value. Thus the nucleus is marked here by the lower tonal level of the pitch accent compared to the target tones of previous constituents. As can be seen in Figure 6.11 and 6.12, the phrase final contour begins low and keeps low for 80-100 msec. to produce low prominences in the two contours.

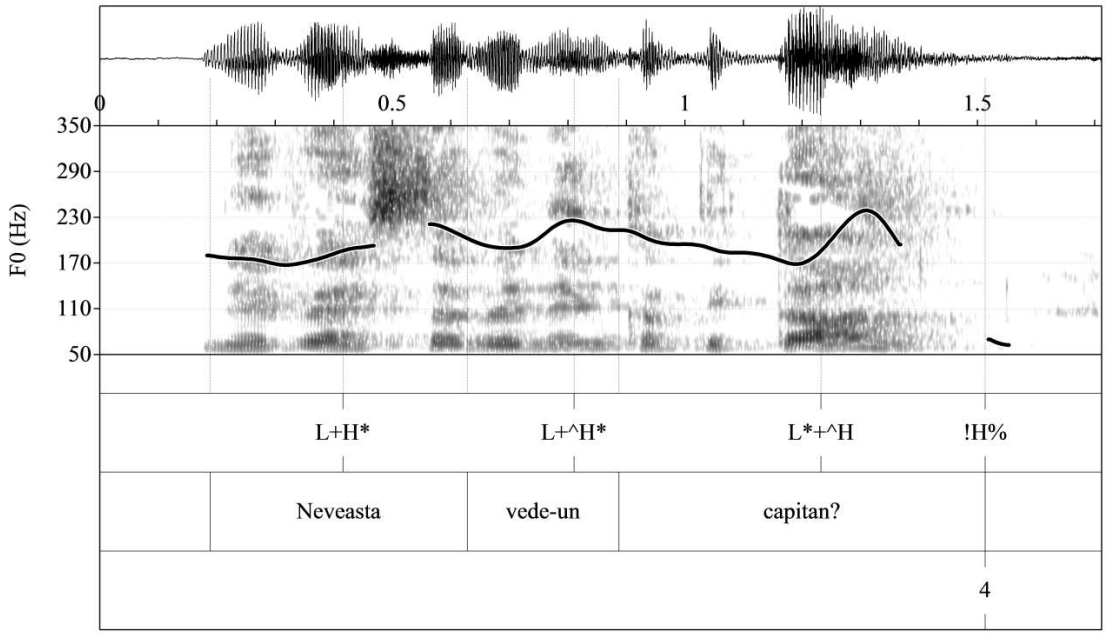


Figure 6.11: Waveform, spectrogram, and F0 contour of the contrastive-focus question Nevasta vede un CĂPITAN? *'Does the wife see a CAPTAIN?' produced by a speaker of Istro- Romanian.*

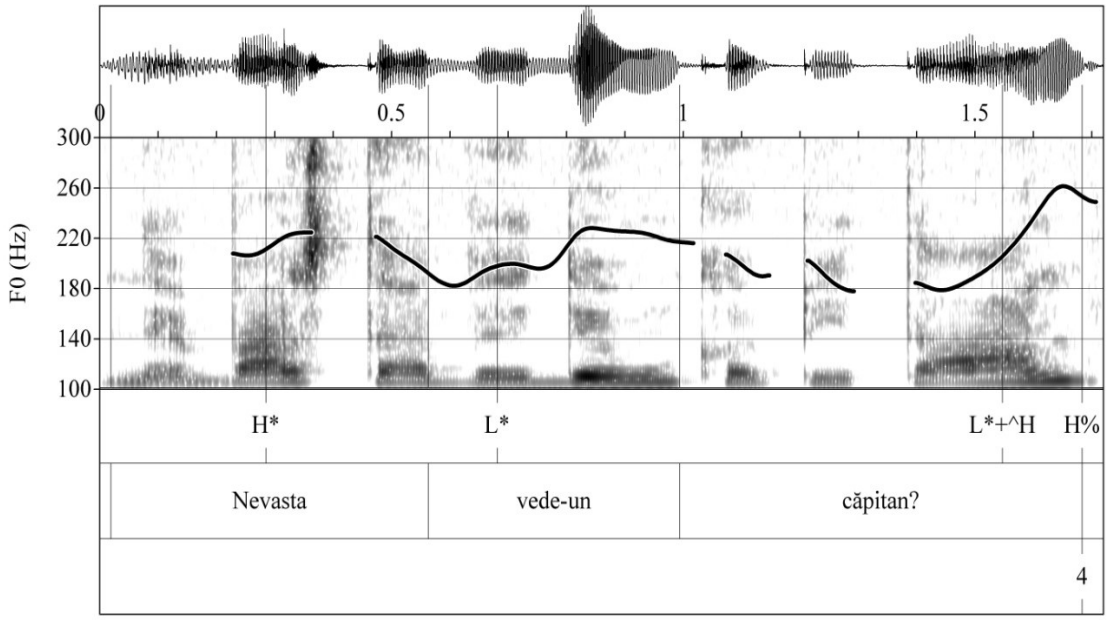


Figure 6.12: Waveform, spectrogram, and F0 contour of the contrastive-focus question Nevasta vede un CĂPITAN. *'Does the wife see a CAPTAIN?' produced by a speaker of Daco-Romanian.*

6.4 Results: acoustic correlates for focus across Daco-Romance

In this section, some of the main intonational patterns of focus will be described, with special emphasis on the difference between broad focus and narrow focus. The results of the eight sentences in broad focus and narrow focus statements and information vs. confirmation seeking yes-no questions will be presented below.

For each variety the following will be presented: the BF statement, IS YNQ contours and one CF statement and one IS YNQ variant. The data were elicited using the DCT methodology as detailed in Chapter 4. In particular, for broad focus statements out of the blue contexts were used to elicit broad focus contours, while for contrastive focus on each of the three constituents, the informant was asked a question like *Fratele vede un căpitan?* 'Does the brother see a captain?' to elicit contrastive focus on the first word: *Nevasta vede un căpitan,* 'The wife sees a captain'. Three informants from each variety were prompted to produce broad and contrastive focus in statements and questions. The exercise was repeated three times. Speakers were not asked to repeat the target sentence three times, but rather, the same context was provided again to elicit a more robust and natural context. The data below show mean values of the three tokens (three repetitions) uttered by three speakers per variety (both male and female) in each condition.

Tables 6.2-6.5 summarise all the acoustic mean values for the various parameters within representative F0 contours in each of the four varieties. The first column shows which sentence type was selected (statement or question) and whether the word selected was under broad focus (BF) / Information-seeking (IS) or contrastive focus (CF) / Confirmation-seeking (CS), as well as word number (whether the first, second or third) in the example *Nevasta vede un căpitan* 'The wife sees a captain'. Word order remained the same in all contexts, which is why word number can be relied on to be identical in both statements and questions. Maximum fundamental frequency (Hz) of the relevant stressed syllable in the respective word features in the second column.

Pitch range represents the difference in pitch between the peak of the accented syllable and minimum F0 in the valley after the peak of the stressed target syllable. RelDuration is relevant to show whether words in focal positions increase this parameter relative to the values in broad focus contexts. This will also show the mean duration of stressed vowels that receive a BF pitch accent compared with those that

bear a CF pitch accent, for each word position and stress pattern. Moreover, the results will also show whether pre- or post-focal compression comes with a decrease in length for the respective words. Intensity (measured in dB) is used to compare stressed syllables in contrastive focus with those in the broad focus context. Peak alignment (last column) is shown as the ratio between two time intervals: i.e. the time elapsed between the onset vowel of a stressed syllable and the maximum F0 peak (measured in Hz) of the pitch accent and the time elapsed between the onset vowel and the syllable boundary. The ratio value is multiplied by 100. The parameter is used to test whether the peak in broad focus and narrow focus is aligned earlier in the stressed syllable, later towards the syllable boundary, or on the post-tonic syllable. When the value is lower than 100, it indicates the peak is aligned in the stressed/tonic syllable. If the value is above 100, and the time value (measured in ms) of the peak is equal to the time value at the end of the syllable, this will show that the peak aligns on the post-tonic syllable.

In the first case, a value of <100 indicates an ascending-descending F0 pattern on the stressed syllable that produced emphasis in CF statements. In the second case, values of >100 indicate the intention to produce a rising F0 contour in the initial part of BF statements or the intention to increase the emphasis in narrow focus yes-no questions after low prominence is marked.

Table 6.2: Acoustic parameters for Daco-Romanian (mean values).

Sentence and focus type	F0 (Hz)	Pitch range (Hz)	Rel.Duration (%)	Intensity (dB)	Peak alignment
Statements BF-W1	226	60	24	62	167
Statements BF-W2	211	40	30	60	1
Statements BF-W3	167	19	21	55	1
Statements CF-W1	325	100	24	76	71
Statements CF-W2	310	92	36	67	89
Statements CF-W3	376	113	34	64	1
IS YNQ -W1	190	10	28	67	67
IS YNQ -W2	177	6	35	62	175
IS YNQ -W3	275	90	34	65	1
CS YNQ W1	180	27	32	68	176
CS YNQ W2	174	49	42	65	142
CS YNQ W3	184	100	41	66	89

Table 6.3: Acoustic parameters for Aromanian (mean values)

Sentence and focus type	F0 (Hz)	Pitch range (Hz)	Rel.Duration (%)	Intensity (dB)	Peak alignment
Statements BF-W1	120/165	45	26	70	168
Statements BF-W2	114/154	40	32	68	155
Statements BF-W3	150/180	30	38	70	1
Statements CF-W1	150/190	40	26	77	100
Statements CF-W2	170/250	80	36	78	100
Statements CF-W3	130/180	50	44	76	55
IS YNQ -W1	122/162	40	36	71	164
IS YNQ -W2	125/150	25	34	74	1
IS YNQ -W3	120/170	50	38	67	1
CS YNQ W1	110/155	45	43	73	170
CS YNQ W2	120/190	70	40	79	100
CS YNQ W3	88/128	60	50	70	64

Table 6.4: Acoustic parameters for Istro-Romanian (mean values)

Sentence and focus type	F0 (Hz)	Pitch range (Hz)	Rel.Duration (%)	Intensity (dB)	Peak alignment
Statements BF-W1	200-236	36	28	67	150
Statements BF-W2	180-185	5	42	68	1
Statements BF-W3	130-150	20	35	61	1
Statements CF-W1	290	64	29	82	185
Statements CF-W2	250-295	45	57	72	72
Statements CF-W3	215-290	75	48	66	1
IS YNQ -W1	185	5	13	67	100
IS YNQ -W2	160-180	20	32	70	1
IS YNQ -W3	184-254	70	24	67	100
CS YNQ W1	175-195	120	25	72	187
CS YNQ W2	190-280	90	37	74	100
CS YNQ W3	184-254	90	30	70	100

Table 6.5: Acoustic parameters for Megleno-Romanian (mean values).

Sentence and focus type	F0 (Hz)	Pitch range (Hz)	Rel.Duration (%)	Intensity (dB)	Peak Alignment
Statements BF-W1	200/220	20	21	65	143
Statements BF-W2	190/200	10	37	66	100
Statements BF-W3	150/165	15	35	67	1
Statements CF-W1	180/210	30	33	63	152
Statements CF-W2	175/245	70	37	68	141
Statements CF-W3	320/380	60	35	64	1
IS YNQ -W1	180/190	10	20	64	160
IS YNQ -W2	190/197	7	30	66	131
IS YNQ -W3	230/290	60	35	68	48
CS YNQ W1	170/217	47	22	66	163
CS YNQ W2	180/290	70	36	63	146
CS YNQ W3	150/290	140	38	68	54

6.4.1 Pitch range

Megleno-Romanian broad focus statements display an F0 contour with very small pitch range (Figure 6.22-6.23). They reach 220Hz on the first word and fall to 150 Hz during the last word. Information seeking yes-no question contours also have a very small pitch range during the low stretch and reach the minimum on the non-accented syllable preceding the stressed one (160 Hz). During the phrase-final contour the F0 steps up to 230 Hz and then rises up to 290 Hz by a slow pitch variation. In contrast, the Aromanian BF statement contours have prosodic words and pitch accents with what appears to be lower pitch ranges (40 Hz on the first focused word).

The pitch accents of focused words have higher target tones and they usually reach the top of their tonal range after a large pitch excursion with a greater pitch range than in the broad focus case. The difference in pitch range between BF and CF is lower on the first word, also in BF when it marks the beginning of an intonational phrase. Narrow focus within Megleno-Romanian BF statements is marked by very prominent positive events (positive emphases) with the highest target tones within their contours. This can produce compression on the preceding and next prosodic words (F2, F3).

In the case of Aromanian statements with NF, positive emphasis can produce prominent peaks with a large pitch range (80 Hz), as in the case of contrastive focus on word 3 (CF3), but also with smaller pitch ranges (40 <45Hz), as in the BF case (BF2). In the latter case, the voiced part of the accented syllable begins directly at a high level and reaches the top after the same time as the BF case (RelDuration = 26). The CF word *nevasta* maintains high levels until the end of the word and the F0 contour falls to low levels on the following word, the negation *nu*. With negative statements, the CF on *nevasta* produces compression on the verb and the object in CF2. CF on the verb entails compression on the object in CF3.

It the case of statements in IstroRomanian, the difference in pitch range during the verb in CF context and BF context appears to be bigger, approximately 8 times higher in CF. In BF the verb seems to be de-accented (as in other BF cases observed previously in the literature) because it usually holds the F0 contour at relatively high levels before the final pitch fall during the last word. In CF on the verb (CF3 Istro-Romanian below, Figure 6.13) the pitch accent rises to a very high level (295 Hz) and then if falls to low levels on the next non-accented syllable. CF on the verb also produces compression on the next word, i.e. the object, unlike in Daco-Romanian

(Daco-Romanian, Figure 6.13) where the compression is produced on both the sentence-initial and sentence-final words, the subject and the object (CF3 Daco-Romanian, Figure 6.13). In Daco-Romanian BF statements, the verb is also de-accented and the pitch range of the whole utterance does not increase too much.

An increase of stressed syllable duration is also necessary for these large pitch excursions in the case of CF on the verb. However, the parameter is a ratio between the syllable duration and the duration of the whole word and the parameter RelDuration keeps its values within small ranges (e.g. [24-36] for Daco-Romanian, for Aromanian [26-44], and Istro-Romanian [29-48]).

In BF yes-no question contours (or information seeking questions) in Figure 6.14, pitch ranges are very small on the first two words and very large on the last word. The word related to the minimum tone of contour is the verb (broad focus – Daco-Romanian, Aromanian). The CF YN question contours change the ascending phrase-final contour into a descending one in the case of CF on sentence-non-final words, because the rising of the F0 contour is produced on the respective NF word (word 2, 3 in Daco-Romanian) that contributes to the emphasis. It is a negative emphasis because tonal negative prominence is marked in the beginning of the accented syllable followed by a rising pitch movement with [27, 49] Daco-Romanian, [45, 70] Aromanian and [60, 90] Istro-Romanian for the pitch range of the non-final words with NF.

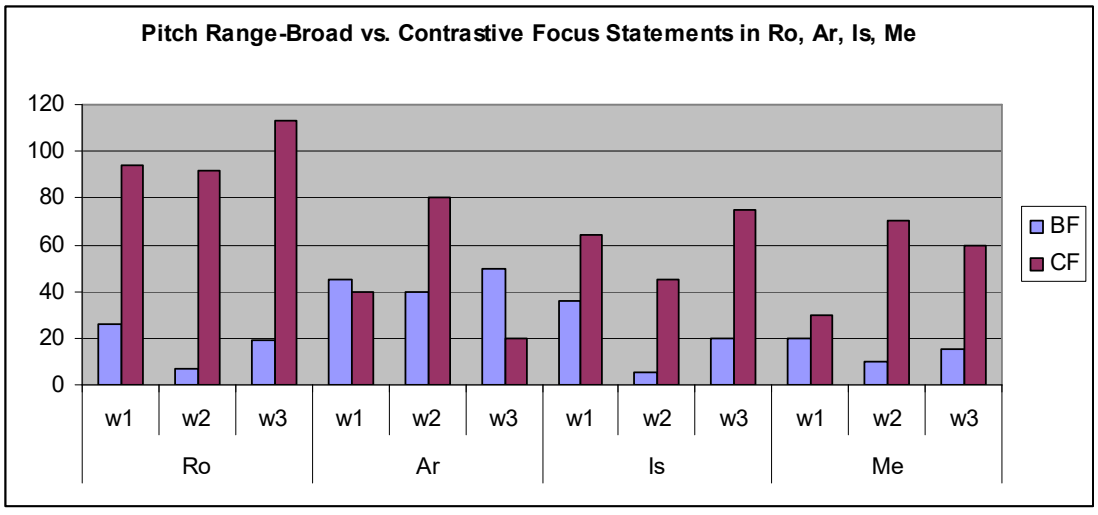


Figure 6.13: Pitch range mean values (Hz) for three words in Nevasta vede un căpitan *'The wife sees a captain' in statements with broad and narrow focus. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian).*

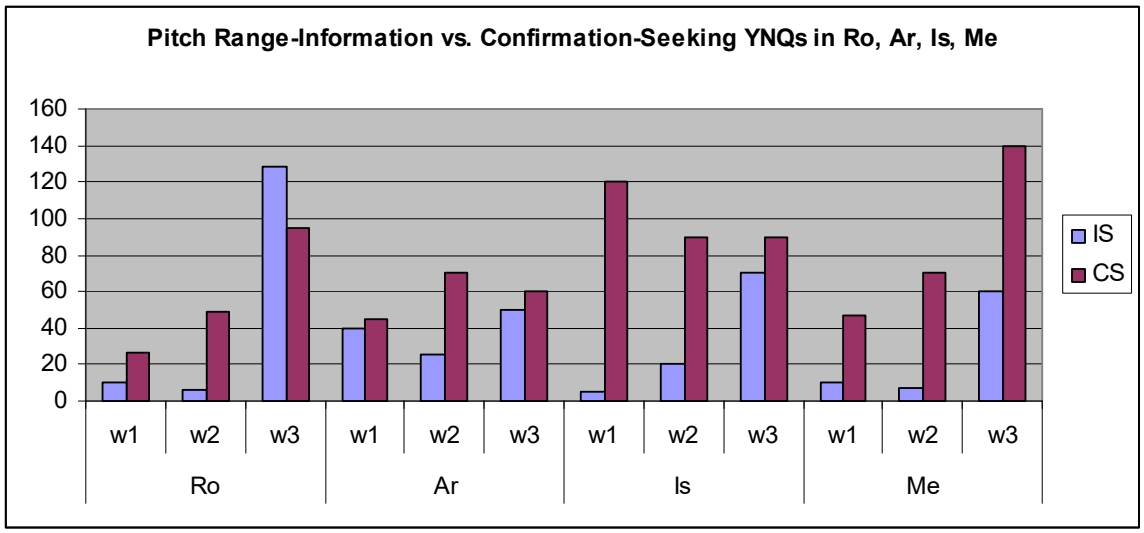


Figure 6.14: Pitch range mean values (Hz) for three words in Nevasta vede un căpitan?*'Does the wife see a captain?' in information vs confirmation seeking questions. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus. (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian)*

In BF yes-no questions, there is a large pitch range (50-70 Hz) for the rising pitch movement beginning with the last accented syllable conveyed in the phrase-final contour. In our example, the last word *căpitan* has a stop consonant at the beginning of the stressed syllable and the rising pitch movement in BF is a jump up to a high tonal level and a falling pitch movement during the accented syllable down to a boundary tone L%.

The CF yes-no question contours change the ascending phrase-final contour into a descending one in the case of NF on sentence-non-final words. The contours have early rising pitch movement on the respective NF words (first and last word in Daco-Romanian for instance) where it produces an emphasis. It is a negative emphasis because a low tone is marked in the beginning of the accented syllable that is followed by a rising pitch movement. The pitch range on the first two words is 27-49 for Daco-Romanian, 45-70 for Aromanian and 60-90 in Istro-Romanian.

Speakers of Istro-Romanian tend to produce negative emphasis in the required position (first and second word under contrastive focus) but the pitch contour falls after the top of the peak is reached on the following non-accented syllable, and transforms the utterance into a CF statement. This is not a characteristic of this type of intonation, as what is expected are high levels until the last stressed syllable which makes the fall possible.

In yes-no questions with NF on word 3, low tones have to be reached on the first part of the syllable to mark the nucleus (valley pattern) and then the high target is

reached at the end of the ascending phrase-final contour (Megleno-Romanian word 3, Istro-Romanian word 3, Daco-Romanian word 3, Aromanian word 1). The pitch range has values of 140, 90, 80 and 60 respectively. Large pitch ranges in NF yes-no questions from the minimum low level lead to prominent emphasis.

6.4.2 Peak alignment

The peak alignment of BF pitch accents with respect the syllable boundary is compared to that of CF pitch accents. Here, 100% represents the end of the stressed syllable so that values above 100 indicate that the peak is aligned with the post-tonic syllable while values below 100 show that the peak is within the stressed syllable.

A value 100 in the ToneAlign parameter relates to 100% - the rightmost boundary of the stressed syllable as a reference value. Contrastive focus statements have a smaller value <100% which means the peak is aligned to the rhyme of the stressed syllable, while broad focus statements are associated with >100% which means the peak is aligned with the post-tonic syllable. Hence, in BF contexts the top of the peak is reached after the accented syllable (on the next syllable), whilst in NF contexts the peak is reached during the accented syllable because the F0 contour tends to reach low levels during the following syllable of the same word or of the next word.

The figures below (Figures 6.15-6.16) reveal a tendency across varieties: peak/tone alignment high values (>100) are involved in producing rising pitch movements within BF descending F0 contours, or in producing prominent emphasis in NF cases. Megleno-Romanian is an example of YN questions with NF that produce low prominence on the whole accented syllable and then jump to a high level on the next non-accented syllable.

The value 1 for ToneAlign characterises the up step of the F0 contour directly to the top of the peak and indicates that a descending pitch movement occurs during the whole accented syllable. In BF statements the sentence-final word, *căpitan* has the value 1 for ToneAlign because the accented syllable has a stop consonant and the voiced part of the syllable opens from the beginning. This can occur in the case of CF when the F0 contour has an upstep at the beginning of the last stressed syllable (where the last element is under contrastive focus in all varieties).

In Aromanian broad focus statements, the contour has two sub-phrases. The first sub-phrase ends after the verb and this word raises the F0 contour on the last accented syllable in order to mark an H- phrase accent. The peak for word 2 is reached after the

accented syllable and the peal alignment is 155 (Figure 6.16). In CF statements the rising part of the focus pattern ends at the end of the accented syllable (ToneAlign is 100) and the descending part begins with the next non-accented syllable. This shows typical phrase edge peak retraction.

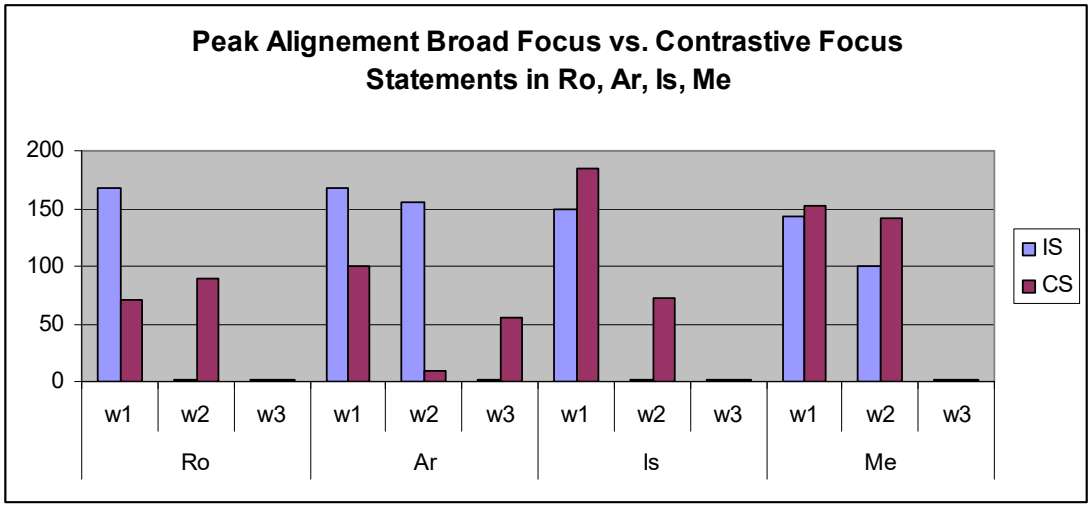


Figure 6.15: Peak Alignment mean values (Hz) for three words in Nevasta vede un căpitan *'The wife sees a captain' in statements with broad and contrastive focus. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian).*

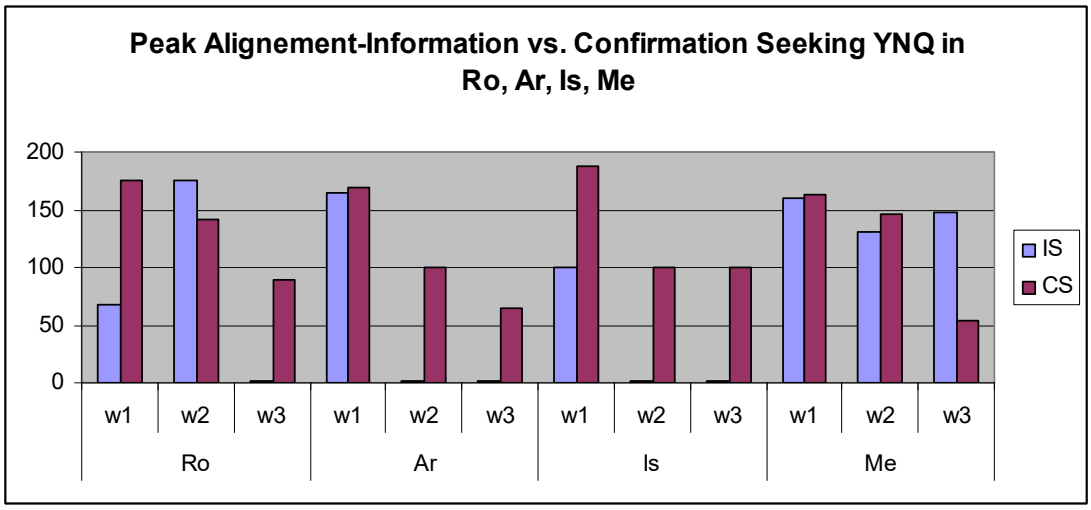


Figure 6.16: Peak Alignment mean values (Hz) for three words in Nevasta vede un căpitan? *'Does the wife see a captain?' in yes-no information vs confirmation seeking questions. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian).*

Peak alignment in broad focus statements has the highest value on the first word which produces a significant rising F0 contour until the end without increasing the pitch range during the accented syllable (167 in Daco-Romanian). In Daco-Romanian, an additional rising F0 contour does not occur on word 2 (the verb) because it has a level pitch accent. A value of 1 results for tone alignment on the second word where the F0 contour reaches the same tonal level as at the beginning. The third word also has a value of 1 for this parameter because it has a descending contour which has the highest tone in the beginning. In contrastive statements the top of the peak is reached before the end of the accented syllable (65, 85 values for tone alignment in Daco-Romanian) in order to begin the fall after the focus on the accented syllable, leading to a more prominent positive emphasis.

In yes-no questions with NF on word 3, a low tone is reached on the first part of the syllable which marks the nucleus (valley pattern) and then the high target is reached at the end of the ascending phrase-final contour (Figure 6.16). Yes-no question contours with CF have greater values for ToneAlign than in BF, where the emphasis exhibits significant negative prominence. Their pitch movements mark firstly low prominence, which is followed by a rising pitch movement which can continue onto the following non-accented syllable of the word. The contour with CF on word 3 in Daco-Romanian has the value 65 because the contour continues rising after the middle of the accented syllable. The slope is small in the beginning with low levels that mark low prominence. Most cases show peak retraction on the utterance final word.

6.4.3 Relative duration

Relative duration (RelDuration) is a parameter expressed as the ratio between the full duration of the stressed vowel in the relevant accented syllable and the full duration of the word multiplied by 100. RelDuration is affected by syllabic speech rate and rhythm. The intention was to reflect whether there is any increased length associated with the accented syllable of a word in narrow focus contexts relative to the same word in broad focus contexts.

This parameter shows whether or not the duration of vowels in focused constituents relative to the corresponding word is the same or different. Also, the corresponding words have different stress patterns, word 3 *căpitan* ‘captain’ bears oxytonic stress, word 1 *nevasta* ‘the wife’ bears paroxytonic stress and word 2 ‘vede’

bears stress on the first syllable. The results reveal the effect of duration in the accented vowel in the three different stress patterns in contrastive and broad focus across varieties.

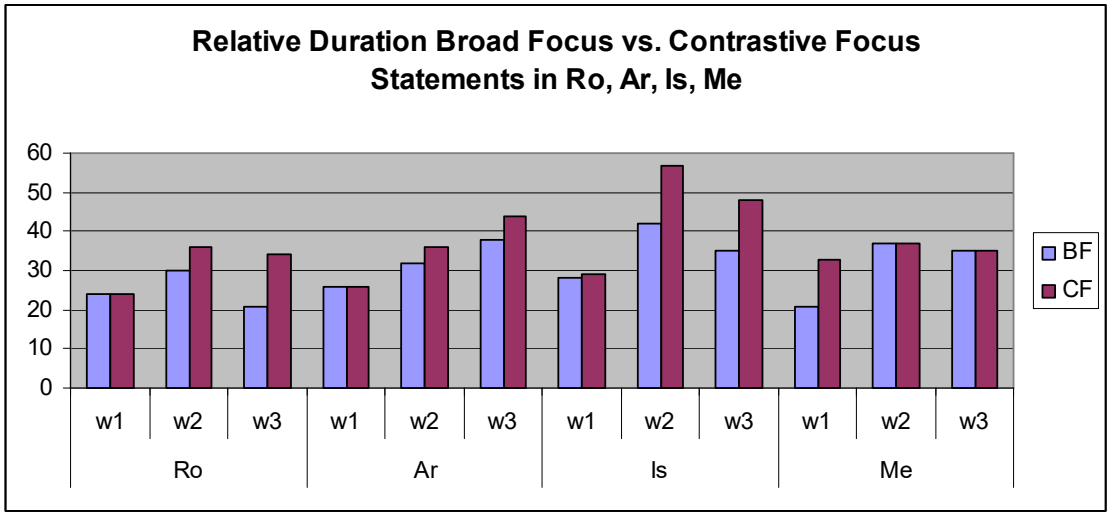


Figure 6.17: Relative Duration mean values (Hz) for three words in Nevasta vede un căpitan *'The wife sees a captain' in statements with broad and narrow focus. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian).*

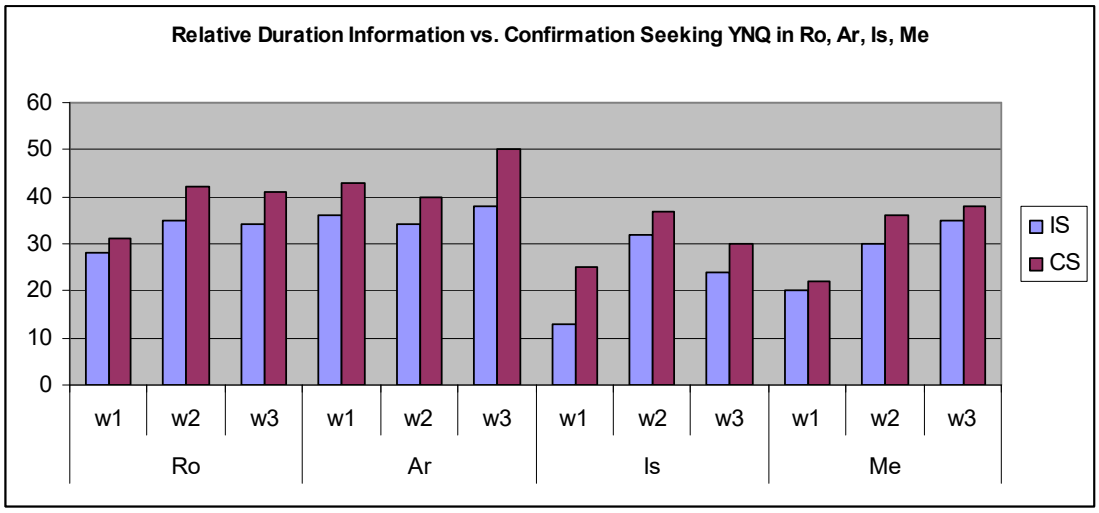


Figure 6.18: Relative Duration mean values (Hz) for three words in Nevasta vede un căpitan *'Does the wife see a captain?' in information and confirmation seeking questions. Word 1 refers to* nevasta*, word 2 refers to* vede*, word 3 refers to* căpitan*. Contrastive focus in initial, medial and final position is compared to broad focus (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian).*

The RelDuration of word 1 in statements (Daco-Romanian) is 26 in the BF context and also 26 in NF contexts. When it is in pre-tonic position in contrastive focus statements on word 2, this parameter is a little lower: 24. When narrow focus in on word 3, the length of word 1 is even higher than in the BF case: 26.

Table 6.6: Mean RelDuration of word 1 in statements (Daco-Romanian).

Daco-Romanian	BF	CF1	CF2	CF3
Word1	26	26	24	27

The RelDuration of word 2 in statements (Daco-Romanian) is 31 in the BF context and 36 in NF contexts. When it is in pre-tonic position in contrastive focus statements on word 3 this parameter is a little higher: 32. When narrow focus in on word 1 and word 2 is in the post-tonic position, the length of word 2 is a little lower than in BF with a value of 28.

Table 6.7: Mean RelDuration of word 2 in statements (Daco-Romanian).

Daco-Romanian	BF	CF1	CF2	CF3
Word2	31	28	36	32

The RelDuration of word 3 in Daco-Romanian statements is 21 in the BF context and 34 in NF contexts. When it is in post-tonic position in contrastive focus statement on word 2 this parameter is a little lower: 20. When narrow focus in on word 1, the length of word 2 is also 21, like in the BF context.

Table 6.8: Mean RelDuration of word 3 in Daco-Romanian statements.

Daco-Romanian	BF	CF1	CF2	CF3
Word3	21	21	20	34

In yes-no questions, the RelDuration of word 1 is 28 in the BF context and 32 in NF contexts. When it is in pre-tonic position in contrastive focus statements on word 2, this parameter is a little lower than in the BF context: 26. When narrow focus is on word 3, the length of word 1 is also 28.

Table 6.9: Mean RelDuration of word 1 in yes-no questions (Daco-Romanian).

Daco-Romanian	BF	CF1	CF2	CF3
Word1	28	32	26	28

In yes-no questions the RelDuration of word 2 is 35 in the BF context and 42 in NF contexts. When it is in post-tonic position in contrastive focus statements on word 1, this parameter is lower: 29. When the narrow focus in on word 3 and word 2 is in pre-tonic position, the length of word 2 is a little lower than in the BF case with a value of 32.

Table 6.10: Mean RelDuration of word 2 in yes-no questions (Daco-Romanian).

Daco-Romanian	BF	CF1	CF2	CF3
Word2	35	29	42	32

In yes-no questions in Daco-Romanian, the RelDuration of word 3 is 34 in the BF context and 41 in NF contexts. When it is in post-tonic position in contrastive focus statements on word 2 this parameter is 35. When narrow focus in on word 1 the length of word 3 is 28, lower than in the BF context.

Table 6.11: Mean RelDuration of word 3 in yes-no questions (Daco-Romanian).

Bucharest	BF	CF1	CF2	CF3
Word3	34	28	35	41

Depending on focus type, in the majority of the examples, the duration of the stressed vowel increases in CF contexts. Higher duration on contrasted verbs is related to hypercorrection of the pronunciation of the vowel sequence from *(ved) e u(n)* ‘sees a’.

In the statement *Nevasta vede un CĂPITAN*, ‘The wife sees a captain’,two intermediate phrases are found, separated by a short pause between *vede* ‘sees’ and *un căpitan* ‘a captain’. This is an important prosodic cue marking contrastive focus on the verb and object.

6.5 Discussion and conclusions

Figures 6.19-20 below show three parameters in broad focus and narrow focus contexts in both statements and questions for each variety. The data shows that Daco-Romance varietiesuse focus pitch range and peak alignment to mark focus, as well as higher intensity and duration. The differences between narrow focus and broad focus reveal that duration of the stressed syllable under focus is also dependent on the adjacent context. Post-tonic stressed syllables are shorter in duration if they are preceded by narrow focused words. At the same time, stressed syllables in words that precede a narrow focus will be shortened in duration compared to the broad focus context. Also, contrastive focus is marked by longer duration compared to other non-focused constituents.

In terms of peak alignment, in Megleno-Romanian peak alignment is delayed in statements in broad focus contexts, as well as in narrow focus on the first and second word. On the other hand, peaks are aligned with the corresponding syllables in Daco-Romanian, where peak alignment is over 100 in broad focus statements and falls to 100 in contrastive focus (on word 1 and 2). In Istro-Romanian statements, broad focus and contrastive focus (first word) is over 100, and only the second contrasted word is below 100.

The data used was limited to focus contexts and did not allow us to investigate de-accentuation and provide evidence for it. However, it was noted in the previous chapter that accents are de-accented following nuclear accents. Further studies on information structure in Romanian are needed to provide evidence for de-accentuation.

There are some relevant pitch accents used to express focus in statements and questions. The minimal level in the final part of broad focus statements is reached by an (H)+L* L%, where the start tone is a relatively high tone or just a low tone. In CF statements the H*+L or H*L is the main event within the focus pattern, having the low part on the accented syllable, or on the non-accented syllable of the focus word or on the following word. L*H. L*+H, L+H* may be pitch accents which mark the focus in yes-no questions. A high tone may be reached during the accented syllable or on the next syllable.

In broad focus statements with descending contours the intonation pattern starts at higher levels and continues at a high level until the fall which occurs at the end of the IP in Megleno-Romanian. In Daco-Romanian, the intonation contour starts with a rising

accent on the first word and falls in two steps, with an accent on the verb and a terminal contour. Aromanian uses sub-phrasing with nuclear accents on the verb and object in broad focus statements.

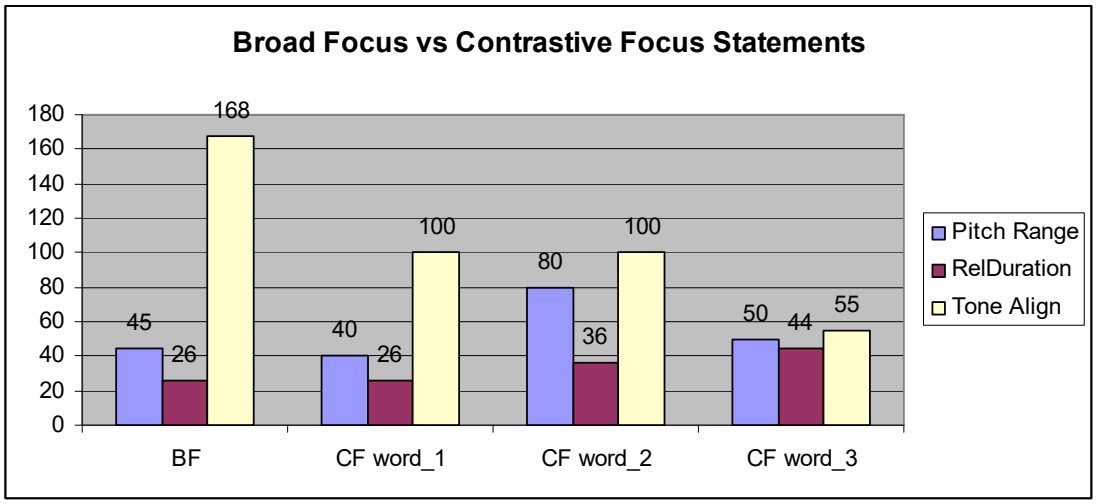


Figure 6.19: Mean pitch range, peak alignment and relative duration of the three words in Nevasta vede un căpitan *'The wife sees a captain' in statements with broad an contrastive focus. (Daco-Romanian). The word under BF is word 1.*

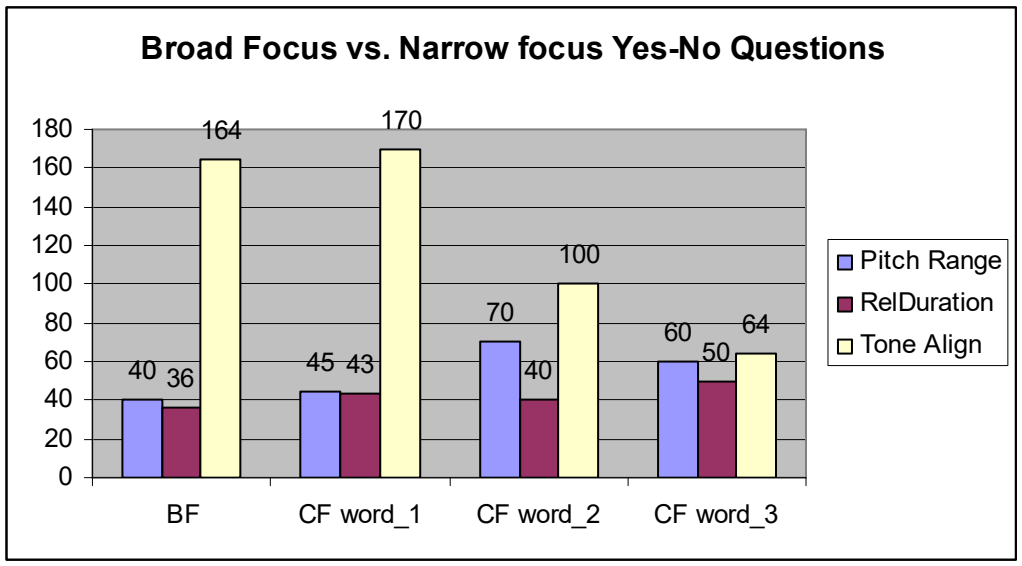


Figure 6.20: Mean pitch range, peak alignment and relative duration of the three words in Nevasta vede un căpitan? *'Does the wife see a captain' in questions with broad and narrow focus. (Daco-Romanian). The word under BF is word 1.*

The alignment of the pitch accent I and pitch accent II tonal peak appears at the end of the stressed vowel or on the post-tonic vowel. When the constituents present CF, the F0

peak aligns on the stressed vowel (with three exceptions) at the middle or closer to the onset of the vowel, generating a circumflex movement.

Pre-focal and post-focal accents in narrow focus contexts are characterised by smaller pitch height compared to broad focus contexts leading even to an F0 contour compression.

The results in this chapter are revealing: they present a large array of factors that are relevant in focus realisation. In our study, the speakers use a variety of strategies and cues to mark focus. Contrastive focus can be realised by increased frequency/pitch on the stressed vowel of the constituent up to the upper limit of the tonal space, which is reflected through the pitch range of the pitch accent. This means that the nucleus can also be produced on a low prominence.

At the same time, contrastive focus is also marked by different alignment patterns of the tonal peak of the stressed vowel in the focused constituent and an increase in duration of the accented vowel under focus. Pitch patterns can also lead to different sequences in pitch accent alignment, for instance L+H* instead of H+!H*. Some pitch accents following initial focus can become de-accented in statements. When focalisation is marked by high prominence and 'positive emphasis', the remaining constituents will fall below the tonal space of the focused word.

The pitch range of the pitch accent is one of the most relevant cues marking contrastive focus. This reaches the maximum level in many statements. Intensive focus on the final constituent applies a high pitch accent to the respective word, usually (H*+L, H*L), on the final contour of statements.

Unlike statements, questions always include a contrast between the low levels marked during sentence non-final words and the large rising pitch movement of the phrase-final contour. This gives an emphasis to the yes-no question contour. The word that bears the maximum interest, and provides the answer to the question (in broad focus statements, usually the verb), always carries the nucleus. It is very prominent when it bears narrow focus.

Göbbels (2002) argued that de-accentuation is present in Romanian in cases where verbs are associated with H* accents. In contrast, Swerts (2007) and Manolescu (2009) found no evidence that verbs become de-accented inside syntactic constituents.

(6.1) Nevast=a nu VED-E un căpitan?
wife=DEF.SG.F.N NEG see-3SG.PRES INDEF.SG.M captain
'Doesn't the wife see a captain?'

In negative questions such as the one above (6.1), the intonation pattern is generally rising, but the phrasing is different in that the subject *nevasta* 'the wife' is the theme and divides the IP into two ips. The negative word *nu* 'no' does not appear to be accented, but the verb *vede* 'sees' receives the main accent, as in polar questions. Broad focus sentences show that the verb in medial position is associated with a shorter pitch range, which is the result of a downstep tendency that leads to de-accentuation. This is also supported by Göebbel (2002), but not Manolescu (2009). Swerts (2007) argues that in noun phrases in subject and object positions, the words with the maximum pitch range are in initial position in subjects and second position in objects. Speakers only place a nuclear accent on one of the two words of the NPs in the sentence. The first word of the NP is focused in subject position while the second one is focused in object position in languages like Dutch. Our data suggests a different interpretation is possible when the first adjective is in focus and the second adjective is also contrastively focused. For example, in the context below the adjectives *frumoasă* 'beautiful' and *elegant* 'elegant' are contrasted with two other adjectives mentioned in the context provided:

(6.2) Nevast=a FRUMOAS-Ă ved-e
wife=DEF.SG.F.N beautiful-SG.F.N see-3SG.PRES

un căpitan ELEGANT
INDEF.SG.M captain elegant
'The beautiful wife sees an elegant captain.'

De-accentuation is reflected in the total or partial lack of pitch movement for other constituents as a consequence of the "dominance" of the focal constituent. It is an important contextual cue for CF.

The pitch accent in contrastive focus is not only the pitch accent with the highest target, and a larger pitch range, duration and intensity, but it also produces a prominent emphasis leading to pitch range pre-post focal compression. This is the intonational phrase pattern for positive emphasis which is different from broad focus where many pitch accents have significantly higher pitch ranges and the last accent with lowest target tone is the nuclear accent. In NF statements, NF words form the nucleus only if they bear emphasis, i.e., they have to dominate.

Some linguists have identified particular forms of pitch accents with contrastive focus for a series of Romance languages such as Spanish (Beckman et al. 2002; Face 2002; see also Prieto & Roseano 2010), Italian (D'Imperio 1997, 2002; Avesani & Vayra 2000) and European Portuguese (Frota 2002). These forms are the result of tonal

peak alignment inside the stressed vowel. Our data confirm Manolescu et al.'s (2009) conclusions with respect to early peak alignment in contrastive focus in Romanian. The falling part of the focus pattern is more relevant in focus marking as the fall occurring on the last part of the accented syllable makes the focus more prominent.

The Nuclear Stress Rule was thought to play an essential role in the identification of focus in the sentence and it was postulated that the constituent with the maximum tonal excursion or 'the rhythmically most prominent word' (Zubizarreta 2011) receives a focus which, under this rule, is predicted to be the last constituent in the sentence. Due to the fact that this rule was shown to be too rigid for Romance languages, various modified versions of the NSR were proposed, both for Romance (Zubizarreta 1998; 2010) and Germanic languages (Ladd 1996; Fery and Kügler 2008). Further studies are needed to offer a more exhaustive explanation of how exactly this rule is applied in Romanian, which will need to take into account de-accentuation and NS-Shift, as well as the prosodic difference between informational focus and contrastive focus which is related to emphatic accents. Further studies are also needed to offer a more exhaustive presentation of the notion of focus in order to unify Ladd's (2008) 'highlighting view' with the information structure view where topic-focus or focus-background structures are proposed for utterance partitioning.

This chapter addressed research questions 2 and 3, namely, what the prosodic realisation of contrastive focus is compared to broad focus in Daco-Romance and whether there is variation in the varieties under investigation with respect to focus realisation. The data presented shows that the Nuclear Stress Rule does not apply in broad focus yes-no questions and contrastive focus across Daco-Romance. The focused word is characterised by positive prominence in contrastive focus statements, and is marked by a wide range for the F0 peak and greater duration and intensity on the stressed syllable compared to broad focus. Peak alignment shows typical phrase edge peak retraction and constituents tend to be de-accented and have a compressed pitch range as their tonal spaces are separated from that of the word under focus. As a general rule, the word under focus has a higher tonal space compared to other constituents and within the intonational phrase it subordinates the following two constituents in the information structure. While focus in statements is marked by positive prominence, in questions this is marked by negative prominence and bears the minimum tone of the intonational stretch in relation to the tonal target levels and their tonal spaces.

Contrastive focus is also marked in Daco-Romanian by longer duration in questions, where this is produced by negative prominence.

Further statistical analysis research is needed to provide a full account of the degree of variation in focus realisation across Daco-Romance; however, the phonological analysis and data suggest that there is little variation in focus realisation across Daco-Romance varieties. H*+L are the most prominent accents when the intonation pattern rises and falls on the accented syllable, while H*L are accents that reach the target as the pitch falls steadily towards the end of the intonational phrase.

CHAPTER SEVEN
Summary and Conclusions

This thesis aimed to present an initial account of the main intonational features of the Daco-Romance varieties, Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian, within the Autosegmental-Metrical framework of intonation using the ToBI transcription system. By collecting semi-spontaneous speech data and recording speakers from the four Daco-Romance varieties (Daco-Romanian, Aromanian, Istro-Romanian, Megleno-Romanian) this preliminary intonational phonology of Daco-Romanian offers a significant contribution to intonation research in Daco-Romanian, building on previous analyses and intonation studies in a unified approach which encourages intonation research of a typological and comparative nature across Romance languages.

7.1 Summary of the thesis

The present thesis has concentrated on the presentation of the main intonational features in varieties of Daco-Romance and showed how focus is realised in this language. The results of the corpus analysis suggest that there is some influence on the prosody of Aromanian, Istro-Romanian and Megleno-Romanian from Croatian, Greek and Macedonian, while Daco-Romanian seems to share many similarities with Spanish, Catalan and Sardinian in statement intonation, and Hungarian and Greek in terms of question intonation. Hence, Daco-Romance intonation lies between Romance and Slavic languages. Based on this, three research questions emerged that attempt to bridge a gap in intonation research

Chapter 2 started with a discussion of technological advances in intonation research. The thesis adopts a phonetic and phonological approach to intonation, following Pierrehumbert and Beckman (1988), where contour tones are analysed at a phonological level but the phonetic realisation of tonal phonological categories is also considered. The functions of intonation were briefly discussed, including grammatical and attitudinal functions. A theoretical background of the main traditions in intonation research revealed that the traditional British system is mainly useful for pedagogical purposes, using categories as pre-head, head, nucleus, tail or tone groups. In contrast, the IPO theory of intonation, where intonation contours are assumed as rises and falls, concentrates more on the meaning of intonation. Lastly, the more recent PENTA model

looks at the communicative functions of speech as parallel to one another, expressed through encoding schemes which differ across languages. The Incremental Storage Concatenation Model was the most recent intonation model surveyed as an alternative to the Autosegmental-Metrical model, which assumes the existence of prosodic structure organizing hierarchically minimal units of prosody and prosodic words, implying that prosodic words do not actually exist, and focusing on the relation between the linguistic function of prosody and rhythmic constraints. The Autosegmental-Metrical model and the ToBI were argued to be the most appropriate for the study of Romanian intonation for various reasons, but mainly because they provide a phonological approach to intonation and allow for distinctions between events and transitions using simple H and L tones and a prosodic hierarchy.

Chapter 3 provided a literature review of the main topics in Romanian intonation. A review of the main features of stress in Romanian revealed that stress is not entirely lexical and to a large extent predictable. As a stress accent language stress usually occurs in Romanian on the rightmost syllable of the word. Romanian has syllable-timed rhythm in which each syllable is stressed at roughly equal intervals. Pre-intonational phonology studies laid the foundation for the initial Nuclear Stress Rules which applies in most Romance languages and offered basic observations about the main intonation contours in Romanian. More recent intonational studies on focus assignment and nucleus placement show that this is not always a straightforward phonetic task in Romanian. Studies at the syntax-phonology interface indicated that a rule developed by the argument structural approach and a modularised Nuclear Stress Rule are active in Romanian. The AMPER project was also presented towards the end of the chapter after which the main aims, research questions and my hypotheses concluded the chapter.

Chapter 4 presented the methodology used in data collection and analysis. The speech corpus was obtained using the Discourse Completion Test and AMPER methodologies, and consisted of a spontaneous and semi-spontaneous large data set. Extensive fieldwork was undertaken to record native speakers of Daco-Romanian, Aromanian, Megleno-Romanian and Istro-Romanian. Data were analysed in PRAAT using the ToBI annotation system within the Autosegmental-Metrical theoretical framework of intonation. Pitch range, tonal alignment and duration were also parameters analysed to clarify how focus is realised across Daco-Romance varieties.

The methodology was designed to be transparent so that it would encourage further comparative research between Romanian and other Romance languages.

Chapter 5 provided an account of the intonational phonology of Daco-Romance varieties. With respect to the prosodic hierarchy, evidence from the Romanian data shows that, like most Romance languages, Romanian includes an Intonational Phrase and an intermediate phrase above the word level. The chapter also includes a short discussion on information structure and intonation. Intonation contours were analysed in various sentence types: declaratives, yes-no questions, wh-questions, echo questions, requests and vocatives. Romanian was shown to be characterized by a dense pitch accent distribution, and data from the semi-spontaneous corpus showed that most, but not all, lexically stressed syllables receive a pitch accent. Broad focus and narrow focus intonation was described in statements where the Nuclear Stress Rule applies in full force. Question intonation across Daco-Romanian was shown to be different from other Romance languages, offering a wide range of question intonation patterns. The chapter revealed that in polar questions the most common nuclear accent is on the main verb, described as an L* pitch accent followed by a rising-falling boundary tone sequence (HL%) aligned with the final syllables, thus confirming previous literature about the particularity of Daco-Romanian intonation. On the other hand, echo yes-no questions seem to have the nuclear accent in clause-final position rather than on the finite verb since the speaker's ignorance about the truth value of the proposition expressed is not absolute. They are also characterized by declarative syntactic order, like in Germanic languages such as English. Thus, Romanian follows the general Eastern European Question Tune, like Hungarian and Greek, making use of L* L% and an L* H% configuration with the main accent on the verb. Moreover, wh-questions which have similar intonation patterns to statements, show that the main nuclear accent is placed on the wh-word, usually in initial position, and that long wh-questions can receive an additional post-nuclear accent.

Chapter 6 demonstrated how focus is realised across Daco-Romance. The chapter explored how focus is prosodically marked in broad focus compared to contrastive focus in statements and questions, and acoustically analysed whether pitch range, peak alignment and duration have any role to play in focus marking. Broad focus accents are characterized by two common intonational patterns (L)+H* !H% (H)+L* L% in positive statements across varieties. In negative broad focus statements, Daco-Romanian uses the negative adverbial *nu* 'no' which is accented by a high pitch accent

that produces an emphasis and bears the nuclear stress. Initial, medial and final foci are generally marked by positive prominence in statements and negative prominence in questions. The acoustic study demonstrated that Romanian uses a combination of acoustic cues like pitch range, tonal boundary, duration and de-accenting to convey focus. Daco-Romance varieties do not use specific pitch accents to convey focus. The results revealed that post-tonic stressed syllables are shorter in duration if preceded by narrow focused words and stressed syllables in words that precede a narrow focus will be shortened in duration compared to their broad-focus counterparts.

Daco-Romance varieties share many similarities with regards to their syntax, morphology, lexicon and phonology. The varieties also share many intonation contours and use similar focus markers. Istro-Romanian, which is the most remote and the furthest from Daco-Romanian presents more variation. However, many intonational patterns are different phonetic realisations of phonological contours.

7.2 Critical appraisal of the AM model

The Autosegmental-Metrical framework assumes tonal targets or segments which are organised lineary and correspond to metrically stressed syllables in the segmental string (Pierrehumbert 1980). One of the advantages of using this model is that tonal autosegments are high (H) tones or low (L) tones organised into pitch accents and boundary tones. Daco-Romanian in particular has an Intonational Phrase, an intermediate phrase and five bitonal pitch accents. The use of only two tonal targets, high and low make the system easier to use and more straightforward.

One of the more common systems of transcription is the ToBI which is based on the AM model. The ToBI allows for each linguistic variety described in this thesis to have its own phonologically distinct categories of pitch accents and boundary tones. The ToBI was so far used in several Romance langauges such as Spanish (Beckman et al. 2002) or Catalan (Prieto et al. 2009) and has been become the norm in more recent Romance studies (Frota and Prieto 2015). The ToBI has been modified and adapted to better account for more granular detail and specific properties of certain Romance languages. The fact that the ToBI has been adapted for many languages shows that while the phonology of distinct Romance varieties may differ, some Romance varieties that exhibit similar contour shapes should be labelled using the same phonetic label.

There is still some disagreement in the literature (Arvaniti et al. 2000) about AM ideas, mainly in relation to the best way of interpreting how abstract tonal targets

correspond to F0 targets. Chapter 6 has presented some evidence of truncation and compression that are due to tonal crowding (meaning that a number of different tones can be simultaneously associated with the same syllable) in Daco-Romance varieties. This suggests that the same phonological tonal event may be realised with a different phonetic form. Prieto and Hualde (2012) recognised this shortcoming and suggested that there should be a distinction between two levels of tonal description, namely a phonological and a phonetic one.

The intonational phonology of Daco-Romance varieties differs from the initial intonational grammar proposed by Pierrehumbert (1980) in that unlike English, Daco-Romance varieties pre-nuclear accents and nuclear accents are two different sets of pitch accents.

7.3 Contribution of the thesis

One of the main contributions of this thesis is that it provides an initial intonational phonology of Daco-Romance varieties. The thesis offers a preliminary tonal inventory of pitch accents, boundary tones and nuclear configurations for a variety of sentence types, and highlights particularities found across Daco-Romanian. Studies at the syntax-phonology interface (Zubizarreta 1998) proposed a modularized Nuclear Stress Rule theory for Romance which was claimed to be active in Romanian. However, this was partly refuted by the rule developed in the argument structural approach. This thesis provides evidence and results that are consistent with the claims made by Göbbel (2003) that the Nuclear Stress Rule (Cinque 1993; Zubizarreta 1998) is active in Romanian only to a certain extent, and does not require that we completely reject the rules of the argument structural approach (Schmerling 1976; Gussenhoven 1992). The Nuclear Stress Rule only works in broad focus statements and although scrambling is triggered by the Nuclear Stress Rule in other Romance languages in narrow focus too, in Romanian, objects resist movement in narrow focus contexts.

The thesis also contributes to the literature on intonation in Romance languages from a theoretical point of view. It was argued in Chapter 5 that in Aromanian, Megleno-Romanian and Istro-Romanian nuclear accents in echo and yes-no questions are assigned to the penultimate constituent rather than the last one as in Daco-Romanian. This study also offers a unified analysis of the nuclear accent and provides new insights with respect to the function of the low prominence vs high prominence in nucleus placement.

It was also revealed that question intonation varies significantly in Romanian and that, unlike other Romance languages, Daco-Romanian places the main nucleus on the verb in yes-no questions and on the wh-word in wh-questions. From an information structure point of view, it was established that contrastive focus in Romanian is related to new information or material in the sentence with old or repeated information in the discourse context. The data presented here further demonstrates that contrastive focus can be realised by increased F0 frequency on the stressed vowel of the constituent up to the upper limit of the tonal space, which is reflected through the pitch range of the pitch accent. At the same time, contrastive focus is marked by various alignment patterns of the tonal peak of the stressed vowel in the focused constituent and increase in vowel duration of the accented vowels under focus.

This thesis adds to the knowledge of intonation across Romance languages and will serve as a preliminary intonational phonology of Romanian for future research. The results presented in this thesis may also have applications in automatic speech recognition and can be useful for TTE systems. Due to its methodology, this study also encourages research of comparative nature across Romance languages.

Appendix 1

ROMANIAN INTONATION QUESTIONNAIRE 1

1. Enunț Declarativ

1.1. Neutrale

1a1. Te-au întrebat dacă vrei pere sau mandarine. Răspunsul tău este mandarine.
Mandarine.

1a3. Spune ce face femeia.
Mănâncă mandarine.

1a3. Spune ce face Maria.
Maria mănâncă mandarine.
Enunțuri enumerative

1b1. Spune zilele săptămânii:
L**uni, Marți, Miercuri, Joi, Vineri, Sâmbătă, Duminică.**

1c1 Imaginează-ți că ai locuit de ani de zile in Albi. Aflat în vacanță într-o altă țară te intâlnești cu cineva care îți spune că vine din Albi. Ești surprins și fericit. Spune-i că și tu ai locuit acolo mult timp.
Și eu am locuit în Albi multă vreme.

1.2 Neneutrale

1d1 Intri într-un magazin și vânzătorul nu aude bine. Ai cerut un kilogram de portocale, dar el îți dă mandarine în schinb. Spune-i că vrei portocale.
Nu! Vreau PORTOCALE.

Enunțuri exclamative
1d2 Intri într-o brutărie și miroase foarte bine. Spune-i brutarului.
Ce miros de pâine bună !

Declarație categorică
1d3. Tu si cu o prietena vorbiți de niste prieteni care se vor muta in străinătate. Tu stii sigur ca vor pleca in Lima, dar prietena ta crede, destul de sigura pe ea de asemenea, ca vor pleca in Bogota. Spune-i ca sigur nu ca vor pleca in Lima.
Sigur nu, vor pleca in Lima!

Declarație dubitativă
1d4 Te-au însărcinat să cumperi un cadou pentru cineva pe care nu îl cunosti prea bine și iți faci probleme ca nu îl vei cumpăra bine. Spune-i persoanei care ți-a dat însărcinarea ca s-ar putea sa nu ii placa cadoul pe care l-ai cumpărat.
S-ar putea să nu-i placă cadoul pe care l-am cumpărat.

Declarația unei evidențe
1d5. Esti cu o prietena si îi povestesti că Maria, o prietenă comună, a rămas însărcinata. Ea te întreabă cu cine a rămas însărcinata si tu te miri ca nu stie, deoarece toata lumea stie că a rămas însărcinata cu Guillermo, prietenul ei de toata viata. Ce îi spui?
Desigur, cu Guillermo!

2. Interogații totale - YES-NO QUESTIONS

2.1. Neutrale - Information-seeking
Întrebare într-o singură unitate tonală - Question with one tonal unit

2a1. Intri într-un magazin si îl întrebi pe vânzător dacă are marmelada.
Aveți marmeladă?

Întrebări disjunctive
2a2. O suni pe Magdalena acasă, dar răspunde soțul ei și îți spune că nu e acasă. Suni din nou, și tot soțul îți răspunde. Întreabă când va veni.
Când vine Magdalena?

Întrebări disjunctive
2b1. Pentru desert aveți pepene si înghețată. Întreabă-i pe invitați dacă vor pepene sau înghețată.
Doriți pepene galben sau înghețată?

Enumerație de întrebări
2b3. Pentru desert ai mai multe opțiuni. Întreabă-i pe invitați dacă doresc mandarine, pere,
pepene verde sau înghețată.
Doriți mandarine, pere, pepene verde sau înghețată?

2c1. Iei cina cu niște prieteni. Tu îi servești, iar când vrei să îi dai o bucată de carne Magdalenei, ea îți spune că nu vrea. Surprins, întreab-o dacă nu mănâncă carne.
Nu mănânci carne?

2.2

2d1 Vorbești despre Maria cu cineva și auzi pe cineva apropiindu-se. Întreabă-l pe interlocutor dacă persoana care vine este Maria.
Maria vine?
Întrebări exclamative

2d2 Câțiva oameni iau prânzul la tine acasă. După desert trebuie să pleci un timp, dar ei rămân să bea cafea. Când te întorci după trei ore, ei sunt tot acolo. Ce le-ai spune ca să le arați că ești surprins că nu au plecat?
Sunteți încă aici !?

2d4 Tocmai ai luat prânzul cu un prieten, și amândoi sunteți sătui. Deodată, prietenul tău se oprește lângă o brutărie. Întreabă-l surprins dacă îi este încă foame.
Ți-e foame ?!

2d6 Jaime a zis ca va veni sa mănânce. Îl întrebi pentru a confirma.
Vei veni să mănânci, nu?

2d10 este trei jumătate dupămasa și știi că este târziu pentru prânz. Ioana tocmai a sosit acasă degrabă și intră direct în bucătărie. Este limpede că nu a luat prânzul. Întreab-o dacă îi este foame.
Ți-e foame, nu?

2e1. Nepoții tăi fac mult scandal si nu te lasă să asculți televizorul. Îi rogi să tacă.
Tăceti?!

2e4 . Întreabă-i pe nepoții tăi dacă doresc bomboane.
Vreți bomboane?

2e5. Nepoții tăi sunt la tine acasă. Le oferi limonadă.
Vreți limonadă?

2e9 Vrei sa fie liniște, dar este prea mult zgomot și activitate în jurul tău. Întreabă-te dacă într-o zi vei putea avea parte de liniște în această casă.
Oare voi avea vreodată liniște și pace în casa aceasta?

3. Interogative parțiale

3.1 Întrebați ce oră este.

3a2 **Cât este ora?**
19. Trebuie să călătoriți la Paris si doriți să cumpărați un cadou pentru cineva pe care nu îl cunoasteți foarte bine si cu care vreți să fiți în relații bune. Vrei să te sfătuiesti cu un prieten si-l întrebi ce i-ar aduce.

3a3 **Ce i-ai aduce?**
3a6 Cineva a sunat la ușă și ți-a spus că vrea să facă un control la sistemul de gaz, dar refuzi să îl lași înăuntru pentru că nu ai încredere în el. Bărbatul îți spune că va veni și mâine. Întreabă un prieten ce ar face dacă ar fi în locul tău când se întoarce bărbatul.
Ce ai face, dacă ai fi în locul meu, când se întoarce?

3b1 Fiica ta de 16 ani vrea să iasă la o petrecere deseară. Te gândești că e cam tânără pentru așa ceva și vrei să știi exact ce vrea să facă. Întreab-o unde merge, când va ajunge acolo și când se întoarce.
Unde mergi, cum ajungi acolo și când te vei întoarce?

3c1 Găsești un pachet pe masă. Întreabă-ți fiul cine a adus pachetul.
Cine a adus acest pachet?

3.2
3d1 Un prieten de-al tău îți spune că Ioana, o cunoștință comună care are o mare datorie la bancă, tocmai ți-a cerut bani împrumut. Ești surprins pentru că știi că deja are o datorie mare. Întreabă-ți prietenul câți bani este datoare acea persoană cu totul.
Câți bani este datoare cu totul?!

3d2 La două dimineața dormi în patul tău și auzi pe cineva bătând la ușă. Te întrebi oare cine ar putea fi la acea oră.
Cine naiba poate fi la ora asta?

3e1 Vrei ca fratele tău să facă ceva pentru tine. Nu știi sigur dacă o va face pentru că l-ai rugat de mai multe ori și încă n-a făcut-o. Întreabă-l când are de gând s-o facă.
Când o vei face totuși?!

3e2 Ai chef ca niste prieteni să vină să mănânce acasă la tine. Pe jumătate rugător (pentru că
deja ți-au spus ca un pot veni) îi întrebi de ce nu vin.
De ce nu veniți?

3e3 Cineva te trage de cămașă insistent și când te întorci să vezi cine a făcut-o vezi că este o cunoștință agasantă. Enervat, îl întrebi ce vrea.
Ce vrei ?!
Întrebări retorice
3 e4. Ți-ai instruit colegii să facă ceva câtă vreme ești plecat, iar când te întorci vezi că nu au știut cum să facă și că te așteptau pe tine. Te întrebi ce s-ar face fără tine.
Ce v-ați face fără mine?

4.1

4a2. Îți spune ora dar nu reusesti să o înțelegi. Crezi că au spus că este ora nouă. Îl întrebi să-ți confirme.
Ați spus că este ora nouă?
Interogații parțiale cu ecou

4b1 Te-au întrebat unde mergi dar tu nu esti sigur dacă ai înțeles bine. Întrebați dacă acesta
este lucrul pe care l-au întrebat.
M-ați întrebat unde mă duc?

4c1 Interogații disjunctive cu ecou
Te-au întrebat pe unde ai venit si tu nu stii dacă te-au întrebat asta sau dacă te-au întrebat pe unde ai intrat. Întreabă care din cele doua lucruri îi interesează.
M-ați întrebat pe unde am venit sau pe unde am intrat.

4c2 Fratele tău îți spune că Magdalena, o prietenă de familie, vrea să vină să joace cărți. Vrei să fii sigur că se referă la Magdalena, cea la care te gândești tu, care are o mașină roșie. Întreabă-ți fratele dacă se referă la Magdalena cea cu mașina roșie.
Magdalena, cea cu mașina roșie?

4d1.
Interogații totale antiexpectative
Ți s-a spus că un coleg de-al tău, Mario, candidează ca primar. Nu crezi ce-ai auzit, si întrebi din nou.
Spui că Mario candidează ca primar?

4d2
Vecina dumneavoastră vă spune că a mers la un restaurant si a comandat iepure cu ciuperci. Ea spune că i s-a dat iepure de câmp in loc de iepure de casă. Nu îți vine sa crezi.
Întrebați-o ce i-au dat (foarte surprins).
Ce spui că ne-au dat?

5a1 Lucrezi la recepția unui hotel și un cuplu își cere o cameră. Pentru a rezerva camera, trebuie să completeze o fișă. Cere-le să facă acest lucru.
Vă rog să completați fișa.

5a3 Enunțuri imperative
Sunteți în parc cu nepoata dumneavoastră, Maria, si aceasta fuge. Spune-i să vină, să nu se îndepărteze atât de la tine.
Vino aici, te rog!

5b2 Rugăminte (cerere)
Vrei să mergi la film cu un prieten. Îți spune că este ocupat, însă tu stii că nu este urgentă treaba pe care o are. Cum l-ai convinge?
Hai, vino!

6a1 Vocative
Intri in casa unei prietene de-ale tale, Marina, dar când intri nu o vezi. Cheam-o.
Marina!

6a2. Trec zece secunde si nu iese nimeni. Strig-o din nou.
Marina!

ENGLISH TRANSLATION ROMANIAN QUESTIONNAIRE 1

Instructions:
We are going to present you some situations. You will have to imagine how you would react if you were in such a situation. Please try to answer with as short as possible sentences.

1. STATEMENTS

1.1 Neutral

One prosodic group
- 1a1. You have been asked whether you prefer oranges or tangerines, and you prefer tangerines. Say what you prefer.
Tangerines.
- 1a3. Say what Maria is doing.
Maria is eating a tangerines.

Enumeration
- 1b1. List the days of the week.
Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday.

Right peripheral element
- 1c1. Imagine that you have been living for years in Albi. On holidays in another country you meet someone who tells you he comes from Albi. You are surprised and happy. Tell him that you lived there for a long time, too.
I have been living in Albi for a long time, too.

1.2. Biased
Contrastive focus
- 1d1. You are in a store where the shopkeeper is a little bit deaf. You have asked her for a kilo of oranges, but she starts to give you tangerines instead. Tell her that what you want is oranges.
No! I want lemons.

Emphatic statement
- 1d2. You enter a bakery and it smells really good. Tell the baker.
It smells really good!

Categorical statement
- 1d3. You are talking with a friend about two mutual friends of yours who want to buy a new house. You are disagreeing about the location of the house they plan to buy: you are sure that they are going to live in Nimes, but your friend is convinced that they are moving to Marselha (Marseille) instead. Tell your friend with conviction that they are not, that they are going to live in Nimes.
No! They are moving to Lima!

Hesitation statement
- 1d4. A friend of yours wants you to buy a present for someone whom you do not know very well, and you fare afraid you might not be able to choose an appropriate gift. Tell your friend that that person may not like what you are going to buy him/her.
Maybe s/he won't like it...

Obvious statement
- 1d5. You are talking with a friend of yours and you have just explained that Maria, a mutual friend, is pregnant. Your friend asks you who the father is. You are astonished that she would ask you, since everybody knows that the father is Guillermo, Maria's husband.
How do you reply to your friend's question?
Guillermo, of course!

Exclamation
- 1d6. A friend is serving you a home-made *caçolet* (a typical Occitan dish) and this is the best *caçolet* you have ever eaten. You are amazed. What would you say in such a situation?
What a good caçolet!

2. YES-NO QUESTIONS

2.1. Neutral

One prosodic group
- 2a1. You enter a store that you have never been in before and ask whether they have any tangerines.
Do you have tangerines?

- 2a2. You were supposed to drive your (grand)son to a football practice, but you are in hurry. Ask your friend if s/he would mind driving him there.
Would you mind driving him there?

Two prosodic groups
- 2a4. You call a friend named Magdalena at her home but her husband answers and tells you that she is not there. Later, you call again, but it is again her husband who answers. Ask him if she is back.
Is Magdalena back?

Disjunctive yes-no question
- 2b1. You are in a clothing shop because you want to buy a shirt, but you can't decide between a red one and a green one that you see. Ask the person who has come with you which one suits you better, the red one or the green one.
Which one suits me better, the red one or the green one?

Enumeration
- 2b3. A friend of yours needs you to help him with some work. You can go and help him on Monday, Tuesday, Thursday or Friday. Ask him when he wants you to come: Monday, Tuesday, Thursday or Friday.
When do you want me to come: Monday, Tuesday, Thursday or Friday?

Peripheral element
- 2c1. You are having dinner with some friends. You are serving, and when you are about to give a piece of meat to one of your friends whose name is Magdalena, she tells you that she does not want it. In surprise, ask her if she does not eat meat.
Do not you eat meat?

2.2. Biased

Yes-no question with narrow focus and emphasis

- 2d1. You were talking about Maria with someone and you hear somebody approaching. Ask your interlocutor if the person who is coming is Maria.
Is it Maria who is coming?

Exclamation yes-no questions

- 2d2. Some people are having lunch at your home. After the dessert, you have to go away for a while, but they stay there having coffee. When you come back three hours later, they are still there. What would you say to tell them that you are astonished to see that they are still there?
You're still here?!

- 2d4. You have just had lunch with a friend of yours, and both of you are quite full. Suddenly your friend stops in front of a bakery. Incredulously (since you've just had a big lunch) ask him if he is still hungry.
You're hungry?!

Confirmatory yes-no questions

- 2d6. Joan has said that he will be back for lunch. Ask him for confirmation.
You'll be back for lunch, won't you?

- 2d10. It is half past three in the afternoon and you know that it is very late for lunch. Joana has just arrived home in a rush and goes right into the kitchen. She has obviously not yet eaten lunch. Ask her if she is hungry.
You're hungry, aren't you?

Imperative yes-no question

- 2e1. Your nephews are shouting a lot while they play and you cannot watch TV in peace. Your patience snaps and you angrily ask them if they would mind shutting up.
Will you shut up?!

Offering yes-no questions

- **2e4.** You are talking with a friend. Ask him/her if s/he wants to go have a drink with you.
Do you want to have a drink?

- 2e5. Your nephews are at your home. Offer them some lemonade.
Do you want some lemonade?

Rhetorical question

- 2e9. You would love some peace and quiet, but there is a lot of noise and activity going on around you. Ask yourself whether one day there might be a bit of peace and quiet in this house.
Will there be one day a bit of peace and quiet in this house?

3. WH-QUESTIONS

3.1. Neutral

One prosodic group
- 3a2. You are about to travel to Italy and you want to bring back a souvenir for someone who you do not know very well but with whom you want to be on good terms. You seek advice from a friend: ask him/her what s/he would buy for that person.
What would you buy?

- 3a3. Imagine that the door of the cupboard of your bedroom was broken a long time ago and has not shut well ever since. When you enter the room, you see that the cupboard is now closed properly. Ask your wife/husband who has repaired it.
Who has repaired it?

Several prosodic groups
- 3a6. A man has rung your bell and told you that he wanted to carry out an inspection of your gas equipment, but you refuse to let him in because you do not trust him. The man tells you that he will come back tomorrow. Ask a friend of yours what s/he would do, if s/he were in your place, when this man comes back.
What would you do, in my place, when he comes back?

Enumeration
- 3b1. Your 16 year-old daughter tells out she wants to go out tonight for a party. You think she is a bit young for that kind of thing and want to know exactly what she intends. Ask her where she is going, how she is going to get there and when she is going to come back.
Where are you going, how are you going to get there and when are you going to come back?

Peripheral element
- 3c1. You find a package on the table. Ask your son who brought this package.
Who brought this package?

3.2. Biased

Exclamation
- 3d1. A friend of yours explains that Joan, a mutual acquaintance who owes the bank a lot of money, has just asked for yet one more loan. You are surprised because you know that he already owes a lot of money. Ask your friend how much money he owes now altogether.
How much money does he owe now altogether?!

Dubitative question
- 3d2. At two o'clock in the morning, you are asleep in your bed, and you hear someone knocking at the door. Ask yourself who the hell it could be at that early hour.
Who the hell could it be at that early hour?

Imperative question
- 3e1. You want your brother to do something for you. You are not very sure that he will do it, because you have asked him for it repeatedly and he has still not done it. Ask him when he finally intends to do it.
When do you finally intend to do it?!

Exhort
- 3e2. You would love for some friends of yours to come over for dinner. Though they have already told you that they can't come, pleadingly ask them why they are not coming.
Why aren't you coming?

Imperative question
- 3e3. Someone tugs on your shirt repeatedly and when you turn around to see who did it, you see that it was an acquaintance who is a chatterbox and a bore. With annoyance, ask him what he wants.
What do you want?!

Rhetorical question
- 3e4. You have instructed your workmates to do something while you were out, and when you come back, you see that they still haven't got around it because they were waiting for you. Ask yourself what they would do without you.
What would they do without me?

4.1. Neutral

Echo yes-no question
- 4a2. You have asked someone for the time, but do not quite understand his answer. You think he said that it was one o'clock, but you are not sure. Ask him again if it is one o'clock.
It's one o'clock?

Echo wh-question
- 4b1. You have been describing to a friend of yours something that happened to you while you were driving your car. Your friend asks you where you were going at that moment, but you are not sure you have understood him very well. Ask him if he asked you where you were going.
Where I was going?

Echo wh-question with disjunction
- 4c1. You have been describing to a friend of yours something that happened to you while you were driving your car. Your friend asks you a question. You think he asked you what route you were taking but you are not sure if he
asked that, or instead asked what happened. Ask him to clarify
whether he has asked you what route you were taking or what happened.
What route I was taking or what happened?

Echo yes-no question with peripheral element
- 4c2. Your brother tells you that a friend of the family's, Maria, wants to come over and play cards. You want to make sure that he is referring the person called Magdalena you are thinking of, that one who has got a red car. Ask your brother if he means that Magdalena, the one with the red car.

Maria, the one with the red car?

4.2. Biased

Echo yes-no question with narrow focus and emphasis
- 4d1. Someone tells you that a friend of yours, called Mario, wants to run in the municipal elections. You cannot believe Mario would run in an election. Incredulously, ask for confirmation.
Mario is running in the municipal elections?

Exclamation echo wh-question
- 4d2. Your neighbor claims when she went to a restaurant and ordered rabbit, the restaurant served her cat instead of rabbit. This seems incredible to you, so you ask her to repeat what she thinks they served her.
What did they serve you?

5. REQUESTS AND ORDERS

Orders
- 5a1. Imagine that you work at the reception desk in a hotel and a couple comes in and asks for a room. In order to book the room, they have to fill in a form. Ask them to do this.
Please fill in the form.

- 5a3. Your niece is running ahead of you and is about to reach the big road next to your house, where there is heavy traffic. Call to her urgently and tell her to come to you.
Come here, please!

Request
- 5b2. You want to go to the cinema with a friend of yours. S/He has told you that s/he has got a lot of work, but you know that there is no problem if s/he leaves it for later. Cajole her/him, urging her/him again to accompany you.
Come on!

6. VOCATIVES

- 6a1. You have knocked at the door of Magdalena's house but nobody has answered. Since the door is open, you go inside, but she is not immediately visible in the entrance hall. You think that she might be in the next room. Call out her name.
Marina!

- 6a2. It's ten seconds later, and still nobody has appeared. Now you decide that she might be upstairs. Call out her name again, with insistence.
Marina!!

Appendix 2

CHESTIONAR INTONATIE ROMANA

Focus type	**Statements**
BF	17. Ne'vasta 'vede un căpi'tan. [The wife sees a captain]
NF	18. NE'VASTA 'vede un căpi'tan. [THE WIFE sees a captain]
	19. Ne'vasta 'VEDE un căpi'tan. [The wife SEES a captain]
	20. Ne'vasta 'vede un CĂPI'TAN. [The wife sees a CAPTAIN]
	Questions
BF	21. Ne'vasta 'vede un căpi'tan? [Does the wife see a captain]?
NF	22. NE'VASTA 'vede un căpi'tan? [THE WIFE sees a captain]?
	23. Ne'vasta 'VEDE un căpi'tan? [The wife SEES a captain]?
	24. Ne'vasta 'vede un CĂPI'TAN ? [The wife sees a CAPTAIN]?

References

Alboiu, G (2002). *The Features of Movement in Romanian.* Bucharest: Editura Universităţii Bucureşti.

Alboiu, G (2004). Optionality at the Interface: Triggering Focus in Romanian, in van Riemsdijk, H., and Breitbath, A.(eds.), *Triggers*, Berlin: Mouton de Gruyter, 49-75.

Alexandrescu, E (1978). Structuri Incidente in *Analele Universitatii A. I. Cuza din Iasi,* s. III, 49-55.

Andreose, A., and Renzi L. (2013). Geography and distribution of the Romance languages, in Maiden, M.; Smith, J. C.; Ledgeway, A. (eds.) *The Cambridge History of the Romance Languages.* Cambridge: Cambridge University Press, 283-334.

Apopei, V; Jitcă, D, and Turculeţ, A. (2006). Intonational Structures in Romanian Yes-No Questions, *Computer Science Journal of Moldova* 14 issue 1(40), 113-137.

Apoussidou, D., and Nordhoff, S. (2010). Feet in Sri Lankan Malay: No stress, please! Manuscript, University of Utrecht and Max Planck Institute for Evolutionary Anthropology.

Armstrong, L. E., and Ward, I. E. (1926). *Hanbook of English Intonation*. Cambridge: Heffer.

Arnhold, A. (2014). Prosodic structure and focus realization in West Greenlandic. In Jun, S-A (ed.) (2005). *Prosodic Typology II: The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press, 216-251.

Arnhold, A. (2016). Complex prosodic focus marking in Finish: Expanding the data landscape. *Journal of Phonetics* 56, 85-109.

Arvaniti, A. (2010). Can Stress-timing and Syllable-timing be Perceived? The Journal of the Acoustical Society of America 128 (4).

Arvaniti, A.; Ladd, D. R., and Mennen, I. (2006). Phonetic Effects of Focus and "Tonal Crowding" in Intonation: Evidence from Greek Polar Questions, *Speech Communication* 48, 667–696.

Arvaniti, A. (2011). The Representation of Intonation. In: van Oostendorp, M. and Ewen, C.J. and Hume, E.J. and Rice, K. (eds). The Blackwell Companion to Phonology. Wiley-Blackwell, 757-780.

Arvinte, V (1993). Contribuţia lui Gustav Weigand la dezvoltarea dialectologiei româneşti. In *Anuar de lingvistică şi istorie literară* 33, 29-42.

Asu, E., L., (2003). *The Phonetics and Phonology of Estonian Intonation*. PhD dissertation, University of Cambridge.

Atanasov, P. (2002). *Meglenoromâna astăzi*. Bucharest: Academia Română.

Augerot, J., E. (1974). *Romanian Phonology: A Generative Phonological Sketch of the Core Vocabulary of Daco-Romanian*. Idaho Research Foundation, University of Idaho.

Avesani, C. (1995). TiBIt: un sistema di trascrizione per lintonazione italiana In *AAVV, 90, Atti delle V Giornate di studio del Gruppo di fonetica sperimentale (Povo, 1994)*, 85-98.

Avram, M. (1958). Note asupra Accentului ca Mijloc de Diferenţiere Semantică în Limba Română, in *Omagiu lui Iorgu Iordan.* Bucharest: Editura Academiei Române, 53-58.

Avram, A (1966). *Durata vocalelor si perceperea accentului în limba română.*In SCL XVIII, 3, 49-55.

Avram, A. (1968). Transferul accentual în limba română.In SCL XIX, 5, pp. 457-462.

Avram, A. (1970). Sur le role de la frequence dans la perception de laccent en roumain in *Proceedings of the Sixth International Congress of Phonetic Sciences*, Prague 1967, 137-139.

Avram, A. (1971). Observaţii asupra Duratei Sunetelor în Limba Română (în legătură cu înălţimea şi intensitatea), *Fonetică şi Dialectologie VII*, 51-58.

Avram, A. (1972). Intonation Curves in the English of Romanians, in Chițoran, D. (ed), *Romanian-English Contrastive Analysis Project.* Bucharest: Editura Universităţii București, 7-42.

Avram, A. (1973). Particularități ale intonatiei interogative în graiul din Muscel, în *FD* VIII, 43-64.

Avram, A. (1991). Cu privire la statutul fonologic al semivocalelor, semiconsoanelor și pseudovocalelor în limba română, in *SCL*, XLII, 5-6, 213-229.

Arvaniti, A.; Ladd, D. R., and Mennen, I. (2006). Phonetic Effects of Focus and "Tonal Crowding" in Intonation: Evidence from Greek Polar Questions, *Speech Communication* 48, 667–696.

Atlasul lingvistic român. 1938-42. Published by the Romanian Language Museum in Cluj, under the direction of Sextil Puscariu. Part I, Vol. I by Sever Pop (Cluj, 1938); Part I, Vol. II by Sever Pop (Sibiu-Leipzig, 1942); Part II, Vol. I by Emil Petrovici (Sibiu-Leipzig, 1940).

Atlasul lingvistic român. I-VI. 1956-69. Part II. Serie noua. Edited by the Institute of Linguistics and Literary History of the Cluj Branch of the Romanian Academy under the direction of Emil Petrovici. București.

Atlasul lingvistic român pe regiuni. Maramureș. 1969. By Petru Neiescu, Grigore Rusu, and Ionel Stan. Vol. I, București.

Billmyer, K., and Varghese, M. (2000). Investigating Instrument-Based Pragmatic Variability: Effects of Enhancing Discourse Completion Tests, *Applied Linguistics* 21(4), 517–552.

Blum-Kulka, S.; House, J., and Kasper, G. (1989). Investigating Cross-cultural Pragmatics: An Introductory Overview, in Blum-Kulka, S.; House, J., and Kasper, G. (eds.), *Cross-Cultural Pragmatics: Requests and Apologies*. Norwood, NJ: Ablex, 13-14.

Beckman, M., E.; Hirschberg, J, and Shattuck-Hufnagel, S. (2005). The Original ToBI System and the Evolution of the ToBI Framework, in S-A. Jun (ed.), *Prosodic Typology. The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press, 9-54.

Balazs, S. (2016). Discourse-configurationality. In Féry, C. and Ishihara, S. *The Oxford Handbook of Information Structure*. Oxford: Oxford University Press

Barba, L. (2010). *History of the Romanian Language and Dialects*. Available online at: http://www.istro-romanian.com/history/history-language.htm (last accessed 14.09.2017).

Baumann, S; Grice, M., and Benzmüller, R. (2001). GToBI – a phonological system for the transcription of German intonation. In Stanislaw Puppel and Grazyna Demenko (eds.), *Proc. Prosody 2000: Speech Recognition and Synthesis*. Poznan: Adam Mickiewicz University, Faculty of Modern Languages and Literature, 21-28.

Beckman, M., E., and. Pierrehumbert, J.B. (1986). Intonational structure in English and Japanese. *Phonology Yearbook* 3: 255-310.

Beckman, M. E., and Ayers, E. G. (1993). *Guidelines for ToBI labelling*. Available online at www.tobihome.org (last accessed 14.09.2017).

Beckman, M., and Jun, S-A. (1996). *K-ToBI (Korean ToBI) Labelling Convention* Version 2. Manuscript. Ohio State University and UCLA.

Beckman, M., E.; Hirschberg, J., and Shattuck-Hufnagel, S. (2005). The Original ToBI System and the Evolution of the ToBI Framework, in S-A. Jun (ed.), *Prosodic Typology. The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press, 9-54.

Belchiță, A. (1968). Les semi-voyelles dans la grammaire transformationelle de la langue roumaine, in CLTA, vol V, 7-21.

Billmyer, K, and Varghese, M. (2000). Investigating Instrument-Based Pragmatic Variability: Effects of Enhancing Discourse Completion Tests, *Applied Linguistics* 21(4), 517–552.

Blum-Kulka, S.; House, J., and Kasper, G. (1989). Investigating Cross-cultural Pragmatics: An Introductory Overview, in S. Blum-Kulka, J. House, and Kasper G. (eds.), *Cross-Cultural Pragmatics: Requests and Apologies*. Norwood, NJ: Ablex, 13-14.

Boersma, P., Weenik, D. (2022): Praat: doing phonetics by computer [Computer program]. Version 6.2.06, retrieved 23 January 2022 from https://www.praat.org.

Bolla, K. (1980). *Magyar Hangalbum (A Phonetic Conspectus of Hungarian)*. (Magyar Fonetikai Füzetek (Hungarian Papers in Phonetics) 6). Hungarian Academy of Sciences, Budapest.

Bolinger, D. (1951). Intonation: levels versus configurations. *Word* 7, 199-210.

Bolinger, D. (1958). A theory of pitch accent in English. *Word* 14, 109-149.

Bolinger, D. (1986). *Intonation and Its Parts*. Palo Alto, CA: Standford University Press.

Booij, G. (1996). Inherent versus contextual inflection and the split morphology hypothesis. In Geert Booij and Jaap van Marle (eds.). *Yearbook of Morphology 1995,* Dordrecht: Kluwer, 1-16.

Brazil, D. (1997). The Communicative Value of Intonation in English, Cambridge University Press, originally published in 1985 by University of Birmingham: English Language Research, England.Bruce,

Büring, D. (2005). *Binding Theory*. Cambridge Textbooks in Linguistics. Cambridge University Press.

Büring, D. (2006.) Focus Projection and Default Prominence. In Valéria Molnár and Susanne Winkler (eds.) The Architecture of Focus. Berlin/New York: Mouton De Gruyter.

Capidan, T. (1932). *Aromânii. Dialectul aromân: studiu lingvistic*. Bucharest: Academia Română.

Cazacu, B. (1982). *Cours de langue roumaine. Introduction à l'étude du roumain (à l'usage des étudiants étrangers)*, Bucharest.

Chafe, W., (1976). Givenness, Contrastiveness, Definiteness, Subjects, Topics, and Point of View. In: C. Li (ed.). Subject and Topic. New York: Academic Press, 25-55.

Chafe, W., (1993). Prosodic and functional units of language. In J.A. Edwards and M.D. Lampert (Eds.), *Talking data: Transcription and coding in discourse research* (pp. 33-43). Hillsdale, NJ: Lawrence Erlbaum.

Chițoran, D.; Pârlog, H., and Augerot, J. (1984). *The Sounds of English and Romanian.* Bucharest: Editura Universităţii București.

Chițoran, I. (1995). Prominence vs. rhythm: The predictability of stress in Romanian. In Zagona, I. (ed.) *Grammatical Theory and Romance Languages*, 47-58. Amsterdam and Philadelphia: John Benjamins.

Chițoran, I. (2002). *The Phonology of Romanian: A Constraint-based Approach.* Berlin and New York: Mouton de Gruyter.

Chițoran, I. (2002). *A perception-production study of Romanian diphthongs and glide-vowel sequences* in The Journal of the International Phonetic Association. Cambridge: Cambridge University Press (pp. 203-222).

Chomsky, N., and Morris, H. (1968). *The Sound Pattern of English*. New York: Harper and Row.

Cinque, G. (1993). A Null Theory of Phrase and Sentence Stress, *Linguistic Inquiry* 24, 391-444.

Cohen, A., and t Hart, J. (1967). On the anatomy of intonation. *Lingua* 19: 177-192.

Comorovski, I. (1997). *Functional indefinites and the proportion problem*. Paris: CSSP.

Contini, M. ; Lai, J.-P. ; Romano, A. ; Roullet, S. ; de Castro Moutinho, L. ; Coimbra, R. L. ; Pereira Bendiha, U. ; and Secca Ruivo, S. (eds) (2002). Un projet d'atlas multimédia prosodique de l'espace roman. *Proceedings of the International Conference Speech Prosody* 200 (11-13 April 2002) Aix-en-Provence, France, 227-231.

Cornilescu, A. (1997). Some notes on the syntax of the subject, *Revue Roumaine de Linguistique* XLII, 101-147.

Cornilescu, A. (2000). Notes on the interpretation of the prepositional Accusative in Romanian. *Working Papers in Linguistics* 2(1). Bucharest, 91-106.

Corniță, G. (2001). *Fonetica integrată,* 2nd revised ed. Baia Mare: Umbria.

Coșeriu, E. (1994). *Prelegeri și conferințe (1992-1993)*, Iasi.

Coteanu, I. (1957). *Cum dispare o limbă (istroromâna)*. Bucharest: Editura Științifică.

Coteanu, I., Dominte, C., Forăscu, N., and Ciompec G (eds). (1985). *Limba română contemporană: Fonetica, Fonologia, Morfologia.* Bucharest: Editura didactică și pedagogică.

Cruttenden, A. (1997 [1986]). *Intonation* (2nd edition). Cambridge: Cambridge University Press.

Cruttenden, A. (1986). *Intonation* (1st edition). Cambridge: Cambridge University Press.

Crystal, D. (1969). *Prosodic systems and intonation in English:* Cambridge University Press.

Daniliuc, L., and Daniliuc, R. (2000). *Descriptive Romanian Grammar. An outline.* Munich: Lincom Europa.

Dascălu-Jinga, L. (1971). Some Remarks on Enumerative Intonation in Romanian, *Revue Roumaine de Linguistique* XVI, 401-410.

Dascălu-Jinga, L. (1975). *What are you asking about ? (On the intonation of emphasis in yes-no questions)* in *RRL* XX, 5, 477-480.

Dascălu-Jinga, L. (1979). On the Intonation of Questions in Romanian: the Rising Pattern*, Revue Roumaine de Linguistique* XXIV, 35-44.

Dascălu-Jinga, L. (1980). *Asupra intonației cuvintelor relativ-interogative în limba română,* in *SCL* XXXI, 2, 161-177.

Dascălu-Jinga, L. (1981). Intonaţii Interogative Compuse, *Studii şi Cercetări Lingvistice* XXXII, 473-477.

Dascălu-Jinga, L. (1985). *Romanian call contours,* in *RRL* XXX, 4, 317-320.

Dascălu-Jinga, L. (1986). *Asupra intonației graiului de Bihor*, in *SCL* XXXVII, 3, 221-239.

Dascălu-Jinga, L. (1990). *Câteva cazuri de rezolvare a ambiguității sintactice cu ajutorul elementelor prozodice,* in *SCL* XLI, 1, 25-34.

Dascălu-Jinga, L. (1991). *Romanian exclamative unde* (where) in *RRL* XXXVI, 1-2, 85-89.

Dascălu-Jinga, Laurenția (1994). Su alcuni valori della prosodia nel rumeno parlato*,* in *Studi Italiani di Linguistica Teoretica e Applicata* XXIII,1, 111-126.

Dascălu-Jinga, L. (1997). *Rejective repetitions,* in *RRL* XLII, 1-2, 47-59.

Dascălu-Jinga, L. (1998). Intonation in Romanian, in D. Hirst and A. Di Cristo (eds.), *Intonation Systems: A survey of Twenty Languages.* Cambridge: Cambridge University Press, 239-261.

Dascălu-Jinga, L. (2001). *Melodia Vorbirii în Limba Română.* Bucharest: Univers Enciclopedic.

Dascălu-Jinga, L. (2005). Gramatica romena per italiani. Carabà Universitaria, Milano.

Dascălu-Jinga, L. (2006). *Pauzele si intreruperile in conversatia romaneasca actual.* Bucharest: Editura Academiei Romane

Dascălu-Jinga, L. (2008). Organizarea Prozodică a Enunţului, in V. Guţu Romalo (coord.), *Gramatica Limbii Române II: Enunţul.* Bucharest: Editura Academiei Române, 946–991.

Dascălu-Jinga, L. (2011). *Dialogul în limba română vorbită*. Editura Oscar Print.

Dahmen, W. (ed.) (2005). Die Aromunem heute: eine Volksgruppe in der Identitatskrise? Sudosteuropa Mitteilungen 2, 66-77.

Delais-Roussarie, E.; Post, B.; Avanzi, M.; Buthke, C.; Di Cristo, A.; Feldhausen, I., and Sichel Bazin, R. (2015). Intonational phonology of French: Developing a ToBI system for French.

DeLancey, S. (1997). Mirativity: The Grammatical Marking. *Linguistic Typology*. 1, 33–52.

Delattre, P. (1966). Les dix intonations de base du francais. *French Review* 40(1), 1-14.

Densusianu, O. (1901). *Histoire de la langue roumaine*. Paris: Leroux.

Densusianu, O. (1925). *În zorile vieţei*. Bucharest.

Densusianu, O. (1938). *Evoluţia estetică a limbii române*, I-V, Bucharest.

Dumitrescu, F. (1978). *Istoria limbii române*. Bucharest: Editura Didactică şi Pedagogică.

D'Imperio, M. (2002). Italian intonation: an overview and some questions. *Probus* 14(1): 37-69.

du Nay, A. (1996). *The Origins of the Rumanians*. *The Early History of the Rumanian Language*. Matthias Corvinus Publishing. Toronto

du Nay, A. (1977). *The Early History of the Rumanian Language*. (The Edward Sapir Monograph Series in Language, Culture, and Cognition 3). Lake Bluff, Ill: Jupiter Press.

Djuvara, N. (1991). *Aromânii: istorie, limbă, destin*. Bucuresti, Editura fundatiei culturale române.

Dobrovie S., C. (1994). *The syntax of Romanian: comparative studies in Romance*. Berlin/New York: Mouton de Gruyter.

Erteschik-Shir, N. (1997). *The Dynamics of Focus Structure*. Cambridge: Cambridge University Press.

Erteschik-Shir, N. (2007). *Information Structure*. *The Syntax-Discourse Interface*. Oxford: Oxford University Press.

Face, T. (2002). Intonational marking of contrastive focus in Madrid Spanish. Munich: Lincom Europa.

Félix-Brasdefer, J., C. (2010). Data Collection Methods in Speech Act Performance: DCTs, Role Plays, and Verbal Reports, in A. Martínez-Flor and E. Usó-Juan (eds.), *Speech Act Performance: Theoretical, Empirical, and Methodological Issues*. Amsterdam/Philadelphia: John Benjamins, 41-56.

Féry, C. (2017). *Intonation and Prosodic Structure*. Cambridge University Press.

Féry, C. and Truckenbrodt, H. (2005). Sisterhood and tonal scaling. *Studia Linguistica* 59. 223-243.

Filip, H. (2003). Prefixes and the delimitation of events. Journal of Slavic Linguistics 11/1: 55-101.

Firbas, J. (1966). Non-thematic subjects in contemporary English. In *Travaux linguistiques de Prague* 2, Prague: Academia: 239-256.

Fonagy, I. and Magdics, K. (1963). Emotional patterns in intonation and music. *Zeitschrift fu¨r Phonetik* 16, 293– 326.

Franzén, V. and Merle H. (1997). *Word stress in Romanian*. Lund University Dept. of Linguistics: Working Papers 46:75-91.

Frăţilă, V.; Sârbu, R. (1998) *Dialectul Istroromân: Texte şi glosar*, Editura Amarcord, Timişoara

Frota, S. (2000). *Prosody and focus in European Portuguese. Phonological phrasing and intonation.* New York: Garland.

Frota, S. (2002). Nuclear falls and rises in European Portuguese: a phonological analysis of declarative and question intonation. *Probus 14* (special issue on intonation in Romance, ed. J. Ignacio Hualde), 113-46.

Frota, S. and Prieto, P. (eds.) (2015). *Intonation in Romance.* Oxford: Oxford University Press.

Fry, D., B. (1955). Duration and intensity as physical correlates of linguistic stress. *JASA* 27: 765-8.

Fry, D., B. (1958). Experiments in the perception of stress. Language and Speech 1:126-152

Giurgea, I. (2017). *On a special prosodic pattern of polar questions in Romanian*. Available at: https://typo.uni-konstanz.de/questionsInterfaces/wp-content/uploads/2017/07/verum-questions-abstr-I-Giurgea-PAM.pdf (last accessed 14/09/2017).

Gramatica Limbii Române (1963). Editura Academiei Republicii Socialiste România. Bucharest.

Göbbel, E. (1996). *Focus movement in Romanian*. Manuscript. Tubingen: University of Tubingen.

Göbbel, E. (1998). Focus Movement in Romanian. In Romero, B.M, and Tomioka, S. (eds.), *Proceedings of the Workshop on Focus*. University of Massachusetts Occasional Papers in Linguistics, 83-99.

Göbbel, E. (2003). On the Relation between Focus, Prosody and Word Order in Romanian, in Quer, J. et al. (eds.), Romance Languages and Linguistic Theory 2001. Amsterdam/Philadelphia: John Benjamins, 75-92.

Goldsmith, J. (1976). *Autosegmental phonology.* PhD thesis, MIT. Distributed by IULC and published 1979 by Garland Press, New York.

Gordon, M. (2011). Stress: phonotactic and phonetic evidence in Mac van Oostendorp, Colin Even, Elizabeth Hume, and Keren Rice (eds), *The Blackwell Companion to Phonolgy, Volume II. Chichester:* Wiley-Blackwell, 924-48.

Gösta, B. (1977). *Swedish word accents in sentence perspective*. Lund: Gleerup.

Gosy, M, and Terken, J. M. B. (1994). Question marking in Hungarian: timing and height of pitch peaks. *Journal of Phonetics* 22, pp. 269-281.

Graur, A. (1963). *Evoluția limbii române. Privire sintetică*, Bucharest, Editura Științifică.

Graur, A. (1995). *Ortografia pentru toți*, Bucharest, Editura Teora, 1995

Grabe, E. (1998). Pitch accent realizations in English and German. *Journal of Phonetics* 26, 129-43.

Grabe, E.; Post, B. and Nolan, F. (2001). Modelling intonational Variation in English. The IViE system. In Puppel, S. and Demenko, G. (eds). *Proceedings of Prosody 2000, 51-57,* Adam Mickiewitz University, Poznan, Poland.

Grabe, E.; Rosner, B.; Garcia-Albea, J.E.; and Zhou, X. (2003). Perception of English Intonation by English, Spanish and Chinese Listeners. *Language and Speech* 46 (4), 375-401.

Graur. A. ; Rosetti, A. (1938). *Le mot. Esquisse dune theorie generale*. Copenhagen, Munksgaard and Bucharest: Inst. de ling. rom.

Grice, M; Ladd, R. D.; and Arvaniti, A. (eds.) (2000). On the place of phrase accents in intonational phonology. *Phonology* 17, 143-185.

Grice, M., and Baumann, S. (2002). *Deutsche Intonation und GToBI*. Linguistische Berichte 191, 267–298. Available at: http://moodle01.zdv.uni-tuebingen.de/mod/resource/view.php?id=12523

Grossmann, M. (2012). Romanian Compounds, *Probus* 24 (1), 147-173.

Gussenhoven, C. (1983). Focus, Mode and the Nucleus, *Journal of Linguistics* 19, 377-417.

Gussenhoven, C. (1983). Focus, mode and the nucleus. *Journal of Linguistics* 19, 377-417.

Gussenhoven, C. (1984). *On the grammar and semantics of sentence accents*. Dordrecht: Foris.

Gussenhoven, C. (1992). Intonational Phrasing and the Prosodic Hierarchy, in W. U. Dressler, H. C. Luschutzky, O. E. Pheiffer, and J. R. Rennison (eds.), *Phonologica 1988. Proceedings of the 6th International Phonology Meeeting.* Cambridge: Cambridge University Press, 89-99.

Gussenhoven, C. (2002). Phonology of intonation. State-of-theArticle. *GLOT International 6* (Nos 9/10), 271-284.

Gussenhoven, C. (2004). *The Phonology of Tone and Intonation*. Cambridge: Cambridge University Press.

Gussenhoven, C. (2005). Transcription of Dutch Intonation. In Jun, Sun-Ah (ed.), *Prosodic Typology: The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press. 118-145.

Gussenhoven, C. (1999). On the limits of focus projection in English. In Peter Bosch and Rob van der Sandt (eds.). *Focus: Linguistic, Cognitive, and Computational Perspectives*,. Cambridge: Cambridge University Press, 43-55.

Guţu Romalo, V. (ed.) (2005). *Gramatica Limbii Române.* Bucharest: Editura Academiei Române.

Guţu Romalo, V. (ed.) (2008). *Gramatica Limbii Române.* Bucharest: Editura Academiei Române.

Haan, J. (2001) *Speaking of Questions. An Exploration of Dutch Question Intonation* . PhD dissertation, Netherlands Graduate School of Linguistics (LOT).

Halliday, M., A., K. (1967). Notes on transitivity and theme in Engish. *Journal of Linguistics* 3.37-81.

Hayes, B. (1989). The Prosodic Hierarchy in meter'. In Paul Kiparsky and Gilbert Youmans (eds.) Rhythm and Meter, Academic Press, Orlando, FL, 201-260.

Hellmuth, S. (2006). Intonational pitch accent distribution in Egyptian Arabic. Unpublished PhD Thesis, School of Oriental & African Studies, University of London.

Himmelmann, N., P. (2006). Language documentation: What is it and what is it good for? In Jost Gippert, Nikolaus P. Himmelmann and Ulrike Mosel (eds.). *Essentials of Language Documentation*. Trends in Linguistics. Studies and Monographs, (178), 1-30. Berlin: Mouton de Gruyter.

Hirst, D. (2005). Form and function in the representation of speech prosody. In K. Hirose, D. J. Hirst and Y. Sagisaka (eds.) *Quantitative prosodic modelling for natural speech description and generation (=Speech Communication* 46 (3-40)), 334-347.

Hirst, D., and Di Cristo, A. (1998), *Intonation Systems. A Survey of Twenty Languages.* Cambridge: Cambridge University Press.

Hirst, D., and Espesser R. (1993). Automatic modeling of fundamental frequency using a quadratic spline function. *Travaux de l'Institut de phonétique d'Aix-en-Provence*, 15, 71-85.

Hirst, D., and Di Cristo, A, and Espesser, R. 2000. Levels of representation and levels of analysis for the description of intonation systems. In M. Horne (ed.) *Prosody: Theory and Experiment. Studies Presented to Gösta Bruce*, 51-87. Dordrecht: Kluwer Academic Publishers.

Ion, T. (1994). *Limba română contemporană, privire general*. Bucharest: Editura Dacia.

Iordan, I. (1956). *Limba română contemporană*. Bucharest: Editura Ministerului Învăţământului.

Iordan, I. (1968). *Scurt istoric al principalelor lucrări de gramatică românească*, *LL*, 1968, 163–196.

Iordan, I., and Robu, R. (1978). *Limba Română Contemporană.* Bucharest: Editura didactică şi pedagogică.CB

Isacenko, A., and Schädlich, H. J. (1966). Untersuchungen über die deutsche Satzintonation. *Studia Grammatica* 7. Berlin: Akademie-Verlag.

Ivănescu, G. (1980). *Istoria Limbii Române*. Iaşi: Junimea.

Ito, J., and Mester, A. (2003). Weak layering and word binarity. In T. Honma, M. Okazaki, T. Tabata and S.-I. Tanaka (eds.), *A New Century of Phonology and Phonological Theory. A Festschrift for Professor Shosuke Haraguchi on the Occasion of His Sixtieth Birthday,* 26-65. Tokyo: Kaitakusha. Slightly revised version of 1992 LRC working paper.

Ito, J., and Mester, A. (2008). *Rhythmic and interface categories in prosody*. Ms., UC Santa Cruz. Presented at PRIG (Prosody Interest Group), UCSC.

Ito, J., and Mester, A. (2009). The onset of the prosodic word. *Phonological Argumentation: Essays on Evidence and Motivation* ed. Stever Parker, London: Equinox.

Jakobson, R. (1964). Towards a linguistic typology of aphasic impairments. In A. V. S. deReuck and M. OConnor (eds.), *Disorders of language* , 21–41. Boston: Little, Brown.

Jitcă, D. ; Apopei, V ; Păduraru, O. (2012). A Romanian prosody prediction module based on a functional model. In *Memoirs of the Scientific Sections of the Romanian Academy* Tome XXXV.

Jitcă, D. (2017). Contrastive elements in Romanian declarative contours in *Computer Science Journal of Moldova*, vol.25, no. 1(73).

Jitcă, D.; Apopei, V.; Jitcă, M. (2009). The F0 contour modeling as functional accentual unit sequences. In *International Journal of Speech Technology*, Springer.

Jitcă, D.; Apopei, V.; Păduraru, O.; Marușca., S. (2015). Transcription of Romanian intonation. In Frota and Prieto (eds.) *Intonation in Romance*, Oxford University Press.

Jitcă, D. (2018). A psycholinguistic view on Romanian intonation interpretation. In Păiș, V; Gâfu, D.; Trandabăț, D; Cristea, D.; Tufiș, D. (eds) *Proceedings of the 13th International Conference 'Linguistic Resources and tools for processing the Romanian language'*, Iași 22-23 Nov. 2018, Institute for Computer Science, Romanian Academy, Iași.

Jones, D. (1909). *The Pronunciation of English*, Cambridge: CUP.

Jones, D. (1960). *An outline of English Phonetics*, 9th ed.: Cambridge: W. Heffer and Sons.

Jun, S-A. (ed.) (2005). *Prosodic Typology II: The Phonology of Intonation and Phrasing*. Oxford: Oxford University Press.

Jun, S-A. (2014). Prosodic Typology II: The Phonology of Intonation and Phrasing. Oxford: Oxford University Press.

Jun, S-A., and Fletcher, J. (2014). Methodology of studying intonation: from data collection to data analysis. In S.-A. Jun (ed.), *Prosodic Typology II: The Phonology of Intonation and Phrasing.* Oxford: Oxford University Press, 493-519.

Ka, O. (1988). Wolof phonology and morphology: a non-linear approach. Unpublished PhD thesis, University of Illinois At Urbana-Champaign.

Kahl,T.(1999). *Ethnizität* und *räumlicheVerbreitung* der *Aromunen* in *SüdosteuropaUnivers ität Münster*: *Institut für Geographie* der *Westfälischen Wilhelms*Khan (2008).

Kasper, G, and Dahl, M. (1991). Research Methods in Interlanguage Pragmatics, *Studies in Second Language Acquisition* 13, 215-247.

Kingdon, R. (1958). The groundwork of English intonation. London: Longman.

Kiss, K. (1995). NP movement, operator movement, and scrambling in Hungarian. Discourse Configurational Languages, edited by Katalin Kiss. New York: Oxford University Press, pp. 207-243.

Krifka, K. (2006). Association with focus phrases. In V. Molnar and S. Winkler (eds.), *The Architecture of Focus.* Berlin: Mouton de Gruyter, 105-36.

Krifka, M. and Musan, R. (2012). Information structure: Overview and linguistic issues. In Krifka, M. and Musan, R., editors, The Expression of Information Structure. De Gruyter Mouton, Berlin/Boston.

Kuno, S. (1972). Functional sentence perspective - a case study from Japanese and English. Linguistic Inquiry 3, 269-320.

Ladd, R., D. (1983). Phonological features of intonation peaks. *Lg* 59:721-59.

Ladd, R., D. (1992). An introduction to intonational phonology. In Docherty, D. and Ladd, R.D. (Eds) *Papers in laboratory phonology II.* Cambridge: Cambridge University Press. pp. 321-34.

Ladd, R., D. (2008 [1996]). *Intonational Phonology*. Second edition. Cambridge: Cambridge University Press.

Ladd, R., D. (2016). Simultaneous Structure in Phonology. Oxford: Oxford University Press.

Ladd, R., D. and Arvaniti. A (2009). Greek wh-questions and the phonology of intonation. In: Phonology 26: 43-74.

Ladd, R., D., and Cutler, A., (1983). Prosody: models and measurements. Berlin: Springer-Verlag, *1983*.

Lambrecht, K. (1994). Information structure and sentence form: topic, focus, and the mental representations of discourse referents. Cambridge University Press.

Liberman, M. (1975). The intonational system of English. PhD thesis, MIT. Distributed 1978 by IULC.

Liberman, M., and Mattingly, I. G. (1985). The motor theory of speech perception revised. Cognition, 21, 1-36.Liberman, Mark and Janet Pierrehumbert (1984). Intonational invariance under changes in pitch range and length. In M. Aronoff and R. Oerhle (eds.) *Language sound structure*. Cambridge, MA: MIT Press, 157-233.

Liberman, M., and Prince, A. (1977). On stress and linguistic rhythm *LI* 8: 249-336.

Lindström, E., and Remijsen, B. (2005). Aspects of the prosody of Kuot, a language where intonation ignores stress. *Linguistics* 43: 839-870.

Lombard, A. (1935). La pronunciation du roumain. Uppsala.

Loporcaro, M. (2011). Syllables, segments and prosody. In Maiden, Martin; Smith, John Charles; Ledgeway, Adam (eds.) *The Cambridge History of the Romance languages. Vol1. Structures.* Structures (chap. II). Cambridge: Cambridge University Press, 50-108.

Maeda, S. (1976). A characterization of American English intonation. Unpublished doctoral dissertation, Massachusetts Institute of Technology.

Maiden, M. (2016). Romanian, Istro-Romanian, Megleno-Romanian, and Aromanian. In Ledgeway, A. and Maiden, M. (eds), *The Oxford Guide to the Romance languages*. Oxford: Oxford University Press. 91-125.

Mallinson, G., (1986). Romanian language-grammar (Croom Helm Descriptive Grammars Series), London et al.

Manolescu, A; Olson, D., and Ortega-Llebaria, M (2009). Cues to contrastive focus in Romanian. In M. Vigario, S. Frota, and M. J. Freitas (eds). *Interactions in Phonetics and Phonology.* Amsterdam: Benjamins, 71-90.

Marin, S. (2013). The Temporal Organization of Complex Onsets and Codas in Romanian: A Gestural Approach, *Journal of Phonetics* 41 (3-4): 211-227.

Marioțeanu, C. (1975). Compendiu de dialectologie română. Editura științifică și pedagogică, Bucharest.

Martin, P., (1975). Analyse phonologique de la phrase française, Linguistics, 146, 35-68.

Martin, P. (2015). The structure of spoken language: Intonation in Romance. Cambridge: Cambridge University Press.

Marușca, S. (2012). Phonetic aspects of Romanian consonants. *Analele Univesitatii Oradea*. Editura Universității Oradea.

Mertens, P. (2004). Le prosogramme. Une transcription semi-automatique de la prosodie. Cahiers de l'Institut de Linguistique de Louvain 30:7-25.

Motapanyane, V. (1998). Focus, Checking Theory and Fronting Strategies in Romanian, *Studia Linguistica* 55 (3), 227-243.

Nandriș, G. (1961). *Colloquial Romanian.* London: Routledge and Kegan Paul.

Neiescu, P. (1997). Mic atlas al dialetului aromân din Albania și din fosta Republică Iugoslavă Macedonia. Editura Academiei Române, București.

Nespor, M., Shukla, M., Mehler, J. (2011). Stress-timed vs. syllable-timed languages. In M. van Oostendorp, C. J. Ewen, E. Hume, and K. Rice (eds.), The Blackwell Companion to Phonology. Malden, Mass.: Wiley-Blackwell, 1147-59.

Nespor, M., and Vogel, I. (1986). *Prosodic Phonology*. Dordrecht: Foris. Republished 2007 by Mouton de Gruyter, Berlin.

Nevaci, M. (2013). Identitate românească în context balcanic, Bucharest, Muzeul Naţional al literaturii române.

Nolan, F. (2008). Intonation. In The handbook of English Linguistics (eds B. Aarts and A. McMahon).

Nurani, L. M. (2009). Methodological Issue in Pragmatic Research: Is Discourse Completion Test a Reliable Data Collection Instrument? *Jurnal Sosioteknologi Edisi* 17: 667–678.

O'Connor, J. D. and Arnold, G. F. (1973). *Intonation of colloquial English.* second edition, London: Longman.

Panaite, O., and Turculeț, A. (2012). Diastratic particularities of speech intonation used in Focsani. Comunicare sustinută la al 3-lea Colocviu Internațional de limbă, cultură și civilizație, Craiuva 24-26 Martie 2011.

Pană-Dindelegan, G. (ed) (2013). The grammar of Romanian. Oxford: Oxford University Press.

Pană-Dindelegan, G. (2014). Does Romanian have mixed categories? In Gabriela Pană Dindelegan, Rodica Zafiu, Adina Dragomirescu, Irina Nicula, Alexandru Nicolae and Louise Esher (eds.), *Diachronic Variation in Romanian.* 197-224. New-Castle: Cambridge Scholar Publishing.

Petrovici, E. (1956). Fonemele limbii române. In LR V, p. 26-37.

Philippide, Al. (1925, 1928). O*riginea romînilor, vol. I. Ce spun izvoarele istorice. Vol. II. Ce spun limbile romînă și albaneză*. Iași, Tipografia "Viața românească" S.A.

Pierrehumbert, J. (1980). *The Phonetics and Phonology of English Intonation*. Ph.D. Dissertation, Massachussets Institute of Technology.

Pierrehumbert, J., and Beckman, M., E. (1988). *Japanese Tone Structure (Linguistic Inquiry Monograph* 15). Cambridge: MIT Press.

Pierrehumbert, J., and Hirschberg, J. (1990). The meaning of intonational contours in the interpretation of discourse. In P.R. Cohen, J. Morgan and M.E. Pollack (eds.) *Intentions in Communication*. Cambridge, MA: MIT Press, 271-311.

Pike, K., L. (1943 [1941]). Phonetics. Ann Arbor.

Pike, K., L. (1945). The intonation of American English. Ann Arbor: University of Michigan Press.

Pike, K., L. (1948). Tone Languages: A Technique for Determining the Number and Type of Pitch Contrasts in a Language. Ann Arbor, MI: University of Michigan Press.

Prieto, P (2001). Lentonació Dialectal del Català: el cas de les Frases Interrogatives Absolutes, in A. Bover, M.-R. Lloret, and M. Vidal-Tibbits (eds.), *Actes del Novè Col·loqui dEstudis Catalans a Nord-Amèrica*. Barcelona: Publicacions de lAbadia de Montserrat, 347-377. Prieto, Pilar, and Cabré, Teresa, (coords.) (2007-2012). *Atlas Interactiu de l'Entonació del Català*. Web page: <http://prosodia.upf.edu/atlesentonacio/>.

Prieto, P; D'Imperio, M., and Gili-Fivela, B. (2005). Pitch accent alignment in Romance: Primary and secondary associations with metrical structure. Language and Speech 48. 359–396.

Prieto, P. (2009). Tonal alignment patterns in Catalan nuclear falls. *Lingua* 119: 865-80.

Prieto, P/, and Roseano, P. (2010). *Transcription of Intonation of the Spanish Language.* München: Lincom.

Prieto, P.; Borràs-Comes, J.; and Roseano, P. (coords.) (2010-2014). *Interactive Atlas of Romance Intonation.*
Web page: <http://prosodia.upf.edu/iari/>.

Prince, E. (1981). Toward a taxonomy of given-new information. In Peter Cole (ed.), *Radical pragmatics.* New York: Academic Press, pp. 223-56.

Popușoi, C. (2013). Limba română actuală din Basarabia: particularități morfosintactice și lexico-semantice. Bucharest: Editura Muzeului Național al Literaturii Române.

Potisuk, S.; Gandour, J.; Harper, M. (1996). Acoustic correlates of stress in Thai. *Phonetica* 53: 200-20.

Potts, C. (2003). The performative nature of expressive content, Talk given at the University of Connecticut (November 17) and the University of Rochester (November 18).

Puşcariu, S. (1977 [1940]). *Limba Română, vol I. Privire Generală [Romanian Language, vol. I. Overview]*. Bucharest: Fundaţia pentru Literatură şi Artă Regele Carol II.

Puşcariu, S. (1994). *Limba Română, vol II. Rostirea [Romanian Language, vol. II. Pronunciation].* Bucharest: Editura Academiei Române.

Rankin, L., R. (1973). Romanian Intonation and Stress, in J. Augerot (ed.), *Romanian Grammar Pamphlets II.* Arlington, VA: Center for Applied Linguistics, iii-28.

Rakow, M., and Lleo C., (2011). Intonation targets of yes-no questions by Spanish and German monolingual and bilingual 2;0- and 3;0-year-olds. In T. Kupisch and E. Rinke (eds.), The development of grammar: Language acquisition and diachronic change (Hamburger Studies on Multilingualism 11), 213–234. Amsterdam/Philadelphia: John Benjamins.

Renzi L. and Andreose A. (2003). Manuale di linguistica e filologia romanza. Bologna, Il Mulino

Renwick, M., E., L. (2014). The Phonetics and Phonology of Contrast: The Case of the Romanian Vowel System. Berlin, Boston: De Gruyter Mouton.

Rischel, J. (1974). Topics in West Greenlandic phonology. Copenhagen: Akademisk Forlag.

Roca, I. (1999). Stress in the Romance languages. In H. van der Hulst (ed.), *Word Prosodic Systems in the Languages of Europe.* Berlin: Mouton de Gruyter, 659-811.

Roceric-Alexandrescu, A. and Copceag, D. (1966). Sugestii pentru cercetarea structurală a intonației, în SCL XVII, 3, pp. 271-284.

Roceric-Alexandrescu, A., and Golopenţia, S. (1961). Observaţii asupra Intonaţiei în Limba Română [Remarks on Intonation in Romanian], *Studii şi Cercetări Lingvistice* XII (1), 29-34.

Rochemont, M., S. (1986). *Focus in Generative Grammar*. Amsterdam: Benjamins.

Rooth, M. (1985). Association with Focus, University of Massachusetts: Ph.D. Dissertation. Rosetti, Alexandru (1961).

Rosetti, A. (1964). *Istoria limbii române*, II: *Limbile balcanice*, Fundația pentru Literatură și Artă, Bucharest, 1938; ed. a 2-a, revăzută și adăugită, Bucharest, 1943; ed. a 3-a, Editura Academiei R.P.R., Bucharest, 1961; ed. a 4-a, Editura Științifică, Bucharest.

Rosetti, A. (1965). Omagiu lui Alexandru Rosetti la 70 de ani. Bucharest, Editura Academiei.

Rosetti, A. (1986). Istoria limbii române I: de la origini pînă la începtul secolului al XVII-lea [History of the Romanian language I: from its origins to the beginning of the 17th Century]. București: Editura științifică și Enciclopedică. Rosetti, Alexandru, and Byck, Jacques (1945). *Gramatica Limbii Române [The Grammar of Romanian].* Bucharest: Editura Universul.

Rusu, V. (1984). Tratat de dialectologie românească. Craiova: Scrisul Românesc.

Sala, M. (1970). *Contribuţii la Fonetica Istorică a Limbii Române [Contributions to the Historical Phonetics of Romanian].* Bucharest: Editura Academiei Republicii Socialiste Romania.

Sala, M. (1989). *Enciclopedia limbilor romanice*, Bucharest, Editura Științifică și Enciclopedică.

Sala, M. (2001). *Enciclopedia limbii române*, Bucharest.

Sala, M. (2010). 101 cuvinte moștenite, împrumutate și create. Humanitas.

Sandfeld, K. (1930). La linguistique balkanique. Paris: Klincksieck. (Originally published in Danish: 1926. Balkanfilologien. Copenhagen: University of Copenhagen).

Saramandu, N. (1984). *Aromâna,* 'Aromanian' in *Rusu, Valeriu (ed.)* Tratat de dialectologie românească. Craiova: Scrisul Românesc.

Saramandu, N. (2005). Atlasul lingvistic român pe regiuni: sinteză [Regional Romanian Linguistic Atlas: Synthesis]. Editura Academiei Române, București.

Schmerling, S., F. (1976). Aspects of English sentence stress. Austin: Univeristy of Texas Press.

Schulte, K. (2009). Loanwords in Romanian in *Loanwords in the World's Languages: A comparative handbook*, Martin Haspelmath & Uri Tadmor (eds.), 230-259. Berlin: De Gruyter Mouton.

Scicon R&D Inc. (2022). Pitchwork Windows [computer software]. https://sciconrd.com/pitchworks.aspx. Accessed 8 February 2022.

Seiver, G., O. (1953). Introduction to Romanian. New York.

Selkirk, E., O. (1978). On prosodic structure and its relation to syntactic structure. In T. Fretheim, Ed., *Nordic Prosody II*, Trodheim: Tapir: 111-40.

Selkirk, E., O (1980). The role of prosodic categories in English words stress. *LI* 11:563-605.

Selkirk, E., O (1981). On the nature of phonological representation. In J. Anderson, J. Laver, and T. Meyers, eds., *The Cognitive representation of speech.* Amsterdam: North Holland.

Selkirk, E., O (1984). Phonology and syntax: the relation between sound and structure. Cambridge, MA: MIT press.

Selkirk, E., O (1986). On derived domains in sentence phonology. Phonology Yearbook 3: 371-405.

Selkirk, E., O (1995). Sentence prosody: intonation, stress, and phrasing. In J. Goldsmith (ed.), *The handbook of phonological theory.* Oxford: Blackwell, pp. 550-69.s

Selkirk, E., O (1996). The prosodic structure of function words, in *Signal to Syntax: Bootstrapping from Speech to Grammar in Early Acquisition,* ed. by James L. Morgan and Katherine Demuth, 187-213, Mahwah, NJ: Lawrence Erlbaum.

Selkirk, E., O (2005). Comments on intonational phrasing, in *Prosodies* ed by Sonia Frota, Marina Vigario and Maria Joao Freitas, 11-58, Berlin: Mouton de Gruyter.

Skopeteas, S.; Féry, C., and Asatiani, R. (2009). Word order and intonation in Georgian. Lingua 119. 102–127,

Steedman, M. (1991). Structure and Intonation. In *Language* 67, 262-296.

Steedman, M. (2000). Information structure and the syntax-phonology interface. In *Linguistic Inquiry* 34*,* 649-689.

Steedman, M. (2014). The surface-compositional semantics of English intonation. In *Language* 90*,* 2-57.

Steriade, D. (1984). Glides and vowels in Romanian. *Berkeley Linguistic Society 14,* 47-64.

Swerts, M. (2007). Contrast and accent in Dutch and Romanian, *Journal of Phonetics* 35 (3): 380-397.

Tench, P. (1996) *The intonation systems of English*. London: CassellToma, Ion (1994).

Trager, G., L., and Smith, H. L. (1951). An outline of English structure (SIL Occasional Papers), Norman, Okla, Battenburg Press.

Truckenbrodt, H. (1995). Phonological Phrases: Their Relation to Syntax, Focus and Prominence. Ph.D. dissertation, MIT. Turculeţ, Adrian (1999). *Introducere în Fonetica Generală şi Românească [Introduction to General and Romanian Phonetics].* Iaşi: Editura Demiurg.

Turculeţ, A.; Botoşineanu, L.; Minuţ, A-M., and Mladin, I-C. (2008). Aspects de la Variation Diatopique de lIntonation au Niveau de la Langue Roumaine Standard, in *La Variation Diatopique de lIntonation dans le Domaine Roumain et Roman*. Iaşi: Editura Universităţi Al. I. Cuza, 21-27.

Turculeț, A. (2010). Există o Limită Prozodică a Graiurilor Ardelenești? [Is there a Prosodic Boundary of Transylvanian Dialects?], presented at the *XIV International Symposium of Romanian Dialectology*, 16-18 septembrie, Cluj-Napoca, Romania, <http://amprom.uaic.ro/file/Exista%20o%20granita%20prozodica%20a%20graiurilor%20ardelenesti.pdf>

Turculet, A.; Apopei, V.; and Jitcă, D., (2006). Intonation structures in yes-no questions. In Computer Science Journal of Moldova, vol. 14, no.1(40).

Turculet, A.; Bibiri, A.; and Panaite, O. (2008). Utilizarea procedeului maptask in proiectele atlas multimedia prosodique de lespace roman (AMPRom) The use of Maptask procedure in AMPER and APROM).

Turculeț, A. ; Botoșineanu, L. ; Minuț A-M. (2006). Atlasul multimedia prosodic roman (AMPRom). Chestionarul și rețeaua de puncte, 2006. În „Limba și literatura română. Regional-Național-Universal“ (Simpozion internațional Iași-Chișinău, 24-27 noiembrie 2005), Iași, Casa Editorială „Demiurg“, p. 283-293.

't Hart, J.; Collier, C., and Cohen, A. (1990). *A perceptual study of intonation: an experimental-phonetic approach.* Cambridge University Press.

Uhmann, S. (1991). *Fokusphonologie: eine Analyse deitscher Intonationskonturen im Rahmen der nicht-linearen Phonologie.* Tubingen:Niemeyer.

Vallduvi, E. (1990). *The informational component.* PhD thesis, University of Pennsilvania. Published 1992 by Garland Press, New York.

Varga, L. (2002). *Intonation and Stress: Evidence from Hungarian.* New York: Palgrave Macmillan.

Vasiliu, E. (1965). *Fonologia Limbii Române [The Phonology of Romanian].* Bucharest: Editura Ştiinţifică.

Velner, E., Boersma, P. P., & de Graaf, M. M. (2020). Intonation in Robot Speech: Does it Work the Same as with People? In *Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 569-578).

Viana, C., and Frota, S. (2007). Towards a P_ToBI. Presented at PaPI: Workshop on the Transcription of Intonation in Ibero-Romance. Retrieved from Vicenik and Jun (2014).

Wagner, M. (2005). Prosody and Recursion, Ph.D. Dissertation, Massachusetts Institute of Technology.

Weigand, G. (1892). *Vlacho-Meglen. Eine ethnographisch-philologische Untersuchung*. Leipzig.

Wells, J. (2006). English *Intonation*: An Introduction . Cambridge: Cambridge. University Press

Winkler, S., and Göbbel, E. (2002). Focus, p-Movement, and the Nuclear-Stress Rule: a View from Germanic and Romance, *Linguistics* 40: 1185–1242.

WinPitch (2004). http://www.winpitch.com. Accessed 8 January 2022.

Xenopol, A.D. (1883) Teoria lui Roesler. In *Revista pentru historie, archeologie si filologie* vol I-IV

Xu, Y. (2005). Speech melody as articulatorily implemented communicative functions. *Speech Communication*, 46, 220-251

Xu, Y.; Lee, A.; Prom-on, S., and Liu, F. (2015). Explaining the PENTA model: A reply to Arvaniti and Ladd. *Phonology* 32: 505-535.

Xu, Y. and Liu, F. (2007). Determining the temporal interval of segments with the help of F0 contours. *Journal of Phonetics* 35: 398-420.

Xu, Y. and Wang, Q. E. (2001). Pitch targets and their realization: Evidence from Mandarin Chinese. *Speech Communication* 33: 319-337.

Xu, Y. and Xu, C. X. (2005). Phonetic realization of focus in English declarative intonation. *Journal of Phonetics* 33: 159-197.

Xu, Y. (2013). ProsodyPro – A Tool for Large-scale Systematic Prosody Analysuis. In Proceedings of Tools and Resources for the Analysis of Speech Prosody (TRANSP 2013), Aix-en-Provence, France. 7-10.

Zec, D. and Inkelas, S. (1991). The Place of Clitics in the Prosodic Hierarchy. Proceedings of the 10 th West Coast Conference on Formal Linguistics: 505-519.

Zafiu, R. (2013). Information structure. In Pană-Dindelegan, G. (ed.) *The Grammar of Romanian,* Oxford Univeristy Press (568-575).

Zimmerman, M., and Fery, C. (2009). Information structure: theoretical, typological, and experimental perspectives. Oxford: Oxford University Press.

Zubizarreta, M., L. (1998). *Prosody, Focus, and Word Order (Linguistic Inquiry Monograph 33)*. Cambridge, MA: MIT Press.