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Conflicting quantity patterns in Ibero-Romance prosody

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Conflicting Quantity Patterns in Ibero-Romance Prosody

by

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Dissertation

Presented to the Faculty of the Graduate School of

the University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May, 2006

A Regina,

como no podía ser de otra manera

ACKNOWLEDGEMENTS

I hereby make grateful acknowledgement to the individuals who contributed to the completion of this dissertation. I am indebted to Megan Crowhurst, whose support and dedication proved invaluable to me, and to Fritz Hensey, Orlando Kelm, Jean Pierre Montreuil, Marta Luján and Carlos Solé whose careful reading of the manuscript helped me throughout the writing project. I would also like to thank my colleague Stephanie Lain, who carefully and patiently proofread the entire dissertation, and Teresa Cabré and Pep Serra for having sent me their dissertations. To these people I extend my appreciation and sincerest thanks.

A.G. S.

The University of Texas at Austin

May 2006

Conflicting Quantity Patterns in Ibero-Romance Prosody

Publication No. ___________

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The University of Texas at Austin, 2006

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This dissertation explores opposing quantity sensitive and quantity insensitive patterns present in the prosody, stress assignment and prosodic morphological processes such as truncation, of the different Ibero-Romance languages (Catalan, Spanish and Portuguese) and argues that a coherent account that integrates both is available in the theoretical framework of Optimality Theory (Prince and Smolensky 1993 [2002]). This dissertation represents, to the best of my knowledge, the first attempt to analyze together in one study both the stress assignment and prosodic morphology of any Ibero-Romance language. Whereas individual studies dealing only with stress assignment or only

prosodic morphology processes in Ibero-Romance languages are abundant, there is not much scholarly research on both stress placement and prosodic morphology combined. This dissertation explores, first, stress and prosodic morphological patterns in several Ibero-Romance languages (Catalan, Portuguese and Spanish). Second, we show two languages, Valencian Catalan and Portuguese, displaying a combination of quantitative prosodic patterns that are unrepresented in the literature: the Valencian variety of Catalan and Portuguese exhibit a quantity sensitive stress pattern and a quantity insensitive truncatory morphology. Only the opposite pattern (that is, quantity insensitive stress and quantity sensitive prosodic morphology) had been attested in the literature, i.e., Tohono O'odham, in Fitzgerald (2002, 2003, 2004). Apart from its empirical value, this study is one of the only works to examine opposing quantitative patterns through the lens of Optimality Theory. The analysis proposed in this study deals adequately with "contradictory" quantity patterns by claiming an initial constraint ranking where constraints that promote quantity insensitivity outrank others promoting quantity sensitivity.

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CHAPTER 1

PRELIMINARY REMARKS AND ORGANIZATION

1.0. Introduction

Traditionally, it has been held that that the sound systems of languages are consistent regarding sensitivity to syllable weight (Hayes 1995). That is, in *quantity sensitive* languages the content of syllables (syllable weight is defined later on in this chapter) is an important factor in their phonology, e.g. Cairene Arabic (McCarthy 1979, cited in Hayes 1995); by contrast, in *quantity insensitive* languages, the content of syllables is not relevant, as in the Australian language Pintupi (Hammond 1986, cited in Hayes 1995). This dissertation shows that this all-or-nothing conception of weight (in)sensitivity is too rigid and does not account for languages that do manifest contradicting quantity patterns in their phonology.

This study analyzes the role of syllable weight in stress assignment and processes of prosodic morphology in Ibero-Romance languages (Catalan, Portuguese and Spanish) and claims that Valencian Catalan and Portuguese show a quantity sensitive non-verbal main-stress system and a quantity insensitive prosodic morphology, mainly involving stress and truncation.[1] On the other hand, Spanish and Eastern Catalan are consistent in the use of weight in their main non-verbal stress assignment and prosodic morphology. The work of Colleen Fitzgerald (2002, 2003, 2004) provides examples of languages displaying contradicting quantity patterns. One of these languages is Tohono O'odham, a native language of Arizona, which displays a quantity insensitive stress system and a quantity sensitive prosodic morphology. A primary objective of this dissertation is to propose a unified analysis of the different, and sometimes conflicting, quantity patterns in Ibero-Romance in the framework of Optimality Theory (Prince and Smolensky 1993 [2002]). Before proceeding in more detail with the main claims and findings of this study, it is critical to outline the main concepts dealt with in this dissertation.

1.1. Quantity sensitivity and prosody

In phonology, *prosody* analyzes the way in which sequences of sound segments in speech are organized in higher levels of structure, such as the syllable, the foot or the prosodic word. To see this, let us consider the familiar examples of poetry. In poetry, prosodic requirements impose restrictions on the scansion and metrical shape of lines. Since the beginning of grammatical studies, light and heavy syllables were distinguished

[1] Catalan (Veny i Clar 1982, Recasens 1991, Hualde 1992, Montoya Abat 2002) is a Romance language spoken along the Eastern Mediterranean coast of Spain, in the Balearic Islands, in small areas of Southwestern France, in the Independent Principality of Andorra (located in the Pyrenees Mountains between the limits of Spain and France) and in the Sardinian town of Alghero. Catalan dialects are divided into two major groups: Eastern, spoken in Eastern Catalonia, France, Alghero and the Balearic Islands; and Western, spoken in Western Catalonia and the Valencian Region. Valencian Catalan or Valencian is the name given to the Western dialects spoken only in the Valencian Region.

to account for prosodic character of prosodic lines, especially stress, and meter. In classical philology, a syllable is long *by nature* if it contains a long vowel, traditionally represented with the diacritic '¯', or a diphthong; a syllable is long *by position* if it contains a short vowel followed by two or more consonants:

(1) Syllable weight in Latin

a. Syllables long by nature (here underlined. Syllable boundaries are marked with a dot '.'): *lau.dō* 'I mention', *Rō.ma* 'Rome', *a.mī.cus* 'friend'.

b. Syllables long by position (underlined): *ser.vat* '(s)he serves', *sa.pi.en.ti.a* 'knowledge', *ax.is* (= ak.sis) 'axis'.

Syllable quantity was a major determinant of the rhythm of Latin poetry (see, among others Allen 1973, Pulgram 1975, Salvatore 1983). Latin, like many other classical languages, uses *quantitative* meter for its verse. Unlike English, where the accent of a given syllable determines its position in verse, a Latin syllable's value is determined by the phonological content of the syllable. Like many other languages, Latin organizes its poetry in feet.. In verse, many meters use a foot as the basic unit in their description of the underlying rhythm of a poem. A *foot* consists of a certain number of syllables forming part of a line of verse. A foot is described by the character and number of syllables it contains: in modern Ibero-Romance languages, feet are named for the combination of accented and unaccented syllables; in other languages such as Classical Latin and Greek, the phonological quantity of the syllable (heavy or light) is measured.

Some of the feet used in poetry since Classical times are dactyls and spondees. Dactyls are a very common foot in Latin poetry. A *dactyl* consists of a long syllable followed by two short syllables, or ¯ ˘ ˘, though the two short syllables may often be replaced by one long one, making the foot a *spondee*, or ¯ ¯.

Dactylic Hexameter is one of the most common Latin poetic meters. This line is actually formed by four dactyls that can become spondees, a dactyl that must remain a dactyl, and a spondee that can have its final syllable shortened. To give an example, here is the first line of Virgil's *Æneid*, with long syllables in underlined characters:

(2) <u>Ar</u>ma vi<u>rum</u>que ca<u>nō</u>**,** // <u>Trō</u>iæ <u>quō</u> <u>prī</u>mus ab <u>ōrīs</u>

'I sing of arms and the man, who first from the shores of Troy'

The metrical scansion of the verse in (2) is next:

(3) Arma virumque canō**,** // Trōiæ quō prīmus ab ōrīs

– ˘ ˘ – ˘ ˘ – – – – – ˘ ˘ – –

1st foot 2nd 3rd 4th 5th 6th

The first and second feet are dactyls; their vowels are grammatically short, but long in poetry because both are followed by two consonants. The third and fourth feet are spondees, with two long vowels, one on either side of the caesura, graphically represented with a double slash '//'. *Caesura* refers to a particular kind of break within a poetic line. In Latin and Greek meter, caesura refers to a foot that spans a word boundary. The fifth foot is a dactyl, as it must be, with the ictus this time falling on a grammatically long vowel. The final foot is a spondee with two grammatically long vowels.

Also important in Greek and Latin poetry is the *Dactylic Pentameter*. This was a line of verse, made up of two equal parts, each of which contains two dactyls followed by a long syllable. Spondees can take the place of the dactyls in the first half, but never in the second. The long syllable at the close of the first half of the verse always ends a word, giving rise to a caesura. Dactylic pentameter is never used in isolation. Rather, a line of dactylic pentameter follows a line of dactylic hexameter in the *elegiac distich* or *elegiac couplet*, a form of verse that was used for the composition of elegies and other tragic and solemn verse in the Greek and Latin world. An example from Ovid's *Tristia* is next:

(4) Vergiliūm vīdī // tāntum, nec amāra Tibullo

– ˘ ˘ – – – – – ˘ ˘ – ˘ ˘ – ˘

1st foot 2nd 3rd 4th

Tempus amī citiæ // fāta dedēre meæ

– ˘ ˘ – ˘ ˘ – – ˘ ˘ – ˘ ˘ –

1st foot 2nd 3rd 4th

'I only saw Vergil, greedy Fate gave Tibullus no time for me'

In modern Ibero-Romance languages, quantity requirements do not play a role in versification. For instance, in Spanish poetry, meter is determined solely by the number of syllables in a line. Syllables in Spanish metrics are determined by consonant breaks, not word boundaries. For example, the Chilean poet Pablo Neruda's line *Pálido y amarrado a mi agua devorante* consists of 13 syllables, separated by '-', as in (5):

(5) *Pálido y amarrado a mi agua devorante*

pa-li-do-ya-ma-rra-doa-mia-gua-de-vo-ran-te

Some common meters in Spanish verse are outlined next (Navarro Tomás 1956 [1974], Quilis 1969 [2000]):

a. Septenary: a line consisting of seven syllables, the sixth being always stressed.

b. Octosyllable: a line consisting of eight syllables, the seventh always being stressed. This meter is commonly used in *romances*, narrative poems similar to English ballads.

c. Hendecasyllable: a line consisting of eleven syllables; the sixth and the tenth or the fourth, the eighth and the tenth always being stressed. This meter plays a similar role to pentameter in English verse. It is commonly used in sonnets.

d. Alexandrines: a line consisting of two heptasyllables.

Since Classical times, syllable quantity in verse was measured in moras. The term, meaning ‘delay’, comes from Latin. If syllables were *light*, they only had one mora, and if they were *long* or *heavy* they had two moras. The *mora*, represented by the Greek letter μ, was therefore used as the unit in phonology that determines syllable weight in some languages. Since Latin, syllable weight was not only used to determine poetic verse, but to account for prosodic phenomena, such as stress assignment. In this framework, the cross-linguistic generalization that syllables are light or heavy is accounted for by the number of moras the syllable dominates, a *light syllable* (L) only dominates one mora, whereas a *heavy syllable* (H) dominates two.

(6) a. Light syllable b. Heavy syllable

The placement of word stress in Latin followed a series of simple rules considering quantity requirements, i.e., light or heavy syllables:

(7) Latin stress rules (taken from Roca 1999: 659)

a. Stress a heavy penult, if there is one: for.tū́.na ‘luck’.

b. Otherwise, stress the antepenult, if there is one: pe.cū́.ni.a ‘money’.

c. Otherwise, stress the first syllable: ní.hil ‘nothing’.

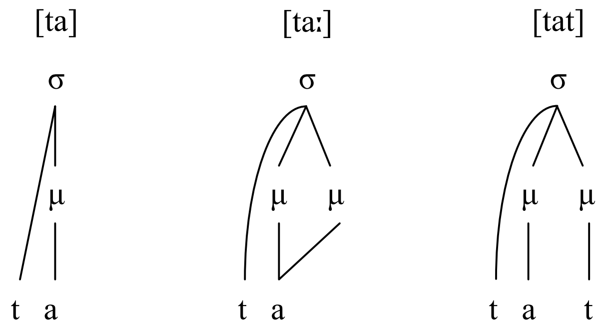
In recent times, moraic theory (among others, Hyman 1985 or Hayes 1985, 1989, 1995), has recruited the traditional concept of *mora* as the basic weight unit in phonological representations of the syllable. The assignment of moras can be lexical in vowels and, on the other hand, coda elements (post vocalic consonants or glides) may be assigned a mora language specifically by rule or through the result of constraint interaction. In another step, moras organize themselves into syllables, according to language-specific rules of syllable formation. Next, syllables form rhythmic groupings or feet. Finally, feet constitute prosodic words. The proposal about the hierarchical arrangement of prosodic categories is shown in (8) (Selkirk 1984).[2]

(8) PrWd — Prosodic Word
|
Ft — Foot
|
σ — Syllable
|
μ — Mora

In this model, the vocalic nucleus dominates the leftmost mora; see the catalog of light and heavy syllables in (9) (Hayes 1989: 253).

[2] This is a truncated hierarchy. There are additional prosodic levels above the PrWd that are not relevant in this dissertation.

(9) a. Light syllable b. Heavy syllable c. Heavy syllable



L and H syllables organize themselves into feet. According to Hayes (1995: 71), the universal catalog of feet is in (10). There are two basic assumptions for this inventory. Firstly, the headedness of feet produces iambs, right prominence feet, or trochees, left prominence feet. The second principle is quantity sensitivity, which divides feet into two groups, whether they consider moras or syllables. *The Iambic/Trochaic Law* (Hayes 1995: 80), which states that elements contrasting in intensity naturally form groupings with initial prominence, whereas elements contrasting in duration naturally form groupings with final prominence, motivates this second principle.

(10) Hayes' universal catalog of feet (1995: 71)[3]

a. Syllabic trochee (quantity insensitive): (σ́σ)

b. Moraic trochee (quantity sensitive): (ĹL), (H́)

c. Iamb (quantity sensitive): (LĹ), (H́), (LH́)

---

[3] σ = any syllable, regardless of weight.

According to McCarthy and Prince (1995a: 321), the prosodic hierarchy, in (8), and foot binarity, seen in (10), derive the notion *minimal word*. A prosodic word must contain at least one foot. An extensive literature has argued that an important property of metrical feet is binarity. By foot binarity, every foot must be bimoraic or disyllabic. In quantity sensitive languages, languages that distinguish syllable weight, the minimal word is bimoraic; in quantity insensitive languages, the ones that do not consider syllable weight, minimal words are disyllabic.

Word minimalism is an active concept cross-linguistically. McCarthy and Prince (1995a) offer the example of morphological affixation in the Australian language Lardil and its interaction with prosodic domains (the data is based on the works of Hale 1973 and Klokeid 1976). This type of analysis combining prosody and morphology constitutes *Prosodic Morphology*, a program of research originally formulated in the works of McCarthy and Prince (1986, 1990, 1991, 1995a) that focuses on the interaction of morphological processes (affixation, infixation, truncation, reduplication) and their phonological (prosodic) domains. Lardil has a quantity sensitive prosody: CVV(C) syllables are heavy or bimoraic whereas CV(C) syllables are light or monomoraic. Since Lardil is a quantity sensitive language, the minimal word is bimoraic. This moraic minimalism is responsible for the following alternation in affixation (data simplified from McCarthy and Prince 1995a: 322):

(11) Lardil

	Underlying	Nominative	Accusative	Gloss
Bimoraic base	wiʈe	wiʈe	wiʈe-in	‘inside’
Monomoraic base	wik	wika	wik-in	‘shade’

Bimoraic roots remain unchanged, as they comply with the bimoraic minimal word requirement. On the other hand, monomoraic bases add an *epenthetic vowel*, a surface vowel not present in the underlying form, to acquire an extra mora guaranteeing licit prosodic word status.

Other prosodic morphology processes relevant in this dissertation are truncation and, less importantly, reduplication. *Truncation* is the process in which a *source word* or *base*, usually a noun or an adjective, is shortened to comply with a certain target shape. Truncation is quantity insensitive in some languages, the target shape being determined by syllabic and not by moraic requirements, e.g., Valencian hypocoristics *Saro* < *Baltasar, Quelo* < *Miquel* are truncated to conform to the shape of a syllabic trochaic foot (σ́σ). Conversely, other languages take moraic structure into account in their truncatory morphology, e.g., Spanish hypocoristics *Fer, Nan, Fernan, Nando* < *Fernando* are limited by the size of a moraic trochee (H́, ĹL or H́L). Truncated proper nouns are also known as truncated *hypocoristics* or *nicknames*. On the other hand, *clippings* are the result of the abbreviation of common nouns and adjectives.

Reduplication is a type of affixation; a reduplicant affix attaches to a base word. The *reduplicant affix* does not have a predetermined phonetic specification but it echoes the phonetic shape of the base, by either repeating all or some of its segmental material, not in an arbitrary way, but to conform to a process specific shape target. The *base* is the string of segments to which the reduplicant affix is attached. In Indonesian (Cohn 1989, also in Kager 1999: 195), the plural is marked by the total reduplication of the singular form, e.g., Base wanita > Reduplicant wanita wanita 'woman/women', maʃarakat > maʃarakat maʃarakat 'society/societies'. When reduplication is partial, the shape of the reduplicated morpheme varies. The Polynesian language Molikese (Harrison 1976, also in Kenstowicz 1994: 628) copies enough material from the base as to fulfill a Reduplicant bimoraic requirement: Base poki > Reduplicant pok poki 'throw'. Other languages have syllabic requirements to limit the shape of reduplicated morphemes, e.g., in the Australian language Diyari (Austin 1981, Poser 1989, McCarthy and Prince 1994, summarized in Kager 1999: 195). The Reduplicant conforms to the size of a syllabic trochee by copying the first two syllables of the base, except the coda of the second syllable: Base t^{j}il.par.ku > Reduplicant t^{j}ilpa t^{j}ilparku 'bird species'.

A well-accepted definition of *stress* is present in Hayes' (1995) influential work. According to Hayes (1995: 1), "stress is the linguistic manifestation of rhythmic structure." Hayes (1995: 1) also defines *metrical theory* "Metrical stress theory is the branch of the theory of generative phonology that deals with stress patterns." Hayes continues argueing that every utterance has some rhythmic structure that serves as a framework for the phonetic and phonological realization of that utterance. According to Hayes (1995: 24), stress has some typological properties:

a. *Culminativity*. Each word or phrase has one single strongest syllable bearing the main stress.

b. *Rhythmic distribution*. Syllables bearing equal levels of stress tend to be spaced at roughly equal distances, falling into alternating patterns. In many languages, a six syllable word are regularly assigned a binary stress pattern such as σ́σσ́σσ́σ as in English *Apalachicola* [æ̀pəlæ̀tʃəkólə]. No six syllable words are attested to assign stress σσσσ́σ́σ́ cross-linguistically.

c. *Stress hierarchies*. Most stress languages have multiple degrees of stress: primary, secondary, tertiary and so on. For instance, Hayes argues that an English word such as *Constantinople* has three degrees of stress: Cons^2 tan^3 ti^0 no^1 ple^0 (0, 1, 2, 3, ordered from lack of stress to tertiary stress).

d. *Lack of assimilation*. Stress does not assimilate. According to Hayes, a stressed syllable does not force another adjacent syllable to be stressed.

Stress is then the linguistic manifestation of rhythm, which is not exclusive of human speech; other human activities such as music or verse share the property of rhythm. Since rhythm is independent from linguistics, no specific phonetic correlates invariantly account for stress. However, according to Hayes (1995) and Kenstowicz (1994), some phonological diagnostics for stress help us study systematically the stress systems in the world's languages. Let us summarize Kenstowicz's indirect evidence for stress:

a. *Native speaker intuitions*. For example, most Catalan speakers can distinguish three levels of prominence in a word like *Alabama*. The second and the fourth syllables are the weakest; the third one is the strongest and the first one has an intermediate degree of prominence. The main stressed syllable is marked with an acute accent '´', whereas secondary stress is marked with a grave accent '`': æ̀.lə.bǽ.mə.

b. *Segmental rules targeting stressed and unstressed syllables*. For instance, in many languages, vowels reduce in unstressed position. In the previously considered word, æ̀.lə.bǽ.mə, unstressed syllables are reduced to a relaxed central vowel "schwa" [ə]. Vowels with some prominence keep their full [æ] quality.

c. *Clash rules*. Some languages try to avoid sequences of stressed syllables. For instance, English transforms words with a stress contour […secondary…primary…] to […primary…secondary] before another word with a leftmost stressed syllable: ràcoón cóat > rácoòn cóat.

d. *Intonation contours organized over words according to the main stress*. For instance, Lieberman (1975) analyzed English *vocative chant*, used to call someone out of sight, as a sequence of a high tone (H), corresponding to the main stress syllable, surrounded by two mid tones (M): oh_M $Í_H$ $(sadore)_M$!, $(Oh\ Isa)_M$ $dó_H$ re_M!

Apart from the difficulty in finding a clear phonetic correlate, stress has several other unusual characteristics, summarized here from Kenstowicz (1994: 550-553):

a. Long-distance effects. In many English compounds, the first word bears the main stress, e.g., the téacher's ùnion. When the compounds are left-branching, the initial prominence is kept in proportion to the depth of embedding, e.g., [teacher's^3 union^1] president^2, [[teacher's^4 union^1] president^2] election^3 (prominence is represented numerically: 2 is more prominent than 1, 3 is more prominent than 2, etc…).

b. Positional stress. Some languages assign stress to a certain syllable not because of the inherent properties of that syllable but because of its position in the word. For instance, Polish assigns stress to the penultimate syllable in regular cases, e.g., *nauczýciel* 'teacher (nominative singular)', *nauczyciéla* 'teacher (genitive singular)'. Other languages assign stress to the first syllable of the word (Czech, Finnish, Georgian) or the final (French, Turkish, Farsi).

c. Non-positional stress. In other languages, a syllable is assigned stress regardless of its position in the word. Usually, syllable weight is a major factor in determining inherently stressed syllables. An example of this pattern is Russian or Japanese.

1.2. The theoretical framework: an elementary introduction to Optimality Theory

This section outlines some basic principles of the main theoretical tool used in this dissertation, Optimality Theory (OT, Prince and Smolensky 1993 [2002]).[4] Some recent OT developments relevant to this dissertation (i.e., *transderivational identity*, Benua 1995) and other models relevant to prosodic analysis (such as *prosodic circumscription*, McCarthy and Prince 1990, 1993, 1995b, Lombardi and McCarthy 1991) are introduced and explained when needed throughout this dissertation.

In standard pre-OT generative phonology (as in Chomsky and Halle 1968), different structure-changing rules were applied to an input form in order to derive an output, as in (12).

(12) Rule-based phonology (Pulleyblank 1997: 63)

Lexicon:	input (initial form)
$Rule_1$:	intermediate $form_1$
$Rule_2$:	intermediate $form_2$
...	
Last rule:	output (final form)

---

[4] Prince and Smolensky (1993 [2002]) and also McCarthy and Prince (1993, 1995a) are considered the foundational papers on OT. Several approachable introductory books on OT are available, i.e., among others, Archangeli and Langendoen (1997), Kager (1999), McCarthy (2002).

For instance, in the vowel harmony process is observed in some varieties of Valencian Catalan an underlying final unstressed low vowel /a/ surfaces as [ɛ] and [ɔ] when preceded by stressed open mid vowels [ɛ] and [ɔ] respectively, e.g. *terra* 'land' [tɛ́.rɛ], *rosa* 'rose' [rɔ́.zɔ] (For a complete dialectal characterization of Valencian vowel harmony, see *Atles Lingüístic Valencià*. For Northern Valencian dialects see Jiménez i Martínez 1998, 2001, 2002. For Southern Valencian and Alacantí see Colomina i Castanyer 1985; Mas i Miralles 1993, 2000; Hualde 1996; Segura i Llopes 1998; Grau Sempere 2001, 2003). Let us consider two rules relevant in this process:

a. Stress rule. Stress the last syllable if it ends in a consonant, other than plural –*s*. Otherwise, stress the penultimate syllable.

b. Harmony rule. A final unstressed /a/ becomes [ɛ] and [ɔ] when preceded by [ɛ] and [ɔ] respectively.

The stress rule is ordered above the harmony rule to account for the right results in Valencian Catalan, as in (13).

(13) Valencian Catalan

Input:	/tɛra/	/rɔ.za/
Stress rule:	[tɛ́ra]	[rɔ́za]
Harmony rule:	[tɛ́rɛ]	[rɔ́zɔ]
Other rules:	[tɛ́.rɛ]	[rɔ́.zɔ]
Output:	[tɛ́.rɛ]	[rɔ́.zɔ]

The role of linguistics in such a model was to define and explain both the delimitation of inputs and the nature of rules affecting those inputs. However, as Prince and Smolensky notice (1993 [2002]: 1), over the years it has been demonstrated that the significant regularities were found in neither the inputs nor the rules but in the outputs themselves. For this reason, in OT, unlike other earlier developments in Generative Phonology, the burden of rules and derivations has been shifted to other modules of the grammar, which has been reconstructed as a direct input-output model with no intervening layers. OT is an output-oriented model whose primary action is *comparative* (McCarthy 2002: 3). In this model, attested surface forms are obtained through the interaction of different components or functions of the Universal Grammar (UG), outlined in (14):

(14) Components of the UG (Prince and Smolensky 1993 [2002])

a. The function GEN(erator) generates for every possible linguistic entry *e*, or *input*, the group of possible linguistic analyses or candidates (A, B, C…).

b. The function EVAL(uator) evaluates the candidates previously generated by GEN through a ranking of universal violable constraints and selects the most harmonic candidate according to the ranking..

c. The grammar of every language is one possible ordering of the same universal set of constraints, or CON. CON is considered part of the innate knowledge of the language that all human beings posses.

These components interact with one another, shown schematically in (15):

(15) Input → GEN → Potential Candidates {A, B, C...}→ EVAL → Output
↑
CON

OT is a model that is primarily designed "to develop and explore a theory of the way that representational well-formedness determines the assignment of grammatical structure." (Prince and Smolensky 1993 [2002]: 1). OT formalizes this requirements of "representational well formedness" into universal constraints, out of which the universal grammar is constructed. There are two kinds of constraints in CON, *markedness constraints*, which penalize or enforce a certain type of surface structure; and *faithfulness* *constraints*, which preserve the identity of structure in different correspondent strings, Input-output or output-otuput (base-truncated form and base-reduplicated form).

An example of a markedness constraint is NoCoda, which penalizes the emergence of syllables ending in a consonant or a glide; a candidate with a syllable such as *bab* would violate NoCoda since it has a consonant in coda position, whereas a candidate *ba*, without a coda consonant, would comply with NoCoda. An example of a faithfulness constraint would be a constraint such as Max IO Seg (Maximality Input Output Segment), which penalizes candidates that erase an input element. Let us consider an input *bab* and two candidates *bab* and *ba*; the candidate *bab* is fully faithful to the input form, therefore it does not violate Max IO Seg, whereas the candidate *ba* does incur one violation of Max IO Seg since it lacks one of the segments, the final b, present in the input form.

Constraints in OT reflect the core idea that grammar is a system of conflicting forces. Every constraint represents a "force" (as defined by Kager 1999: 4) and imposes a requirement for candidates to fulfill. Constraints are generally conflicting since the fulfillment of one constraint may involve the violation of another constraint. The ranking of constraints is OT's way of mediating conflicts; the violation and satisfaction of constraints is relative to their relative position in the hierarchy. Higher-ranked constraints prevail over lower-ranked constraints. Constraints are assumed to be violable; but violation is minimal. A candidate that violates one or more constraints is not necessarily ungrammatical.

To illustrate how an OT ranking works with a simple example, let us continue with the example mentioned above: a potential input *bab* generates through GEN a set of candidates {*bab, ba*}. Graphically, OT uses evaluation tableaux. The input and the set of candidates are located at the leftmost vertical column. Constraints are in the top horizontal line divided by a solid line to represent domination; a constraint A dominates a constraint B when A precedes B and a solid line separates A and B.

If a language L chooses the ranking of NoCoda over Max IO Seg (or NoCoda » Max IO Seg), this hierarchy determines the surfacing of the more harmonic candidate ba. According to this ranking, in L it is better to delete an element than to have a coda.

(16) NoCoda » Max IO Seg

Input: bab	NoCoda	Max IO Seg
☞ a. ba		*
b. bab	*!	

Violations are marked with an asterisk '*'. Fatal violations are marked with '!'. A violation is considered *fatal* when another candidate has fewer violations of the same or a higher ranked constraint. The optimal candidate, or "winner", is marked with '☞'. Shadowed boxes indicate the evaluation is irrelevant since the winner has previously been decided.

In the previous tableau, candidate b violates highly ranked NoCoda, whereas the vowel-final candidate a does not. Since candidate b has more violations of the highest ranked constraint NoCoda, candidate b is less harmonic than candidate a. Candidate a violates Max IO Seg, but this violation is not decisive, since the winner is already determined by the evaluation of NoCoda.

On the other hand, if another hypothetical grammar L´ chooses the opposite ranking, Max IO Seg dominating NoCoda (or Max IO Seg» NoCoda), it would optimally select bab as the winning candidate. In line with this ranking, it is better to tolerate codas than to delete elements. An example of such a language would be Fijian (Dixon 1988).

(17) Max IO Seg» NoCoda

Input: bab	Max IO Seg	NoCoda
a. ba	*!	
☞ b. bab		*

When two or more constraints are ranked at the same level, this is represented in a tableau by a vertical dotted line. For instance, considering the same example used before, CON in language L´ also has a constraint CVC, requiring all syllables to be heavy, together with Max IO Seg high up in the hierarchy dominating NoCoda. The optimal candidate bab complies with both CVC and Max IO Seg, whereas the inharmonic candidate ba violates both constraints. Consistent with the data displayed, there is no evidence to rank Max IO Seg and CVC.

(18) Max IO Seg, CVC » NoCoda

Input: bab	Max IO Seg	CVC	NoCoda
a. ba	*!	*!	
☞ b. bab			*

1.3. Main claims and findings and organization of this dissertation

One of the main objectives in this dissertation is to demonstrate that languages showing a quantity sensitive (QS) stress system and a quantity insensitive (QI) prosodic morphology are present in the Ibero-Romance domain, using Spanish, Catalan and Portuguese as case studies. In order to achieve its goals, this study will analyze regular Ibero-Romance QS stress patterns and define the content of feet in the verbal and non-verbal lexicon.

Along with many other linguists, this dissertation supports the view that in Ibero-Romance, heavy syllables (CVC or CVG) regularly attract main stress to the final syllable in non-verbs. Otherwise, if no heavy syllables are available word finally, the main stress falls on the penultimate syllable. In some special cases, the stress falls on the antepenultimate syllable. On the other hand, secondary stress and verbal stress are claimed to be neutral to quantity, since rhythmic and morphological aspects, respectively, are the key factors in their assignment.

Hypocoristic formation, a truncation process common in the Ibero-Romance domain, has different requirements in the different dialects of Catalan, Spanish and Portuguese. One of the strongest generalizations made on Valencian hypocoristics, as opposed to Eastern Catalan, is that they must be exactly two syllables long. In all Catalan dialects, truncated nicknames copy the main stress foot of their base, disyllabic in the case of paroxitone (antepenultimate stress) bases and monosyllabic in the case of oxitone (final stress) bases. However, only Valencian Catalan adds a final epenthetic vowel to the oxitone-based (necessarily a single heavy syllable) truncated form, thus increasing the number of syllables to two. Spanish and Portuguese hypocoristics display a variety of patterns; with different quantity requirements. Some truncated nicknames, the majority of attested cases, require two syllables and only a few hypocoristics are monosyllabic. Against all studies consulted, Spanish truncation will be claimed to be QS, since the minimal size of the truncated word is bimoraic; whereas it will be concluded that Portuguese truncatory morphology is QI as it allows monomoraic hypocoristics to surface.

Furthermore, this dissertation argues, in agreement with Fitzgerald (2002, 2003, 2004), that Hayes' (1995) Iambic-Trochaic Law, described above, are too rigid and do not account for the Valencian Catalan and Portuguese facts. Hayes treats quantity sensitivity as a *parameter*, which means languages are either sensitive or insensitive to quantity but they cannot be both at the same time. This study argues that a constraint-based model is better able to accommodate contradictory weight patterns such as the ones found in some Ibero-Romance dialects.

This dissertation contains five chapters, including this introductory foreword. Chapters 2 and 3 have a dual descriptive purpose. They serve both to illustrate the main stress and prosodic morphology patterns found in Ibero-Romance languages respectively and to outline some of the previous analyses on the data. Chapter 4 is analytic. Using OT as the theoretical framework, this chapter displays a unified analysis of the data presented in the previous two chapters. Last but not least, chapter 5 briefly summarizes the main ideas this dissertation discusses. A brief description of the chapters in this dissertation is next.

Chapter 2, *Weight discrepancies in Ibero-Romance stress assignment*, displays the different verbal and non-verbal main and secondary stress patterns found in Spanish, Portuguese and Catalan, supported by data. This chapter also analyzes the different roles syllable weight plays in the assignment of stress in Ibero-Romance and supports the view that main non-verbal stress is quantity sensitive whereas verbal and secondary stress placement do not take moras into account. This conclusion is based on my own study of the data and agrees with other studies on stress placement in the different Ibero-Romance languages. Readers with some familiarity with the data and the studies on the subject may consider omitting this chapter. The value of this chapter is not the originality of its conclusions. However, this chapter provides readers unfamiliar with the subject a concise summary of the data and the some of the different, and sometimes opposed, points of view it has produced over the last few decades.

Chapter 3, *Moraic or syllabic minimalism and stress assignment in Ibero-Romance prosodic morphology*, deals with prosodic morphology processes in Ibero-Romance, especially truncatory morphology. This chapter provides data and examines the manner in which quantity plays a role in the different prosodic morphology processes analyzed. The influence of quantity in truncation is determined by the size of the minimal truncated word. This chapter supports the hypothesis that Eastern Catalan has a quantity sensitive truncation pattern, since the size of the minimal truncated word is bimoraic. On the other hand, this study claims that truncation in Valencian Catalan is quantity insensitive as it only allows a minimally disyllabic truncated form. In addition, this dissertation concludes, against all the studies consulted, that Spanish and Portuguese truncatory processes are quantity sensitive and insensitive respectively.

Chapters 2 and 3, then, set the basis for the opposing quantity patterns the title of this dissertation mentions. All dialects under scrutiny are inconsistent in the use of weight in stress placement; main non-verbal stress assignment is quantity sensitive whereas secondary stress and verbal stress are not. Additionally, Valencian Catalan and Portuguese are claimed to display opposite quantitative patterns in main non-verbal stress assignment and in truncation, whereas Spanish and Eastern Catalan are consistent in the use of weight in prosodic morphology and main non-verbal stress assignment.

Chapter 4, *A unified optimality theoretic analysis of Ibero-Romance prosody*, analyzes the prosodic phenomena described in the previous chapters in an OT framework. The main challenge of this task is to join in a single constraint ranking all the opposing quantity patterns in Catalan, Portuguese and Spanish prosodic processes. This chapter assumes an initial ranking that favors quantity insensitive behavior, such as truncation. Quantity sensitive stress patterns are obtained by ranking stress-specific constraints that promote quantity sensitivity above this initial ranking. The assignment of secondary and verbal stress is determined by other highly ranked constraints targeting a specific prosodic process.

Finally, Chapter 5, *Concluding remarks*, wraps up the discussion in this dissertation and serves as a summary of the conclusions drawn in the previous chapters.

CHAPTER 2

WEIGHT DISCREPANCIES

IN IBERO-ROMANCE STRESS ASSIGNMENT

2.0. Introduction

This chapter reports whether syllabic weight affects how Catalan, Portuguese and Spanish assign main and secondary stress to verbs and non-verbs.[5] For this purpose, §2.1 presents relevant generalizations affecting the placement of verbal and non-verbal main stress. Main non-verbal stress is analyzed in §2.2 and verbal stress is studied in §2.3. §2.4 considers secondary stress assignment. Sections 2.2 to 2.4 present relevant data and descriptive generalizations, followed by discussion on the influence of syllable weight. Finally, §2.5 offers a summary of the claims supported in this chapter.

[5] Unless stated otherwise, this dissertation does not analyze a specific variety of Catalan, Portuguese or Spanish. All claims and conclusions, unless stated otherwise, are applied to any variety of the languages under consideration.

2.1. Preliminary generalizations

This section describes the main claims regarding the basic principles of Ibero-Romance stress assignment. Firstly, the unanimously accepted claim that stress in Ibero-Romance languages is restricted to one of the last three syllables of the word will be presented. Next, there is a summary of the different opinions on the relative degree of markedness of the three possible positions of stress, due to the three-syllable window principle. Finally, this section summarizes different points of view that linguists in the past have used to support the derivational stem or the prosodic word as the right domain for stress assignment.

All the studies consulted agree on the observation that stress in Ibero-Romance can only fall on the last, the penultimate, or the antepenultimate vowel in the word. However, the addition of clitics in verbs can displace the stress to the fourth or fifth syllable from the right edge of the word. The stressed syllable remains unchanged, regardless of the accumulation of clitics, as in the Spanish examples in (1).[6]

[6] Throughout this dissertation, examples are transcribed ignoring irrelevant phonetic information. To name just a few: (1) Only vowels [a, e, i, o, u] were used, ignoring schwas and open mid vowels in Eastern Catalan and Portuguese (2) Although nasalization is shown in Portuguese, it is ignored in Catalan and Spanish (3) Rhotic allophones in the three languages are ignored and simplified to [r] (4) In Spanish and Catalan, voiced fricatives [β, ð, γ], which alternate with [b, d, g] are not shown (5) Place assimilation in coda nasals is limited to [m, n]. Syllabic division is indicated with dots '.' and stressed syllables are marked with a stress mark over the vocalic nucleus 'á'. Transcription, unless stated otherwise, corresponds to Brazilian Portuguese, since the vast majority of studies consulted analyzed this variety, and the dialects the author of this dissertation is a native speaker of, namely Southern Alacantí Western Catalan and Central Peninsular Spanish.

(1) Spanish

		Gloss
a.	kí.te	'take away'
b.	kí.te.me	'take me away'
c.	kí.te.me.lo	'take it away from me'
d.	kí.te.se.me.lo	'take it away from me (emphatic)'

There is also agreement among studies on Ibero-Romance stress regarding the division of lexical items into marked or unmarked patterns. Paroxitone words ending in a vowel and oxitone words ending in a consonant are generally considered unmarked. On the other hand, words ending with penultimate stress, oxitone words ending in a vowel and all proparoxitone words are considered marked.

Harris (1992: 11) splits the Spanish non-verbal vocabulary into three different categories, Type A, B and C words. The unmarked patterns, paroxitone words ending in a vowel and oxitone words ending in a consonant, the vast majority in frequency, identified by Harris (1983, 1991), join the Type A class. Type B words include paroxitone words ending in a consonant and antepenultimate stressed words. This group constitutes a minority but it is still considerable in number in Spanish. Finally, Type C words integrate the scarce number of oxitone words ending in a vowel. The majority of studies, except Otero (1986), coincide in considering Type A words the unmarked pattern.

Harris (1992: 15) provides different reasons to support this claim. The first piece of evidence is statistical. The vast majority of words in Spanish are grouped in the Type

A category: 86% of words ending in a vowel are paroxitone and 97.8% of consonant-final lexicon bears final stress, according to Morales-Front (1995). In addition, the majority of loanwords from other languages are adapted to the unmarked pattern. Words like *Bulova* (bu.ló.ba), *Subaru* (su.bá.ru), *Nissan* (ni.sán), *hangar* (an.gár), *detective* (de.tek.tí.be), *video* (bi.dé.o) adopt the unmarked stress pattern. However, other lexical items like fút.bol ('soccer' from English *football*) or bás.ket.bol ('basketball' from English *basketball*) keep the stress in the original syllable.[7] According to Harris (1992: 15), these words do not constitute evidence against the stress patterns he proposes "From these we learn only that Spanish speakers can mimic the stress contours of English words; no further inference can be drawn about the stress rules internalized by native speakers of Spanish." Finally, acronyms are normally pronounced as Type A words. Examples included such words as *ALADI* (a.lá.di), *CANACINTRA* (ka.na.θín.tra) or *IMER* (i.mér).

There are several reasons to group Portuguese and Catalan with Spanish concerning marked and unmarked patterns. Firstly, statistical reasons could lead us to conclude that Type A is the unmarked pattern for Portuguese and Catalan as well. For Portuguese, Mateus and d´Andrade (2000: 110) claim that approximately 80% of the Portuguese lexicon consists of Type A words. Lee (1997: 9) is more precise in the computation of Portuguese data. This study claims that 78% of Portuguese words ending

[7] Dialectal variation exists. Some dialects produce fut.ból and bas.ket.ból, keeping with the expected regular Type A pronunciation. However, other dialects pronounce ní.san and bí.de.o, conforming to a foreign pronunciation.

in a consonant have the expected unmarked oxitone pattern (21.55% are marked: 21% are paroxitone and55% are proparoxitone). Serra (1996: 346) analyzes a corpus of Catalan words and concludes that less than2% of words ending in a vowel are oxitone and less than 11% of the words ending in a consonant are paroxitone. If we take into account regular Type A pronunciation. However, other dialects pronounce ní.san and bí.de.o, conforming to a foreign pronunciation. In Serra's account, approximately 2% of the words are proparoxitone, the results indicate that more than 86% of Catalan words comply with the regular unmarked stress assignment described as Type A in Harris (1992).

Secondly, the markedness division proposed by Harris for Spanish can be applied to Catalan and Portuguese words based on acronym pronunciation as well. Cabré (2003: 924) notices that the stress position on acronyms is predictable. Acronyms are oxitone and paroxitone when they end in a consonant and in a vowel respectively, thus, conforming to the unmarked Type A pattern. Examples are *UNESCO* (u.nés.ko), *ESADE* (e.sá.de), *ADI-FAD* (a.di.fát) or *CIRIT* (si.rít) (Cabré 2003: 924). On the other hand, Gonçalves (2004) cites a handful of Brazilian Portuguese acronyms like *BANERJ*, *EMBRATEL*, *MOBRAL* or *UFO* without indicating the stressed syllable.

Lastly, the pronunciation of foreign words in Catalan and in Portuguese adopts the regular unmarked pattern for the stress assignment of native words. Oliva and Serra (2003: 369) present a handful of Catalan examples like *bungalou* (bun.ga.lów from English *bungalow*), *tiquet* (ti.két from English *ticket*) or *penalty* (pe.nál.ti from English *penalty kick*). In the same study, the authors observe that some words have kept the stress pattern in their original language; examples are words like Amsterdam or Washington.

Oliva and Serra conclude, along with Harris, that in words like those, native speakers not only learn the pronunciation of the word but also the position of the accent. Harris' division of Spanish lexicon into three groups (unmarked Type A and marked Type B and C), adopted in other posterior studies on Spanish stress such as in Dunlap (1991), has been shown to be adequate for both Catalan and Portuguese and will be used in this dissertation to divide Ibero-Romance non-verbal stress patterns.

The studies on stress in Ibero-Romance do not agree on the nature of the domain for stress. Some studies support the idea that the domain of stress assignment is the *derivative stem*, the word without derivative or flexive morphemes.[8] Others conclude that the prosodic word is the domain for stress.[9] Harris (1983: 91, 1992: 24) provides three reasons to reject the derivative stem as the domain for stress in Spanish. The first cause is syllabification. If we consider the derivative stem as the domain for stress, in a word like álxebr]$_{stem}$ a] ('algebra'), there is no way to ascertain whether postnuclear consonants are syllabified or not. If this consonant cluster is syllabified in the coda, ál.xebr]$_{stem}$ a], the

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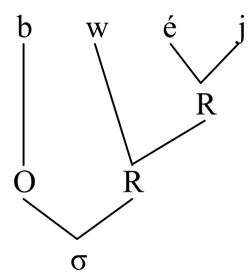
[8] Spanish: Hooper and Terrell (1976); Roca (1988, 1990a, 1991, 1992, 1997); Otero (1986); Morales-Front (1995). Catalan: Alsina (1989). Portuguese: Costa (1978); Lopez (19799; Maia (1981a, 1981b); Mateus (1983); Lee (1994, 1997, 1999, 2002, 2003); Pereira (1996-7); d'Andrade (1997); Cagliari (1999); Mateus and d'Andrade (2000). All the Romance languages: Roca (1999).

[9] Spanish: Fink (1978); Solán (1981); Harris (1983; 1989, 1991, 1992, 1995); Den Os and Kager (1986); Dunlap (1991); Morales-Front (1994); D'Introno et al (1995); Lipski (1997). Catalan: Oliva (1992); Oliva and Serra (1992); Serra (1992-3, 1996, 1997); Cabré (1993, 1994, 1998); Bonet and Lloret (1998). Portuguese: Leite (1974); Carvalho (1989); d'Andrade and Laks (1991); Wetzels (1992, 2003); Bisol (1992, 1994); Massini-Cagliari (1999); Collischonn (2002); Dantas and Rondonini (2004).

proparoxitone stress in the word would be impossible, due to the *Branching Condition*, which prohibits the rhyme of an unstressed syllable branch. We would have to suppose the cluster is part of the onset of the next syllable, still without a nucleus, ál.xe.br]$_{stem}$ a], to avoid this problem. However, In Harris' opinion the analysis is more adequate if we assume that stress is assigned after syllabification, in the domain of the word and not of the stem.

Harris (1983) assumes a representation of the syllable composed of two immediate components: the onset (O) and the rhyme (R). The same linguist (1983: 8) defines the rhyme as "the obligatory constituent containing the sonority peak" and includes both the nucleus and any pre and post nuclear glides and postnuclear consonants. The onset is the optional left sister. The representation of a monosyllabic word like bwéj ('*ox*') is in (2).

(2) Spanish



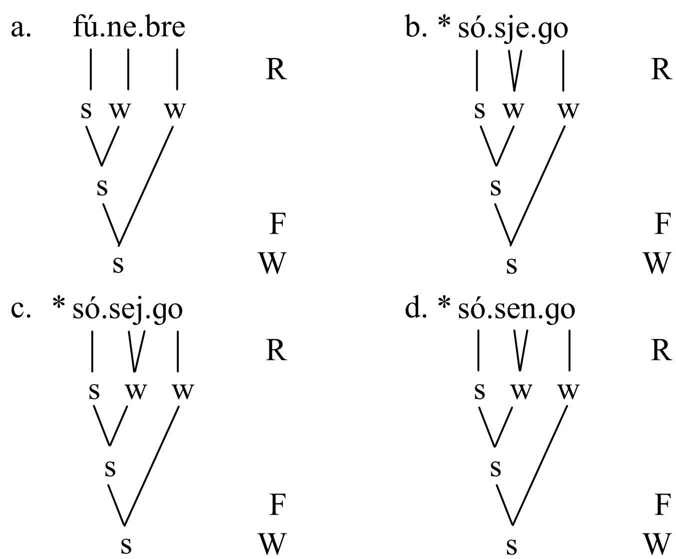
Harris (1983: 111) defines his *Branching Condition* according to the previous hypothesis of the syllable and to foot formation principles.

(3) Branching Condition

Foot-nodes labeled *w*(eak) cannot branch.

In Harris' (1983) adaptation to Spanish of Liberman and Prince's (1977) arboreal grid model, feet (F) form left-branching tress with a rightmost *s*(trong) node and an optional rightmost *w*(eak) node, assigned at the R(hyme level). Words (W) form right-branching trees. According to Harris, post-stressed weak nodes can only include a vocalic nucleus. Syllables with rhymes such as G(lide)V(owel), VG and VC(onsonant) are barred from surfacing in post-stressed position. Examples of the effects of the Branching Condition are in (4).

(4) Spanish



Penultimate stress is possible in example (4) a, as the Branching Condition is not violated.

However, hypothetical proparoxitone examples b-d are impossible, for their penultimate weak rhyme dominates more than one element.

Harris' Branching Condition can be reinterpreted using the principles of Moraic Theory (among others, Hyman 1985 or Hayes 1985, 1995, 1989). According to this model, outlined in Chapter 1, proparoxitone stress is impossible in hypothetical words like *só.sej.go or *só.sen.go as their penultimate syllable is heavy, it dominates two moras: *só.se$^{\mu}$j$^{\mu}$.go, *só.se$^{\mu}$n$^{\mu}$.go. However, a theory based on moras does not explain why a penultimate syllable with a GV rhyme blocks antepenultimate stress.

The hypothesis this dissertation will support is that Ibero-Romance has both light and heavy syllables, vowels and coda consonants and glides contribute weight, and that syllabic weight is a factor in assigning stress. In contrast, there is no evidence for long vowels in this language, neither phonemically nor phonetically, contradicting Trubetzkoy's Generalization (assumed and slightly modified by Zec 1995). *Trubetzkoy's Generalization* claims that a language that allows CVC heavy syllables also allows CVV syllables.

The optimality theoretic (Optimality Theory, OT) ranking partially responsible for the hypothesis that coda consonants and glides contribute weight in Catalan is the one in (5).

(5) Weight-by-Position » *Cμ

a. Weight-by-Position (Kager 1999: 147): coda elements are moraic. (One * for each coda element that is not moraic).

b. *Cμ (Holt 1997: 3): consonants are not moraic. (One * for any consonant that is the sole dependant of a mora).

An example of the interaction of these constraints with a Catalan word like *fum* 'smoke' is found in (40).

(6) Catalan

Weight-by-Position » *Cμ

Input: fum	Weight-by-Position	*Cμ
☞ a. $fu_{\mu}m_{\mu}$		*
b. $fu_{\mu}m$	*!	

Coda consonants are moraic, regardless of their weight specification in the input. The sub optimal candidate b obeys *Cμ but is ruled out by the action of Weight-by-Position, that requires all coda consonants and glides to be moraic.

The assumption that codas are moraic necessarily involves the violation of *σμμ, as seen in (8).

(7) Weight-by-Position >> *σμμ,

*σμμ (Kager 1999: 147): syllables are monomoraic. (One * for every heavy syllable).

(8) Catalan

Weight-by-Position >> *σμμ

Input: $fu_{\mu}m$	Weight-by-Position	*σμμ
☞ a. $fu_{\mu}m_{\mu}$		*
b. $fu_{\mu}m$	*!	

Vowels are also claimed to be moraic. The following ranking accounts for this analysis.

(9) Vμ »*Vμ

a. Vμ (Spaelti 2006: 28): vowels are moraic. (One * for every vowel that is not dominated by a mora).

b. *Vμ (Holt 1997: 56): vowels are not moraic. (One * for every vowel that is dominated by a mora).

The ranking in (9) is exemplified in the following tableau:

(10) Catalan

Vμ » *Vμ

Input: fum	Vμ	* Vμ
☞ a. $fu_{\mu}m_{\mu}$		*
b. fum_{μ}	*!	

A second source of Harris' (1992: 25) rejection of the derivational stem as the domain for stress assignment is verbal flexion. Tense, mode, aspect, person and number in Spanish verbal morphology are traditionally classified as flexive morphemes, excluded from the stem. Despite this observation, flexive morphemes affect the stress assignment in some verbal forms (Cf. ábl-e but a.bl-é-mos).

The use of prepositions and other functional words, stressed in a metalinguistical use, and acronyms is the last argument Harris proposes to discard the derivational stem as the domain for stress assignment. Harris notes how these words can never undergo stem based derivational affixation and, therefore, they do not posses a derivational stem. For this reason, if the derivational stem were the domain for stress, these words could never be stressed.

Like many others, this study follows Harris' rejection of the notion that the derivative stem is the proper domain for Spanish stress assignment and that this analysis should be applied to Catalan and Portuguese. Therefore, this analysis agrees with those that claim the prosodic word is the domain for stress assignment in Ibero-Romance.

Summarizing critical points in this section, there is consensus among linguists in the status of the three-syllable window in Ibero-Romance; the stress can only be placed within the last three syllables of a word. There is almost complete consensus on the issue of markedness among the different stress patterns in non-verbs. This study supports the conclusion that the unmarked pattern, labeled Type A words, in Ibero-Romance includes words ending in a vowel with final stress and penultimate stress in consonant-final lexicon. Finally, this study supports the claim that the prosodic word, rather than the derivative stem, constitutes the domain for stress assignment.

2.2. Main non-verbal stress

This section attempts to present relevant data to describe marked and unmarked patterns in placing non-verbal stress in the Ibero-Romance domain. The second goal is to critically analyze the abundant literature on this matter to be able to reach a conclusion on whether Ibero-Romance languages are sensitive to syllabic structure when assigning stress or, on the other hand, consider only the number of syllables.

The rest of the section is organized as follows. First, §2.2.1 offers a description of non-verbal stress patterns, regular and irregular, and the influence morphology, affixes and suffixes, may play in assigning stress in the Ibero-Romance languages. In §2.2.2 this study supports a quantity sensitive analysis of Ibero-Romance non-verbal stress placement based on the discussion of the literature on the matter.

2.2.1. Description of marked and unmarked stress patterns

Non-verbal stress assignment in Spanish, Catalan and Portuguese fall into three major patterns. Firstly, all content words, including monosyllabic words, are stressed.

(11)	Catalan	Portuguese	Spanish	Gloss
	a. má	mɐ̃́õ	—	'hand'
	b. té	ʃá	té	'tea'
	c. fé	fé	fé	'faith'
	d. pá	pɐ̃́w̃	pán	'bread'
	e. mél	mél	mjél	'honey'
	f. trén	trém	trén	'bread'
	g. péw	pé	pjé	'foot'
	h. trés	trés	trés	'three'

Secondly, the majority of polysyllabic words ending in a vowel are paroxitone, as the examples in (12) show.

(12)	Catalan	Portuguese	Spanish	Gloss
	a. ká.za	ká.za	ká.sa	'house'
	b. fés.ta	fés.ta	fjés.ta	'party'
	c. sém.pre	sém.pri	sjém.pre	'always'
	d. e.nór.me	e.nór.mi	e.nór.me	'huge'
	e. bi.gó.ti	bi.gó.ʧi	bi.gó.te	'moustache'
	f. ká.ro	ká.ro	ká.ro	'car'
	g. —	a.ʤi.vo.gá.du	a.bo.gá.do	'lawyer'
	h. re.sí.du	—	—	'residue'
	i. trí.bu	trí.bu	trí.bu	'tribe'

Finally, the majority of words ending in a glide or a consonant, other than plural *–s*, are oxitone, as seen in (13).

(13)

	Catalan	Portuguese	Spanish	Gloss
a.	pin.zéj/ʎ[10]	—	pin.θél	'brush'
b.	ko.ro.nél	ko.ro.néw	ko.ro.nél	'colonel'
c.	ka.ráj	—	ka.ráj	'interjection'
d.	tro.féw	tro.féw	—	'trophee'
e.	pro.fe.sór [11]	pro.fe.sór	pro.fe.sór	'professor'
f.	be.ri.tát	—	ber.dád	'truth'
g.	a.rós	a.rós	a.róθ	'rice'
h.	—	—	re.lóx	'watch'

On the other hand, there are three main patterns of irregular stress patterns described below. First, some words ending in a vowel are oxitone, as shown in (14).

(14)

	Catalan	Portuguese	Spanish	Gloss
a.	so.fá	so.fá	so.fá	'sofa'
b.	ʧa.lé	ʧa.lé	ʧa.lé	'chalet'
c.	gwa.ra.ní	gwa.ra.ní	gwa.ra.ní	'Guarani'
d.	do.mi.nó	do.mi.nó	do.mi.nó	'domino'
e.	ta.bú	ta.bú	ta.bú	'taboo'

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[10] Underlying /ʎ/ normally surfaces as a glide [j] in Valencian Catalan by a process of delateralization, common in other romance languages like Spanish (see, among others, Quilis 1993). Other varieties of Catalan are more resistant to delateralization (see Bonet and Lloret 1998).

[11] Some Catalan dialects delete vibrant consonants in final stressed syllables: *paper* (pa.pé)~*paperera* (pa.pe.ré.ra) 'paper ~ wastebasket' (see, among others, Bibiloni 2002).

In Catalan, a majority of oxitone words ending in a vowel has an underlying final -n that appears before suffixes, but is deleted in morpheme final position. However, other words of foreign origin like me.nú (plural me.nús, *me.núns) do not have an underlying [n]. In (15) some examples are compared to their derived plural, adding suffix -s as the plural marker, and diminutive version, where -ét is added.[12]

(15) Catalan

Singular	Plural -s	Diminutive -ét	Gloss
a. me.ló	me.lón-s	me.lo.n-ét	'melon'
b. sa.bó	sa.bón-s	sa.bo.n-ét	'soap'
c. kam.pi.ó	kam.pi.ón-s	kam.pi.ó.n-ét	'champion'
d. ka.mí	ka.mín-s	ka.mi.n-ét	'road'
e. ka.ta.lá	ka.ta.lán-s	ka.ta.la.n-ét	'Catalan'

Portuguese behaves similarly to Catalan regarding final nasals. In word-final position, a nasal consonant is deleted but leaves its nasal feature to the preceding vowel, thus creating a final nasalized vowel. The nasal consonant reappears in liaison contexts. In (16), a singular form displays a final nasalized vowel. However, the nasal consonant reappears with the addition of the plural marker –s.[13]

[12] In Catalan, deletion of [n] in final stressed and unstressed syllables is a common process in all dialects (Bonet and Lloret 1998 or Bibiloni 2002, among others, provide more details on this pattern and on exceptions).
[13] Although, some dialects drop the nasal, e.g. ʒar.dĩ́ ~ ʒar.dĩ́s (Orlando Kelm, personal communication).

(16) Portuguese

	Singular	Plural -s	Gloss
a.	ʒar.dĩ́	ʒar.dʒín-s	'garden'
b.	ir.mã́	ir.mán-s	'sister'
c.	ku.mṹ	ku.mún-s	'common'
d.	bõ.bṍ	bõ.bón-s	'bonbon'

Similar to the behavior of Portuguese and Catalan nasals, Portuguese and Spanish oxitones with a final oral vowel have also been claimed to have an abstract unpronounced final consonant that regularizes stress placement. For instance, oxitone words ending in a vowel show a variety of consonants that appear in liaison contexts in derived words and when added a diminutive morpheme, as shown in (17).

(17)

	Portuguese	Spanish	Gloss
a.	ka.fé	ka.fé	'coffee'
	ka.fe.téj.ra	ka.fe.té.ra	'coffee machine'
	ka.fe.zí.ɲo	ka.fe.θí.to[14]	
b.	so.fá	so.fá	'sofa'
	so.fa.zí.ɲo	so.fa.θí.to	
c.	ta.bú	ta.bú	'taboo'
	ta.bu.zí.ɲo	ta.bu.θí.to	

Diminutive allomorphs –zí.ɲo and –θí.to, employed in Portuguese and Spanish respectively, are the same allomorphs used with the root ends in some consonants, as shown in (18).

[14] Also produced ka.fe.ti.to or ka.fe.lí.to in some dialects.

(18) Portuguese		Spanish		Gloss
Base	Diminutive	Base	Diminutive	
pro.fe.sór	pro.fe.sor.zí.ɲo	ka.xón	ka.xon.θí.to	'professor', 'drawer'
	* pro.fe.sor.zí.ɲo		* ka.xon.θí.to	

In conclusion, in the three languages under analysis, an underlyingly unpronounced final consonant seems to be affecting stress placement in the singular form. If this is the correct analysis, these words are assigned stress regularly as they are equivalent to the words in (13), complying with the generalization expressed above that the majority of words ending in a consonant are oxitone.

The second generalization regarding marked stress assignment is that some words ending in a consonant, excluding the plural suffix marker -s, are paroxitone, and do not show the expected regular oxitone stress.

(19)

	Catalan	Portuguese	Spanish	Gloss
a.	já.pis	lá.pis	lá.piθ	‘pencil’
b.	ka.rák.ter	ka.rá.ter	ka.rák.ter	‘temperament’
c.	ab.dó.men	ab.dó.men	ab.dó.men	‘abdomen’
d.	fó.rum	—	fó.rum	‘forum’
e.	tó.raks	tó.raks	tó.raks	‘thorax’
f.	fá.sil	fá.siw	fá.θil	‘easy’
g.	dís.nej	—	dís.nej	‘Disney’
h.	—	vjá.ʒẽj̃	—	‘travel’
i.	á.rap	—	—	‘Arab’
j.	es.tú.pit	—	—	‘stupid’
k.	in.trín.sek	—	—	‘intrinsic’

Finally, Some words are proparoxitone, rather than showing the expected oxitone, examples a-d, or paroxitone pattern, as seen in consonant-final example e.

(20)

	Catalan	Portuguese	Spanish	Gloss
a.	sí.la.ba	sí.la.ba	sí.la.ba	‘syllable’
b.	sín.te.si	sĩ́.te.si	sín.te.sis	‘summary’
c.	me.tró.po.li	me.tró.po.li	me.tró.po.lis	‘metropolis’
d.	ím.pe.tu	ĩ́.pe.tu	ím.pe.tu	‘strength’
e.	ʤú.pi.ter	ʒú.pi.ter	xú.pi.ter	‘Jupiter’

It is worth mentioning that there are limitations on the shape of words that can be proparoxitone. For instance, there are no native proparoxitone words with a closed penult syllable. However, this generalization is not applicable for a handful of recent loanwords, which usually denote foreign names of places: *Manchester, Liverpool, Washington,* *Anderson, Robinson* or *Amsterdam*. The previous words are normally produced oxitone by members of older generations, thus adopting the regular allocation of Ibero-Romance stress. However, younger generations have adopted the original stress of these words. Whether this trend is a matter of just mimicking the pronunciation of a foreign word, or the introduction of a new stress pattern in the grammar is a question that still needs further discussion.

In Ibero-Romance languages, suffixes may affect the position of stress, as seen in (21).

(21)	Catalan	Portuguese	Spanish	Gloss
	a. fór.ma	fór.ma	fór.ma	'shape'
	b. for.ma.li.zát	for.ma.li.zá.du	for.ma.li.θá.do	'formalized'
	c. for.ma.li.zár	for.ma.li.zár	for.ma.li.θár	'to formalize'

Examples (21) b, c change the position of the stress by adding the masculine singular past participle and the infinitive suffixes respectively. A list of some derivational suffixes and how they attract stress is in (22).

(22)

	Catalan	Portuguese	Spanish	Gloss
a.	pe.dr-á.da	pe.dr-á.da	pe.dr-á.da	'stone blow'
b.	for.m-ál	for.m-ál	for.m-ál	'formal'
c.	fe.r-á.ʤe	fe.r-á.ʒẽ̃j̃	e.r-á.xe	'hardware'
d.	kon.for.t-á.ble	kon.for.t-á.vew	kon.for.t-á.ble	'comfortable'
e.	de.bi.l-i.tát	de.bi.l-i.dá.ʤi	de.bi.l-i.dád	'weakness'
f.	fo.n-ó.leg	fo.n-ó.lo.gu	fo.n-ó.lo.go	'phonologist'
g.	bo.b-e.rí.a	bo.b-éj.ra	bo.b-e.rí.a	'silliness'
h.	be.j-é.za	be.l-é.za	be.j-é.θa	'beauty'
i.	in.gl-és	ĩ.gl-és	in.gl-és	'English'
j.	bi.bljo.te.k-á.ri	bi.bljo.te.k-á.ri.u	bi.bljo.te.k-á.rjo	'librarian'
k.	for.ma.l-i.zár	for.ma.l-i.zár	for.ma.l-i.θar	'to formalize'

The behavior of suffixes and prefixes regarding stress agrees with previous considerations on stress assignment. First, stress is assigned at the right edge of the word; this is why prefixes, located at the left edge of the word, have no influence on stress assignment. Second, most of the suffixes that are claimed to attract stress conform to the regular stress patterns anyway: they are oxitone when they end in a consonant and paroxitone when they end in a vowel. Only a few of stress-attracting suffixes are truly exceptional: - á.ʒẽ̃j̃, -á.vew in Portuguese.

A few suffixes in simple words (and in compound words only in Catalan and Spanish) affect stress differently. Instead of "attracting" the stress to themselves, they are neutral regarding stress that, therefore, falls onto the immediately preceding syllable. Examples of stress-neutral suffixes are in (23).

(23)	Catalan	Portuguese	Spanish	Gloss
	a. sim.bó.l-ik	sĩ.bó.l-i.ku	sim.bó.l-i.ko	‘symbolic’
	b. gló.b-ul	gló.b-u.lu	gló.b-u.lo	‘globule’
	c. te.lé.-fon	—	te.lé.-fo.no	‘telephone’
	d. ter.mó.-me.tre	—	ter.mó.-me.tro	‘thermometer’

Flexive suffixes are never stressed. Like in derivative suffixes, a question that this statement suggests is whether these suffixes are underlyingly unstressed or not. For instance, gender marking endings -a, -o, -e found in the different Ibero-Romance languages form an open final syllable when added to the derivational stem. Thus, the regular stress assignment patterns described above can account for the apparently unstressed nature of these suffixes. On the other hand, as mentioned before in this section, number marking suffix -s forms final open syllables that are never stressed. This observation may be conclusive to support the hypothesis that flexive suffixes are underlyingly unstressed.

To summarize critical points, this section reviews that regular stress assignment follows from two strong generalizations. Almost all words ending in a vowel are paroxitone and almost all words ending in a consonant are oxitone.[15] Exceptional patterns occur: some words ending in a consonant are paroxitone and a few words ending in a

[15] The stress algorithm proposed for Ibero-Romance is similar to Latin, except for the analysis that the last syllable in Latin is extrametrical. Classical Latin stress algorithm has been thoroughly analyzed (see, among many others, Bullock 2001, Halle 1997, Hayes 1995, Mester 1994, Roca 1999, Saltarelli 1997, Walker 1975) and can be informally summarized as follows: Stress a heavy penult, if there is one; otherwise stress the antepenult, if there is one; otherwise stress the first syllable. These principles produce stressed monosyllabic words, paroxitone disyllabic words and paroxitone or proparoxitone trisyllabic or longer words. Final syllables in disyllabic or longer words are extrametrical, they are never stressed or influence stress.

vowel are oxitone. Paroxitone words ending in a consonant truly form an exceptional stress pattern. Then again, almost all paroxitone words ending in a vowel have a final unpronounced (except under conditions of liaison) consonant that seems to be covertly affecting the placement of stress. Proparoxitone words occur unpredictably. Still, all native words observe the same restriction; a consonant or a glide can never close the post-stressed syllable. Finally, some suffixes affect regular stress placement by attracting the stress to themselves or by retracting the stress to the previous syllable.

2.2.2. Quantity (in)sensitivity in non-verbs

This section summarizes the opposite conclusions linguists have had on the issue of Ibero-Romance quantity sensitivity in the last decades. For Spanish, phonologists Iggy Roca and James Harris, among others, have had different views on Spanish being a quantity sensitive or insensitive language regarding stress assignment.[16] Both linguists offer valid reasons to sustain their ideas. On the other hand, John Lipski explains how Spanish has a stress system based partially on quantity sensitivity. Experimental phonetic studies generally conclude that stress in Spanish is placed without taking syllabic weight into account (Eddington 2000; Bárkányi 2002a, b; Alvord 2003; Face 2004). Only the studies by Face (2000) and Eddington (2004) claim quantity sensitivity has an impact on Spanish stress assignment. On the same issue in Portuguese, Leo Wetzels concludes the

[16] Other phonological studies such as Den Os and Kager (1986), Dunlap (1991), Morales Front (1994), Rosenthall (1994), D'Introno et al (1995), Piñeros (2001) have supported a quantity sensitive algorithm for Spanish main stress assignment. On the other hand, only Hooper and Terrell (1976), Hammond (1995) and Morales-Front (1995) support a quantity insensitive analysis.

reasons given in support of a quantitative analysis of Portuguese stress, and the other languages treated in this dissertation, especially Trubetzkoy's Generalization, are not valid and defends the need for a quantity sensitive analysis. Finally, there has not been much debate on Catalan stress studies. Only Alsina (1989), Oliva (1992) and Serra (1992-3) have supported a quantity insensitive view of Catalan stress. More recently, studies on Catalan stress coincide in the quantitative analysis based on the generalizations that heavy final syllables attract stress and that heavy penultimates disfavor antepenultimate stress (Cabré 1993, 1994, 1998; Serra 1996, 1997; Bonet and Lloret 1998; Grau Sempere 2002; Oliva and Serra 2002).[17]

Harris (1983, 1992, 1995) assumes Spanish is a quantity sensitive language based on two main arguments: the impossibility of proparoxitone stress in the presence of a posttonic heavy syllable and data from Núñez Cedeño's (1986) study of Dominican Spanish. Núñez Cedeño observes how this variety of Caribbean Spanish shows an ultra correct [s] in almost any syllabic coda in a word. The only position that cannot have this epenthetic [s] is the coda of the posttonic syllable in a proparoxitone Type B word.

[17] All the studies mentioned consider the placement of stress in Ibero-Romance to be done either by rule or by
constraint interaction. However, this is not the only point of view. Linguists like, among others, Mascaró (1976), Wheeler (1987), Recasens (1991, 1993), Hualde (1992b), Prieto i Vives (2004) for Catalan; Camara (1953), Agard (1969), Abaurre et al. (2001) for Portuguese; and Alarcos Llorach (1950), Saporta and Contreras (1962), Stockwell and Bowen (1965), Quilis and Fernández (1969), Whitley (1976), Hayes (1995) for Spanish claim that, due to its complexity, stress in the different Ibero-Romance languages is a lexical property of words.

(24) Caribbean Spanish

a. i.po.pó.ta.mo (standard pronunciation) ‘Hippopotamus’

b. i.po.pó[s].ta.mo

c. i.po[s].pó.ta.mo

d. * i.po.pó.ta[s].mo

Harris (1983, 1992) concludes that this ultra correct [s] can only appear as long as it does not form a posttonic heavy syllable.

Morales-Front (1999) recently questioned the earlier argument by observing that ultra corrective [s] insertion is a sociolinguistic variable process in which the speaker consciously inserts an element not present in the underlying representation in the post lexical level, when the word has already been stressed. If this is the right analysis, the ultra correct [s] has nothing to do with syllabic weight and stress assignment. Another alternative explanation for the absence of ultra correct [s] in certain environments put forward by Morales-Front is that the speaker inserts the element taking into account where the element would be in the standard variety. In that case, the speaker would choose the less marked option(s). Morales-Front concludes that this phenomenon should not be taken into account for considering Spanish a quantity sensitive language: “… puesto que existen explicaciones alternativas, los datos del dominicano no deberían, por sí solos, tomarse como prueba irrefutable de que en español las codas contribuyen al peso silábico.” (Morales-Front 1999: 224).

The second main argument Harris presents to support the view that Spanish stress assignment is quantity sensitive is the observation that Type B words are incompatible with ultimate or penultimate syllables with a complex rhyme. Exceptions to this generalization are the native *Frómista*, fró.mis.ta, and recent loanwords such as *Washington,* wá.ʃin.ton, *Manchester*, mán.ʧes.ter, or *Disney*, dís.nej (Cf. Roca 1988: 417 or 1991: 601). Experimental studies such as Bárkányi (2002a, b), Alvord (2003) and Face (2004) provide a counterargument to Harris' conclusion.

Bárkányi (2002a) carried out an experiment in which informants were asked to write the stress in nonce words inserted used as proper or common nouns in sentences. The results show how antepenultimate stress appeared in approximately 20% of cases when the penultimate syllable was heavy, contradicting the hypothesis that this pattern is exceptional and non-native. For this reason, Bárkányi concludes that Spanish stress assignment is not quantity sensitive but assigned lexically according to patterns in the lexicon, based on analogy to known words in the lexicon. She supports this conclusion, even though informants noticed the unmarked patterns of stress in a majority of cases: around 65% of both proper and common nouns ending in a consonant had the expected last syllable stressed. In addition, penultimate stress was chosen in approximately the same percentage when words ended in a vowel.

Barkanyi (2002b) and Alvord (2003) attempt to provide more evidence to prove Spanish is a quantity insensitive language. Barkanyi's (2000b) shows that only 27% of informants rejected proparoxitone stress with a heavy penult and 31% accepted those supposedly non-native patterns as unmarked. Alvord (2003) performs an experiment with a nonce word test and concludes that more than 90% of informants accepted technically impossible patterns such as *te.lé.fos.no, used before to validate quantity sensitivity in Spanish stress. Based on this result, Alvord also concludes that Spanish stress assignment is quantity insensitive.

Face (2000) directed a perceptual experiment with synthesized speech in which informants were requested to mark which syllable they perceived as stressed. In this study, pitch and duration were held constant in an attempt to focus on whether syllable structure influences stress assignment. Face concluded that quantity sensitive rules of Spanish stress assignment influenced perception: a word ending in a vowel is perceived as paroxitone, a word ending in a consonant is perceived as oxitone and proparoxitone stress is blocked by a heavy penultimate.

However, Face (2004) admits the experiment in Face (2000) had a shortcoming: all vowels had the same length, but the duration of the syllable increased when the coda consonants were added. As a result of syllables becoming longer, there could have been an acoustic factor leading the informants to select the stress syllable not because of its syllabic structure but because it was longer than light syllables. In the new experiment in Face (2004), the nonce words were manipulated so that each syllable had the same length and intensity. The results show that the weight of the final syllable is a factor in the perception of Spanish stress, although not as strong of a factor as suggested in Face (2000), 61.8% in Face (2004) against 74.2% in Face (2000). Face (2004: 124) admits that the results are consistent with the regular patterns that assign stress to the last heavy syllable. However, in marked stress patterns syllable weight does not play a role in the perception of Spanish stress. Proparoroxitone patterns are perceived almost the same number of times regardless of the penultimate syllable being heavy or light.

For Alvord, Bárkányi and Face, regular stress patterns only have the appearance of being quantity sensitive but, in reality, they are nothing but a historical residue. In Alvord's words: "These results indicate that Spanish is not quantity sensitive; the lack of antepenultimate stress in the two situations considered is the result of historical developments and is not a productive restriction on Spanish stress." (Alvord 2003: 1).

Among perceptual studies on Spanish stress, Eddington (2004) is the only study maintaining that weight plays a role in Spanish stress assignment. In this study, a series of analogical simulations and a nonce word study are carried out. Several simulations were done to determine which variables are most relevant to stress placement in Spanish: syllable weight, the CV tier, phonemic representation or the combination of the phonemic representation and syllable weight or the CV tier. The results of these simulations show that the phonemic representation of words obtained a much higher rate of success than syllable weight and the CV tier. Alternatively, the nonce word study in Eddington (2004) provides evidence in favor of the use of syllabic weight in the placement of stress. Eddington concludes: "However, in contrast to the database simulations, the nonce study does provide evidence that the use of abstract units such as syllable weights and CV tier elements may affect accentuation. […] It is this evidence that suggests that the role of CV tier and syllable weights should not be discounted." Eddington (2004: 110).

Among phonologists, Roca (1988: 417, 1990a: 152, 1997: 629) criticizes the notion that Spanish stress assignment is quantity sensitive and gives several reasons to support his conclusion:

a. Paroxitone stress is not marked in both heavy and light syllables (Roca 1997: 631). In other words, penultimate stress is preferred, regardless of syllabic weight.

b. Several words with a light penultimate syllable in Spanish are obligatorily paroxitone. Roca (1988: 417, 1997: 635) mentions paroxitone words like re.bá.ɲo ('flock'), ka.bá.jo ('horse'), ka.prí.ʧo ('quirk'), ple.bé.ja ('commoner') or ka.ní.xo ('tiny'). These words have a light penultimate syllable introduced by a palatal consonant or velar [x] and have no proparoxitone alternative: *ré.ba.ɲo, *ká.ba.jo, *ká.pri.ʧo, *plé.be.ja, *ká.ni.xo. After analyzing different explanations for the absence of proparoxitone stress in these words, Roca (1997: 638) concludes they are unsatisfactory and leaves the issue unresolved.

Harris (1992: 18) refutes Roca's argument based on two claims. Firstly, there is no direct evidence that a handful of onset consonants have an effect on a rhyme phenomenon, quantity sensitivity. Secondly, Harris cites informal conversations, “discussions that I have had over a number of years with linguistically sensitive but theoretically uncommitted graduate students” (Harris 1992: 18), to conclude that native speakers do not automatically reject proparoxitone stress in nonce words like ré.ba.ɲo, cited as ungrammatical by Roca.

According to Roca, proparoxitone foreign loanwords with a heavy penult such as *Manchester* or *Washington* cited above could not be present in Spanish vocabulary if this language really took syllabic weight into account to assign stress. However, Harris (1992: 17) suggests that these words cannot be taken into consideration to contest a quantitative hypothesis as they are learned respecting the foreign stress placement. Harris adds that some older speakers pronounce these words using the canonical stress pattern as Type A words, wa.ʃin.tón, man.ʧes.tér, and criticizes Roca, who admits this possibility “in spontaneous, perhaps “uneducated pronunciations.” (Roca 1988: 416), but still does not take into account these pronunciations as a way native speakers have of regularizing foreign stress to the native pattern.

A final argument critical of Harris’ quantity sensitive analysis of Spanish has to do with Trubetzkoy’s Generalization, which assumes that languages that are quantity sensitive also have a distinction between long and short vowels. Leo Wetzels (2003) conceives serious objections to Trubezkoy’s Generalization and endorses a quantity sensitive analysis of Portuguese non-verbs. Wetzels begins his study with the claim that in Romance languages like Spanish and Italian there is controversy as to the role syllable weight plays in stress assignment and that there is a “tacit consensus” (2003: 107) among

Lusitanists in considering Portuguese a language in which syllable weight is irrelevant.[18] This consensus is based upon the observation that, at least in non-verbs, stress falls on the last vowel of the stem, in most cases the thematic vowel. Wetzels argues that this analysis predicts the main stress in the majority of Portuguese words but fails to explain why proparoxitonic stress is impossible in words with heavy penultimate syllables and why athematic non-verbs usually end in a consonant.

Wetzels also posits the need for a quantity sensitive analysis of Portuguese stress to account for the previous observations and analyzes the counterarguments used to dismiss weight-sensitive stress assignment in Portuguese and in other Romance languages. Firstly, Trubezkoy's Generalization and, secondly, the assumption that quantity sensitivity in verbal stress assignment cannot coexist in a language whose non-verbal stress assignment is quantity insensitive (as strongly supported by Mateus and d'Andrade 2000). Wetzels (2003: 131) concludes, based on typological considerations, that the above reasons are not valid: "… the rejection of a weight-sensitive stress rule for Portuguese, or any other language without phonemic vowel length, cannot be justified by typological arguments, but must be based on language-internal arguments only. "

Wetzels notes first how it was really Kuryłowicz (1948) and not Trubetzkoy who recognized the universal implication between quantity sensitive stress and phonemic

[18] View supported by Leite (1974); Lopez (1979); Maia (1981a, 1981b); Mira Mateus (1983); d'Andrade and Laks (1991); Lee (1994, 1997, 1999, 2002); Pereira (1996-7); d´Andrade (1997); Cagliari (1999); Roca (1999); Mateus and d'Andrade (2000). However, the "tacit consensum" Wetzels (2002) mentions is unjustified if we consider the work of Costa (1978); Carvalho (1989); Wetzels (1992); Bisol (1992, 1994); Massini-Cagliari (1999); Collischonn (2002), who support a quantity sensitive analysis of Portuguese stress.

vocalic length. Then, using examples of Spanish, Italian and other unrelated languages that do not posses phonemic long vowels, Wetzels demonstrates that Kuryłowiz's universal is not justified. For instance, consonant gemination in Dominican and Havana Cuban Spanish, where kár.ta becomes kát.ta and vocalic lengthening in Cuban Spanish, where bús.ke becomes bú:.ke show how different Spanish dialects must have had moraic structure before consonant or vocalic lengthening.

The second claim that Wetzels evaluates is the one that states that the quantitative hypothesis is incompatible with the coexistence of two stress subsystems, like in Portuguese, where verbs seem to have a morphologically conditioned syllabic stress. Wetzels agrees on the observation that Portuguese verb stressed is assigned in a quantity insensitive manner and demonstrates how in different languages this discrepancy is normal. In line with Wetzels, section 2.2.2 in this chapter aims to provide examples in Ibero-Romance languages of this normal inconsistency.

Back to Spanish, Lipski (2000) analyzes the issue of quantity sensitivity from an intermediate point of view. This linguist neither confirms nor denies that Spanish is quantity sensitive or insensitive but concludes that Spanish stress is a hybrid system in which quantity sensitive and insensitive factors are combined.

Lipski (2000: 650) supports the hypothesis that quantity sensitivity only appears in Spanish to avoid the presence of a heavy syllable as the weak node in a foot. This limitation of the role of quantity sensitivity together with other factors, synchronic and diachronic, lead Lipski to hint that Spanish stress system may be changing to a system completely insensitive to quantity.

Historically, quantity sensitivity changed in the different evolutionary phases from Latin to Spanish (Cf. Roca 1999). In a first historical moment, long vowels were lost in Vulgar Latin. According to Lipski, this factor broke the quantity sensitive stress assignment of Latin. This aspect, together with the great amount of inherited lexicon with a paroxitone stress pattern and the generalized syncope of posttonic vowels made penultimate stress the default pattern. In addition, the fact that most final vowels were phonetically erased created a numerous group of words ending in a consonant that kept the stress in the former penultimate syllable.

These historical developments determined greatly the creation of a prosodic system based on quantity.[19] Lipski believes contemporary Spanish is in a transitional period between a quantity sensitive and a quantity insensitive system. A number of synchronic factors support his thesis. Firstly, proparoxitone words with a heavy penult or final syllable (tú.nel 'tunnel' or ré.xi.men 'regime') or foreign loanwords with highly marked or impossible stress patterns (mán.ʧes.ter or wá.ʃin.ton) emerge in the language at a relatively high frequency and do not seem to be a major challenge for native speakers. Additionally, some dialects accept a paroxitone pronunciation of loanwords like kóm.boj (from English *convoy*) and the majority accepts pronunciations such as dís.nej.

[19] Ferris (1984) reaches the same conclusion for Catalan.

This fact leads Lipski to conclude that heavy final syllables do not automatically attract stress.

Finally, Lipski (2000: 658) claims Spanish is becoming increasingly a cosmopolitan language and that this factor makes the language accept a great number of foreign loanwords that are changing little by little the canonical stress pattern. Because of this, Spanish in some areas is close to becoming a completely quantity insensitive language. In these areas, paroxitone words ending in a vowel and oxitone words ending in a consonant would constitute the default pattern. Moreover, any deviation from this default pattern would signify exceptions lexically marked.

In sum, studies on Spanish and Portuguese stress assignment are contradictory when concluding whether it is sensitive or not to syllabic weight. On the other hand, for the last decade it seems to have been a consensus in favor of quantity sensitivity in Catalan non-verbal main stress assignment. Harris and Wetzels conclude satisfactorily, that the traditional arguments against a quantity sensitive analysis of Spanish and Portuguese stress are problematic, leaving the door open for a more adequate quantity sensitive analysis of the data. Precisely by looking at the raw data, what it is inarguable, even to the linguists who claim Spanish is quantity insensitive, is that final closed syllables in non-verbal forms attract the main stress in a majority of cases and that a penultimate heavy syllable bans penultimate stress most of the time. Therefore, this study agrees with those who have claimed that the analysis of Ibero-Romance non-verbal main stress placement must take into account the effects of syllable weight.

Considering the previous arguments, the representation I assume for foot structure in regular stressed non-verbal forms in Ibero-Romance is based on the quantity sensitive hypotheses on stress, explained before in this section, and on Hayes' moraic trochee model, displayed next in (26)b.

(25) Ibero-Romance regular non-verbal main foot formation

a. Final heavy syllables form a monosyllabic bimoraic foot, i.e., Spanish me (ló$^{\mu}$n$^{\mu}$)$_{Ft}$ 'melon'

b. Final light syllables form a disyllabic trochaic foot with the preceding syllable, i.e., Portuguese bor.bo (lé$^{\mu}$.ta$^{\mu}$)$_{Ft}$ 'butterfly'.

These hypothetical Ibero-Romance foot formation principles are, by no means, new. Other studies in the past have concluded that foot formation in Catalan, Portuguese and Spanish form moraic trochees.

Vowel harmony in Valencian Catalan offers additional evidence for the foot structure (H́L) over (H́)L, previously referred to (For a complete dialectal characterization of Valencian vowel harmony, see *Atles Lingüístic Valencià*. For Northern Valencian dialects see Jiménez i Martínez 1998, 2001, 2002. For Southern Valencian and Alacantí see Colomina i Castanyer 1985; Mas i Miralles 1993, 2000; Hualde 1996; Segura i Llopes 1998; Grau Sempere 2001, 2003). The study of Valencian vowel harmony reveals that not only ĹL] but also H́L structures can be the domain of a harmony process in this dialect, that turns final low vowel [a] into open mid vowels [ɛ, ɔ] when preceded by an adjacent stressed open mid vowel, e.g., sέra → sέrɛ ‘sierra’. In fact, the study of vowel harmony in this variety leads to the hypothesis that this specific harmonic process is limited to the domain of the metrical foot.

Syllables are organized into rhythmic units or feet. Hayes’ *parametrical model* (1985, 1995) assumes a fixed universal inventory of feet. In his early work, Hayes’ (1985) model predicted too many foot-types that were not typologically common cross-linguistically. In addition to typological gaps, Hayes’ early model did not account for asymmetries in the frequencies with which different stress patterns occur. In his posterior work, Hayes (1995) reduced the inventory of possible feet to three, in (26).[20]

(26) Hayes’ universal catalog of feet (1995: 71)

a. Syllabic trochee (quantity insensitive): (σ́σ)

b. Moraic trochee (quantity sensitive): (Ĺ L), (H́)

c. Iamb (quantity sensitive): (LĹ), (H́), (LH́)

There are two basic assumptions for this inventory in (26). Firstly, the headedness of feet produces iambs or trochees. The second principle is quantity sensitivity, which divides feet into two groups, whether they consider moras or syllables. *The Iambic/Trochaic Law* (Hayes 1995: 80), which states that elements contrasting in intensity naturally form

[20] Where σ stands for any syllable, regardless of weight, L for a light syllable and H for a heavy syllable.

groupings with initial prominence, whereas elements contrasting in duration naturally form groupings with final prominence, motivates this second principle.

Dunlap (1991), Serra (1997) and Bisol (1992, 1994) analyze Spanish, Catalan and Portuguese stress assignment, respectively, in a very similar way using moraic theory. These linguists claim there is one main rule that non-iteratively builds one moraic trochaic foot at the right edge of the prosodic word. This algorithm accounts for all the words traditionally grouped as Type A (paroxitone ending in a vowel and oxitone ending in a consonant).[21]

(27) Ibero-Romance Type A vocabulary

a.	k	á	r	o	b.	k	o	r	o	n	é	l	Melody
		μ		μ			μ		μ		μ	μ	Mora
		(*		.)							(*	.)	Foot

Mora extrametricality plays a role in determining the stress assignment of Type B words (proparoxitone and paroxitone ending in a consonant). *Extrametricality* is a provision that makes certain peripheral elements "invisible" from metrical parsing. For instance, the last syllable in Latin polysyllabic words have traditionally been considered extrametrical since they cannot be stressed and do not influence the placement of stress.

[21] An asterisk '*' marks the strong foot node, whereas a dot '.' represents the weak node of the foot. The glosses for the two examples, common in the three languages under analysis, are '*car*' and '*colonel*'.

With the addition of extrametricality in specially marked words, the moraic algorithm produces the expected proparoxitone and paroxitone stress pattern.[22]

(28) Ibero-Romance Type B vocabulary

a.	s í l a b a	b.	f ó r u m	Melody
	μ μ <μ>		μ μ <μ>	Mora
	(* .)		(* .)	Foot

According to the same algorithm, in penultimate stressed words with a heavy penultimate syllable, like Spanish ka.nas.ta ‘basket’, in (29) a, the stress is retracted to the antepenultimate mora by the use of the *Head-Prominence Relation*, HPR, that makes sure only a stressable element, a vowel, bears stress, and prevents a consonantal mora from being stressed. This principle is also useful to account for the stress placement of paroxitone words with two heavy syllables at the right edge of the word. In a word like Spanish kón.dor ‘condor’, in (29) b, HPR retracts the stress to the third mora from the end to prevent stress in a consonantal mora.

(29) Spanish

a.	ka	nás	ta	b.	kón	do	r	melody
	μ	μμ	μ		μμ	μ	<μ>	mora
		(x	.)		(x	.)		foot
		(x	.)		(x	.)		HPR

[22] Extrametrical moras are marked <μ>.

Wetzels (1992) treats Portuguese paroxitone words with a penultimate closed syllable differently. Instead of assuming a trimoraic right-aligned foot, like Dunlap, Serra or Bisol, exemplified for Spanish in (29), Wetzels assumes that stress in Portuguese is placed through a strict version of the moraic trochee.

(30) Portuguese Type A vocabulary (Wetzels 1992)

a.	g	ó	r	d	o	b.	k	w	a	d	r	i	l	c.	k	á	z	a
		μ	μ		μ				μ			μ	μ			μ		μ
		(*	.)		(.)							(*	.)			(*		.)

In this model, the stress is assigned to the final heavy syllable, as in (30) b (gloss 'hip'), otherwise the penultimate heavy syllable, as in (30) a ('fat'), bears the stress. The stress is assigned to the penultimate syllable if no heavy final or penultimate syllables are available, as seen in (30) c.

The studies of Dunlap, Serra and Bisol mentioned above also claim that the only oxitone words ending in a vowel, traditionally considered Type C, have an unpronounced consonantal element in the surface. In Catalan and Portuguese, as mentioned before in this chapter, see (15)-(18), an underlyingly unpronounced final consonant seems to be affecting stress placement in the singular form. On the other hand, plural formation and the addition of other suffixes constitute evidence that supports this claim in Spanish (Dunlap 1991). Firstly, the plural suffix for words ending in a vowel is [-s], *casa*/*casas* 'house/s', whereas the allomorph for words ending in a consonant is [-es], *barril*/*barriles* 'barrel/s'. Type C words share the same plural allomorph with words ending overtly in a consonant, *men*/*menúes* (even though *menús* is also accepted). Secondly, suffixes *–(c)ero* and *–(s)azo*, normally surface with a consonant when applied to bases with a thematic consonant, *barril-barrilcito* (also *barrilito* and only *barrilazo*) and *casa-casero-casaza*. Words like *menú* 'menu'surface with the allomorph normally used for consonant final words, *menú-menucito-menusazo*. In conclusion, the presupposition of an unpronounced final consonant makes Type C words virtually identical to Type A words. The analysis is straight forwardly accounted for by the use of the moraic trochee algorithm, as seen in (31) with example *dominó* 'domino'.

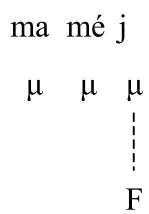
(31) Spanish

do	mi	nó	C	melody
μ	μ	μ	μ	mora
		(x	.)	foot

Finally, Dunlap, Serra and Bisol analyze words that show a residual proparoxitone pattern with closed ultimas, e.g., Spanish ó.mi.kron 'omicron', ré.xi.men 'regime' or xú.pi.ter 'Jupiter', as lexically accented; they are treated as exceptions to the moraic trochee rule.

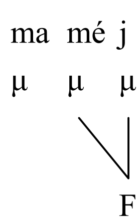
Lipski's (1997) analysis of Spanish stress slightly differs from the ones just outlined. His analysis is based on a trimoraic template, assigned from right to left, left headed, non iterative, and with a minimal structure that licenses a bimoraic foot with a monomoraic or bimoraic head. The parameters Footmin and Headmin determine the minimal foot structure. Footmin is generally inactive. Therefore, a foot must be at least bimoraic. Headmin, which requires monomoraic heads of feet, is normally active allowing monomoraic heads. Because of these parametric settings the only licensed feet in Spanish are $[\mu\mu]_{HF}$, $[[\mu]_{H}\ \mu]_{F}$ and $[[\mu\mu]_{H}\ \mu]_{F}$ (H= head, F= foot). According to Lipski, the following algorithm accounts for Type A words. A first step is to associate the last mora of the word to the template.

(32) Spanish



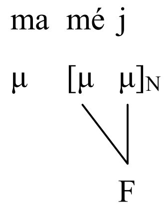
The next rule completes maximally F with the successive mora(s) to the left of the first one. In cases like ma.méj 'tropical fruit', in (32), words with a final glide, the preceding mora needs to be associated to the template to guarantee that the head be a vowel.

(33) Spanish



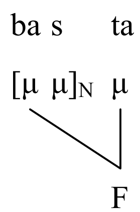
The last step is to project the head of F. Spanish allows a monomoraic head. However, the two moras of a final heavy syllable constitute the head of the foot.

(34) Spanish



As maintained by Lipski, Type A words do not allow proparoxitone stress as the last two moras maximally complete the foot template. Alternatively, Type A words with a penultimate heavy syllable are derived the same way; the foot is associated not only to the mora of the coda consonant but also to the mora of the vowel.

(35) Spanish



Type B paroxitone words like *túnel* ‘tunnel’ or *cóndor* are analyzed assuming the last mora of the word to be extrametrical. Lipski (2000: 641) also claims that Type B words must have some kind of lexical marking that allows these words to change the value of Headmin to inactive, thus requiring a bimoraic head.

(36) Spanish

te lé fo no

μ [μ μ]$_N$ μ

F

Proparoxitone words with a heavy antepenultimate syllable include the requirement of having a bimoraic head. However, in order to ensure a vowel be the head of the foot, the mora of the vowel is also included in H. The result is a foot with four moras with a trimoraic head.

(37) Spanish

bá s ta go

[μ μ μ]$_N$ μ

F

Lipski (2000: 642) justifies the resulting foot in (37), which seems to contradict the minimal trimoraic foot template he proposes. Any consonantal mora is licensed by the mora of the preceding vowel. This mechanism is valid for any moraic template as part of the *Condition of Prosodic Integrity*, which disallows dividing a syllable between two different feet.

Finally, Lipski (2000: 642) argues oxitone words ending in a vowel, Type C words, have a lexical marking that allow Footmin be active. This parameter setting together with the normal Headmin= active allow a monomoraic foot be formed at the right edge of the word.

(38) Spanish

ka fé

μ $[\mu]_N$

|

F

Rosenthall (1994) offers a first attempt to analyze Spanish stress placement under the precepts of OT. This linguist assumes that type A words are stressed using right aligned moraic trochaic feet. Type B words are analyzed using extrametricality; the last syllable in proparoxitone words and the mora associated to the last consonant in penultimate-stressed lexicon are extrametrical. This study does not consider type C words (oxitone ending in a vowel). The different morphemes belonging to type A or B are assumed to select a different ranking of the same universal violable constraints. The formal definitions of the constraints Rosenthall uses are next.

(39) Rosenthall's OT constraints

a. FootForm: feet are bimoraic and trochaic (Rosenthall's 1994: 90).

b. Align: feet are right aligned with the right edge of the prosodic word (Rosenthall's 1994: 24).

c. Non-Finality: feet do not include the rightmost mora (Rosenthall's 1994: 120).

Type A words, in the tableaux in (40), demand the ranking FootForm » Align » Non-Finality, whereas type B lexicon, exemplified in the tableaux in (41), require the reordination of Non-Finality and Align to account for stress retraction.[23]

(40) Spanish (Rosenthall 1994: 149)

Type A: FootForm » Align » Non-Finalityy

a. Input: podadera	FootForm	Align	Non-Finality
☞ a. po.da (dé.ra)			*
b. po (dá.de) ra		*!	
c. (pó.da) de.ra		*!*	

b. Input: ʧaparon	FootForm	Align	Non-Finality
a. ʧa (pá.ron)	*!		*
☞ b. ʧa.pa (rón)			*
c. (ʧá.pa) ron		*!*	

[23] The glosses for (40) a and b are 'trim scissors' and 'rain shower' respectively. The optimal outputs mean 'antelope' and 'useful' in tableaux (41) a and (41) b respectively.

(41) Spanish (Rosenthall 1994: 194)

Type B: FootForm » Non-Finality » Align

a. Input: antilope	FootForm	Non-Finality	Align
a. an.ti (ló.pe)		*!	
☞ b. an (tí.lo) pe			*
c. (án) ti.lo.pe			**!*
d. (án.ti) lo.pe	*!		**

b. Input: util	FootForm	Non-Finality	Align
☞ a. (ú.ti)l			*
b. (ú.til)	*!	*	
c. u (tíl)		*!	

Piñeros (2001: 4) rejects Rosenthall's constraint-reordering analysis of type B words for being stipulative and proposes an alternative analysis. For Piñeros, also for D'Introno et al. (1995), the three last syllables in a proparoxitone word form a bimoraic foot. This inconsistency in the number of syllables and the number or moras is resolved by stipulating that the posttonic syllable in a proparoxitone word is not assigned a mora underlyingly. Piñeros gives the following evidence to support his claim. The first piece of evidence Piñeros uses is based on Navarro Tomás' phonetic study on Spanish. Navarro Tomás (1926 [1974]) concludes that the final syllable in a proparoxitone word has more prominence than the penultimate. In proparoxitones the resulting rhythmic pattern is 3-1-2, where prominence is stronger the higher the number. Based on Navarro Tomás' analysis, Piñeros offers a parsing [...(σ́σσ)] and rejects [...[(σ́σ)σ], which would presuppose a rhythmic sequence 3-2-1, contrary to Navarro Tomás' findings. The analysis of data from Montañés Spanish constitutes Piñero's second argument to support his trisyllabic foot hypothesis. Piñeros analyzes the fact that harmony is present in both Type A and B words from the stressed vowel to the posttonic vowel(s) to its right. He also assumes that the domain of application of vowel harmony in Montañés is the metrical foot and concludes that proparoxitone words form trisyllabic feet.

Piñeros (2001: 11) offers data on hypocoristic formation in Spanish to further prove the vowel immediately after the stressed one in paroxitone words is not moraic. One class of Spanish hypocoristics truncates the last two syllables of the base form, respecting the original position of the stress. In other words, these hypocoristics (TF) copy the metrical foot of the base form (BF): [i.sa (bél)]$_{BF}$ → [(béla)]$_{TF}$ or [kris (tí.na)]$_{BF}$ → [(tí.na)]$_{TF}$. In the same study, Piñeros observes how proparoxitone proper names like *Hipólito*, [i.pó.li.to], produce truncated forms like *Polo*, [(pó.lo)], skipping the intermediate posttonic syllable. Rosenthall's analysis would predict a hypocoristic like [(pó.li)], respecting the base foot boundaries. However, according to Piñeros, hypocoristics like [(pó.li)] are unattested. The same linguist claims that truncated hypocoristics formed from proparoxitone bases always skip the posttonic non-final syllable. This amount of evidence leads Piñeros to assume that a number of morphemes in Spanish carry a special lexical moraic specification such as /...$\sigma^{\mu}\sigma\sigma^{\mu}$/. For his OT analysis of Spanish stress, Piñeros uses the following constraints:

(42) Piñeros' (2001: 18) OT constraints

a. Ident(H)Mora: a segment that bears a head mora must be associated with the same number of moras as its input correspondent

b. FootBin: feet are binary at some level of analysis (μ, σ)

c. Troch: feet are left-headed

d. Align (H)R: prosodic heads (e.g., main-stressed foot and main-stressed syllable) must be final in PrWd

These constraints are ranked and put to the test with a minimal pair like sá.ba.na 'sheet' and sa.bá.na 'savannah' in (43).

(43) Spanish (Piñeros 2001: 23)

Ident(H)Mora » FootBin, Troch » Align (H)R

a. Input: $sa^{\mu}ba^{\mu}na^{\mu}$	Ident(H)Mora	FootBin	Troch	Align (H)R
a. $sa^{\mu}.ba^{\mu}.(ná^{\mu})$		*!		
☞ b. $sa^{\mu}.(bá^{\mu}.na^{\mu})$				*
c. $(sá^{\mu}.ba^{\mu}.na^{\mu})$		*!		**

b. Input: $sa^{\mu}bana^{\mu}$	Ident(H)Mora	FootBin	Troch	Align (H)R
a. $sa^{\mu}.ba.(ná^{\mu})$		*!		
b. $sa^{\mu}.(bá^{\mu}.na^{\mu})$	*!			*
☞ c. $(sá^{\mu}.ba.na^{\mu})$				**

Piñeros' analysis does not use Rosenthall's constraint reordering, which would violate the principle of *Strictness of strict domination*. This OT principle claims that the grammar of a language is the specific ranking of universal violable constraints, as proposed by Prince and Smolensky (1993 [2002]). In sum, the advantage of Piñero's hypothesis over Rosenthall's proposal is clear: there is no need for special lexical marking that forces some words to choose a different constraint ranking. However, this improvement comes with the cost of stipulating a special lexical marking.

Piñero's vowel-weightlessness thesis is questionable for another reason. It is partially based on inadequate conclusions on Spanish hypocoristics. Piñeros claims that hypocoristics from proparoxitone bases always skip the penultimate mora-lacking syllable. The reason for this behavior is that this pattern of truncated nicknames always copies the metrical foot of the base form. However, this is not always the case. As this dissertation will show in the next chapter, hypocoristics from proparoxitone bases do not always skip the penultimate syllable. In Peninsular Spanish (Casado Velarde 1999: 5078), proper names like *Hipólito* produce a nickname *Poli*, with the expected stressed syllable followed by the penultimate syllable.[24] In this dialect, it is the last syllable that is ignored by the truncated form, thus contradicting Piñero's claim that these hypocoristics are "imposibles en todos los dialectos." (Piñeros 2001: 14).

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[24] Readers familiar with Spanish soccer will undoubtedly remember former Real Betis Balompié and Spanish national team star forward Hipólito "Poli" Rincón, currently soccer commentator for Spanish radio station Cadena Ser.

The study of Piñeros (2001) disagrees with Rosenthall's in another crucial point: the notion of foot well-formedness. Whereas Rosenthall, like Wetzels (1992) in his Portuguese rule-based moraic analysis, seen in (30), supports the strict bimoraicity of the Spanish feet as encoded in his definition of FootForm, Piñeros (2001: 1) assumes the generalized trochee (disyllabic or bimoraic, Prince 1980, Kager 1992, Hayes 1995) as Spanish canonical foot. A syllabic trochee is formed when the word ends in a light syllable, whereas the foot is monosyllabic when the word ends in a heavy syllable. Piñeros accounts for this behavior ranking Align-R (the main stressed foot must be final) above Non-Finality (the main stress foot must not be final). Under the scrutiny of the constraint ranking Piñeros proposes, an input like *kanasta* yields an optimal disyllabic winner, as in (44).

(44) Spanish

Align-R » Non-Finality

Input: kanasta	Align-R	Non-Finality
a. ka (nás) ta	t!a	
☞ b. ka (nás.ta)		*

In Rosenthall's analysis, however, the hypothesis that FootForm outranks Align correctly yields a monosyllabic bimoraic foot that fails to be right aligned with the right limit of the prosodic word.

(45) Spanish (Rosenthall 1994: 148)

Type A: FootForm » Align » Non-Finality

Input: kanasta	FootForm	Align	Non-Finality
☞ a. ka (nás) ta		*	
b. ka (nás.ta)	*!		*

In sum, Piñero's (2001) account of Spanish stress facts under OT attempts to solve the problems that arise in Rosenthall's (1994) analysis but fails to solve them adequately. His analysis on proparoxitone exceptional stress does not consider Rosenthall's constraint reranking, thus adequately adhering to the principle of strictness of strict domination. However, Piñeros' solution, vowel weightlessness, relies on the use of language specific inputs and is partially based on inadequate conclusions on Spanish truncation.

Serra (1996) provides an OT account of Catalan stress assignment. His analysis, together with the previous studies, is based on the hypothesis that this language builds moraic trochees right-aligned with the right edge of the word. Serra's account includes the following constraints:

(46) Serra's OT constraints (translations mine)

a. FootBin (*Σ Binaris*, in his dissertation): feet are binary (μμ) or (σσ) (Serra 1996: 46).

b. Align-Ft-R (*Σ a la dreta*): the right edge of the foot and the right edge of the prosodic word coincide (Serra 1996: 48).

c. Trochee (*Troqueu*): rhythm is trochaic (Serra 1996: 49).

d. Parse-σ (*Associeuσ*): syllables are parsed into feet (Serra 1996: 50).

e. WSP-Ft (*Pes/Accent*): heavy syllables within the foot are prominent (Serra 1996: 52).

Serra analyzes Type A vocabulary and obtains the desired results by ranking the constraints responsible for foot-wellformedness above Parse-σ.

(47) Catalan (Serra 1996: 250)

Type A: FootBin Align-Ft-R, Trochee WSP-Ft » Parse-σ

a. Input: enemik	FootBin	Align-Ft-R	Trochee	WSP-Ft	Parse-σ
☞ a. e.ne (mík)					e ne
b. e (ne.mík)			*!		e
c. e (né.mik)				*!	e
d. (é.ne) mik		m!ik			mik

b. Input: palmada	FootBin	Align-Ft-R	Trochee	WSP-Ft	Parse-σ
☞ a. pal (má.da)					pal
b. pal (ma.dá)			*!		pal
c. (pál.ma) da		d!a			da
d. (pál) ma.da		m!ada			ma da

c. Input: penalti	FootBin	Align-Ft-R	Trochee	WSP-Ft	Parse-σ
☞ a. pe (ná.lti)					pe
b. pe (nál) ti		t!i			pe ti
c. (pé.nal) ti		t!i		*!	ti
d. (pe.nál) ti		t!i	*!		ti

The previous three tableaux exemplify Type A vocabulary. In tableau a, Serra's analysis correctly predicts the emergence of a final bimoraic monosyllabic foot in words like *enemic* 'enemy'. On the other hand, input b, 'slap', yields a bimoraic disyllabic foot. Finally, by ranking Align-Ft-R over Parse-σ, Serra's analysis predicts the emergence of a disyllabic trimoraic trochee in a word with a penultimate heavy syllable, such as *penalty* ‘penalty kick’, in tableau c.

Type B and C non-verbal vocabulary are also analyzed in Serra’s (1996) dissertation. Serra proposes that Type C words, oxitone ending in a vowel, merit an identical analysis as oxitone words ending in a consonant. The reason for this hypothesis is suggested by the observation that the majority of Catalan oxitone words ending in a vowel have an unpronounced nasal vowel in the masculine singular form that reappears in liaison contexts, e.g., *Català* ‘*Catalan* (masculine singular)’ ~ *Catalana* ‘Catalan (feminine singular)’ ~ *Catalans* ‘Catalan (masculine plural)’ ~ *Catalanisme* ‘Catalanism’, see (15) above in this chapter.

(48) Catalan (Serra 1996: 275)

Type A: FootBin Align-Ft-R, Trochee WSP-Ft » Parse-σ

a. Input: katalan	FootBin	Align-Ft-R	Trochee	WSP-Ft	Parse-σ
☞ a. ka.ta (lán)					ka ta
b. ka (ta.lán)			*!		ka
c. ka (tá.lan)				*!	ka
d. ka (talá) n		n!			ka n

According to Serra (1996: 274), stress assignment precedes n-deletion “És clar, per altra banda, que la regla d’elisió de la [n] s’aplica després de l’assignació d’accent perquè la posició de l’accent intervé en la definició del context d’aplicació: una [n] final s’esborra regularment quan la vocal precedent és tònica.”. However, the same linguist fails to explain how to obtain stress assignment and n-deletion in OT terms. Even though Serra may suggest the possibility of parallel OT evaluation, this possibility is no further explored. I shall provide an OT explanation for this pattern in the next chapter of this dissertation.

Finally, Serra (1996) analyzes Type B words, paroxitone ending in a consonant and proparoxitone, using lexical extrametricality. Paroxitone words ending in a consonant lexically have their last consonant extrametrical, e.g., ú.ti <l>, whereas proparoxitone lexicon is divided into two groups. Proparoxitones whose radical ends in a vowel, such as fa.mí.li + a 'family', are analyzed as a regular paroxitone, fa (mí.li) + <a>, where the desinence is extrametrical. On the other hand, proparoxitones ending in a consonant, pá.ʤi.n + a 'page', are analyzed as a Type B paroxitone word, e.g., pá.ʤi.<n> + <a>, where the last consonant of the radical and the desinence are extrametrical.

In sum, section 2.2 supports the quantity sensitive analysis of Ibero-Romance non-verbal stress assignment. To illustrate this hypothesis, this section outlined some of the moraic trochee analyses of Catalan, Portuguese and Spanish put forward recently. In contrast, verbal stress assignment, summarized in the next section, has different quantity requirements.

2.3. Main verbal stress

Two main goals are set for this section. The first goal is to offer data to describe the main verbal stress paradigms in Ibero-Romance. The second goal is to review the literature on this issue to determine whether verbal stress is sensitive to internal syllabic structure or to other aspects, such as the number of syllables or morphological structure. According to these objectives, the remainder of the section is divided in two subsections: §2.3.1 studies the stress patterns in finite and non-finite verbal forms and §2.3.2 notes how the vast majority of previous studies conclude that verbal stress is determined by morphological factors.

2.3.1. Description of verbal stress patterns

This section describes the position of the stress in Ibero-Romance simple verb tenses, present indicative and subjunctive, imperfect indicative and subjunctive, future, conditional, preterite, pluperfect (only in Portuguese); and finite forms, infinitive, gerund, present participle and past participle. For this purpose, a model verb for each of the three conjugations is used. For the first conjugation, par.lár, fa.lár and a.blár (‘to speak’) are used for Catalan, Portuguese and Spanish respectively. Second conjugation verbs include te.mér (‘to fear’), ba.tér (‘to beat’) and te.mér. Catalan sur.tír and Spanish and Portuguese par.tír (‘to leave’) are examples of the third conjugation.[25]

Let us start with the present indicative, exemplified in (49).

[25] The transcription of Catalan examples throughout this section corresponds to the Eastern Catalan variety, as they appear in Oltra-Massuet (1999) but slightly simplified here for clarity.

(49) Present Tense Indicative

	Catalan			Portuguese			Spanish		
	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.
1ps	pár.lu	té.mu	súr.tu	fá.lu	bá.tu	pár.tu	á.blo	té.mo	pár.to
2ps	pár.les	té.mz	súrts	fá.las	bá.tes	pár.tes	á.blas	té.mes	pár.tes
3ps	pár.la	té.m	súrt	fá.la	bá.te	pár.te	á.bla	té.me	pár.te
1pp	par.lém	te.mém	súr.tím	fa.lá.mos	ba.té.mus	par.ʧi.mus	a.blá.mos	te.mé.mos	par.tí.mos
2pp	par.léw	tr.méw	sur.tíw				a.blájs	te.méjs	par.tís
3pp	pár.len	té.men	súr.ten	fá.lãw̃	bá.tẽȷ̃	pár.tẽȷ̃	á.blan	té.men	pár.ten

Spanish and Portuguese present tense forms always bear stress in the penultimate syllable, regardless of its internal structure. First and second person plural forms in Catalan are oxitone and, therefore, do not adhere to the previous generalization. The same conclusions can be drawn from the observation of the present subjunctive tense, which only have different flexive endings. For this reason, and for the sake of brevity, the corresponding examples are omitted.

Some Catalan verbs belonging to the third conjugation take a special thematic vowel /ɛ́ʃ/. For instance, the conjugation for *unir* ('to unite') is the following: u.nɛ́.ʃu, u.nɛ́.ʃes, u.nɛ́ʃ, u.ním, u.níw, u.nɛ́.ʃen. The first and the second person plural show final stress, whereas /ɛ́ʃ/ is always stressed in the remaining forms.

Next, future verbal forms are shown in (50):

(50) Future Tense

	Catalan			Portuguese			Spanish		
	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.
1ps	par.la.ré	tem.ré	sur.ti.ré	fa.la.réj	ba.te.réj	par.ʧi.réj	a.bla.ré	te.me.ré	par.ti.ré
2ps	par.la.rás	tem.rás	sur.ti.rás	fa.la.rás	ba.te.rás	par.ʧi.rás	a.bla.rás	te.me.rás	par.ti.rás
3ps	par.la.rá	tem.rá	sur.ti.rá	fa.la.rá	ba.te.rá	par.ʧi.rá	a.bla.rá	te.me.rá	par.ti.rá
1pp	par.la.rém	tem.rém	sur.ti.rém	fa.la.ré.mus	ba.te.ré.mus	par. ʧi.ré.mus	a.bla.ré.mos	te.me.ré.mos	par.ti.ré.mos
2pp	par.la.réw	tem.réw	sur.ti.réw				a.bla.réjs	te.me.réjs	par.ti.réjs
3pp	par.la.rán	tem.rán	sur.ti.rán	fa.la.rấw̃	ba.te.rấw̃	par. ʧi.rấw̃	a.bla.rán	te.me.rán	par.ti.rán

Spanish and Portuguese agree in the stress distribution in the future tense: in both languages all the forms, ending in a vowel or a consonant, are oxitone except for the first person plural, which bears antepenultimate stress. Catalan assigns stress more evenly in the future tense: all the forms display final stress, regardless of the final syllable ending in a vowel or a consonant.

Catalan stress in conditional verbs is also more consistent than Spanish and Portuguese, as shown in (51).

(51) Conditional Tense

	Catalan			Portuguese			Spanish		
	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.
1ps	par.la.rí.a	tem.rí.a	sur.ti.rí.a	fa.la.rí.a	ba.te.rí.a	par.ʧi.rí.a	a.bla.rí.a	te.me.rí.a	par.ti.rí.a
2ps	par.la.rí.es	tem.rí.es	sur.ti.rí.es	fa.la.rí.as	ba.te.rí.as	par.ʧi.rí.as	a.bla.rí.as	te.me.rí.as	par.ti.rí.as
3ps	par.la.rí.a	tem.rí.a	sur.ti.rí.a	fa.la.rí.a	ba.te.rí.a	par.ʧi.rí.a	a.bla.rí.a	te.me.rí.a	par.ti.rí.a
1pp	par.la.rí.em	tem.rí.em	sur.ti.rí.em	fa.la.rí.a.mus	ba.te.rí.a.mus	par.ʧi.rí.a.mus	a.bla.rí.a.mos	te.me.rí.a.mos	par.ti.rí.a.mos
2pp	par.la.rí.ew	tem.rí.ew	sur.ti.rí.ew				a.bla.rí.ajs	te.me.rí.ajs	par.ti.rí.ajs
3pp	par.la.rí.en	tem.rí.en	sur.ti.rí.en	fa.la.rí.ãw̃	ba.te.rí.ãw̃	par.ʧi.rí.ãw̃	a.bla.rí.an	te.me.rí.an	par.ti.rí.an

While the totality of Catalan conditional forms has penultimate stress, the first person plural is proparoxitone in Portuguese and Spanish.

A parallel conclusion is obtained from the observation of imperfect tense stress assignment.

(52) Imperfect Indicative Tense

	Catalan			Portuguese			Spanish		
	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.
1ps	par.lá.ba	te.mí.a	sur.tí.a	fa.lá.va	ba.ʧí.a	par.ʧí.a	a.blá.ba	te.mí.a	par.tí.a
2ps	par.lá.bes	te.mí.es	sur.tí.es	fa.lá.vas	ba.ʧí.as	par.ʧí.as	a.blá.bas	te.mí.as	par.tí.as
3ps	par.lá.ba	te.mí.a	sur.tí.a	fa.lá.va	ba.ʧí.a	par.ʧí.a	a.blá.ba	te.mí.a	par.tí.a
1pp	par.lá.bem	te.mí.em	sur.tí.em	fa.lá.va.mus	ba.ʧí.a.mus	par.ʧí.a.mus	a.blá.ba.mos	te.mí.a.mos	par.tí.a.mos
2pp	par.lá.bew	te.mí.ew	sur.tí.ew				a.blá.bajs	te.mí.ajs	par.tí.ajs
3pp	par.lá.ben	te.mí.en	sur.tí.en	fa.la.vãw̃	ba.ʧí.ãw̃	par.ʧí.ãw̃	a.blá.ban	te.mí.an	par.tí.an

We observe the same stress patterns in the subjunctive imperfect tense forms. Again, these forms are omitted for brevity.

Preterite tense verbs share the same stress pattern in the three languages under consideration.

(53) Preterite Tense

	Catalan 1st conjug.	Catalan 2nd conjug.	Catalan 3rd conjug.	Portuguese 1st conjug.	Portuguese 2nd conjug.	Portuguese 3rd conjug.	Spanish 1st conjug.	Spanish 2nd conjug.	Spanish 3rd conjug.
1ps	par.lí	te.més	sur.tí	fa.léj	ba.ʧí	par.ʧí	a.blé	te.mí	par.tí
2ps	par.lá.res	te.mé.res	sur.tí.res	fa.lás.ti	ba.tés.ʧi	par.ʧís.ʧi	a.blás.te	te.mís.te	par.tís.te
3ps	par.lá	te.mé	sur.tí.	fa.lów	ba.téw	par.ʧíw	a.bló	te.mjó	par.tjó
1pp	par.lá.rem	te.mé.rem	sur.tí.rem	fa.lá.mus	ba.té.mus	par.ʧí.mus	a.blá.mos	te.mí.mos	par.tí.mos
2pp	par.lá.rew	te.mé.rew	sur.tí.rew				a.blás.tejs	te.mís.tejs	par.tís.tejs
3pp	par.lá.ren	te.mé.ren	sur.tí.ren	fa.lá.rãw̃	ba.té.rãw̃	par. ʧí.rãw̃	a.blá.ron	te.mjé.ron	par.tjé.ron

In the three languages, preterite first and third person singular forms display final stress. Paroxitone stress is assigned elsewhere. The simple pluperfect tense, only present in Portuguese, exhibits the same stress pattern.

(54) Pluperfect Tense

	1st conjug.	2nd conjug.	3rd conjug.
1ps	fa.lá.ra	ba.té.ra	par.ʧí.ra
2ps	fa.lá.ras	ba.té.ras	par.ʧi.ras
3ps	fa.lá.ra	ba.té.ra	par.ʧí.ra
1pp	fa.lá.ra.mus	ba.té.ra.mus	par.ʧí.ra.mus
3pp	fa.lá.rãw̃	ba.té.rãw̃	par.ʧí.rãw̃

The present and the past participle (Pre and Pas, respectively, in (55)), the infinitive (I) and the gerund (G) have the following stress patterns in Ibero-Romance languages:

(55) Finite forms

	Catalan			Portuguese			Spanish		
	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.	1st conjug.	2nd conjug.	3rd conjug.
I	par.lár	té.mer	sur.tír	fa.lár	ba.tér	par.ʧír	a.blár	te.mér	par.tír
G	par.lánt	te.mént	sur.tínt	fa.lã́.du	ba.tẽ́.du	par.ʧĩ́.du	a.blán.do	te.mjén.do	par.tjén.do
Pre	par.lánt			fa.lã́.ʧi			a.blán.te		
Pas	par.lát	te.mút	sur.tít	fa.lá.du	ba.ʧí.du	par.ʧí.du	a.blá.do	te.mí.do	par.tí.do

All Catalan finite forms display final stress, except for infinitives of the second conjugation, whose stress is penultimate. However, Portuguese and Spanish behave identically: both languages show penultimate stress in all forms except infinitives, which are always oxitone.

To sum up, unlike non-verbs, verbal paradigms seem to have a predetermined fixed position for stress that the syllabic structure of the final syllable does not affect: the majority of verbal forms show an oxitone or paroxitone pattern, regardless of the syllabic structure of their final syllables. The following chart summarizes the stress patterns described in this section.

(56) Summary of Ibero-Romance stress patterns

Tenses	Placement of stress in:	
	Catalan	Portuguese and Spanish
Present	Penultimate, except 1st and 2nd p.p. (final)	Penultimate
Future	Final	Final, except 1st p.p. (antepenultimate)
Conditional	Penultimate	Penultimate, except 1st p.p. (antepenultimate)
Imperfect	Penultimate	Penultimate, except 1st p.p. (antepenultimate)
Preterite and pluperfect	Penultimate	Penultimate, except 1st and 3rd p.p. (final)
Finite forms	Final, except infinitives of the 2nd conjugation (penultimate)	Penultimate, except infinitives (final)

2.3.2. Quantity insensitivity and morphological factors in verbal stress placement

This section reviews the analyses laid out in the literature on Ibero-Romance verbal stress assignment. Although the theoretical machinery and the internal structure of verbs differ considerably in these studies, almost all agree on the same observations: verbal stress is morphologically conditioned; it has no exceptions and does not consider syllabic weight.

Harris (1987) distinguishes four different paradigms in Spanish non-verbs. The first paradigm displays penultimate stress in present indicative and subjunctive and in preterite. This group constitutes the unmarked case, the same conclusion earlier studies (Brame 1974, Hooper and Terrell 1976, Schane 1976, Núñez-Cedeño 1985) reached before. Stress is assigned by building binary syllabic trochees from right to left.

Penultimate stress is displayed in imperfect and conditional except in the first and second person plural, which have antepenultimate stress. In these cases, syllabic trochees from right to left are formed, except for the last syllable, which is considered extrametrical.

The third paradigm includes penultimate stress in a consonant-initial person/number preterite tense morpheme but final stress in vowel-initial person/number morpheme. In a vowel-initial morpheme, the theme vowel does not count in for the metrical count.

Future tense shows final stress, except in the first and second person plural. Both for the conditional and for the future tense, stress is assigned by combining two different stress domains: the root and the morpheme. Future kan.ta.ré is the result of the combination of infinitive kan.tár ('to sing') and first person singular future tense marker -é. The prevailing stress is the one of the person/number/tense morpheme.

In later works, Harris (1989, 1992) reduces the complexity of the analysis sketched above by analyzing both marked and unmarked patterns based on a simple version of extrametricality. Harris' new extrametricality hypothesis states that the rightmost stressable element is extrametrical "iff word/final or followed by an inflectional consonant." (Harris 1989: 253). According to this hypothesis, the unmarked pattern is obtained by building a right-headed syllabic unbounded foot: non-verb (sa.bá) <na> ('*savannah*'), verb (tra.ba.xá) <mos> (first person plural, present tense of tra.ba.xár ´to work´). Marked antepenultimate stress is derived by assembling left headed unbounded syllabic feet triggered by a diacritic in certain roots or suffixes (underlined here): nonverb (sá.ba) <na> ('sheet'), verb (tra.ba.xá.ba) <mos> (first person plural, imperfect tense).

Finally, marked final stress is left aside in this study. Harris claims this is a residual process that is not productive in Spanish.

Departing from his earlier studies, Harris (1995: 874) treats verbal and non-verbal stress assignment differently. This distinction is based on the observation that verbal stress assignment is quantity insensitive, whereas the placement of stress for non-verbs takes into account syllabic weight. Harris (1995) supports the claim that verbal stress in Spanish is quantity insensitive with different reasons. Firstly, in polysyllabic present tense forms the stress always falls on the penultimate syllable. Secondly, some dialects pronounce the first person plural of lim.pjár ('to clean') in the present subjunctive as lím.pje.mos (standard lim.pjé.mos), versus the present indicative lim.pjá.mos. Assuming Harris' algorithm that considers the last syllable extrametrical and assigns a stress mark '•' to a syllable nucleus and two to any diphthong, only a syllabic analysis is possible:

(57)	a. QI analysis			b. QS analysis			
	lím.	pje.	mos	* lím.	pje.	mos	
	(•	•)	•	••	(••)	•	
	•				•		

Roca (1988, 1990b, 1992) assumes verbs and non-verbs are stressed using different rules, even though both systems are quantity insensitive. Roca (1990b) criticizes Harris (1987, 1989) and the excessive formal machinery in his analyses and proposes the same rule for verbs and non-verbs: " the rightmost metrical syllable in the lexical word is the head" (Roca 1990b: 337). Desinences in non-verbs and clitics and inflexional endings in verbs fall outside the domain. This algorithm is simple but leaves out the present tense as marked.

Roca (1990b, 1992) stipulates a different rule for the present tense. In his early study, Roca's rule, in (58) a, retracts the right boundary to the penultimate accent mark ′*′. On the other hand, the rule in Roca (1992) makes the last * extrametrical, see (58) b and the subsequent example.

(58) a. Roca (1990b) b. Roca (1992)

) →) / ___ line0 * → <*> / __ $]_{PRES}$
|
σ $_{Pres}$

Example: 1st person plural *comer* 'to eat'

```
ko mé  mos
 *  *    *      Accent marks
 *  *  < * >    Extrametricality Rule
  ( *    *)     Foot Formation
    *
```

Roca (1992) divides verbal stress in three patterns, depending on morphological requirements. Preterite and Imperfect verbs form the first group. These verbal forms are always stressed on the thematic vowel, marked with superscript 'th', (a.blé, a.bláth.ba, a.bláth.ba.mos). In the case of first person singular of preterite forms, a.blé, the stressed vowel -é is the result of the fusion of the desinence with the thematic vowel.

The second group is formed by the future and the conditional tenses. The assignment of the stress in this group also depends on the thematic vowel. The difference with the first pattern lies in the observation that the stress does not fall on the thematic vowel but the immediately next vowel, always a part of the tense morpheme (a.blath.ré, a.blath.rí.a, a.blath.ré.mos). Roca claims there is a special lexical mark on these morphemes that forces this stress pattern.

The present tenses integrate the third stress pattern in Spanish verbs. These verbs are invariantly paroxitone. Roca maintains that this is due to the effects of extrametricality of the last syllable. According to Roca, this pattern, which this linguist considers marked, is generated with the extrametricality rule in (58) b above.

Dunlap (1991) adopts the patterns of verbal stress proposed in Harris (1992) mentioned above and states why verbal stress is different from non-verbal stress. First, stress in non-verbs is predictable from the phonological shape of the word, whereas verbal stress is determined morphologically from the tense/mood/aspect. Second, verbal stress is syllable sensitive and non-verbal stress is mora sensitive. Finally, verbal stress is exceptionless, whereas non-verbal stress admits exceptions. Dunlap's analysis of verbal stress is built on a quantity insensitive algorithm: the building of rightmost syllabic trochees. Dunlap divides the entire Spanish lexicon in Types A, B and C, as in Harris (1992). Verbs with a paroxitone stress pattern are included in Type A words.

(59) Type B verbal stress assignment

Example: 1st person plural present indicative of *terminar* 'to finish'

ter	mi	ná	mos	Melody
σ	σ	σ	σ	Syllable
(x	.)			Foot (where 'x' is the head)

Type B verbs and non-verbs are derived without counting the last syllable, because of the application of an extrametrical rule that retracts the stress to the penultimate syllable, as shown in (60), where TM stands for thematic vowel and an extrametrical syllable is marked <σ>.

(60) Dunlap's extrametrical rule (1991: 155) for Type B verbs

σ___ →___ <σ> / TM ___ {impr., subj., cond.}

Example: 2nd person plural present indicative of *terminar* 'to finish'

ter	mi	nás	te	is	Melody
σ	σ	σ	σ	σ	Syllable
σ	σ	σ	σ	< σ >	Extrametricality
		(*	.)		Foot

Lastly, Type C vocabulary is obtained differently in verbs and in non-verbs. For non-verbs, a virtual consonant, without phonetic content but metrically influential, was posited. However, this possibility is unviable for verbs. Dunlap proposes that person/number markers in finally stressed verbs have a lexical foot: (é)$_{\text{Ft}}$ (1ps preterite), (ó)$_{\text{Ft}}$ (3ps preterite), (é)$_{\text{Ft}}$ (1ps future), (ás)$_{\text{Ft}}$ (2ps future) and (án)$_{\text{Ft}}$ (3pp future).

(61) Type C verbal stress placement

Example: 2nd person singular future of *terminar* 'to finish'

ter	mi	ná	rás	Melody
σ	σ	σ	σ	Syllable
			(*)	Lexical Foot

Morales-Front's (1994) dissertation includes the only attempt, as far as I know, to analyze Spanish verbal stress assignment under the principles of OT. Morales-Front (1994, 1999) argues that Spanish stress is assigned by building neither trochaic nor iambic feet. Instead, the primary force governing Spanish stress is the preference for locating the main stress as close to the right edge of the prosodic word, except the terminal element (TE), as possible. A constraint *Align-TE prohibits the terminal element from being stressed and it is undominated. Alternatively, Parse (μμ) and Align-Head favor final binary feet. Finally, Align-Foot and Align-Str are dominated.

(62) Morales-Front's OT constraints

a. *Align-TE (*Align (TE, Ft, T)): a TE cannot overlap with any foot (Morales-Front 1994: 233).

b. Parse (μμ): a sequence of two or more adjacent moras must be parsed into a foot (Morales-Front 1994: 231).

c. Align-Head (Align (H(PrWd), Last Ft)): the head of the PrWd is the primary stress and by definition, a PrWd has only one head (Morales-Front 1994: 229).

d. Align-Foot (Align (PrWd, R, Ft, R)): in every PrWd, the right edge be aligned with the right edge of a foot (Morales-Front 1994: 229).

e. Align-Str (Align (H(PrWd), PrWd, R): the stress has to be aligned with the right edge of the PrWd (Morales-Front 1994: 232).

According to Morales-Front's (1994) analysis, penultimate non-verbal stress is canonical in words that end in a terminal element, as in (63) with example *acartonado* 'wizened'.

(63) Spanish (Morales-Front 1994: 233)

*Align-TE » Parse (μμ), Align-Head » Align-Foot » Align-Str

	Input: akartonado	*Align-TE	Parse (μμ)	Align-Head	Align-Foot	Align-Str
☞	a. a.kar (to$^{\mu}$.ná$^{\mu}$) do				*	*
	b. a.kar (tó$^{\mu}$.na$^{\mu}$) do				*	**!
	c. a (ká$^{\mu}$r$^{\mu}$) to.na.do		*!			***
	d. a.kar.to (ná$^{\mu}$.do$^{\mu}$)	*!				*
	e. a.kar.to (na$^{\mu}$.dó$^{\mu}$)	*!				

On the other hand, in words that do not end in a terminal element, final stress is the only possibility, as shown in (64) with example *colibrí* 'hummingbird' and *soledad* 'loneliness'.

(64) Spanish (Morales-Front 1994: 234)

*Align-TE » Parse (μμ), Align-Head » Align-Foot » Align-Str

a. Input: kolibri	*Align-TE	Parse (μμ)	Align-Head	Align-Foot	Align-Str
☞ a. ko (li.brí)					
b. ko (lí.bri)					*!
c. (ko.lí) bri				*!**	*
d. (kó.li) bri				*!**	**

b. Input: soledad	*Align-TE	Parse (μμ)	Align-Head	Align-Foot	Align-Str
☞ a. so.le (dád)					
b. so (le.dá) d				*!	
c. so (lé.da) d				*!	*
d. (so.lé) dad				*!**	*
e. (só.le) dad				*!**	**

The ranking Morales-Front (1994: 237) proposes accounts for 95% of Spanish lexicon, including Type A and C words. However, Type B words, which display exceptional antepenultimate and final stress, are explained with the use of an additional constraint, *Align-Last, which prohibits the head of a foot from coinciding with the last mora of the root, the word without the terminal element. This constraint being undominated disfavors penultimate stress in words ending in a terminal element. Special roots, such as examples in (65) *sábana* and *túnel*, have a lexical mark that triggers the promotion of this constraint.

(65) Spanish (Morales-Front 1994: 236)

*Align-TE » *Align-Last » Align-Foot » Align-Str

a. Input: sabana	*Align-TE	*Align-Last	Align-Foot	Align-Str
☞ a. (sá.ba) na			**	**
b. (sa.bá) na		*!	**	*
c. sa (ba.ná)	* !			
d. sa (bá.na)	* !	*		*

b. Input: tunel	*Align-TE	*Align-Last	Align-Foot	Align-Str
☞ a. (tú.ne) l			*	*
b. tu (nél)		* !		
c. (tu.né) l		* !	*	

Morales-Front (1994 : 238) proposes another alignment constraint to explain the special stress assignment of suffixes that retract stress. The same linguist argues that stress retractor suffixes such as *-ic, -graf, atr, -log*…belong to a special class of suffixes, SSuf, that require the left edge of the foot containing the suffix to be aligned with the right edge of the main foot. This alignment constraint is expressed by Align-SSuf and its effects are put to the test in the following tableau.

(66) Spanish (Morales-Front 1994: 238)

*Align-TE » *Align-Last, Align-SSuf » Align-Foot » Align-Str

Input: mitiko	*Align-TE	*Align-Last	Align-Foot	Align-Str
☞ a. (mí.ti) ko				**
b. (mi.tí) ko			*!	*
c. mi (ti.kó)	*!		**	
d. mi (tí.ko)	*!		*	*

Morales-Front (1994) uses the same constraint ranking used above for non-verbs to derive verbal stress placement. The same linguist assumes that the set of morphemes that mark person and number (PN), in (67), are never stressed and that they belong to the set of terminal elements (TE).

(67) PN morphemes

a. *–s* 2nd person singular (*canta+s*)

b. *–mos* 1st person plural (*canta+mos*)

c. *–is* 2nd person plural (*canta+is*)

d. *–n* 3rd person plural (*canta+n*)

The thematic vowel (TV) (*-a*, *-e* or *–i*, depending on the conjugation) appears before the PN morpheme, e.g., *cant+a+s*, *cant+a+mos*, *can+ta+is*, *cant+a+n*. On the other hand, the tense, aspect and mood morpheme (TAM) appears in some tenses and its importance for verbal stress assignment is marginal, e.g., *cant+a+ba+mos*. According to these verbal morphology considerations, Morales-Front divides three patterns for Spanish verbal stress. The first pattern includes the imperfect indicative and subjunctive tenses, where the TV, right before the TAM, bears the stress. The imperfect indicative of a first conjugation verb exemplifies this pattern in (68).

(68) Imperfect indicative 1st conjugation (Morales-Front 1994: 250)

Root	TV	TAM	PN
kant	-á	-ba	-s
kant	-á	-ba	
kant	-á	-ba	
kant	-á	-ba	-mos
kant	-á	-ba	-is
kant	-á	-ba	-n

According to Morales-Front, the TAM morphemes in these tenses behave identically as the set of special suffixes in non-verbs, like *–ic*, exemplified above in tableau (66). The PN suffixes behave as TEs and are not parsed. Therefore, the stress can only go to the TV.

(69) Spanish (Morales-Front 1994: 251)

*Align-TE » *Align-Last, Align-SSuf » Align-Foot » Align-Str

Input: kantabamos	*Align-TE	*Align-Last	Align-Foot	Align-Str
☞ a. kan (tá.ba) mos				ba mos
b. kan (ta.bá) mos		*!		mos
c. kan.ta.ba (mós)	m!os	*	*	

The second verbal stress pattern Morales-Front assumes includes the present indicative and subjunctive, in which the stress falls in the last syllable of the root for all persons except the 1st and 2nd plural. The present indicative of *cantar* serves as an example of this pattern in (70).

(70) Present indicative 1st conjugation

Root	TAM	TV	PN
kánt	-o		
kánt	-a		-s
kánt	-a		
kant		-á	-mos
kant		-á	-is
kánt	-a		-n

To explain this puzzling pattern, Morales-Front suggests that the TV only appears in the 1st and 2nd person plural. This assumption allows a simple explanation as to why only those two forms do not have the stress in the root. For the rest of the forms, the TAM acts as a retractor.

(71) Spanish (modified from Morales-Front 1994: 252)

*Align-TE » *Align-Last, Align-SSuf » Align-Foot » Align-Str

a. Input: kantas	*Align-TE	*Align-Last	Align-Foot	Align-Str
i. kan (tás)	s!		*	
☞ ii. (kán.ta) s				tas

b. Input: kantais	*Align-TE	*Align-Last	Align-Foot	Align-Str
☞ i. kan (táj) s			s	
ii. (kán.ta) js			j!s	tajs
iii. (kan.tá) js			j!s	

The last pattern Morales-Front analyzes consists of the preterite, the conditional and the future. In these tenses, the morpheme containing the past, future and conditional specification (PFC) bears the stress. To exemplify this pattern, let us consider the future of *cantar* in (72).

(72) Future indicative 1st conjugation

Root	TV	PFC	PN
kant	-a	-ré	
kant	-a	-rá	-s
kant	-a	-rá	
kant	-a	-ré	-mos
kant	-a	-ré	-is
kant	-a	-rá	-n

To account for this behavior, the same linguist suggests the use of an additional alignment constraint.

(73) Align-PFC (Align (PFC, L, H(PrWd)): the left edge of the PFC morphemes must be aligned with the primary stress (Morales-Front 1994: 254).

Morales-Front ranks this constraint at the same level as *Align-Last and Align SSuff.

(74) Spanish (Morales-Front 1994: 254)
*Align-TE » *Align-Last, Align-SSuf, Align-PFC » Align-Foot » Align-Str

Input: kantara	*Align-TE	*Align-Last	Align-PFC	Align-Str
☞ a. kan (ta.rá)				
b. kan (tá.ra)			*!	ra

In sum, there seems to be a consensus among linguists regarding verbal stress in Spanish being assigned in a morphologically sensitive manner. In the same line, summaries of studies on Catalan and Portugues verbal stress placement are next.

Recent studies on Catalan verbal stress structure conclude it is fully predictable (Hualde 1992b, Serra 1997, Oltra-Massuet 1999, among others). In fact, Oltra- Massuet (1999: 310) analyzes verbal morphology and stress placement and offers the generalization that the vowel at the left of the tense node element is stressed. According to Oltra-Massuet, all simple finite tenses may be maximally composed of three functional heads, υ(verb), T(ense) and M(ode), and each of these three heads projects a thematic vowel (th) node. According to the previous analysis, the same linguist summarizes the stress selection in the different tenses. I recapitulate Oltra-Massuet's conclusions in (75).

(75) Oltra Massuet's conclusions on Catalan verbal stress

a. The following tenses assign the stress to the rightmost theme vowel: future, conditional, past and present (first and third conjugations).

b. Stress falls on the root in the next cases: present tense in second conjugation verbs.

In other words, the generalizations in (75) state that all tenses are assigned stress in the theme vowel, at the right of the tense terminal node, regardless of the presence of another preceding theme vowel in the root, dominated by the verb root node υ, except the second conjugation present tense verbs, which lack a theme vowel in υ. The inventory in (76) offers instances of these patterns. Examples in (76) a-d use the verb *cantar* 'to sing'. Examples in (76) e employ the verb *témer* 'to fear'.

(76) Catalan

Future			Conditional				Past				Present					Pres. (2nd conj.)			
	th	T		th	T			th	T			th		T		T		th	T
kantar	á	Ø	kantar	í	a		kant	á	v	a	k	á	nt	o		tém			
kantar	á	s	kantar	í	e	s	kant	á	v	es	k	á	nt	e	s	tém	s		
kantar	á	Ø	kantar	í	a		kant	á	v	a	k	á	nt	a		tém			
kantar	é	m	kantar	í	e	m	kant	á	v	em	k	a	nt	é	m	temém			
kantar	é	w	kantar	í	e	w	kant	á	v	ew	k	a	nt	é	w	tem		é	w
kantar	á	n	kantar	í	e	n	kant	á	v	en	k	á	nt	é	m	témi	n		

The data in (76) and the generalizations in (75) are conclusive in order to assume that verbal stress assignment in Catalan is quantity insensitive. Actually, there is no reference to syllable structure in placing stress in verbs. Instead, morphological structure is the only element that plays a role in this task.

The majority of the studies consulted on Portuguese verbal stress reach the same conclusion. Almost all these studies divide verbal stress patterns in Portuguese according to different grades of markedness (Leite 1974; Lopez 1979; Mateus 1983; d'Andrade and Laks 1991; Wetzels 1992; Bisol 1992, 1994; Lee 1994, 1997; Pereira 1996-7; Mateus and d'Andrade 2000).

For instance, Lee (1994, 1997) divides Portuguese verbs into three patterns. The first marked pattern groups the first person plural of the imperfect, pluperfect, future and present tenses. The stress in these forms is antepenultimate. In order to derive the exceptional stress, the person/number morpheme *–mus* is considered extrametrical. Therefore, the regular syllabic trochee is built: fa $(\text{lá.va})_{Ft}$ <mus>, 1st person plural imperfect indicative of *falar* 'to speak'. Another marked pattern includes the future tense, whose forms always show an oxitone stress pattern. To account for these, Lee posits the building of unbounded iambic feet: $(\text{ba.tí})_{Ft}$, $(\text{ba.te.rá})_{Ft}$. The unmarked pattern brings in the rest of verbal forms with penultimate stress: $(\text{fá.lu})_{Ft}$, fa $(\text{lá.mus})_{Ft}$.

On the other hand, Pereira (1999-2000) observes that there are no marked or unmarked patterns. Stress patterns are determined by morphology and have no exceptions. The first pattern includes the present tenses, where the penultimate syllable bears the stress by building a right-aligned syllabic trochaic foot, the same analysis outlined above in Lee's work. The past tenses constitute the second pattern. These forms stress the thematic vowel. The third paradigm contains the future and the conditional tense. The tense/mode/aspect morpheme (TMA) is stressed in these verbs. Finally, the thematic vowel is stressed in the finite verbal forms.

Pereira (1999-2000: 8) concludes that in the majority of verbs the stress falls on the thematic vowel, except in the future and the conditional tenses where the TMA is stressed. The penultimate syllable bears the stress elsewhere. This characterization is virtually identical to the one proposed by Roca (1992) for Spanish, explained above.

Bisol's articles (1992, 1994) are the only discordant notes among studies on Ibero-Romance verbal stress assignment. In these studies, verbal and non-verbal stress patterns in Portuguese are derivable through a quantity sensitive algorithm. In order to validate this claim, extrametricality plays a decisive role. Bisol analyzes non-verbal stress by an algorithm that makes a final heavy syllable form a monosyllabic bimoraic foot:

po ($má_{\mu}r_{\mu}$) (‘orchard’). If the final syllable is light, a syllabic trochee is formed instead (ká.za). For verbs, extrametricality is applied to the last syllable of certain verb forms, first and second person plural of the imperfect tense, that display proparoxitone stress, kan (tá.se) <mus>, and all flexive consonants: (kán.ta) <s>, (kán.ta) <n>.

In other words, what Bisol proposes for Portuguese is a moraic trochee template that is right aligned with the right edge of the prosodic word. The major weakness of this analysis is the role of extrametricality, which plays the makeshift role of eliminating whatever segmental material; it could be a consonant or a whole syllable, which is left over at the right of the posttonic syllable after applying the template.

To finish this section, it is important to note that there is agreement in considering verbal stress assignment in Ibero-Romance quantity insensitive. Instead, morphological factors, the position of the thematic vowel and the tense node, play an important role in determining the different regular stress patterns. The only study that utilizes a quantity sensitive algorithm is forced to use ad hoc extrametricality to account for the data.

2.4. Quantity insensitivity in the assignment of secondary stress

This section deals with secondary stress; the different patterns described for Ibero-Romance and the role syllabic weight plays. Firstly, the three main patterns for secondary stress assignment in Spanish, as categorized by Prieto and Van Santen, are described. Then, I propose that those three patterns can be extended to the different studies on

Portuguese and Catalan. Lastly, a summary of the findings in experimental studies on Spanish is presented.

The different studies on Spanish secondary stress assignment have put forward different proposals, which Prieto and Van Santen (1996: 339) divide in three groups:

(77) Spanish secondary stress proposals

a. *Rhythmic hypotheses*, defended by Navarro Tomás (1926 [1974]), Roca (1986), Harris (1991), which state that secondary stress is manifested in every other syllable from the right or left of the main stressed syllable.

b. *Non- Rhythmic hypotheses*, proposed by Stockwell et al. (1956), which claim that secondary stress is only assigned word-initially.

c. *Non-existence hypotheses*, supported by Quilis (1981), which argue that secondary stress is not present in regular speech.

The categorization proposed by Prieto and Van Santen for studies on Spanish also applies to the different studies on Portuguese and Catalan secondary stress. Coromines (1987) supports the rhythmic hypothesis by claiming that Catalan secondary stress assignment to every other syllable from the left of the main stressed syllable: à.fek.tì.vi.tát ('affectivity'). On the other hand, linguists like Cabré (1998) defend the nonexistence hypothesis.

Harris (1983: 85) talks about secondary stress briefly and classifies it into two main patterns. The first pattern assigns secondary stress to the first syllable of the prosodic word: xè.ne.ra.tí.bo ‘generative’. The second option is to assign rhythmic secondary stress to every even numbered syllable to the left of the main stress: xe.nè.ra.tí.bo.

Roca (1986) and Harris (1991) offer a more detailed analysis of Spanish secondary stress. These studies argue that secondary stress is assigned in a postlexical level whereas main stress is lexical and divide secondary stress assignment in pretonic or posttonic syllables. The two linguists clash in how they view secondary stress assignment. For Roca, secondary stress is assigned through an algorithm that builds binary iambic constituents and two additional rules: a clash rule to avoid secondary stress when adjacent to primary stress heads and an initial-stress shift, that moves the stress to the leftmost syllable in odd-numbered syllable words.

On the other hand, Harris (1991) claims there is no evidence for posttonic iambic feet and concludes that the final syllable is prominent, regardless of the distance from the primary head. Accordingly, Harris states that the secondary stress is placed through an unbounded right headed foot: kí.te (lò), kí.te (me.lò), kí.te (se.me.lò). Conversely, Harris’ hypothesis affirms that pretonic secondary stress is assigned by way of the iterative creation of binary trochaic feet: (kòns.tan)(tì.no)(pò.li)(θà.θjo) nís.mo (‘Constantinopolitanism’).

Morales-Front (1994, 1999) offers an analysis of Spanish secondary stress in OT terms. The interaction of different constraints is responsible for the generation of disyllabic trochaic feet. In Morales-Front's analyses, *Clash outranks Parse (σσ) and Foot-Troch. The undomination of *Clash ensures no adjacent stressed syllables surface.

(78) Morales-Front's (1994: 259) OT constraints on syllable structure

a. *Clash: no adjacent heads

b. Parse (σσ): a sequence of two adjacent syllables must be parsed into feet

c. Foot-Troch: feet are left-headed

These constraints are dominated by Align-Feet. This ranking guarantees the packing of feet to the right edge of the IP, which Morales Front defines as the prosodic word without the main foot.

(79) Align-Feet (align (Ft, R, IP, R): for every foot, there is an IP such that the right edge of this IP is aligned with the right edge of a foot (Morales-Front 1994: 261).

An additional alignment constraint, Align-First, when dominating Align-Feet, ensures the first syllable of an IP be prominent.

(80) Align-First (Align (IP, L, Ft, L): for every IP, there is a foot such that the left edge of this foot is aligned with the left edge of the IP (Morales-Front 1994: 260).

The effects of the rankings just outlined are exemplified in (78) with the input *constantinopolitanismo* 'Constantinopolitanism'.

(81) Spanish

Align-First » Align-Feet » *Clash » Parse (σσ) , Foot-Troch

Input: konstantinopolitanismo	Align-First	Align-Feet	*Clash	Parse (σσ)	Foot-Troch
a. kons(tàn.ti)(nò.po)(lì.ta)(nís.mo)	k!ons				
☞ b. (kòns.tan)ti(nò.po)(lì.ta)(nís.mo)					
c. (kòns.tan)(tì.no)po(lì.ta)(nís.mo)		*!			
d. (kòns.tan)(tì.no)(pò.li)ta(nís.mo)		*!*			

The constraint interaction exemplified in the previous tableau certifies the presence of an initial trochaic foot and the rest of feet packed to the right of the prosodic word. The ranking in (81) also guarantees that an unparsed syllable in odd syllable words remain adjacent to the first foot.

This chapter outlined above in section 2.3.2 how Morales-Front (1994, 1999) argues that Spanish stress assignment builds neither trochaic nor iambic feet. Instead, the primary force governing Spanish stress is the preference for locating the main stress as close to the right edge of the prosodic word, except the terminal element (TE), as possible. Therefore, a paroxitone word with a TE forms an iambic foot, leaving the last syllable unparsed, see tableau (63) above in this chapter, where an input *akartonado* produces a parsing a.kar (to.ná) do. According to his previous observation on primary stress, Morales-Front suggests that the ranking responsible for primary stress dominates the ranking proposed for secondary stress. Therefore, the right output for an input konstantinopolitanismo would not be (kòns.tan) ti (nò.po)(lì.ta)(nís.mo) the winner candidate in tableau (81), as it would fatally violate highly ranked *Align-TE, but (kòns.tan) ti (nò.po)(lì.ta)(nís) mo, which minimally violates Align-Feet.

Collischonn (1994), Abaurre et al. (2001) and Lee (2002) analyze pretonic secondary stress in Brazilian Portuguese in identical terms: prò.ba.bì.li.dá.de (‘*probability*’). Secondary stress is overruled by the application of the stress clash rule: sìm.pá.ti.ko→sim.pá.ti.ko (‘friendly’). On the other hand, Abaurre et al. (2001) defend the initial non-rhythmic hypothesis for European Portuguese.

The studies by Harris and Roca for Spanish, and Collischonn (1994), Abaurre et al. (2001) and Lee (2002) for Portuguese, observe the tendency to shift the secondary stress to the first syllable, thus creating an initial dactyl foot, in words with an odd number of syllables to the left of the stressed syllable.

The experimental studies by Prieto and Van Santen (1996) and Díaz-Campos (2000) support the non-rhythmic hypothesis for Spanish. Prieto and Van Santen ran a series of experiments to test the acoustic correlates (duration, intensity and pitch) of secondary stress and found no acoustic or perceptual evidence for rhythmic secondary stress alternation. Instead, they verified a positive correlation between intensity and pitch and initial secondary stress.

Díaz-Campos (2000) agrees with Prieto and Van Santen that no phonetic manifestation of secondary stress in rhythmic environments is found. However, the main goal of this study is to test the phonetic correlates of secondary stress. Contrary to Prieto and Van Santen, Díaz-Campos presents the following conclusions. Firstly, duration constitutes an acoustic correlate of stress, distinguishing main and secondary stress, but not secondary and unstressed syllables. Secondly, the fundamental frequency is not significant in any stress prominence (main, secondary and unstressed). Lastly, intensity is not significant in any stress prominence (main, secondary and unstressed).

To sum up, rhythmic and non-rhythmic hypotheses have been proposed for Ibero-Romance secondary stress assignment. Experimental studies on Spanish secondary stress show that the initial syllable is given more prominence, thus corroborating the nonrhythmic hypothesis. In any case, syllabic quantity plays no role in the placement of secondary stress in any of these three languages. Rhythmic studies assign secondary stress to every other syllable to the right or to the left of the stressed syllable without considering weight. Alternatively, non-rhythmic studies assign prominence to the first syllable, regardless of syllabic structure.

2.5. Summary of conclusions

The main conclusion drawn from this chapter is that the different manifestations of stress assignment in Catalan, Portuguese and Spanish consider weight differently. Main non-verbal stress is assigned in a quantity sensitive manner, whereas secondary and verbal stress placements do not consider weight.

The analysis of stress in Ibero-Romance languages was divided in three major categories, main verbal and non-verbal stress and secondary stress. While verbal and secondary stress assignment is almost uncontroversially quantity insensitive, the analyses on main stress placement in non-verbs have produced a plethora of opposing conclusions based on different pieces of evidence, some more controversial than others.

After considering the data and the reasons presented in the literature, this study aligns with the following hypotheses regarding stress assignment:

a. Catalan, Portuguese and Spanish group together in their identical treatment of quantity sensitivity in stress assignment.

b. Both quantity sensitive and insensitive stress assignment patterns can coexist in a language.

c. Trubetzkoy's (or rather Kuryłowiz's) Generalization is invalid. Languages, such as the ones treated in this dissertation, without phonemic vowel length distinction can assign stress quantitatively.

d. The domain of stress placement is not based on morphological units but on prosodic ones. The prosodic word, rather than the derivative stem is supported as the right domain for stress assignment.

e. Prosody rather than morphology plays a crucial role in assigning stress in non-verbs. Morphology only plays a role when the addition of a few derivational and flexive suffixes seems to affect stress placement. Conversely, regular stress assignment in non-verbs depends on the prosodic nature of the rightmost syllable in a prosodic word.

f. Morphological structure and not prosody is decisive in determining the placement of stress in verbs.

g. Rhythmic considerations rather than syllable structure or morphology are what determine the secondary stress patterns in Ibero-Romance.

CHAPTER 3

MORAIC OR SYLLABIC MINIMALISM AND STRESS ASSIGNMENT IN IBERO-ROMANCE PROSODIC MORPHOLOGY

3.0. Introduction

Prosodic Morphology is a program of research originally formulated in the works of McCarthy and Prince (1986, 1990, 1991, 1995a) that focuses on the interaction of morphological processes (affixation, infixation, truncation, reduplication) and their phonological (prosodic) domains. In McCarthy and Prince's (1995: 318) words, "Prosodic Morphology […] is a theory of how morphological and phonological determinants of linguistic form interact with one another in a grammatical system." This chapter mainly analyzes truncation in Catalan, Brazilian Portuguese and Spanish to determine what role (if any) syllable weight plays in their formation and stress assignment.[26] For this purpose, this chapter presents relevant data and generalizations and reviews the appropriate literature in order to verify i) whether Ibero-Romance prosodic

[26] Brazilian Portuguese and Portuguese are used indistinctively in this chapter. Note, however, that only Latin American Portuguese and not the Iberian variant is treated in the studies mentioned in this chapter.

morphology processes in Spanish conform to a minimally moraic or a syllabic target and ii) the influence of syllable weight in the assignment of stress in truncated or reduplicated forms. This chapter analyzes reduplication and diminutive/augmentative formation with less detail. Reduplication is a marginal process in Ibero-romance prosodic morphology and diminutive/augmentative formation is a process in which syllable weight plays a significant role in only one dialect.

The rest of the chapter is organized as follows. Sections 3.1-3.5 deal with the different truncation patterns present in Ibero-Romance and the influence of weight in their production and stress placement. Other marginal prosodic morphological processes are also briefly discussed: §3.5 analyzes Spanish diminutive/augmentative formation and reports on Ibero-Romance reduplication. Finally, §3.6 summarizes the main findings in this chapter and highlights the connections with the conclusions drawn in the previous chapter.

3.1. Truncation

Truncation is the process in which a *source word* or *base*, usually a noun or adjective, is shortened not in an arbitrary way, but to conform to a process specific shape target. In Ibero-Romance we find truncation patterns where segmental material from the edges of some prosodic words is removed, producing typically disyllabic paroxitone truncated words, as in (1), (Trunc. = Truncated form, …= at least one syllable), where the examples are Brazilian Portuguese. In this study, truncated words that omit segmental material from the left and right edges of a base word will be referred to as Type L and R respectively, as seen in (1) a-b below, whereas Type M, exemplified in (1) c, includes truncated words that cut off both edges of their source.

(1) Truncation

	Type L	Type R	Type M
Base	a. [… σ σ]	b. [σ σ …]	c. [σ σ σ …]
	| |	| |	| |
Trunc.	σ́ σ	σ́ σ	σ́ σ
Examples			
Base	a. fe lí pe	b. ra fa él	c. a bi ga íl
	| |	| |	| |
Trunc.	lí pe	rá fa	bí ga

Truncated words normally retain the original meaning of the base form. However, truncated words are normally used in a different stylistic register, often more informal. For instance, speakers of Spanish would generally use *profesor* (‘professor’) in more formal situations than its clipping *profe*. Some clippings are so commonly used than they have become accepted in registers that are more formal. Examples include Peninsular Spanish *bici* (from *bicicleta* ‘bicycle’), *tele* (from *televisión* ‘television’) or *boli* (from *bolígrafo* ‘ball pen’).

As noted earlier, truncation usually affects nouns and adjectives in Ibero-Romance languages. Truncated proper nouns are also known as truncated *hypocoristics* or *nicknames*. On the other hand, *clippings* are the result of the abbreviation of common nouns and adjectives. Accordingly, this dissertation will use the distinction between clippings and truncated hypocoristics in the terms just outlined. In addition, I will use the more generic term *truncated word* to refer to any shortened word, regardless of the grammatical category of its source form.

Type L and R hypocoristic truncation processes have been attested in all dialects under consideration. Boyd-Bowman (1955) analyzes a corpus of Latin American hypocoristics from the point of view of child language acquisition and concludes that pretonic syllables are normally erased in all dialects. Therefore, according to Boyd-Bowman, Type L truncation is the preferred pattern in the Spanish spoken in Latin America. This claim is supported by the studies of van Wijk (1964) on Honduran Spanish and Costenla Umaña (1985) on the Costa Rican variety. Conversely, Urawa (1985) finds twice as many Type R hypocoristics in the Colombian Spanish variety spoken in Bogotá than the expected Type L pattern. Cabré (2003: 907) supports the thesis that Type L truncation is the norm for the Catalan language and claims that the Type R pattern, while still marginal, is spreading in Catalan because of the influence of neighboring Spanish. While examples of the Type L pattern are common, Casado Velarde (1984, 1999), Fajardo (1990), Hamans (1996) or Piñeros (2000b) argue that Peninsular Spanish prefers Type R truncation. Finally, Fonte-Monteiro (1983, 1991) and Rocha (1998) show that, in addition to Types L and R, Type M hypocoristic truncation is a productive pattern in Portuguese.

While a variety of patterns of truncated hypocoristics have been widely attested in all the languages analyzed here, examples of clippings are sporadically found and they regularly conform to the Type R variety. The studies of Cabré (2003), Casado Velarde (1999) and Vazquez and Gonçalves (2004) reveal no Type L clippings in Catalan, Spanish or Portuguese respectively. [27]

This dissertation does not consider the segmental changes that syllable onsets of truncated words may undergo, especially Latin American Spanish hypocoristics (e.g., Latin American Spanish ʧé.la < gra.sjé.la).[28] These consonantal changes in the onset position are irrelevant for prosody as coda consonants and not onsets may contribute weight and, therefore, influence stress assignment.

Truncation is not the only manner in which languages produce hypocoristics. Ibero-Romance also displays reduplicated disyllabic hypocoristics, which are formed of two elements, the first one being the stressed syllable truncated from the base form and the second one echoing the phonetic shape of the first, e.g., Portuguese fá.ti.ma produces hypocoristic fa.fá; hypocoristics produced by diminutive or augmentative suffixation, e.g., Catalan pas.kwa.lét from proper name pas.kwál and diminutive suffix -ét.

The rest of the sections devoted to truncation in this chapter are organized as follows. Sections 3.2-3.4 display data and generalizations on the different truncation

[27] Except for Spanish bús, truncated from aw.to.bús '*bus*'.

[28] Boyd-Bowman (1955), van Wijk (1964), Urawa (1965), Hoffman (1969), Constenla Umaña (1982), Prieto (1992b), Lipski (1995), Colina (1996), Piñeros (1998, 2000a, 2000b, 2002) describe and analyze from different theoretical frameworks the different segmental changes in Latin American Spanish hypocoristics.

processes attested in Ibero-Romance. §3.2 analyzes how Type L truncated hypocoristics are produced. Next, §3.3 describes Type R truncated hypocoristics and clippings. Finally, §3.4 suggests that a medial truncation process is active in Portuguese. The data used to exemplify the different patterns comes from diverse sources: Catalan examples come mainly from Cabré (2003). Fonte-Monteiro (1991) provides the majority of Portuguese examples, and Spanish data is mainly provided by Boyd-Bowman (1955), van Wijk (1964), Urawa (1965), Constenla Umaña (1982), Prieto (1992b). §3.5 offers discussion on the role quantity sensitivity plays in the production of truncated words and other prosodic morphology processes.

3.2. Type L truncation

Omitting segmental material from the left edge of a base word is a major Ibero-Romance truncatory pattern. The shape of the resultant truncated word varies among dialects. In Eastern Catalan, Peninsular Spanish, and Portuguese the truncated word can be either monosyllabic or disyllabic, depending on the main foot of the base, whereas in Valencian Catalan these truncated forms are always disyllabic, even if the main foot is monosyllabic. Only Brazilian Portuguese disregards the foot structure of the source word and accepts monosyllabic Type L truncated forms ending in a vowel.

3.2.1. Main patterns

In Type L truncated words, the stressed syllable of the base and the final unstressed syllable, in paroxitone words, are kept. In other words, according to the principles of regular non-verbal stress assignment analyzed in Chapter 2 of this dissertation, summarized in (2), Type L truncated words discard material not contained within the main stress foot.

(2) Ibero-Romance regular non-verbal stress assignment

a. Final heavy syllables form a monosyllabic bimoraic foot, i.e., Spanish me $(\text{lón})_{Ft}$ 'melon'

b. Final light syllables form a disyllabic trochaic foot with the preceding syllable, i.e., Portuguese bor.bo $(\text{lé.ta})_{Ft}$ 'butterfly'

c. According to (2)a and b, the possible regular feet in Ibero-Romance are (σ́L) and (H́), where σ́ stands for any stressed syllable, regardless of weight, L for a light syllable and H for a heavy syllable.

In (3), the examples are Portuguese. (3) a exemplifies paroxitone-based Type L truncation, whereas (3) b displays the truncation of a monosyllabic foot in oxitone base words.

(3) Type L truncation

Base	a. [... (σ́ L)$_{Ft}$]		b. [... (H́)$_{Ft}$]
	|		|
Trunc.	(σ́ L)$_{Ft}$		(H́)$_{Ft}$
Examples			
Base	fe (lí pe)$_{Ft}$		ra (kél)$_{Ft}$
	|		|
Trunc.	(lí pe)$_{Ft}$		(kél)$_{Ft}$

More Type L examples in the three languages under study are seen in (4).

(4)

	Catalan		Portuguese		Spanish	
	Paroxitone bases					
	Base	Trunc.	Base	Trunc.	Base	Trunc.
a.	er.nes.tí.na	tí.na	os.vál.du	vál.du	er.nes.tí.na	tí.na
b.	en.ri.ké.ta	ké.ta	fe.lí.pe	lí.pe	en.ri.ké.ta	ké.ta
c.	ma.no.lí.ta	lí.ta	fer.nã́.du	nã́.du	fer.nán.do	nán.do
d.	te.o.dó.ra	dó.ra	le.o.pów.du	pów.du	le.o.pól.do	pól.do
	Oxitone bases					
	Base	Trunc.	Base	Trunc.	Base	Trunc.
e.	mon.se.rát	rát	ra.kéw	kéw	ba.len.tín	tín
f.	am.brós	brós	i.ri.néw	néw	xe.sús	ʧús
g.	mi.kél	kél	mi.géw	géw	xo.a.kín	kín
h.	re.méj	méj	ma.ri.már	már	a.sun.θjón	ʧón

There is dialectal variation in truncated words obtained from bases with an oxitone stress. Peninsular Spanish, Portuguese and Eastern Catalan behave identically in retaining the last stressed closed syllable of the base in the truncated form. The stressed syllable in the truncated word matches the stressed syllable in the base in all dialects. A second group of dialects, including some Latin American Spanish dialects and Valencian Catalan, adds an epenthetic gender marking ending -o or -a (<o, a> in (5)) to truncated words formed from oxitone bases ending in a consonant. This process, exemplified in (5) with a Valencian example, adds an extra syllable in truncated words that is not present in the source.

(5) Valencian Catalan

	Model	Example
Base	[... (H́)$_{Ft}$]	mi (kél)$_{Ft}$
Trunc.	(Ĺ L)$_{Ft}$	(ké lo)$_{Ft}$
	<o , a >	

More Valencian Catalan and Latin American examples are in (6).

(6)

	Valencian Catalan		Latin American Spanish	
	Base	Trunc.	Base	Trunc.
a.	ʤo.a.kím	ʧí.mo	xo.a.kín	kí.no
b.	i.sa.bél	bé.la	i.sa.bél	bé.la
c.	bi.sén	sén.to	i.nés	né.ʧa
d.	bal.ta.sár	sá.ro	ba.len.tín	tí.no

Epenthesis in hypocoristic formation is a systematic process in Valencian Catalan, where only one exception is attested (pép < ʤo.zép, Cabré 2003: 903). In Latin American Spanish, epenthesis is not as commonly found.

In Portuguese, an additional pattern, although underrepresented in the literature, is present productively. This pattern include hypocoristics that keep the last open syllable, stressed or not, of several paroxitone and oxitone names. In (7), there is a list of the examples found in Fonte-Monteiro's (1991) online dictionary. [29]

(7) Portuguese

Paroxitone base			Oxitone base		
	Base	Trunc.		Base	Trunc.
a.	aj.váw.ni	ní	g.	ẫ.dré	dré
b.	áw.ba	bá	h.	bar.na.bé	bé
c.	á.na	ná	i.	ʒe.sé	sé
d.	a.ná.ʤi	ʤí	j.	ʒa.kó	kó
e.	ar.náw.du	dú	l.	ʒo.sa.fá	fá
f.	aw.dér.li	lí	l.	ʒo.sé	sé

Considering the pattern just outlined, this study assumes a further productive pattern in Brazilian Portuguese Type L truncation that merely keeps the rightmost light syllable, regardless of the stress assignment or any other linguistic characteristic of the base word.

[29] Some of the trisyllabic base forms in (7) also display the expected foot-sensitive disyllabic truncated hypocoristic, e.g., a.ná.ʤi > ná.ʤi, ar.náw.du> náw.du and ná.du, aw.dér.li> dér.li, bar.na.bé > ba.bé. Other source forms, however, only produce monosyllabic truncated hypocoristics, e.g., aj.váw.ni > ní, *váw.ni. Thus, lexical idiosyncrasy and not phonological or morphological factors seem to influence the variation found in Brazilian Portuguese Type L foot-sensitive disyllabic or monosyllabic hypocoristic.

To summarize the main points outlined in this section, all dialects examined display Type L truncated words that copy a version of the main stress foot of the source word. These truncations can be disyllabic or monosyllabic, depending on the stress placement of their source. Paroxitone source words build a disyllabic foot and, thus, yield a disyllabic trochaic truncated form. Oxitone bases form a monosyllabic bimoraic foot that is preserved in the abbreviated form. Not all the dialects under consideration accept both patterns. Valencian Catalan only accepts disyllabic results, whereas in the rest of Ibero-Romance dialects studied monosyllabic examples are abundant. Foot-sensitive word abbreviation is not the only productive pattern in Ibero-Romance truncation. Brazilian Portuguese displays truncated hypocoristics that keep the last open syllable of the source word, regardless of its stress assignment. The stressed syllable of the base remains the prominent syllable in the truncated word in all dialects (unattested patterns are marked with a slash '—').

(8) Main Type L truncation patterns in Ibero-Romance

	Valencian Catalan	Eastern Catalan	Spanish	Portuguese
Disyllabic	√	√	√	√
Monosyllabic	—	√	√	√
a. Bimoraic		√	√	√
b. Monomoraic		—	—	√

3.2.2. Residual pattern: prosodic trapping in Eastern Catalan.

Eastern Catalan displays a residual productive pattern worth mentioning. In this dialect, some oxitone proper names, in (9), present an alternative truncated hypocoristic that consists of the last two syllables of the base and respects the originally stressed syllable.

(9) Eastern Catalan

	Base	Trunc.	
a.	mon.se.rát	rát	se.rát
b.	bar.to.méw	méw	to.méw
c.	bal.ta.sár	sá r	ta.sár

The truncation pattern exemplified above is ungrammatical if the penultimate and the antepenultimate syllables of the base are open or if the penultimate is closed, as shown in (10).

(10) Eastern Catalan

	Base	Trunc.	
a.	es.ta.nis.láw	láw	* nis.láw
b.	ʤo.a.kím	kím	* a.kím
c.	se.ʤi.món	món	* ʤi.mó

Finally, Eastern Catalan oxitone bases ending in a vowel, with a final underlying consonant -n or –r (shown in parenthesis in (11)) unpronounced in word-final positions but reappearing in liaison contexts, obligatorily truncate the rightmost two syllables.

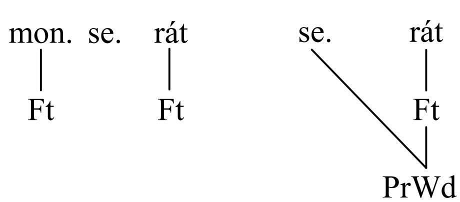
(11) Eastern Catalan

	Base	Trunc.	
a.	sal.ba.dó(r)	ba.dó	* dó
b.	da.mi.á(n)	mi.á	* á
c.	se.bas.ti.á(n)	ti.á	* á

Cabré and Kenstowicz (1995) explain the cases in Eastern Catalan in which an oxitone source form not only keeps the monosyllabic final feet but also the preceding unstressed syllable. The authors assume exhaustive moraic trochee parsing at the level of the prosodic word that can leave a light syllable trapped between two bimoraic feet. For instance, a base like mon.se.rát, the medial syllable -se- is prosodically trapped between the initial and the final monosyllabic bimoraic feet: (mon) se (rát). Some speakers choose to produce truncated hypocoristics rát or se.rát, optionally adjoining the unparsed syllable to the prosodic word directly.

(12) Eastern Catalan Prosodic Trapping

Base Trunc.



Cabré and Kenstowizc continue argueing that a truncated hypocoristic cannot break a foot existing in the base form. For instance, a base like se.ʤi.món is parsed (se.ʤi)(món). Therefore, the only hypocoristic allowed is món. Hypothetical *ʤi (món) is ungrammatical as it breaks the foot structure of the base.

3.2.3. Summary

In sum, in all Ibero-Romance dialects, Type L truncated words generally maintain the stressed syllable from the base and the final unstressed syllable, only in paroxitone sources. However, Valencian Catalan produces disyllabic truncated hypocoristics from oxitone source words by adding a vowel that is not originally present in the base. Latin American Spanish has the same process but it is not as productive as in Valencian, where many monosyllabic hypocoristics ending in a consonant are found. Among other patterns, Brazilian Portuguese widely allows monosyllabic monomoraic truncated hypocoristics from oxitone and paroxitone bases. On the other hand, In Eastern Catalan, an additional open syllable at the left of the stressed one optionally surfaces or appears obligatorily to prevent a monosyllabic open syllable truncated word.

3.3. Type R truncation

All Ibero-Romance languages keep some segmental material from the right edge of some prosodic words. Although this process is not, for obvious reasons, foot sensitive, the shapes of left anchored productive truncation patterns coincide with the ones found in the Type L truncatory process seen above. While all dialects widely accept a disyllabic truncated word with penultimate stress, other productive and unproductive patterns also surface. Monosyllabic truncated words constitute a productive pattern but appear less frequently. Among the less productive patterns, the most represented one includes a handful of trisyllbic truncated forms.

The emergence of a certain pattern, monosyllabic or disyllabic, does not seem to be determined by linguistic factors, as in the majority of Type L truncatory processes described above, which are foot-sensitive. Instead, many Type R patterns seem to be idiosyncratic. The syllable structure of the first syllable does not determine the production of a disyllabic or monosyllabic truncated form. The majority of monosyllabic Type R hypocoristics are produced from a base noun with an initial closed syllable, e.g., Spanish fér < fer.nán.do. However, base words with a leftmost open syllable may produce the expected monosyllabic result, but also a disyllabic nickname or both, e.g., Spanish fer.nán.do > fér, fér.nan, but raj.mún.do> ráj, *ráj.mun. Similarly, a source word with an initial open syllable may produce a monosyllabic truncated word, i.e., Portuguese kle.o.ní.si > kléw.

The rest of the section is organized as follows. Section 3.3.1 focuses on the two main patterns of the Type R truncatory process: disyllabic and monosyllabic. §3.3.2 describe other residual patterns, like trisyllabic clippings. Finally, §3.3.3 provides some concluding remarks.

3.3.1. Main patterns

As in Type L truncation, the majority of Type R truncated words are disyllabic. However, while Type L truncation discarded all the segmental material outside the domain of the source main stress foot, the Type R truncatory process truncates material to the right of the leftmost two syllables in the base form. Unlike Type L truncated words, whose stressed syllable is kept from the base, the stress of the source may be displaced to conform to canonical penultimate stress in the abbreviated form.[30] This first main disyllabic pattern occurs in hypocoristics and clippings. Truncated hypocoristics are shown in (13).[31]

(13)	Catalan		Portuguese		Spanish	
	Base	Trunc.	Base	Trunc.	Base	Trunc.
a.	ra.fa.él	rá.fa	ra.fa.éw	rá.fa	ra.fa.él	rá.fa
b.	a.lek.sán.dre	á.leks	a.lek.sɐ̃́.dre	á.leks	a.lek.sán.dre	á.leks
c.	ʃa.bjér	ʃá.bi	ma.ri.á.na	má.ri	xa.bjér	xá.bi[32]

The majority of clippings shown in (14) also follow the pattern described above.[33]

(14)	Catalan		Portuguese		Spanish	
	Base	Trunc.	Base	Trunc.	Base	Trunc.
a.	u.ni.ber.si.tát	ú.ni	u.ni.ber.si.dá.ʤi	ú.ni	u.ni.ber.si.dád	ú.ni
b.	bi.si.kle.ta	bí.si	bi.si.kle.ta	bí.si	bi.θi.kle.ta	bí.θi
c.	pro.fe.sór	pró.fe	pro.fe.sór	pró.fe	pro.fe.sór	pró.fe

[30] Final stress occurs unpredictably in a handful of Portuguese truncated hypocoristics from paroxitone bases. Some examples are fi.lo.mé.na > fi.ló, ma.nu.é.la > ma.nú, a.de.láj.ni > a.dé (Da Silva and Gonçalves 2004).

[31] Example (13) c in Spanish and Catalan show how a diphthong in the base form surfaces as a full vowel in the corresponding truncated form. In addition, some truncated hypocoristics, as in (13) b, copy material not only from the first two syllables of the source, but also from the third.

[32] The pair j/i counts as an exact copy under the assumption that j and i share the same distinctive features but their moraic status is different, i^{μ} but j (see Hayes 1989).

[33] The glosses are ‘university’, ‘bicycle’ and ‘professor’ respectively.

This first major disyllabic Type R truncation pattern is also present in prefixed and compound source words, as exemplified in (15).[34]

(15)

	Catalan		Portuguese		Spanish	
	Base	Trunc.	Base	Trunc.	Base	Trunc.
a.	dis.ko.té.ka	dís.ko	—	—	dis.ko.té.ka	dís.ko
b.	bo.lí.graf	bó.li	—	—	bo.lí.gra.fo	bó.li
c.	fo.to.gra.fí.a	fó.to	—	—	fo.to.gra.fí.a	fó.to
d.	aw.to.mó.bil	áw.to	—	—	aw.to.mó.bil	áw.to
e.	—	—	pẽ.ta.kã.pe.ã́w̃	pẽ́.ta	—	—
f.	—	—	fo.no.aw.djo.lo.ʒí.a	fó.no	—	—

The second major Type R truncation pattern found in some Ibero-Romance dialects coincides with its Type L counterpart and includes monosyllabic bimoraic truncated words, which normally keep the leftmost heavy syllable of their source. [35]

[34] The glosses correspond to 'discotheque', 'ball pen', 'photograph' and 'automobile' respectively for both Spanish and Catalan. Portuguese glosses are 'penta- champion' and 'phono-audiology'.
[35] In Brazilian Portuguese, the choice of consonant or which an abbreviation can end is restricted; only sonorant consonants are licensed in word-final position, as in (16) a-b. Truncated forms with a final obstruent insert an epenthetic vowel. Examples of this pattern are na.tá.li.a > ná.ʧi, *nat; tra.bá.ʎu ('work') > trá.bi, *tráb .

(16) Portuguese[36] Spanish

	Base	Trunc.	Base	Trunc.
a.	kris.tʃí.na	krís	ar.tú.ro	ár
b.	kle.o.ní.si	kléw	paw.lí.na	páw

In Catalan, this pattern is not productive; only a couple of hypocoristics are attested (krís < kris.tí.na and pát < pa.trí.sja).[37]

Brazilian Portuguese is the only Ibero-Romance dialect that accepts monomoraic monosyllabic Type R truncated words. The study of the Brazilian Portuguese hypocoristic data reported in Fonte-Monteiro (1991) provides a variety of examples. Some of them are in (17).[38]

(17) Portuguese

	Base	Trunc.
a.	a.lek.sán.dre	á
b.	e.du.ár.du	é
c.	i.ná.si.o	í
d.	be.a.tríʒ	bé
e.	kár.la	ká
f.	ʒo.a.kĩ́	ʒó

[36] As mentioned earlier, the Portuguese example c, kléw is different from the rest. The resulting monosyllabic bimoraic hypocoristic keeps the first light syllable of the source and is attached the glide [w], originally present in the base form as the vocalic nucleus of the second syllable.

[37] Cabré (1999) argues that these examples, like their Spanish counterparts, are English borrowings.

[38] Unfortunately, Fonte-Monteiro's (1991) online dictionary is partially completed and does not include proper nouns starting with the letters 'm' to 'z'. Eighteen vowel-final monosyllabic truncated hypocoristics were found corresponding to 71 source names.

This Brazilian Portuguese Type R truncatory pattern pairs with its Type L counterpart, see (7), in forming an open syllable from the phonetic material found at the very edge of the base form.

Spanish generally disfavors Type R monosyllabic truncated words ending in a vowel. Examples are scarce; the study of the Latin American data in Boyd Bowman (1955), van Wijk (1964), Urawa (1985), Hoffman (1969) and Costenla Umaña (1982) only yields a couple of examples: klé < kle.men.tí.na and dí < di.á.na. This asymmetry (bimoraic but not monomoraic monosyllabic truncated words are possible) supported by the observation of the Spanish and Catalan data so far, suggests that only truncated words that adhere to the minimal bimoraic word-size requirement are possible. Further details on this issue are below in section 3.5.

In sum, Type R truncated words can be disyllabic or monosyllabic. The first pattern yields the most examples. Not all the dialects under consideration accept both patterns. Catalan almost exclusively accepts disyllabic results, whereas Spanish and Portuguese monosyllabic examples are abundant. Monosyllabic hypocoristics can be made of a monomoraic or a bimoraic syllable. Only Portuguese freely accepts both types. Spanish monosyllabic truncated words are bimoraic. The first syllable bears the stress in Type R hypocoristics in all dialects.

(18) Main Type R truncation patterns in Ibero-Romance

	Catalan	Portuguese	Spanish
Disyllabic	√	√	√
Monosyllabic	—	√	√
a. Bimoraic		√	√
b. Monomoraic		√	—

3.3.2. Residual patterns

Before focusing in a few non-productive disyllabic and trisyllabic Type R truncatory patterns in Ibero-Romance, it is worth briefly outlining the behavior of hypocoristics and clippings truncated from a base with a closed second syllable.

Catalan and Spanish present variation in truncated forms ending in a consonant. These final consonants are optional in some Spanish forms, see (19) a-d. In both languages, final consonants are either left behind, as in (19) e-h, or they are obligatorily present, in (19) i-l ('(x)' indicates x is optional, '*(x)' corresponds to x being obligatorily present, '(*x)' means compulsory erasure of x).[39]

[39] All examples above are hypocoristics except for (19) e, 'director'; (19) f in Catalan, which means 'display'; and (19) k-l, 'hypermarket' and 'supermarket' respectively.

(19) Catalan Spanish

The final consonant is optionally present

	Catalan Base	Catalan Trunc.	Spanish Base	Spanish Trunc.
a.	—	—	gi.jér.mo	gí.je(r)
b.	—	—	ro.dól.fo	ró.do(l)
c.	—	—	ar.mán.do	ár.ma(n)
d.	—	—	xe.sús	xé.su(s)

The final consonant is erased

	Catalan Base	Catalan Trunc.	Spanish Base	Spanish Trunc.
e.	di.rek.tór	dí.re(*k)	di.rek.tór	dí.re(*k)
f.	de.mos.tra.sjó	dé.mo(*s)	da.bíd	dá.bi(*d)
g.	ma.tíl.de	má.ti(*l)	ma.tíl.de	má.ti(*l)
h.	pi.ber.nát	pí.be(*r)	kon.θep.θjón	kón.θe(*p)

The final consonant is obligatorily present

	Catalan Base	Catalan Trunc.	Spanish Base	Spanish Trunc.
i.	baj.ber.dú	báj.be*(r)	ro.bér.to	ró.be*(r)
j.	ar.men.gól	ár.me*(n)	fran.θís.ko	frán.θí*(s)
k.	i.per.mer.kát	í.pe*(r)	i.per.mer.ká.do	í.pe*(r)
l.	su.per.mer.kát	sú.pe*(r)	su.per.mer.ká.do	sú.pe*(r)

Based on the previous data, oral stops are banned from final position in Spanish and in Catalan. In Spanish, this behavior is expected as it happens throughout the language with a few exceptions: ma.dríd, ber.dád 'truth'.[40] On the other hand, Catalan accepts word-final voiceless oral stops, ma.drít, grók 'yellow', náp 'turnip'. On the other hand, the

[40] Although a spirantized pronunciation is very common in Central Spanish dialects (see, among others, Morris 1998): ma.dríð or ma.dríθ and ber.dáð/θ.

presence of nasals, sonorants and fricatives in both languages is variable: sú.per (*sú.pe) but gí.je or gí.jer.

A few disyllabic remaining Type R processes surface in Ibero-Romance. Firstly, in Latin American Spanish, proparoxitone proper names form truncated hypocoristics consisting of the stressed syllable, the onset of the next posttonic syllable and the final gender marker, already present in the source.

(20) Latin American Spanish

	Base	Trunc.
a.	kán.di.da	kán.da
b.	i.pó.li.to	pó.lo
c.	mé.li.da	mé.la
d.	lá.sa.ro	lá.ʧo

Secondly, some truncated hypocoristics end with a morpheme, generally -i, not present in the base form.

(21)

	Catalan		Portuguese		Spanish	
	Base	Trunc.	Base	Trunc.	Base	Trunc.
a.	na.tá.lja	ná.ti	na.tá.li.a	ná.ʧi	na.tá.lja	ná.ti
b.	to.más	tó.mi	—	—	to.más	tó.mi
c.	pi.lár	pí.li	—	—	pi.lár	pí.li

Apart from the residual disyllabic patterns seen so far, Portuguese and Peninsular Spanish accept a handful of trisyllabic Type R truncated words. All the forms in this category display a final morpheme -a, -o, which may not present in the source form. (22) shows examples of this pattern.[41]

(22) Brazilian Portuguese / Peninsular Spanish

	Brazilian Portuguese Base	Trunc.	Peninsular Spanish Base	Trunc.
a.	flo.ri.a.nó.po.lis	flo.rí.pa	a.nal.fa.bé.to	a.nál.fa
b.	de.le.gá.du	de.lé.ga	an.fe.ta.mí.na	an.fé.ta
c.	sã.wí.ʧi	sã.dú.ba	a.nar.kís.ta	a.nár.ko
d.	si.li.kó.ni	si.lí.ko	te.le.ko.mu.ni.ka.θjó.nes	te.lé.ko
e.	o.dõ.to.loʒí.a	o.dṍ.to	pro.le.ta.rjá.do	pro.le.ta

The pattern described and exemplified above is not productive in Catalan, although a couple of examples do exist: e.má.to (<e.ma.to.lo.ʤí.a 'hematology') and fár.ma.ko (<far.ma.ko.lo.ʤí.a 'pharmacology') (Cabré 2003: 910).

Felíu (2001) and Piñeros (2002) offer analyses of this pattern in Spanish, which coincide in the parsing of these truncated words. For both studies, a trisyllabic truncated word is composed of a trochaic syllabic foot preceded by an unparsed syllable, left aligned with the left edge of the word, attached directly to the prosodic word, $[\sigma\ (\acute{\sigma}\sigma)_{Ft}]_{PrWd}$.

[41] The glosses for Portuguese are: b. 'delegate', c. 'sandwich', d. 'silicone', e. 'dentist'. In Spanish, we have 'illiterate', 'amphetamine', 'anarchist', 'telecommunications' and 'proletariat'.

(23) Spanish trisyllabic truncation

an.	fe.	ta.	mí.	na	Base Form
|	|	|			
[σ (	σ́	σ)$_{Ft}$]$_{PrWd}$			Template
|	|	|			
an.	fé.	ta			Truncated Form

3.3.3. Summary

To summarize critical points in §3.3, the base words that allow right-edge truncation form disyllabic truncated forms in all Ibero-Romance dialects. However, this is the most represented but not the only productive pattern. The truncation of the first closed syllable of the source is a second productive pattern in all languages under consideration, but it is only productive in Portuguese and Spanish. Portuguese also widely allows vowel-final monosyllabic truncated words. The stress placement in the two major patterns corresponds to the first syllable. Minority patterns also surface. The most important one includes trisyllabic truncation. Spanish and Portuguese display a pattern that consists of the truncation of the first three syllables of the base.

3.4. Type M truncation

There is an additional truncation productive pattern present in Portuguese. This process does not preserve material from either the right or the left edges of the source word but it keeps medial segmental content excluding both prosodic edges. The list in (24) offers a few Portuguese examples obtained from Fonte-Monteiro’s (1991) dictionary.

(24) Portuguese

Disyllabic Trunc.			Monosyllabic μμ			Monosyllabic μ		
	Base	Trunc.		Base	Trunc.		Base	Trunc.
a.	a.bi.ga.íw	bí.ga	f.	a.bí.ljo	bíw	k.	a.de.ráw.du	dé
b.	a.ʤi.na.béw	dí.na	g.	a.daw.bér.tu	dáw	l.	a.da.íw.tõ	dá
c.	a.fro.dí.ʧi	fró.ʤi	h.	a.dew.gún.de	déw	m.	a.dri.á.na	drí
d.	a.ris.tó.te.les	tó.ʧi	i.	a.díw.sõ	díw	n.	a.fró.di.ʧi	fró
e.	a.nũ.si.á.da	nṹ.si	j.	aw.sí.des	síd	o.	a.su.sé.na	sú

Portuguese examples, are abundant. As the previous list of examples show, the segmental material that is preserved in the truncated form is immediately adjacent to the source's leftmost syllable, see (25) below, except for example d, a.ris.tó.te.les > tó.ʧi. The shape of these truncated hypocoristics varies. Both monosyllabic, which keep the second syllable or the source, in (24) f-o, and disyllabic examples, maintaining the second and the third syllables of the base form, in (24) a-e, were found.

(25) Portuguese Type M truncation

			Example
Base	a.	[σ σ σ ...]	b. a nũ si á da
		| |	| |
Trunc.		σ́ σ	nṹ si

Fonte-Monteiro (1991) does not include any trisyllabic or longer medial hypocoristics. Monosyllabic examples can both end in a consonant, in (24) f-k, or in a vowel, (24) l-o. Alternatively, Catalan has no examples of this type of truncation and

Spanish has only a few, hypocoristic pó.li from base i.pó.li.to, in Peninsular Spanish (Casado Velarde 1999); lís < e.lí.sa.bet, tó < a.na.tó.ljo in the Colombian variety of Bogotá (Urawa 1985); and nán < fer.nán.do in all varieties of Spanish.

To conclude this section, a summary of the shapes that main Type M truncation patterns in Ibero-Romance is next in (26).

(26) Main Type M truncation patterns in Ibero-Romance

	Brazilian Portuguese	Catalan	Spanish
Disyllabic	√	—	—
Monosyllabic	√	—	—
a. Bimoraic	√		
b. Monomoraic	√		

3.5. Syllabic or moraic minimality in Ibero-Romance prosodic morphology

This section summarizes some of the analytical work done on truncatory processes in Ibero-Romance languages and analyzes the role quantity plays in Ibero-Romance truncatory morphology, and other marginally interesting prosodic morphological processes such as reduplication and diminutive/augmentative formation.

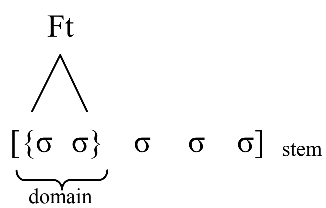
The literature on Ibero-Romance truncation have traditionally considered Spanish and Valencian Catalan truncated words to adhere to a disyllabic template, whereas the studies on Eastern Catalan and Portuguese coincide in assuming a moraic trochee template. However, the description outlined above of the data that linguists have traditionally used reveals a different picture. Whereas I support the major claims on both dialects of Catalan, the analyses on Spanish and Portuguese truncation have puzzlingly ignored different productive truncation patterns and, consequently, have produced incomplete characterizations.

3.5.1. Eastern Catalan and Spanish truncatory morphology is minimally moraic

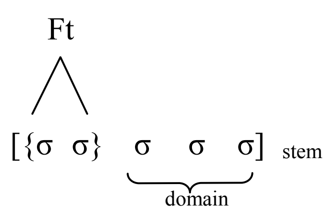
There is consensus among the different linguists who have analyzed Spanish truncatory morphology. They all agree in considering that the template to which Spanish truncated words conform is disyllabic. Weeda (1992) analyzes Types L and R truncated forms in Costa Rican Spanish and concludes that their template is a syllabic trochee. Prieto (1992b) and Lipski (1995) offer a templatic analysis that relies on prosodic circumscription (McCarthy and Prince 1990, 1993, 1995, Lombardi and McCarthy 1991) and templatic morphology to account for the data.

The goal of *prosodic circumscription* is to delimit (circumscribe) a prosodic domain, on which a certain morphological process may have an effect. According to Crowhurst (1994: 183), "The goal of prosodic circumscription theory is to capture the important generalization that the domain of a morphological process such as template mapping or affixation if often not an entire morphological stem, but may be limited to a portion of the stem." In prosodic circumscription, a parsing function Φ delimits the prosodic constituent C within the base B at one of its edges E: Φ (B, C, E). This function divides B into two pairs, the kernel B:Φ that satisfies the (C, E) conditions, and the residue B/Φ, the complement of B:Φ within B. Therefore, B = B:Φ * B/Φ, B equals the concatenation (*) of the kernel and the residue. If the kernel B:Φ is the single target of the morphological operation, then the prosodic circumscription is *positive*. According to McCarthy (1997: 3), "The main feature of positive prosodic circumscription, then, is that a morphological operation is applied to some prosodic constituent within a base instead of being applied to the whole base." However, if the residue B/Φ is the targeted domain, then the prosodic circumscription is *negative*. For instance, (27) a exemplifies a positive circumscription of the leftmost foot, which serves as the base for morphological operations, whereas (27) b displays the negative circumscription of the leftmost foot, not targeted for morphological operations (Crowhurst 1994: 183).

(27) a. Positive prosodic circumscription of foot from left edge



b. Negative prosodic circumscription of foot from left edge



Prieto (1992b) proposes a disyllabic trochaic template for Type R truncation in Peninsular Spanish, a disyllabic trochee in which the second syllable is optionally light.

In Prieto's (1992b) analysis, the function Φ (word, σσ, Left) parses the first two syllables of the base (gi.jér.mo). The kernel constituent is, then, gi.jer, B:Φ = gi.jer, whereas the residue includes the last syllable, B/Φ = mo. The two syllables of the kernel are mapped onto the disyllabic trochaic foot template.

(28) Prieto's (1992b) analysis

Function Φ	Φ (word, σσ, Left)
Base	B (gi.jér.mo)
Kernel	B:Φ = gi.jer
Residue	B/Φ = mo
Template mapping	σ́ σ | | gí je(r)

Lipski (1995) analyzes Type L truncation and observes how the majority of truncated words conform to a CV́.CV pattern, except when the stressed syllable is closed by a nasal (e.g., kán.da < kán.di.da), in which case the nasal is kept. Lipski applies Prosodic Circumscription and template mapping twice. In the first application, with a base al.bér.to, the function Φ (word, foot, right) yields the kernel B:Φ = bér.to and the residue B/Φ = al. Once the residue is deleted, the foot that forms the kernel goes through a second application of Prosodic Circumscription, Φ (Foot, Syllable, Left), where the two syllables in the kernel become independent and are, then, mapped onto the CV́.CV template syllable by syllable to avoid the presence of unwanted coda consonants. A summary of the different processes is next.

(29) Lipski's (1995) analysis

Function$_1$ Φ	Φ (word, foot, right)
Base$_1$	B (al.bér.to)
Kernel$_1$	B:Φ = ber.to
Residue$_1$ Erased	B/Φ = al
Function$_2$ Φ	Φ (Foot, Syllable, Left)
Kernel$_2$	B:Φ = ber
Residue$_2$	B/Φ = to
Template mapping$_{ber}$	C V | | b e r
Template mapping$_{to}$	C V | | t o
Concatenation	C V́ C V | | | | b é t o

Colina (1996), based on Prieto's (1992b) Type R data, and Piñeros (1998, 2000a, 2000b, 2002) support the disyllabic trochaic template and analyze the data from an optimality theoretic standpoint. For instance, Piñeros (2002) offers an optimality theoretic (Optimality Theory, OT) analysis of Type L and R truncatory processes in Spanish that relies on the ranking of different constraints to obtain disyllabic truncated words.

For his analysis, Piñeros (2002) follows Benua (1995) in applying some truncation-specific correspondence constraints. The observation of languages like English or Danish lead Benua (1995) to the conclusion that morphologically truncated forms may show phonological irregularities not found in regular surface patterns. Benua proposes these irregularities are due to Output-Output identity effects between truncated forms (T) and their base (B). Benua (1995) models BT identity through *Correspondence Theory*. In their formulation of Correspondence Theory, McCarthy and Prince (1995b) extend the notion of "correspondence", formerly attached to the association between the base and the (R)eduplicant (McCarthy and Prince 1993 [2002]), to the identity effects in other domains, like (I)nput-(O)utput. As McCarthy notes (2002: 14) "Correspondence Theory provides a general framework for stating constraints that demand faithfulness to linguistic objects." The notion of correspondence is defined as follows (McCarthy and Prince 1995b: 14):

(30) Correspondence

Given two strings S_1 and S_2, correspondence is a relation $\mathfrak{R}$ from the elements in S_1 to those of S_2. Elements $\alpha \in S_1$ and $\beta \in S_2$ are referred to as correspondents of one another when $\alpha \mathfrak{R} \beta$.

With this general definition, correspondence constraints such as Max (no deletion) or Dep (no insertion) need to be specified according to the values of S_1 and S_2. For instance, the Max or Dep constraints become a family of constraints whose members differ in their values of S_1 and S_2 (Input-Output, Base-Reduplicant, Base-Truncated form).

OT models BT identity effects through *transderivational*, or Output-Output, correspondence constraints. These constraints regulate the content of the truncated form with respect to its base. Benua's (1995) model for truncation is given here in (31).

(31) IO/BT Correspondence (Benua 1995)

Input

IO Correspondence ↕

Base ⟷ Truncated form

BT Correspondence

Correspondence is thus expanded to BT in a model that resembles the one proposed for BR identity. Both models have some differences: first, in reduplication, base words and reduplicants are simultaneously produced but in truncation, the related output strings are separate words. Second, there is no correspondence relation between the input and the truncated output. Third, IO and OO relations are not demonstrably simultaneous. The new model is superior to rule based analysis, which needs to introduce arbitrary unmotivated rule orderings and even special rules for truncated words.

In Piñeros' (2002) analysis, the undominated hierarchy FootBin, Parse-σ, Align-Ft-R (also known as *Restrictor*, responsible for delimiting or "restricting" the size of the prosodic word, McCarthy and Prince 1994) is responsible for a prosodic word of exactly two syllables long in Spanish. This is how Piñeros (2002) defines the previous constraints (translations are mine):

(32) Restrictor constraints (Piñeros 2002: 442)

a. FootBin (*Pie-Binario* in Piñeros' article): metrical feet are binary at a moraic or syllabic analysis.

b. Parse-σ (*Afiliar-σ*): syllabes are parsed into feet.

c. Align-Ft-R (*Alinear(Pie)*): the right edge of a foot coincides with the right edge of a prosodic word.

The effects of the Restrictor hierarchy, FootBin, Parse-σ, Align-Ft-R, are exemplified next with the input *bicicleta* '*bicycle*' and its Type R clipping *bici*.[42]

(33) Spanish (Piñeros 2002: 442)

FootBin, Parse-σ, Align-Ft-R

Base: bi.θi.klé.ta	FootBin	Parse-σ	Align-Ft-R
a. (bì.θi) (klé.ta)			(bì.θi)!
b. bi (θí.kle)		bi!	
☞ c. (bí.θi)			
d. (bí)	*!		

The only possible prosodic word resulting from the Restrictor filter is, then, disyllabic. Align-Ft-R rejects candidates consisting of more than one foot, Parse-σ filters out candidates with unparsed material and FootBin is responsible for eliminating

[42] This ranking exemplifies the effects of Restrictor constraints only. Any disyllabic candidate would win according to the ranking in tableau (40). Further analyses are needed to obtain the right optimal candidate.

candidates with feet that are too small or too big. The winning candidate is obtained at the cost of violating Max BT Seg, as some segmental material from the base is erased after truncation takes place. For this reason, Piñeros states that truncation needs Max BT Seg to be outranked by Restrictor (citing Benua 1995). In addition, the observation that all truncated words are trochaic implies that the Trochee constraint is undominated.

(34) Additional constraints in Piñeros' (2002) analysis

a. Max BT Seg (*Max*): every segment in the (B)ase has a correspondent in the (T)runcated form

b. Trochee (*Troqueo*): every foot is left prominent

The resulting ranking Trochee, Restrictor » Max BT Seg is put to the test in the following tableau with an input *colegio* '*school*' and its Type R clipping *cole*.

(35) Spanish (Piñeros 2002: 443)

Trochee, Restrictor » Max BT Seg

Base: ko.lé.xjo	Trochee	Restrictor	Max BT Seg
a. ko(lé.xjo)		ko! (Parse-σ)	
☞ b. (kó.le)			xjo
c. (ko.lé)	*!		xjo
d. (kó)		*!	le xjo

In accord with the ranking in (35), the resulting prosodic word is a moraic syllabic trochee. Trochee rejects disyllabic candidate c.

For Type R truncated words, Piñeros proposes the ranking of two additional constraints that guarantee the left edge of the base word be kept. Anchor BT L prohibits a truncated word from erasing the segmental material at the left edge of the base form. On the other hand, Contiguity-BT ensures that adjacent elements in the base form are also contiguous in the truncated form.

(36) Type R-specific constraints as defined in Piñeros (2002)

a. Anchor BT L (*Anclar-I*): a segment at the left edge of the base form has a correspondent at the left edge of the truncated word.

b. Contiguity-BT (*Contigüidad*): a portion of the truncated form that is correspondent with the base needs to contain contiguous elements.

The previous constraints dominate the ranking in (35), producing a Type R disyllabic result, as in the next tableau.

(37) Spanish

Anchor BT L, Contiguity-BT » Restrictor » Max BT Seg (Piñeros 2002: 446)

Base: te.ré.sa	Anchor BT L	Contiguity-BT	Restrictor	Max BT Seg
a. te (ré.sa)			te! (Parse-σ)	
☞ b. (té.re)				sa
c. (ré.sa)	t!e			te
d. (té.sa)		r!e		re

As Piñeros (2002) points out, the candidates (37) b-d are successful at creating the desired disyllabic result. However, candidate c is rejected as it does not keep the leftmost segmental material and candidate d, which does keep the first syllable, fails to form a candidate whose segments are contiguous in the input.

On the other hand, foot-sensitive Type L truncation is treated in a different manner. Piñeros assumes a constraint Max Ft BT that in the output form preserves the integrity of the foot already present in the base.

(38) Max Ft BT (*Max(Pie)*): every segment in the main foot in the base has a correspondent in the truncated form. (Piñeros 2002: 448).

This constraint outranks Restrictor, thus forcing the foot of the base, regardless of whether it is monosyllabic or disyllabic, to be copied in the truncated form. This can be seen in the following tableau, with an input mu.ʧá.ʧo 'young man'.

(39) Spanish

Max Ft BT » Restrictor » Max BT Seg (Piñeros 2002: 448)

Base: mu (ʧá.ʧo)$_{Ft}$	Max Ft BT	Restrictor	Max BT Seg
a. mu (ʧá.ʧo)		mu! (Parse-σ)	
b. (mú.ʧa)	ʧ!o		ʧo
☞ c. (ʧá.ʧo)			mu

The ranking in (39) predicts the emergence of monosyllabic or disyllabic Type L truncated forms, depending on the foot structure of the source word, as Max Ft BT is undominated.[43]

Considering the analyses from different theoretical points of view just presented, it has been assumed that Spanish truncatory processes do not take moras but syllables into account. However, this proposal is not adequate if monosyllabic truncated words are considered. The ranking proposed by Piñeros does not predict the emergence of monosyllabic bimoraic Type R truncated forms, which I suggest form a productive pattern in Spanish. Consider the following summary of Spanish productive truncatory patterns:

[43] However, Piñeros (2002) notes how there is variation among Spanish dialects regarding monosyllabic Type L truncated words. Apart from the expected monosyllabic truncated form, present in some varieties, e.g., ba.len.tín > tín, in other dialects, source words ending in a monosyllabic foot surface with a final vowel that it is not present in the base form, see (5) and (6) in this chapter, e.g., ba.len.tín > tí.no. The same linguist proposes the use of two different coda condition constraints (CodaCond), a "strict" version that bans any coda with any point of articulation and a "relaxed" version, which allows coronal codas to surface. Piñeros suggests that the dialects in which the strict version of CodaCond dominates, an epenthetic vowel is inserted, thus forming a disyllabic truncated word (tí.n<o>). Conversely, in the dialects that allow monosyllabic truncated words, the relaxed CodaCond constraint prevails.

(40) Spanish truncatory processes and shapes

	Type L	Type R
Disyllabic	en.ri.ké.ta > ké.ta	ra.fa.él > rá.fa
Monosyllabic		
a. Bimoraic	ba.len.tín > tín	fer.nán.do > fér
b. Monomoraic	—	—

Monosyllabic truncated hypocoristics and clippings emerge in both Type L and Type R patterns. The study of the Latin American hypocoristic data found in Boyd Bowman (1955), van Wijk (1964), Urawa (1985), Hoffman (1969) and Costenla Umaña (1982) brings into light too many examples (approximately 80 tokens, divided equally in Type L and R patterns) to consider this pattern marginal. Still, the production of monosyllabic truncated words and its incidence in the Spanish truncatory system is overlooked in all the studies consulted.

One reason could be that, as we noted in the previous section, in Latin American Spanish Type L truncated hypocoristics obtained from an oxitone source often surface with an epenthetic gender-marking vowel, creating an extra syllable not present in the base. However, there are also a great number of examples that respect the shape of the last heavy syllable of the base, producing monosyllabic truncated forms (e.g., nór < le.o.nór). In addition, many doublets emerge, with or without the epenthetic vowel (tín ~ tí.no < ba.len.tín). In Peninsular Spanish, a dialect that accepts more extensively monosyllabic truncated words, no disyllabic truncated words are obtained via epenthesis and monosyllabic bimoraic Type R truncated words are more common. The reasons for this omission are uncertain. For instance, Prieto (1992b) does not discuss monosyllabic clippings or hypocoristics in her study of Peninsular Spanish.

Assuming that monosyllabic truncation is a productive pattern in Spanish, two questions arise:

a. Is it simply by chance that the monosyllabic examples that exist mainly in Peninsular Spanish are invariably composed of a heavy syllable and that light monosyllables are rarely truncated?

b. Does the existence of this pattern mean that Spanish truncatory morphology considers moraic structure?

The answer to the first question could be affirmative. In that case, though, we would miss the generalization that the production of all monosyllabic examples takes into account the minimal word requirements in the language. In other words, the shape of Spanish truncated words is minimally bimoraic, the size of the minimal word in the same language (see, among others, Dunlap 1991).[44]

Spanish requires the smallest word to contain no fewer than two moras.

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[44] This pattern seems to coincide with Spanish ancestor Classical Latin. According to the data in Biville (1989), Latin truncated hypocoristics are normally two syllables long, e.g., *Aphro* < *Aphrodita*. However, the few monosyllabic nicknames attested are bimoraic, e.g., *Pol* < *Poledepol*.

(41) Spanish

a.	rés	'head of cattle'
b.	pán	'bread'
c.	séd	'thirst'
d.	cán	'dog'

Monomoraic examples exist, but are restricted to the following categories (based on Dunlap 1991: 75).

(42) Spanish

a. Functional words:	á	'to'
	dé	'of'
b. Interjections:	xó	'whoa!'
	tá	'beware'
c. Onomatopoeia:	kló	'cluck'
d. Irregular verbs:	dá	'(s)he gives', imperative 'give'
	dí	'I gave', imperative 'say'
	bé	'(s)e sees', imperative 'go'
	bí	'I saw'
	bá	'(s)he goes'
	sé	'I know', imperative 'be'
e. Personal pronouns	jó	'I'
	tú	'you'
f. Other words:	fé	'faith'
	té	'tea'
	pré	'soldier's daily pay'
	gró	'grogram'
	pró	'profit'

Examples (42) a-c are non-lexical words and are not subject to minimal word requirements. Only a small number of imperatives and other non-verbs are truly exceptional. According to Dunlap (1991: 75), a search of approximately 70,500 words only yielded a handful of monosyllabic monomoraic words in (42) f. However, the words gó, pró are shortenings. In conclusion, despite the existence of a few counterexamples, the hypothesis that the minimal content word in Spanish is bimoraic is solid.

The minimal word requirements in Spanish adhere to the minimal size of the foot. As supported in the previous chapter, oxitone words ending in a heavy syllable form a monosyllabic bimoraic foot, whereas a final light syllable forms a disyllabic trochaic foot with the previous syllable. Therefore, Type L hypocoristics such as nór < le.o $(\text{nór})_{Ft}$ and disyllabic Type L forms, e.g., tí.na <er.nes $(\text{tí.na})_{Ft}$, also truncate the main foot of the source, conforming to the original trochaic pattern (Piñeros 1998, 2000a, 2000b, 2002).

(43) Spanish Type L truncation

	Main foot	Type R Truncated form
a. Final bimoraic syllable	le.o $(\text{nó}^{\mu}\text{r}^{\mu})_{Ft}$	nór
b. Final monomoraic syllable	er.nes $(\text{tí}^{\mu}.\text{na}^{\mu})_{Ft}$	tí.na

Type R truncated words yield both monosyllabic and disyllabic truncated results (e.g., frán < fran.θís.ko, rá.fa < ra.fa.él). The minimal word/foot size requirements play the role of allowing both types of feet to surface. The stressed syllable invariantly conforms to the trochaic pattern. This analysis explains why closed but not open syllables can constitute a truncated word in Spanish. The size of an open monomoraic syllable does not adhere to the minimal word, and foot, requirements, which is the reason why it almost never surfaces.

(44) Spanish Type R truncation

Base Form			
fer.nán.do	a. Monosyllabic truncated form:	$\text{fé}^{\mu}\text{r}^{\mu}$	* fé^{μ}
	b. Disyllabic truncated form:	fér.nan	

At this point, I suggest an answer to the second question above. Contrary to what different studies in the past have proposed, there is enough evidence to support the hypothesis that Spanish considers syllabic weight in truncation processes. However, the role of weight is restricted. Weight considerations, expressed as a minimal word requirement, allow truncated bimoraic monosyllabic words to appear, in both Type L and Type R formats, but play no role in the assigning of stress in the Type L pattern. As noted in previous sections, the stress in polysyllabic truncated words is invariantly penultimate, regardless of syllabic internal structure. Because of this, we can find truncated words with penultimate stress and a heavy ultima (e.g., fá.kul < fa.kul.tád 'faculty'), contravening the rules of regular stress assignment in the language, described in the previous chapter. However, we saw above that the last consonant of heavy unstressed ultimas are obligatorily deleted in some forms, while other truncated forms erase them optionally.[45]

Spanish reduplication, although marginal, is also sensitive to moraic structure. According to Lloyd (1966), Spanish reduplicative words consist of two elements, each of which echoes the phonetic shape of the other, by either repeating one or more syllables, e.g., tun.tún 'drum stick', té.pe té.pe 'constant effort'. Taking té.pe té.pe as an example, a reduplicated word is formed with the base té.pe and the affix té.pe that reduplicates the totality of the base (B = Base, R = Reduplicant), as seen in (45).

(45) Reduplication

Model		Example
Base	[σ́ σ]	té pe
B + R	[σ́ σ] + R	té pe + R
	| |	| |
	[σ́ σ] [σ́ σ]	té pe té pe

Lloyd (1966) provides 66 total examples of reduplicative words in Spanish. Disyllabic paroxitone morphemes constitute the majority of reduplicative morphemes found. Trisyllabic morphemes, with either paroxitone or proparoxitone stress, are also found more restrictedly, e.g., θá.pe.le θá.pe.le 'painful movement of a crippled person'. Monosyllabic reduplicative morphemes are scarce but they adhere to the same bimoraic

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[45] Syllable markedness, open syllables are less marked than closed ones; coda conditions, some consonants are more suited to be in final coda position than others; or the regularization of the assignment of stress by eliminating unstressed heavy syllables could be responsible for this pattern.

shape; no monosyllabic monomoraic reduplicative morphemes, CV́ CV́, are attested, e.g, ʧún ʧún 'drum stick'. In conclusion, the observation that Spanish reduplicative morphemes are minimally bimoraic may be evidence that this process, however marginal and non-productive, considers syllabic structure.

However, it has been argued that Spanish diminutive and augmentative formation take a disyllabic base, contradicting the claim that Spanish prosodic morphology takes into account a moraic template (Jaeggli 1980, Dunlap 1991, Crowhurst 1992, Prieto 1992a, Ohannesian Saboundjian 1996, Lain 2004). These linguists distinguish different patterns. First, words ending in a class marker (-a, -o) omit it before taking the allomorph –ita/o, as exemplified in (46).[46]

(46) Spanish

	Base	Diminutive	Gloss
a.	ká.sa	ká.si.ta	'house'
b.	lí.bro	lí.brí.to	'book'
c.	ko.ró.na	ko.ro.ní.ta	'crown'
d.	te.lé.fo.no	te.le.fo.ní.to	'telephone'

[46] For the sake of brevity, this study chose to analyze specifically the diminutive morpheme -ito/a and its variants, -í.to/a, -s/θí.to/a, -e.s/θí.to/a. Ohannesian Saboundjian (1996:4) claimes that -ito/a is the most productive diminutive morpheme in the Spanish language, but it is not the only one. Other diminutive morphemes are: -é.xo/a, -í.ko/a, -í.jo/a, -é.te/a, -wé.lo/a. Augmentative morphemes include, among others, -a.s/θo/a, -ó.te/a. The morpheme –ito/a is used extensively to produce hypocoristics.

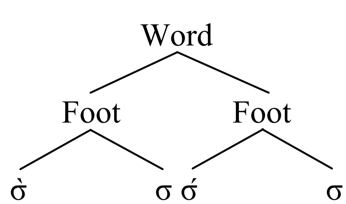
The second major pattern includes athematic monosyllabic radicals and thematic single-footed bases ending in [j] or containing [we] or [je], which take the suffix –s/θito/a preceded by an epenthetic [e].

(47) Spanish

	Base	Diminutive	Gloss
a.	sól	so.le.s/θí.to	‘sun’
b.	má.dre	ma.dre.s/θí.ta	‘mother’
c.	lá.bjo	lá.bje.s/θí.to	‘lip’
d.	nwé.bo	nwé.be.s/θí.to	‘new’

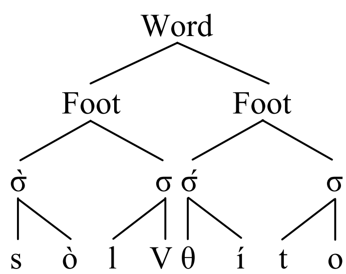
Linguists such as Jaeggli (1980), Dunlap (1991), Crowhurst (1992), Prieto (1992a) (but cf. Harris 1993, 1994) have proposed a prosodic disyllabic constraint on the stem preceding diminutive and augmentative suffixes. An epenthetic [e] is added to the stem in cases of monosyllabic stems to satisfy this disyllabic constraint. Prieto (1992a) claims a minimal word requirement, composed of two disyllabic trochaic feet, is activated in some speakers. This minimal word constraint is represented in (48).

(48) Prosodic Template for Spanish Diminutives



According to Prieto (1992a: 195), the features of epenthetic [e] will only link to satisfy the template in some varieties, i.e. Peninsular Spanish. In the dialects where the epenthetic process is active, the diminutive *sol.s/θí.to does not match the minimal word requirement, and an epenthetic [e] is added to the melodic level.

(49) Spanish



As Prieto (1992b) notices, there is dialectal variation regarding the disyllabic template. In Bolivian Spanish the allomorph -ito/a is normally chosen, without the epenthesis of [e], e.g., base: sól; Diminutive sol.sí.to. Therefore, in this dialect, the disyllabic template is not an active constraint.

However, Harris (1993) disagrees with Crowhurst (1993) and doubts that the disyllabic template plays a role in diminutive/augmentative formation in Spanish. He claims: "…monosyllabicity of the base seems to be neither a necessary nor a sufficient condition for epenthesis in Sonoran diminutives." (Harris 1993: 182). Harris notices how polysyllabic bases trigger epenthesis, tá.pja > ta.pje.sí.ta 'wall', constituting evidence that monosyllabicity is not a necessary condition for epenthesis. In addition, some monosyllabic bases do not trigger epenthesis, mú.gre > mu.grí.ta 'dirt', tí.gre > ti.grí.to 'tiger'.

Harris does not attempt to give an alternative explanation to the Sonoran data. However, he notes two aspects future researchers would need to take into account. One is that allomorph selection does not seem to depend on phonology but rather on morphology. In Harris' words, the allomorph variation observed in Spanish is based on allomorphs that are "morpheme variants selected on a non-phonological basis." (Harris 1994: 184). On the other hand, lexical idiosyncrasy, in Harris' opinion, has to be analyzed as an important component of diminutive/augmentative formation in Mexican Spanish. The same linguist argues it is common for native speakers to distribute allomorphs capriciously; and that other speakers of the same dialect show different preferences for the same items: a word like lá.bjo may yield the diminutives such as la.bi.í.to, la.bje.sí.to la.bí.to.

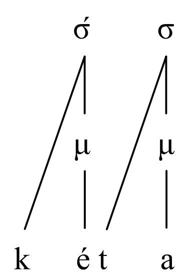
In conclusion, the data from different dialects of Spanish displayed in several studies claim that the diminutive/augmentative morpheme needs to attach to a base formed minimally by a syllabic trochee and that when a base is composed of a moraic trochee, an epenthetic [e] is added to comply with the syllabic template. However, Harris (1994) presents evidence to support that Spanish diminutive/augmentative formation is a process in which extra linguistic factors are important in the selection of the different allomorphs.

Eastern Catalan truncation behaves similarly to Spanish regarding weight. Cabré (1993, 1994, 1998, 2003) and Cabré and Kenstowicz (1995) argue that Eastern Catalan truncation and reduplication adheres to the same minimal word/foot requirements in

Catalan, as proposed for Spanish above.[47] Following this idea, Cabré (1993) offers an analysis of Eastern Catalan truncation based on Prosodic Circumscription and templatic morphology. According to Cabré's Prosodic Circumscription analysis, the parsing function Φ parses the rightmost metrical foot, Φ (word, μμ, Right). Taking a paroxitone name such as en.ri.ké.ta, the resulting kernel is ke.ta, B:Φ = ke.ta, whereas en.ri becomes the residue, B/Φ = en.ri. Alternatively, an oxitone name as mi.kél is parsed B:Φ = kél, B/Φ = mi. The following step is to map the kernel to the bimoraic template [μμ].[48]

(50) Cabré's (1993) analysis

Function Φ	Φ (word, μμ, Right)
Base	B (en.ri.ké.ta)
Kernel	B:Φ = ke.ta
Residue	B/Φ = en.ri
Template maping	

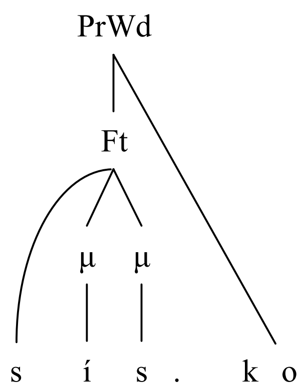


[47] The minimal word in Catalan is also bimoraic: ów 'egg', áʎ 'garlic', árk 'arch', préw 'price' (among others, Cabré 1993, 1998, 2003). Some monomoraic content words surface, e.g., pá 'bread', má 'hand', dú 'hard'. However, the vast majority of monomoraic words have an underlying nasal –n or vibrant –r that is erased in word-final position. For instance, consider the alternation between the singular and the plural form pá ~ páns, má ~ máns, dú ~ dúrs (See further discussion in the second chapter of this dissertation).

[48] In her analysis, Cabré (1993) uses a syllable that projects moras, following Moraic Theory, outlined in the previous chapter of this dissertation. In this framework, the cross-linguistic generalization that syllables are light or heavy is accounted for by the number of moras the syllable dominates, a light syllable only dominates a mora, whereas a heavy syllable dominates two.

This model predicts truncated words that adhere to a strictly bimoraic trochaic template: CV́.CV or CV́CC. However, truncated forms with a heavy penultimate do appear: sís.ko from base fran.sís.ko. In these cases, the bimoraic template is satisfied with the first syllable. Cabré suggests that the last unstressed syllable remains outside the disyllabic template, being adjoined to the prosodic word directly, as in (51).

(51) Cabré (1993: 98)



The analysis in (51) forces Cabré to suggest two main requirements for Catalan truncation. Firstly, a truncated word must contain the main prosodic foot, usually bimoraic, from the base. Secondly, more than two moras may appear, as long as the truncated form is no longer than two syllables, as seen in sís.ko in (51). A more formal definition of these conditions is next (translation mine):

(52) Cabré's (1993) prosodic requirements for Eastern Catalan truncation

a. Condition on constituency (*Condició de constituent*): a truncated word must contain prosodic circumscription of the base.

b. Disyllabic condition (*Condició de bisibil·labicitat*): a truncated word is maximally disyllabic.

According to these requirements, Type L monosyllabic bimoraic and disyllabic hypocoristics and clippings appear in the language. As predicted by this analysis, monosyllabic monomoraic truncated words are unattested.

(53) Eastern Catalan truncatory processes and shapes

	Type L
Disyllabic	te.o.dó.ra > dó.ra
Monosyllabic	
a. Bimoraic	mon.se.rát > rát
b. Monomoraic	—

Cabré's (1998) OT analysis of Catalan truncation relies on Benua's BT-Correspondence theory outline above. Cabré (1998: 12) assumes three BT anchoring constraints that, together with FootBin outrank Max BT Seg (Max BT in Cabré's terms). These three anchoring constraints ensure that the prosodic foot from the base is faithfully kept in the truncated form.

(54) Cabré's (1993: 12) anchoring constraints

a. Anchor-Pos$_{BT}$ (Ft, head): the prominent element of the truncated form and the prominent element of the base form stand in correspondence relation.

b. Anchor-Pos$_{BT}$ (Ft, initial): the initial segment of the prosodic constituent (Ft) of the base stands in correspondence relation with the initial segment of the truncated form.

c. Anchor-Pos$_{BT}$ (Ft, final): the final segment of the prosodic constituent (Ft) of the base stands in correspondence relation with the final segment of the truncated form.

According to Cabré, FootBin dominating Max BT Seg guarantees truncation. In her own words "Truncated words are unmarked prosodic words, so Foot Binarity constraint must be observed (sic). Thus, a low position of Max BT in the ranking allows the truncated hypocoristics to not copy the whole base." (Cabré 1998: 13).

(55) Eastern Catalan (Cabré 1998: 13)

FootBin, Anchor-Pos$_{BT}$ (Ft, head), Anchor-Pos$_{BT}$ (Ft, initial), Anchor-Pos$_{BT}$ (Ft, final) » Max BT Seg

a. Base: en.ri (ké.ta)	FootBin	Anchor-Pos$_{BT}$ (Ft, head)	Anchor-Pos$_{BT}$ (Ft, initial)	Anchor-Pos$_{BT}$ (Ft, final)	Max BT Seg
☞ i. (ké.ta)					**
ii. (én.ri)		*!	*!	*!	**
iii. (ri.ké.ta)	*!		*!		*

b. Base: mi (kél)	FootBin	Anchor-Pos$_{BT}$ (Ft, head)	Anchor-Pos$_{BT}$ (Ft, initial)	Anchor-Pos$_{BT}$ (Ft, final)	Max BT Seg
☞ i. (kél)					*
ii. (mi.kél)			*!		

Cabré's analysis just outlined does not guarantee that truncation takes place. With the ranking in (55), the optimal candidate is the faithful candidate, omitted in both tableaux (55) a-b, en.ri (ké.ta) and mi (kél) respectively, which complies with foot binarity, anchoring constraints and BT maximality. As Benua (1995) rightly observes, to ensure the desired truncation, Parse-σ and Align-Ft-R must also dominate Max BT Seg (see how Piñeros applies this ranking in (35) above in this chapter). The next chapter in this dissertation will attempt to offer a more adequate OT analysis of Eastern Catalan truncation, taking into account the previous observation.

Reduplication in Eastern Catalan is a marginal process (Cabré 2003) and seems to be even more marginal in Valencian Catalan. Perhaps for this reason, reduplication in Valencian has been ignored in the literature. This dissertation analyzes the Eastern

Catalan data in Cabré (2003). According to Cabré, the meaning of reduplicative words in Catalan includes almost exclusively onomatopoeias and hypocoristics. Cabré (2003) claims that reduplication affects a base word, not always a preexisting word in the language, that is minimally a heavy syllable or two light syllables with trochaic stress, thus, according to Catalan minimal word requirements.[49]

The most productive reduplicative process Cabré analyzes in Eastern Catalan is the one mentioned in other studies as *Morphological Reduplication* (Mascaró 1986, Lleó 1995).

(56) Catalan

Adverbial compounds	Gloss
a. ba.lan.drím ba.lan.drám	'swinging'
b. lé.ri lé.ri	'about to'
c. ój ój	'right?'
Nominal compounds	
d. búb búb	'dog's bark'
e. ka.ta.klík ka.ta.klók	'noise of something breaking'
f. ka.trík ka.trák	'noise of loom'

[49] Cabré (2003) provides a list of other marginal reduplicative processes. The first marginal pattern in Catalan reduplication includes words typical of baby talk like má.ma. The second minor pattern Cabré (2003) mentions is formed by the repetition of an open syllable from a monosyllabic, which normally conforms to the minimal word requirements by being bimoraic, or a disyllabic base. These partially reduplicated forms are assigned oxitone stress. For instance, a base like bom.bó 'bonbon' produces a reduplicated word bo.bó, where the stressed syllable from the base is reduplicated. The third residual reduplication pattern in Catalan includes a reduplicative structure, which forms a syllabic trochee, CV́.CV, prefixed to a monosyllabic, bimoraic, pre-existing word, e.g., pa.ta.pám from base pám 'noise of violent slam'.

This pattern reduplicates a structure, which may not be a preexisting word but complies with word minimalism; it may be monosyllabic as long as it is bimoraic. The result of this morphological reduplication is a form composed of two coordinated independently stressed words. These reduplicative words can be nouns or adverbs.

Reduplication in Catalan is, to conclude, a marginal morphological process. Despite this characteristic, the vast majority of examples in all patterns conform to a word minimality constraint that considers a moraic minimal word. The stress assignment complies, in the majority of cases, with the regular quantity sensitive algorithm formulated in the previous chapter. Mainly, the majority of reduplicative morphemes ending in a consonant are oxitone, whereas paroxitone stress is found in reduplicated words ending in a vowel. Therefore, like Spanish, there is evidence that Catalan reduplication is quantity sensitive.

3.5.2. Truncation in Valencian Catalan and Brazilian Portuguese is not minimally moraic

All the studies on Eastern Catalan truncation claim this process is quantity sensitive. This hypothesis is adequate if we consider Type L truncation, which has a productive moraic trochee truncation process. However, Valencian Catalan behaves differently than Eastern Catalan regarding truncatory patterns and weight considerations. As stated above, while Eastern Catalan allows disyllabic and monosyllabic truncated forms, the size of a truncated word in Valencian Catalan is always limited to two syllables, no monosyllabic or trisyllabic truncated words are present (Casanova 1995, Cabré 1998, 2003).

(57) Valencian Catalan truncatory processes and shapes

	Type L
Disyllabic	en.ri.ké.ta > ké.ta
	mi.kél > ké.lo
Monosyllabic	—

In both Catalan dialects, the less common Type R truncated forms are usually disyllabic. Valencian Catalan adds an epenthetic vowel (gender marker -a, -o) to Type L truncated forms with a source word ending in a consonant, creating a truncated form containing a syllabic trochee. Accordingly, truncation in Valencian is incompatible with a monosyllabic foot, even if it is present in the source, and, consequently, a truncated form has to be exactly a disyllabic foot. This analysis leads to the conclusion that Valencian Catalan truncation does not consider moras but syllables, adhering to a disyllabic template for Spanish, and, therefore, is quantity insensitive.

Cabré (1998) accounts for the Valencian Catalan data using the same OT constraints defined in the previous section for Eastern Catalan. According to the behavior of oxitone bases in Valencian Catalan, Cabré (1998: 18) assumes that Anchor-Pos$_{BT}$ (Ft, final), a constraint that requires the last segment of the base be kept in the truncated form, is dominated, as Valencian hypocoristics like ké.lo (from base mi.kél) display a final vowel not present in the base. For the same reason, a constraint BT-Faith, which prohibits any output deletion or insertion of an element needs to be outranked as well.

(58) BT-Faith: there must be structural and segmental faithfulness between corresponding outputs. No deletion, no insertion. (Cabré 1998: 14).

The constraint that Cabré uses to decide between candidates kél, faithful to the prosodic foot of the base, and optimal ké.lo is PW (leftheaded). Cabré (1998: 18) argues that PW (leftheaded) being undominated guarantees the emergence of an at least disyllabic trochaic candidate.

(59) PW (leftheaded): P(rosodic)W(ord) is required to have the strong position on the left. (Cabré 1998: 18).

However, according to the previously defined constraint, prosodic words do not need to be disyllabic to be left-headed. The emergence of hypocoristic ké.lo or sá.ro (from bal.ta.sár) in Valencian Catalan is exemplified in the next tableaux.

(60) Valencian Catalan (Cabré 1998: 18)

Anchor-Pos$_{BT}$ (Ft, head), Anchor-Pos$_{BT}$ (Ft, initial), PW (leftheaded) » BT-Faith, Anchor-Pos$_{BT}$ (Ft, final)

a. Base: mi (kél)	Anchor-Pos$_{BT}$ (Ft, head)	Anchor-Pos$_{BT}$ (Ft, initial)	PW (leftheaded)	BT-Faith	Anchor-Pos$_{BT}$ (Ft, final)
i. kél			*!		
☞ ii. ké.lo				o	o

b. Base: bal.ta (sár)	Anchor-Pos$_{BT}$ (Ft, head)	Anchor-Pos$_{BT}$ (Ft, initial)	PW (leftheaded)	BT-Faith	Anchor-Pos$_{BT}$ (Ft, final)
i. sár			*!		
ii. ta.sár	t!a		*!		
☞ iii. sá.ro				o	o

The OT analysis of Valencian Catalan Cabré proposes is flawed for the same reasons pointed out before for her analysis on Eastern Catalan. The ranking she proposes selects a faithful candidate, omitted in the previous tableaux. On the other hand, Cabré needs to uses an unusual constraint, PW (leftheaded), to make sure a disyllabic candidate emerges. In tableau (60) a, Cabré assigns a violation of PW (leftheaded) to the candidate kél. Yet, kél satisfies the definition given by Cabré that prosodic words need to be left headed (but not necessarily disyllabic). I shall develop an alternative analysis in the next chapter.

Valencian Catalan is not the only dialect in the Ibero-Romance domain displaying a truncation process that ignores quantity requirements. This study supported the hypothesis that Valencian Catalan is quantity insensitive because only one truncated word shape disregarding mora count, disyllabic, is permitted. On the other hand, I suggest that Brazilian Portuguese truncatory and reduplicative morphology are quantity insensitive as they productively allow several patterns that are not quantity sensitive. A summary of all monosyllabic and disyllabic truncatory patterns, displaying mora or syllable sensitivity, in Portuguese is next.

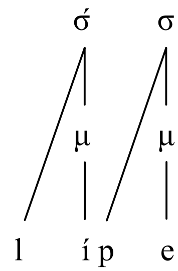
(61) Brazilian Portuguese truncatory processes and shapes

	Type L	Type R	Type M
Disyllabic	os.vál.do > vál.do	ma.ri.á.na> má.ri	a.bi.ga.íl > bí.ga
Monosyllabic			
a. Bimoraic	ra.kél > kél	kris.tí.na > krís	a.dal.bér.to > dál
b. Monomoraic	a.ri.vál.ni > ní	a.lek.sán.dre > á	a.da.íl.ton > dá

The studies of Da Silva and Gonçalves (2004) and Gonçalves (2004) on Type R and L truncation processes, respectively, have recently supported the thesis that Portuguese truncation adheres to the minimal word requirements previously presented for Spanish and Eastern Catalan. In other words, these studies claim that truncated words in Portuguese can only conform to the moraic trochee model; they can only be monosyllabic, as long as they are bimoraic, or disyllabic. Forms like á or dá contradict this hypothesis.

For instance, Gonçalves (2004) uses the already familiar bimoraic template and Prosodic Circumscription model similar to the one Cabré (1998) uses to explain Brazilian Portuguese truncatory morphology.

(62) Gonçalves' (2004) analysis on Brazilian Portuguese

Function Φ	Φ (word, μμ, Right)
Base	B (fe.lí.pe)
Kernel	B:Φ = lí.pe
Residue	B/Φ = fe
Template mapping	

There are not many OT studies dealing with Portuguese truncatory morphology. Da Silva and Gonçalves (2004) analyze Type R hypocoristics, whereas Vazquez and Gonçalves (2004) treat Type R clippings. On the other hand, Lima and Gonçalves' (2004) article studies compound hypocoristic formation (e.g., ma.lú from names ma.rí.a and lu.sí.a). Da Silva and Gonçalves (2004) explain Brazilian Type R truncatory patterns using OT. According to these lusitanists, in line with the analysis Piñeros puts forward for Spanish, explained above, truncation is obtained by ranking Parse-σ (*AN*, in the authors' nomenclature) and Align-Ft-R (*TD-Pé*) above Anchor BT L (*Alin*) and Max BT Seg. The following tableau is a simplified version of the one in Da Silva and Gonçalves (2004: 6).[50]

---

[50] *ComplexCoda prohibits a syllabic coda formed by more than one element.

(63) Brazilian Portuguese Type R truncated hypocoristics

Parse-σ, Align-Ft-R » Anchor BT L » *ComplexCoda » CodaCond » Max BT Seg

Input: ga.bri.é.la	Parse-σ	Align-Ft-R	Anchor BT L	*Complex Coda	CodaCond	Max BT Seg
a. (gá.bri)				br!		ela
b. (é.la)			g!abri			gabri
c. (gáb)					*!	riela
☞ d. (gá.bi)						r ela
e. bri (é.la)	b!ri		ga	br		ga

This analysis is flawed in several aspects. Firstly, the ranking of some of the low-ranked constraints is not motivated, at least by the data in this tableau. Parse-σ and Align-Ft-R must outrank Max BT Seg and Anchor BT L. However, there is no evidence for the ranking of the alignment constraint over Max BT Seg and CodaCond below *ComplexCoda. Secondly, Da Silva and Gonçalves fail to include a constraint like FootBin to delimit the size of feet and ensure truncation. In the previous tableau, disyllabicity is achieved by the action of top-ranked Parse-σ, which prevents the trisyllabic candidate (63) d from surfacing by penalizing the first unparsed syllable, and CodaCond, which prohibits a candidate with an obstruent-final segment from appearing, as in candidate (63) c. However, nothing in Da Silva and Gonçalves' analysis would stop a candidate like (ga.bri.é.la), faithful to the base form and aligned and anchored to both prosodic edges, from emerging. Da Silva and Gonçalves' ranking does not predict the emergence of a monosyllabic truncated hypocoristic. The presence of a top-ranked constraint such as FootBin would have fixed this difficulty by forcing the output to be binary.

A more detailed analysis of Fonte-Monteiro's (1991) data, the same source used in the Portuguese studies on truncatory morphology mentioned so far, reveals that more patterns that are productive arise in Portuguese truncation. As mentioned above (see (61)) monosyllabic monomoraic truncated words are present in all processes. This Portuguese monosyllabic monomoraic pattern seriously challenges the proposal put forward by Da Silva and Gonçalves (2004) and Gonçalves (2004) claiming that Portuguese truncated words adhere to the minimally bimoraic word in Portuguese. Monomoraic monosyllabic truncated hypocoristics and clippings, although unable to conform to word minimality, widely surface in the language. Portuguese accepts disyllabic and monosyllabic truncated words, regardless of their syllabic internal structure. Therefore, this study claims that there is enough evidence to consider Portuguese truncation as quantity insensitive. Accordingly, Chapter 4 in this dissertation will attempt to provide an OT analysis of Brazilian Portuguese truncatory patterns.

Reduplication processes in Portuguese are more productive than in the other Ibero-Romance languages analyzed so far. According to Gonçalves (2004), two patterns are especially productive in Brazilian Portuguese.[51] First, a process exists that combines

[51] Apart from the two productive patterns Gonçalves (2004) analyzes, Couto (1999) mentions other less productive processes in Brazilian Portuguese reduplication. The first pattern includes instances of syllabic Reduplication. A first sub group is composed of words related to baby talk, or the specific lexical items adults use to address infants. This reduplication can be complete or partial, e.g., be.bé 'baby' or dã.dá 'to walk'. Instances of onomatopoeic reduplication form a second minor reduplicative pattern in Couto (1999). In this class, reduplicative words are formed by two monosyllables, not necessarily bimoraic, or two

truncation and reduplication in order to make hypocoristics. The data in (64) illustrates this pattern (Red = Reduplicated word).

(64) Portuguese

	Base	Red.
	Base	Red.
a.	fá.ti.m.a	fa.fá
b.	ã.ʒé.li.ka	ʒe.ʒé
c.	kár.los	ka.ká
d.	bar.na.bé	be.bé
e.	ã.dré	de.dé

These reduplicative words are formed with the truncated stressed syllable of the base, which serves as the base for reduplication, and the suffix that reduplicates the whole truncated base, as in (65).

disyllabic structures, independently stressed, e.g., frú frú'noise of leaves' or lén.ga lén.ga 'hissing conversation'. A third residual pattern includes lexicalized partial reduplicated words, fo.fó.ka 'gossip'. The last reduplication process that Couto talks about is what he calls "Retriplication" (Retriplicação), which triplicates a monosyllabic, open or closed syllable. The resulting triplicated word displays final stress, e.g., ra.ra.rá 'laughter'.

(65) Truncation and reduplication in Brazilian Portuguese

	Truncation	Reduplication
Base	a. [σ σ σ́ σ]	b. R + σ́
	σ́	σ σ́
Examples		
Base	a. an ʒé li ka	b. R + ʒé
	ʒé	ʒe ʒé

Examples (64) c,e display a process of prosodic circumscription in which the syllable to be reduplicated loses either a coda consonant or a complex onset respectively to conform to a CV template (Gonçalves 2004: 17).

(66) Prosodic Circumscription in Brazilian Portuguese reduplication

	Truncation	Reduplication
	a. ã d r é	b. R + dé
Template	C V	de dé
Base	d é	

Once the stressed syllable is mapped to the template, the resulting CV sequence is reduplicated, as in (66) b.

The second productive process of reduplication in Portuguese includes total reduplication of a verb form, the third person singular in the present indicative tense, as long as it is disyllabic and ends in a vowel.

(67) Portuguese

	Base	Red.	Gloss ('Base, Reduplicated word')
a.	pú.ʃa	pú.ʃa pú.ʃa	'to push, modest'
b.	bá.ʧi	bá.ʧi bá.ʧi	'to hit, traffic lane'
c.	lấ.be	lấ.be lấ.be	'to lick, day-care'
d.	pú.la	pú.la pú.la	'to jump, camera'
e.	pé.ga	pé.ga pé.ga	'to take, amusement Park ride'

Unlike hypocoristics, the reduplicative result changes its morphological category. The base form is a verb, whereas the reduplicated word becomes a noun.

The newly formed compound nouns have to conform to a syllabic trochaic pattern, which is why other monosyllabic or consonant-final third person singular verbal forms of the present indicative tense block this reduplicative process, as shown in (68).

(68) Portuguese

	Base	Red.	Gloss ('Base')
a.	re.tẽ́	* re.tẽ́ re.tẽ́	'to restrain '
b.	kér	* kér kér	'to want '
c.	ko.rój	* ko.rój ko.rój	'to run '

In conclusion, different patterns of Portuguese reduplication are not sensitive to moraic structure. First, verbal reduplication, in (67), has to conform to a syllabic trochee template [(CV́.CV) (CV́.CV)] (pú.ʃa pú.ʃa). Reduplicative moraic trochees like *kér kér are ungrammatical. Second, onomatopoeic reduplicative forms such as frú frú or rón rón are formed by two independently stressed monosyllabic words that can be monomoraic or bimoraic. Therefore, a minimal bimoraic requirement is not active in this process.

3.6. Summary of Conclusions

The analysis of Ibero-Romance truncation processes provided in §§3.1-3.5 supported the view that Spanish and Eastern Catalan prosodic morphology is quantity sensitive, as it conforms to the moraic word minimum. Conversely, Valencian Catalan and Portuguese truncated words do not comply with the former generalization. Truncation in Valencian Catalan only forms disyllabic results, whereas Portuguese truncated words appear in different sizes, including monosyllabic monomoraic. Conversely, quantity insensitivity in the placement of stress is justified in Type R and M truncated words. Type R disyllabic truncated forms in Portuguese and Spanish and Type M disyllabic truncated words in Portuguese invariably bear stress in the first syllable, regardless of syllable weight considerations and stress placement in the source. On the one hand, Type L truncation in Ibero-Romance keeps the main foot, including the head, of the source.

The study of reduplication in Eastern Catalan and Spanish concludes that these languages consider a moraic minimal reduplicated word and that the placement of stress conforms to a quantity sensitive manner. On the other hand, some Portuguese reduplication patterns do not consider weight limitations. Verbal reduplication only takes paroxitone disyllabic forms and sub minimal monosyllabic monomoraic reduplicative morphemes appear. The assignment of stress in Portuguese reduplicative words does not consider weight either.

On the other hand, there is a lot of variation regarding Spanish diminutive and augmentative formation. This process is quantity insensitive in some dialects of Spanish. In these varieties, the majority of morphemes, before suffixation, have to form a disyllabic template. Monosyllabic morphemes add an epenthetic vowel to comply with this constraint. However, some varieties are quantity sensitive, as they do not observe this requirement and monosyllabic bases can add the augmentative and diminutive suffix without having to undergo epenthesis.

A summary of the morphological processes considered in this chapter and the role weight plays in their formation and stress assignment is provided in (69) (Dim/Aug = diminutive and augmentative, QI = quantity insensitive, QS = quantity sensitive, n/a = weight considerations irrelevant, — = unattested, ? = Unclear).

(69) Syllabic weight influence in Ibero-Romance prosodic morphology

	Catalan		Portuguese	Spanish	
	Eastern	Valencian	Brazilian	Iberian	Other
Truncation	QS	QI	QI	QS	
Stress in Truncation					
Type L	The stress syllable of the source is generally kept [52]				
Type R	—		QI	QI	
Type M	—		QI	—	
Reduplication	QS	—	QI	QS	
Dim/Aug Formation	n/a	n/a	n/a	QI?	n/a

The different Ibero-Romance dialects under scrutiny in this chapter treat quantity constraints differently. The two major Catalan dialectal areas considered in this study are internally consistent regarding the influence syllabic structure plays in their morphological processes. Eastern Catalan has truncatory and reduplicative processes that adhere to the bimoraic minimal word requirement, whereas Valencian Catalan only has a productive quantity insensitive truncation pattern. Brazilian Portuguese produces truncated and reduplicative words that do not respect the bimoraic minimal word requirement. Finally, some Spanish varieties, such as Bolivian Spanish, are consistently minimally bimoraic in all morphological processes treated here. Other varieties, such as Iberian Spanish, which complies with a minimally disyllabic base when adding the

[52] Except in monosyllabic monomoraic Brazilian Portuguese examples such as ní < ai.vál.ni, where the last syllable is kept, regardless of its being stressed or not in the base.

diminutive/augmentative suffix, are internally inconsistent regarding the influence weight plays in prosodic morphological processes.

Comparing the conclusions summarized in (69) with the conclusions drawn in the previous chapter on stress assignment, as seen in (70), it is clear how Spanish and Eastern Catalan main stress assignment and prosodic morphology processes are consistent in their quantity sensitive treatment of syllable weight. On the other hand, Valencian Catalan and Portuguese treat weight differently in their prosodic morphology processes and their main stress placement, as seen in the previous chapter.

(70) Syllable weight influence in Ibero-Romance stress placement

Non-verbal stress	QS
Verbal stress	QI
Secondary stress	QI

In sum, Valencian Catalan and Portuguese show a QS non-verbal regular stress system and a QI prosodic morphology, thus filling the typological gap Colleen Fitzgerald points out in a series of recent articles (2002, 2003, 2004). This linguist argues that there is no absolute distinction between quantity sensitive and insensitive languages and sustains her point by analyzing Tohono O'odham, a language displaying a QI stress system and a QS prosodic morphology. In addition, Fitzgerald (2002: 21) observes the impossibility of the reverse pattern, a language with a QS stress system and a QI prosodic morphology, in the World languages: “intuitively, it [a language with a QS stress system and a QI prosodic morphology] seems as if it rightly should not exist.”

The quantity insensitivity of Tohono O’odham stress assignment is based on three aspects:

a. Stress is alternant. Stress is assigned to odd-numbered syllables, regardless of its weight: kúi.ga ‘to own a mesquite tree’, pá:.do.gà ‘to own a duck’, pá.ko.ʔò.la ‘Pascola dancer’.

b. Morphology, not phonology, determines the secondary stress assignment. Only morphologically complex words allow secondary stress. Final CV or CVC syllables never attract final stress in a monomorphemic word: mú.si.go ‘musician’, ʔá.su.gaɭ ‘sugar’. However, final stress is obtained in complex words, regardless of any weight considerations: mú-msi.gò ‘musicians’, ʔá.su.gàɭ-t ‘make sugar (imperfect)’.

c. Heavy syllables can appear anywhere and do not systematically attract stress.

On the other hand, the quantity sensitivity of Tohono O’odham’s prosodic morphology is justified by the following arguments:

a. The minimal word is bimoraic: kí: ‘house’ is a possible word in Tohono O’odham, whereas *kí is not.

b. The distribution of long vowels is restricted; they only appear word-initially: máː.gi.na 'car'.

c. Reduplication bears syncope that sometimes results in closed initial syllables: Singular gáːt > Plural gáː-gt 'cat'.

d. Distribution formation results in gemination: Plural táː.tam, Distributive táːt.tam 'tooth'.

Truncation triggers compensatory lengthening to maintain faithfulness to the minimal word. Tohono O'odham deletes the final segment or two segments from the imperfective to form perfective verbs. In monosyllabic imperfectives, compensatory lengthening of the vowel occurs: Imperfective hím > Perfective híː 'walking'.

Furthermore, Fitzgerald concludes that the interaction of OT universal constraints are able to predict contradictory weight patterns like the one found in Tohono O'odham and in other languages but, as a drawback, generate multiple patterns that are unattested cross linguistically.

If the main objectives of the previous and this chapter were to account for the discrepancy in the use of syllable weight different Ibero-Romance prosodic manifestations display (summarized in (69) and (70)) a unified Optimality Theoretic account of the opposing treatments of syllable weight is the focus of the next chapter. One of the main challenging aspects will be to analyze different contrasting surface behaviors with a single ranking of the same OT constraints.

CHAPTER 4

A UNIFIED OPTIMALITY THEORETIC ANALYSIS OF IBERO-ROMANCE PROSODY

4.0. Introduction

The previous chapters in this dissertation showed how the different languages in the Ibero-Romance domain display both quantity sensitive (QS) and quantity insensitive (QI) patterns in their prosody. Catalan, Portuguese and Spanish are inconsistent in the role syllable weight plays in their stress assignment: the three Ibero-Romance languages assign main non-verbal stress in a QS manner whereas verbal stress and secondary stress placement is QI. On the other hand, it was claimed that Eastern Catalan and Spanish truncation was QS, since the minimal shape of truncated forms is bimoraic, whereas Valencian Catalan and Portuguese truncatory morphology was analyzed as QI, since the minimal truncated word is disyllabic and monomoraic respectively.

The objective of this chapter is to analyze the different contradicting quantitative patterns in Ibero-Romance under the precepts of Optimality Theory (OT). The main challenge of this task is to join all contradictory patterns under a single constraint ranking. For this purpose, the remainder of the chapter is organized as follows, §4.1 offers an analysis of QS Ibero-Romance stress assignment based on an initial QI » QS ranking that will be claimed to hold for the rest of Ibero-Romance prosodic patterns, QS and QI. Sections 4.2 and 4.3 examine the previous claim regarding truncation, and verbal and secondary stress assignment, respectively. Finally, a summary of conclusions is offered in §4.4.

4.1. Ibero-Romance Type A non-verbal stress assignment

Earlier in this dissertation, I supported the following description of Ibero-Romance non-verbal stress:

(1) Basic generalization on Ibero-Romance stress in non-verbs

The last syllable is stressed if it ends in a consonant. Otherwise, the penultimate syllable is stressed.

Ibero-Romance non-verbal vocabulary was divided into three categories:

(2) Classes of words according to the stress pattern

a. Type A words. This category includes the words that follow the generalization in (1), e.g., Catalan mi.rá.da ‘look’, mi.ráʎ ‘mirror’.

b. Type B words. Paroxitone words ending in a consonant and proparoxitone words are considered Type B words, e.g., Spanish lá.piθ ‘pencil’, sí.la.ba ‘syllable’, xú.pi.ter ‘Jupiter’.

c. Type C words. Oxitone words ending in a vowel form this group, e.g., Portuguese so.fá ‘sofa’.

Considering the previous generalization in (1), the representation I assumed for foot structure in regular Type A non-verbal words in Ibero-Romance was based on the quantity sensitive hypotheses on stress and on Hayes’ generalized trochee model.

(3) Ibero-Romance regular non-verbal main foot formation

a. Final heavy syllables form a monosyllabic bimoraic foot, i.e., Spanish me $(\text{ló}^{\mu}\text{n}^{\mu})_{\text{Ft}}$ ‘melon’

b. Final light syllables form a disyllabic trochaic foot with the preceding syllable, i.e., Portuguese bor.bo $(\text{lé}^{\mu}.\text{ta}^{\mu})_{\text{Ft}}$ ‘butterfly’.

To begin our analysis, even though this study supported the view that Ibero-Romance Type A stress assignment is QS in non-verbs, it supports the hypothesis that some of the constraints responsible for quantity insensitivity outrank some of the quantity sensitivity constraints. This assumption produces an initial ranking like the one in (4).

(4) FootMinσ » FootMaxμ[53]

a. FootMinσ: feet are minimally disyllabic. (One * per monosyllabic feet).

b. FootMaxμ: feet are maximally bimoraic. (One * for every mora in excess of two in a foot).

This study claims that this QI » QS ranking in (4) holds for both stress assignment and truncatory morphology in Ibero-Romance. In other words, a single basic constraint ranking that seems to favor QI behavior, with the addition of other rankings, forces both QS and QI patterns to emerge. This apparent paradox will be resolved hereafter.

Disyllabic feet, originating in words with a final light syllable, such as the example in tableau (5), Catalan *festa* 'party', naturally result from the ranking in (4), since highly ranked FootMinσ rejects monosyllabic feet.[54]

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[53] These constraints are decomposed from FootBin, a foot is binary under syllabic or moraic analysis (Crowhurst and Michael 2005, Hewitt 1993, 1994).

[54] Throughout this section, for simplicity, only tableaux displaying Catalan examples will be used, even though the analyses proposed are claimed to be valid for all Ibero-Romance languages.

(5) Catalan

FootMinσ » FootMaxμ

	Input: festa	FootMinσ	FootMaxμ
☞	a. (fés.ta)		*
	b. (fés) ta	*!	

Candidate b is ruled out as it fails to comply with FootMinσ. The optimal candidate a surfaces despite its failure to satisfy FootMaxμ. Furthermore, words that form a disyllabic bimoraic foot, as in tableau (6) with Catalan example *serralada* 'foothill', are harmonic with both FootMinσ and FootMaxμ.

(6) Catalan

FootMinσ » FootMaxμ

	Input: seralada	FootMinσ	FootMaxμ
☞	a. se.ra (lá.da)		
	b. se.ra.la (dá)	*!	
	c. se (rá.la.da)		*!

Candidate c obeys syllable minimalism but fatally violates FootMaxμ. On the other hand FootMinσ is violated by monosyllabic and monomoraic candidate b.

As noted in chapter 2 of this dissertation, vowel harmony in Valencian Catalan offers additional evidence for the foot structure (H́L) over (H́)L in this language (For a complete dialectal characterization of Valencian vowel harmony, see *Atles Lingüístic Valencià*. For Northern Valencian dialects see Jiménez i Martínez 1998, 2001, 2002. For Southern Valencian and Alacantí see Colomina i Castanyer 1985; Mas i Miralles 1993, 2000; Hualde 1996; Segura i Llopes 1998; Grau Sempere 2001, 2003). It is important to note that this study assumes (H́L) in all Ibero-Romance languages under study but there is no firm evidence for (H́L) over (H́)L in Eastern Catalan, Spanish and Portuguese. The study of Valencian vowel harmony reveals that not only ĹL but also H́L structures can be the domain of a harmony process in this dialect, that turns final low vowel [a] into open mid vowels [ɛ, ɔ] when preceded by an adjacent stressed open mid vowel, e.g., sɛ́ra → sɛ́rɛ 'sierra'. In fact, the study of vowel harmony in this variety leads to the hypothesis that this specific harmonic process is limited to the domain of the metrical foot.

Syllabic structure plays a role in this harmonic process; stressed syllables can either be L or H, whereas unstressed final syllables are necessarily L. The domain of vowel harmony in Valencian coincides with the requirements presented before for delimiting the prosodic foot in the same dialect. The similarities of both prosodic foot and harmony domain are the following. In the first place, both domains are limited to the right edge of the PrWd. Moreover, neither feet nor harmony domains cross word boundaries or are affected by clitics. The next similarity has to do with the fact that the few proparoxitone words with a potential triggering vowel show no harmony (*apòstata* [a.pɔ́s.ta.ta] ‘apostate’).[55] Additionally, no words showing other irregular pattern of stress assignment are involved in harmony. A final piece of evidence in support for the claim that the metrical foot is the domain for harmony resides in cross-linguistic observations. Flemming (1994) supports the idea that the metrical foot universally bounds harmony conditioned by stressed elements. In sum, there is evidence that support the statement that the domain for vowel harmony in Catalan is the metrical foot. Hence, both (ĹL) and (H́L) are possible metrical feet in this language as both sequences ĹL and H́L are affected by harmony.

Two problems with ranking (4) arise (FootMinσ » FootMaxμ). One has to do with sub minimal stressed content words like Catalan má ‘hand’, the other refers to words containing a monosyllabic bimoraic final feet, e.g., Spanish ma $(\text{rón})_{\text{Ft}}$ ‘brown’. We will address the first issue by briefly analyzing word minimalism in Ibero-Romance.

The minimal word in the world’s languages is usually a foot (Kager 1999: 144, but see Crowhurst 1991/2). Accordingly, it has been proposed for the different Ibero-Romance languages that the minimal word is a bimoraic monosyllable (among others, Dunlap (1994) for Spanish, Serra (1997) for Catalan and Gonçalves (2004) for Portuguese). However, monomoraic minimal content words are possible in all the languages under scrutiny (e.g., Spanish *te* ‘tea’, *fe* ‘faith’; Catalan *ma* ‘hand’, *sò* ‘sound’;

[55] For an alternative interpretation of words like this, see Jiménez i Martínez (1998:147).

Portuguese *pé* 'foot', *chá* 'tea'. See Chapter 2 in this dissertation). Any monosyllabic content word forms a foot, and consequently a PrWd, regardless of its weight.

The hypothesis that all Ibero-Romance content words are stressed implies that even light monosyllabic prosodic words build a foot. The claim this study supports is that this behavior is the result of PrWd-to-Ft, and Max and Dep constraints, being undominated.

(7) PrWd-to-Ft » FootMinμ, FootMinσ

a. PrWd-to-Ft (a. k. a. Rooting, Hammond 1997: 44): a Prosodic Word must dominate at least a foot. (One * per footless PrWds).

b. FootMinμ: feet are minimally bimoraic. (One * per monomoraic feet).

A monomoraic word like Catalan *má* is put under the scrutiny of the previous ranking in (7).

(8) Catalan

PrWd-to-Ft » FootMinμ, FootMinσ

Input: ma	PrWd-to-Ft	FootMinμ	FootMinσ
☞ a. (má$_{\mu}$)		*	*
b. ma$_{\mu}$	*!		*

Catalan offers no evidence of vowel lengthening to satisfy minimal word requirements as in Italian (D'Imperio and Rosenthall 1999). A highly ranked constraint such as NoLongVowels would eliminate surface sub optimal long vowels in this language. The next ranking is responsible for this pattern.

(9) NoLongVowels » FootMinμ, FootMinσ

NoLongVowels (Rossenthall 1994: 15): vowels are only dominated by one mora. (One * per long vowel).

We can see the effects of the ranking in (9) in the next tableau.

(10) Catalan

NoLongVowels » FootMinμ, FootMinσ

Input: ma	NoLongVowels	FootMinμ	FootMinσ
☞ a. má_{μ}		*	*
b. $\text{má}_{\mu\mu}$	*!		*

Dep constraints penalizing segmental epenthesis are also needed to account for candidates that add an additional syllable to comply with FootMinσ. Dep IO V disallows the addition of vowels, while Dep IO C does not tolerate the epenthesis of consonants. These constraints crucially dominate FootMinσ and FootMinμ.

(11) Dep IO C, Dep IO V » FootMinσ, FootMinμ

a. Dep IO C: output consonants must have input correspondents. (One * per every output consonant without an input correspondent).

b. Dep IO V: output vowels must have input correspondents. (One * per every output vowel without an input correspondent).

(12) Catalan

Dep IO C, Dep IO V » FootMinσ

Input: ma	Dep IO C	Dep IO V	FootMinσ	FootMinμ
☞ a. (má)			*	*
b. (má.a)		a!		
c. (má.ma)	m!	a!		

The second issue raised by the ranking in (4) (FootMinσ » FootMaxμ) is the emergence of monosyllabic final feet in forms ending in a heavy syllable when the ranking requires feet to be disyllabic. One initial way to solve this apparent problem is to formulate the analysis that Catalan feet are trochaic. The ranking responsible for this pattern is Trochee » Iamb.

(13) Trochee » Iamb

a. Trochee (a. k. a. RhType = T, Kager 1999: 172): feet have initial prominence. (One * for every iambic foot).

b. Iamb (a. k. a. RhType = I, Kager 1999: 172): feet have final prominence. (One * for each trochaic foot).

This ranking disallows iambic feet, as shown in the following tableau with Catalan example *porter* '*goalkeeper*'.

(14) Catalan

Trochee » Iamb

Input: porter	Trochee	Iamb
☞ a. por (tér)		*
b. (por.tér)	*!	

This analysis does not ban a candidate such as *(pór.ter), with a heavy syllable in the weak position of a foot, and *(pòr)(tér), with iterative parsing, which comply with trochee and FootMinσ. The second candidate *(pòr)(tér) is banned by a constraint *Clash that prohibits the emergence two adjacent stressed syllables dominating a constraint WSP, which forces heavy syllables to be stressed.

(15) *Clash » WSP (Weight to Stress Principle)

a. *Clash (Kager 1999: 165): no stressed syllables are adjacent. (One * per every adjacent stressed syllables).

b. WSP (Kager 1999: 155): heavy syllables are stressed. (One * for every heavy unstressed syllables).

(16) Catalan

*Clash » WSP

Input: porter	*Clash	WSP
☞ a. por (tér)		*
b. (pòr) (tér)	*!	

The constraints *Clash and Trochee force the emergence of a candidate with a heavy penultimate syllable being unparsed. Therefore, *Clash and Trochee outrank Parse-σ, a constraint that requires the parsing of syllables into feet.

(17) *Clash, Trochee » Parse-σ

Parse-σ (Kager 1999: 153): syllables are parsed by feet. (One * for every unparsed syllable).

(18) Catalan

*Clash, Trochee » Parse-σ

Input: porter	*Clash	Trochee	Parse-σ
☞ a. por (tér)			por
b. (pòr) (tér)	*!		
c. (por.tér)		*!	

The previous rankings are not enough to explain the emergence of por(tér) over *(pór.ter): Parse-σ wrongfully chooses *(pór.ter) over por (tér) since both candidates fail to comply with WSP ('☜' indicates the wrongfully chosen candidate).

(19) Catalan

*Clash, Trochee » Parse-σ

Input: porter	*Clash	Trochee	Parse-σ
☞ a. por (tér)			por!
☜ b. (por.tér)			

To get rid of ungrammatical candidates with a stressed Ḣ followed by an unstressed H syllable the constraint WSP-Ft, which specifically penalizes heavy unstressed syllables within a foot, is relevant. WSP-Ft dominating Parse-σ and FootMinσ ensure the emergence of the optimal candidate a in tableau (21). The use of this ranking in the subsequent tableau exemplifies the hypothesis that trochaic feet with a heavy unstressed syllable, such as (σ́H), are disallowed and establishes the preference for monosyllabic bimoraic final feet (H́) in Ibero-Romance.

(20) WSP-Ft, WSP » FootMinσ

WSP-Ft (Kager 1999: 184): heavy syllables within the foot are prominent. (One * per unstressed footed heavy syllable).

(21) Catalan

WSP-Ft, WSP »Parse-σ, FootMinσ

Input: porter	WSP-Ft	WSP	FootMinσ	Parse-σ
☞ a. por (tér)		*	*	por
b. (pór.ter)	*!	*!		

According to the previous ranking, no H syllables are allowed in the unstressed position of a foot in Ibero-Romance. Penultimate unstressed closed syllables are not allowed to lose a mora, and thus become L, to comply with WSP. The next ranking accounts for this distribution.

(22) Weight-by-Position » WSP

Weight-by-Position (Kager 1999: 147): coda elements are moraic. (One * for each coda element that is not moraic).

The tableau below shows how no deletion of moras is allowed to satisfy WSP.

(23) Catalan

Weight-by-Position » WSP

Input: porter	Weight-by-Position	WSP
☞ a. po$^{\mu}$r$^{\mu}$ (té$^{\mu}$r$^{\mu}$)		*
b. po$^{\mu}$r (té$^{\mu}$r$^{\mu}$)	*!	
c. (pó$^{\mu}$r$^{\mu}$.te$^{\mu}$r)	*!	

As noted previously in chapter 2, Weight-by-Position, since it requires output moras not present in the input, dominates Wt-Ident-IO, a constraint that requires IO mora identity.

(24) Catalan

Weight-by-Position » Wt-Ident-IO

Input: porter	Weight-by-Position	Wt-Ident-IO
☞ a. po$^{\mu}$r$^{\mu}$ (té$^{\mu}$r$^{\mu}$)		****
b. po$^{\mu}$r (té$^{\mu}$r$^{\mu}$)	*!	***

A candidate such as *(pór)ter that obeys Trochee and FootMinσ is banned due to the preference for Ibero-Romance, among many other languages, to place the main stress at the right edge of the prosodic word. This generality can be formalized with a pair of alignment constraints, the ranking of which, in (25), favors the concurrence of the right edges of categories main foot and prosodic word.

(25) RightMost » LeftMost

a. RightMost (Align (Hd-Ft, Right, PrWd, Right), Kager 1999: 167 after Prince and Smolensky 1993): the head foot is rightmost in PrWd. (One * for every segment between the right edge of PrWd and the right edge of the main foot).

b. LeftMost (Align (Hd-Ft, Left, PrWd, Left), Kager 1999: 167 after Prince and Smolensky 1993): the head foot is leftmost in PrWd. (One * for every segment between the left edge of PrWd and the left edge of the main foot).

The ranking in (25) forces the main foot to be right aligned with the prosodic word, as in the next tableau, rejecting *(pór) ter.

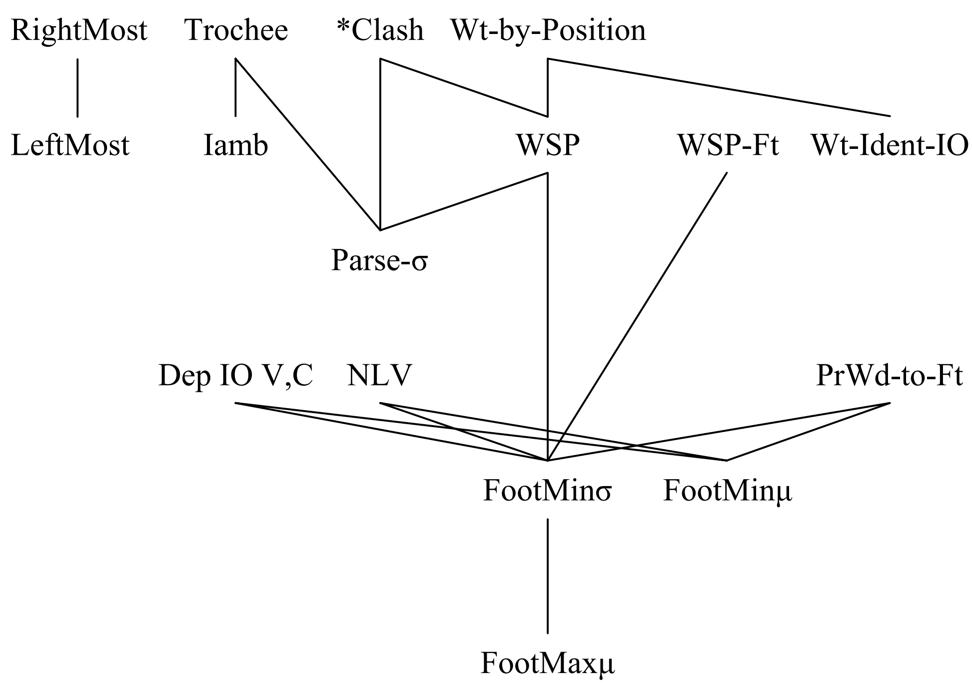
(26) Catalan

RightMost » LeftMost

Input: seralada	RightMost	LeftMost
☞ a. por (tér)		por
b. (pór) ter	t!er	

In this section, we have explored a way to solve the apparent puzzle we mentioned before: an initial constraint ranking that would favor QI behavior can explain, with the help of other constraints that promote quantity sensitivity, the emergence of a QS phenomenon. We started assuming a QS » QI, FootMinσ » FootMaxμ, initial ranking that explained the emergence of disyllabic feet in candidates with a final L syllable. The addition of some constraints, Trochee, WSP and WSP-Ft, and their outranking of FootMinσ then justified the emergence of monosyllabic feet in cases when a final H syllable is present in the input. Additionally, all feet in Ibero-Romance are right aligned with the right edge of a word due to the effects of highly ranked RightMost dominating its left counterpart. Next, a Hasse diagram displays the main interactions of the constraints used in this section.

(27) Hasse diagram of Ibero-Romance Type A non-verbal stress assignment



4.2. Weight discrepancy in Ibero-Romance stress and truncation

The preceding section provided a QS analysis on Ibero-Romance stress based partially on an initial ranking that favors QI behavior. This QI initial ranking (FootMinσ » FootMaxμ) was necessary to provide a unified constraint ranking for Ibero-Romance QS and QI patterns of stress and truncation.

Previously, this dissertation divided truncation processes in Ibero-Romance into three different categories, depending on the edge of the base word that was erased.

(28) Types of truncation processes in Ibero-Romance

a. Type L. This group includes truncated words that discard the left edge of the base form, keeping the main stress foot of the base, e.g., Spanish hypocoristic *Nando* < *Fernando*. Spanish, Portuguese and Catalan display abundant examples of this pattern.

b. Type R. Truncated words that keep the right edge of the base word form this category, e.g., Spanish hypocoristic *Queta* < *Enriqueta*. Spanish and Portuguese exhibit this pattern in abundance.

c. Type M. Truncated words that get rid of both edges of the base form are included in this group, e.g., Portuguese *Tila* < *Atilano*. Only Portuguese has a few examples of this pattern. For this reason, this pattern is excluded from the analysis hereafter.

According to the minimal shape of the truncated form, the different dialects under consideration were considered to be QS or QI regarding truncation.

(29) Syllable or mora minimalism in Ibero-Romance

a. Eastern Catalan is considered QS, since truncated words are minimally bimoraic, monosyllabic or disyllabic, e.g. *Queta* < *Enriqueta, Rat* < *Montserrat*.

b. Valencian Catalan is concluded to be QI, as truncated words are invariantly disyllabic, even at the cost of adding a vowel to monosyllabic feet in the base form, e.g., *Cento* < *Vicent*.

c. Portuguese is analyzed as QI, since truncated words could be minimally monomoraic, e.g., *Dré* < *André*.

d. Spanish truncation is considered QS as monosyllabic truncated forms are allowed, only if they are bimoraic, e.g., *Fer* < *Fernando*.

In sum, Valencian Catalan and Portuguese display inconsistency in the treatment of weight in main stress assignment (QS) and truncation (QI) (see tableaux (69) and (70) in chapter 3). On the other hand, Spanish and Eastern Catalan are consistent in the role syllable weight plays (QS) in their major prosodic morphological processes. The rest of the subsections in §4.2 will show how the same initial QI » QS ranking in (4), partially responsible for QS Type A stress assignment, can also account for both QI/QS truncation patterns in Ibero-Romance. Section 4.2.1 deals with Type L truncation, whereas §0 analyzes Type R. A summary of conclusions is offered in 4.2.3.

4.2.1. Type L truncation in Ibero-Romance

The initial QI » QS ranking presented above in (4), FootMinσ » FootMaxμ, gives a partial explanation for the disyllabic shape in Type L pattern of nicknames present in all the dialects under examination, exemplified in tableau (30) with the Spanish/Catalan example *Queta* < *Enriqueta*:

(30) Spanish

FootMinσ » FootMaxμ

Base: fernando	FootMinσ	FootMaxμ
☞ a. ké.ta		*
b. két	*!	

The ranking of All Feet Left (AFL) and All Feet Right (AFR) over Max BT Seg determines the preference for hypocoristics to form only one foot, as seen in tableau (32). The winning truncated candidate necessarily violates Max BT Seg.

(31) AFR, AFL » Max BT Seg

a. AFR (Align (Foot, Right, PrWd, Right), Kager 1999: 163): every foot stands at the right edge of the PrWd. (One * per segment between the right edge of a foot and the right edge of the PrWd).

b. AFL (Align (Foot, Left, PrWd, Left), Kager 1999: 163): every foot stands at the left edge of the PrWd. (One * per segment between the left edge of a foot and the left edge of the PrWd).

c. Max BT Seg (Benua 1995: 16): every segment in the base has a correspondent in the truncated form. (One * per deleted element).

(32) Spanish/Catalan

AFR, AFL » Max BT Seg

Base: (èn.ri) (ké.ta)	AFR	AFL	Max BT Seg
☞ a. (ké.ta)			en ri
b. en.ri (ké.ta)		en! ri	
c. (èn.ri) (ké.ta)	ke! ta	en! ri	

The previous ranking partially establishes the preference for Ibero-Romance truncated forms to form a single foot, eliminating unparsed syllables or secondary feet, at the cost of minimally violating BT Maximality. Furthermore, Max BT Seg is ranked below FootMaxμ to prevent the surfacing of a candidate that forms a long foot, as in the next tableau.

(33) Spanish/Catalan

FootMaxμ » Max BT Seg

Base: (èn.ri) (ké.ta)	FootMaxμ	Max BT Seg
☞ a. (ké.ta)		en ri
b. (én.ri.ke.ta)	*!**	
c. (rí.ke.ta)	*!	en

Type L hypocoristics discard the segmental material to the left of the main foot of the base. This generality is partially captured by highly ranked HeadMatch, which preserves the head of the main foot from the base in the truncated form, over Max BT Seg, as in tableau (35).

(34) HeadMatch » Max BT Seg

HeadMatch (McCarthy 2000: 183): if α is in H' (PrWd) and α $\Re$ β, then β is in H' (PrWd). (One * for every segment between the head of PrWd in B and the head of PrWd in T).

HeadMatch ensures the head of the base form is the same in the truncated form, as in the next tableau.[56]

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[56] An additional candidate *(ri.ké), which adheres to HeadMatch is banned by highly ranked Trochee.

(35) Spanish/Catalan

HeadMatch » Max BT Seg

Base: (èn.ri) (ké.ta)	HeadMatch	Max BT Seg
☞ a. (ké.ta)		en ri
b. (rí.ke)	k!e	en
c. (én.ri)	n!rike	ke

Type L nicknames ending in a heavy stressed syllable only keep the stressed monosyllabic foot from the base form, thus violating FootMinσ, e.g., Eastern Catalan kél < mi.kél. A possible candidate mí.kel, which respects foot binarity without having to epenthesize any segments, is banned by HeadMatch.

(36) Eastern Catalan

HeadMatch » FootMinσ

Base: mi (kél)	HeadMatch	FootMinσ
☞ a. kél		*
b. mí.kel	*!	

In addition to this ranking, a more familiar Trochee » Iamb, seen in this chapter in (13), prevents disyllabic iambic hypocoristics from appearing, e.g., *(mi.kél). Given the results of the previous rankings, no segments to the left of the stressed syllable in the base are maintained in the Type L truncated form in any Ibero-Romance language.

Type L nicknames ending in a heavy stressed syllable do not keep only the rightmost foot in Valencian Catalan, as candidate b shows in tableau (37). Instead, some segmental material is epenthesized to comply with foot syllable minimalism.

(37) Valencian Catalan

FootMinσ » FootMaxμ

Base: bi (sén)	FootMinσ	FootMaxμ
☞ a. (sén.to)		*
b. (sén)	*!	

Taking the previous into account, the next ranking is necessary to account for epenthesis, as a BT specific process in Valencian Catalan.

(38) FootMinσ » Dep BT Seg

Dep BT Seg (Benua 1995: 16): every segment in the truncated form has a correspondent in the base. (One * for each epenthetic segment).

The next tableau demonstrates the validity of (38).[57]

[57] The stop [t] was erased word finally in the base when preceded by a homorganic nasal. It reappears in non-final position, in a liaison effect. See, among others, Bonet and Lloret (1998) or Dols Salas (2002) for more information on this common pattern in all dialects of Catalan.

(39) Valencian Catalan

FootMinσ » Dep BT Seg

Base: bi(sén)	FootMinσ	Dep BT Seg
☞ a. (sén.to)		(t)o
b. (sén)	*!	

Dep BT Seg is unavoidably violated by Valencian truncated candidates that need to epenthesize elements to keep syllable minimalism. Alternatively, we will see shortly how regular stress assignment does not allow epenthesis to go along with FootMinσ.

On the other hand, Eastern Catalan, Portuguese and some Spanish dialects do not need to epenthesize any segments to comply with syllable minimalism. For these languages, Dep BT Seg outranks FootMinσ, allowing a monosyllabic bimoraic nickname.

(40) Eastern Catalan

Dep BT Seg » FootMinσ

Base: bi (sén)	Dep BT Seg	FootMinσ
☞ a. (sén)		*
b. (sén.to)	(t)o!	

We just demonstrated that Valencian Type L truncated forms allow the addition of segmental material to satisfy FootMinσ and, consequently, create a disyllabic foot from a monosyllabic foot in the base. This possibility is banned in regular stress assignment in the Ibero-Romance domain. Dep BT Seg is dominated in Valencian Catalan but, on the other hand, Dep IO Seg is undominated in all dialects of Catalan, Portuguese and Spanish.

(41) Dep IO Seg » FootMinσ

The effect of this ranking is illustrated in the following tableau.

(42) Catalan

Dep IO Seg » FootMinσ

Input: porter	Dep IO Seg	FootMinσ
☞ a. por (tér)		*
b. por (té.ro)	*!	

The different ranking of Dep Seg, whether it targets BT or IO correspondence, determines the presence of epenthetic elements to satisfy foot syllable minimalism. Dep BT Seg is dominated in Valencian, thus allowing epenthesis, but it is undominated in the rest of the Ibero-Romance domain, disallowing BT epenthesis. On the other hand, as we have just presented, Dep IO Seg dominates FootMinσ in all languages under consideration, and therefore prohibits epenthesis in regular stress assignment.

The analysis of Portuguese Type L truncated forms coincides with the one proposed earlier for Eastern Catalan and Spanish, except for the case of monosyllabic monomoraic forms. This pattern only keeps the last open syllable in several oxitone or paroxitone names, e.g., *Aivalni* > *Ni* or *André* > *Dré*.

The emergence of this pattern is partially explained by the promotion of a constraint that forces the head of feet to be right-aligned with the right edge of the prosodic word outranking FootMinσ, as in (43).

(43) Align Head Right » FootMinσ

Align Head Right (Align (Head, Right, PrWd, Right)): every prosodic word ends with the head of the main foot. (One * per syllable between the head of the main foot and the right edge of PrWd).

This ranking is put to the test with the Portuguese example *Ni* in tableau (44).

(44) Portuguese

Align Head Right » FootMinσ

Base: aj.váw.ni	Align Head Right	FootMinσ
☞ a. ní		*
b. váw.ni	ni!	

The emergence of candidates such as *val.ní, complying with alignment as well as with foot minimalism, is disallowed by highly ranked Trochee, as in (45).

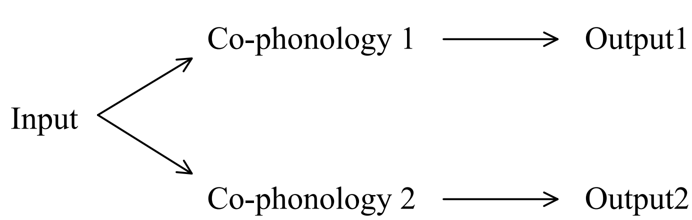
(45) Portuguese

Trochee » FootMinσ

Base: aj.váw.ni	Trochee	FootMinσ
☞ a. ní		*
b. vaw.ní	*!	

Align Head Right and FootMinσ are not strictly ranked with one another; in some instances Align Head Right dominates FootMinσ producing monosyllabic results and in other cases the ranking is reversed, yielding the more productive foot sensitive results, contradicting the OT principle of strict domination. *Strict domination* is one of the main principles in OT, discussed earlier in this dissertation, which states that a constraint C1 can be ranked with another constraint C2 in two ways: either C1 » C2 or C2 » C1. C2, C1 occurs when no empirical data supports either ranking. The issue of variation has not been dealt with satisfactorily in OT. Different approaches have been put forward within OT to answer to variation. One way to analyze variation in OT is to posit *co-phonologies* (among others, Inkelas and Orgun 1995), or different constraint rerankings within one grammar, where each co-phonology selects a different output.

(46) Co-phonologies



According to Kager (1999: 405), this approach has the disadvantage of predicting that each co-phonology is independent from one another, allowing co-phonologies to produce very different outputs. Kager concludes that this prediction is inadequate as candidates in variation are usually similar.

Free ranking of constraints (Anttila 1997, Anttila and Cho 1998) is another solution to variation in OT. When two constraints are *freely ranked*, the evaluation branches in two directions: in one branch, C1 » C2 and in the other branch, C2 » C1. Kager (1999: 406) offers a formal definition of free ranking, copied here in (47).

(47) Interpretation of free ranking of constraints C1, C2

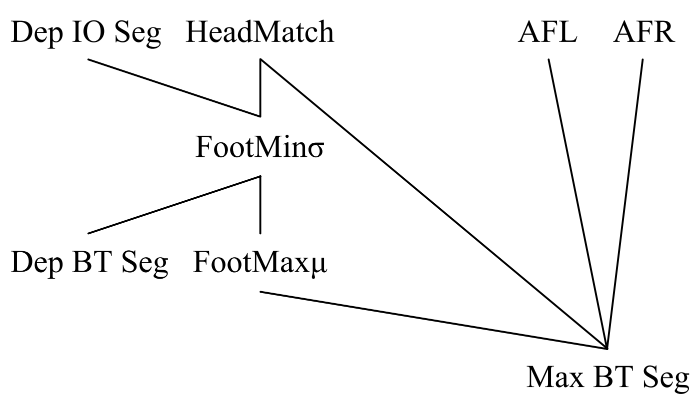
Evaluation of the candidate set is split into two subhierarchies, each of which selects an optimal output. One subhierarchy has C1 » C2 and the other C2 » C1.

The principle of strict domination is preserved under free ranking in each subhierarchy. On the other hand, Kager (1999: 407) notes that the main disadvantage of free ranking is that it is not clear whether free ranking grammars are learnable or not.

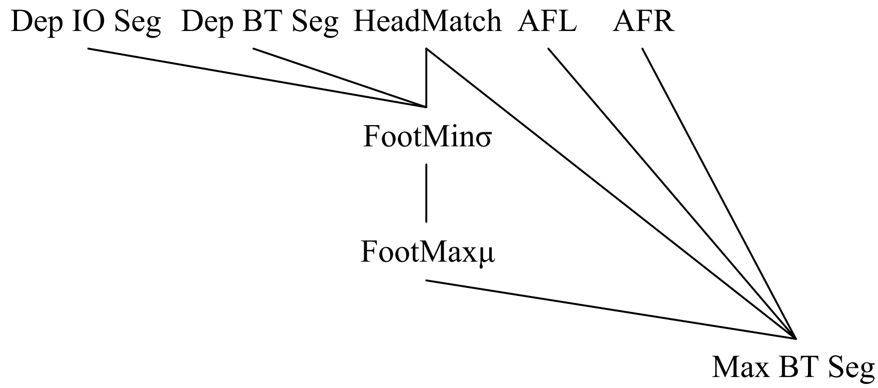
This study adopts free ranking to deal with variation, admitting the issue deserves a deeper analysis. In Portuguese, the ranking of Align Head Right and FootMinσ are freely ranked, producing monosyllabic monomoraic results or the expected foot-sensitive result, monosyllabic or disyllabic. The fact that only certain inputs, bases ending in a vowel, trigger the promotion of Align Head Right remains unresolved under free ranking. Another unresolved issue is the observation that, according to free ranking, each input should produce two different outputs, depending on the ranking of Align Head Right and FootMinσ. This is not the case. Only a handful of Portuguese base nouns actually produce two different related truncated hypocoristics.

In conclusion, the initial QS » QI ranking, FootMinσ » FootMaxμ, explained the emergence of disyllabic Type L truncated forms. Only Valencian truncation allows the addition of segments to comply with syllable minimalism, thus disallowing truncated monosyllabic H syllables. This generalization follows from the different position in the ranking Dep Seg occupies. Dep IO Seg dominates FootMinσ, disallowing epenthesis in stress assignment and allowing a monosyllabic foot to surface. On the contrary, FootMinσ dominates Dep BT Seg in Valencian, thus disallowing a monosyllabic truncated form. The opposite ranking in Eastern Catalan, Portuguese and Spanish does allow the emergence of Type L monosyllabic truncated forms. A Hasse diagram of the major interactions of the constraints presented so far in this section is in (48) for Valencian Catalan and in (49) for Eastern Catalan and Spanish.

(48) Hasse diagram for Valencian Catalan Type L truncation

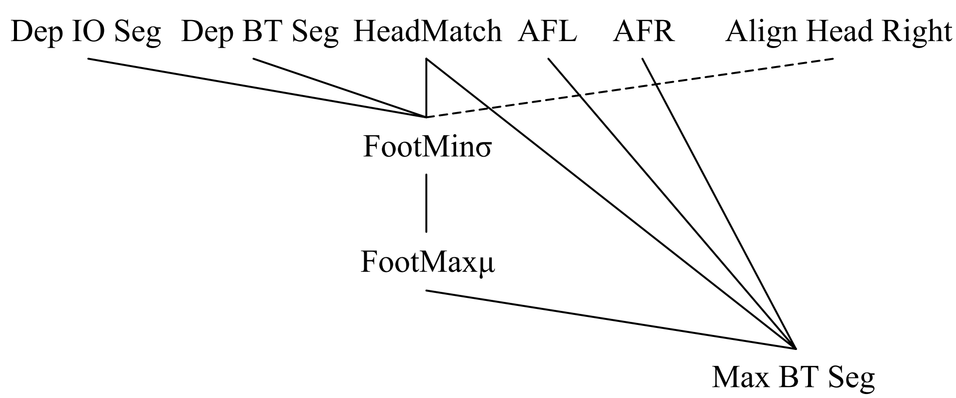


(49) Hasse diagram for Eastern Catalan and Spanish Type L truncation



The complete Hasse diagram for Portuguese Type L truncation is essentially the same proposed for Eastern Catalan and Spanish, in (49), with the addition of the partial constraint ranking of Align Head Right and FootMinσ, indicated with a discontinuous line '---', responsible for the monosyllabic truncation pattern explained in (43).

(50) Hasse diagram for Portuguese Type L truncation



4.2.2. Type R truncation in Portuguese and Spanish

As in Type L, the most productive Ibero-Romance disyllabic Type R truncation pattern is partially obtained by the initial ranking in (4), FootMinσ » FootMaxμ, as in (51) with the Spanish example *Sátur* < *Saturnino*.

(51) Spanish

FootMinσ » FootMaxμ

Base: sa.tur.ní.no	FootMinσ	FootMaxμ
☞ a. sá.tur		*
b. sát	*!	

Additionally, the same constraint ranking responsible for truncation, above in (32), simplified here in tableau (52), is active in this Type R process.

(52) Spanish

AFR, AFL » Max BT Seg

Base: sa.tur.ní.no	AFR	AFL	Max BT Seg
☞ a. (sá.tur)			nino
b. (sá.tur) ni.no	ni!no		
c. (sá.tur) (nì.no)	ni!no	sa! tur	

As in Type L, Type R truncated forms only build one foot due to the action of highly ranked constraints AFR/L over Max BT Seg. Unparsed syllables or additional feet are not allowed. The winning candidate a minimally violates Max BT Seg. Another coincident ranking is FootMaxμ » Max BT Seg, which avoids the emergence of long footed words such as *(sa.tur.ní.no) complying with Max BT Seg. Additionally, the ranking Trochee » Iamb is active to ensure the emergence of trochaic feet.

Highly ranked anchoring constraints are crucial for Type R truncation. Anchor BT L dominates Anchor BT R to preserve the left edge of the base form, as shown in (54).

(53) Anchor BT R » Anchor BT L

Anchor-R/L (McCarthy and Prince 1995: 123): Any element at the right/left periphery of B has a correspondent at the right/left periphery of T. (One * per any epenthesized or erased segment).

(54) Spanish

Anchor BT L » Anchor BT R

Base: sa.tur.ní.no	Anchor BT L	Anchor BT R
☞ a. sá.tur		nino
b. ní.no	s!atur	
c. túr.ni	s!a	

The previous ranking allows truncated forms to keep the segmental material to the left edge of the prosodic word.

Contrary to Type L truncated words, the winning candidate in the previous tableaux, *Sátur*, forms a disyllabic foot that does not preserve the right-aligned stress in the base form. For this reason, highly ranked HeadMatch is outranked by Trochee and Anchor BT L, as in (55).

(55) Anchor BT L, Trochee » HeadMatch

The following tableau exemplifies the effects of this ranking.

(56) Spanish

Anchor BT L, Trochee » HeadMatch

Base: sa.tur.ní.no	Anchor BT L	Trochee	HeadMatch
☞ a. sá.tur			tur
b. sa.ní		*!	
c. tur.ní	s!a	*!	

Candidate b conforms to Anchor BT L by keeping the first syllable of the base and to HeadMatch by adding the head in the base. However, the result is an iambic foot, penalized by Trochee.

The optimal candidate *Sátur* departs from Type A stress assignment and Type L truncation by not complying with highly ranked WSP and WSP-Ft, constraints that do not allow unstressed heavy syllables. In Type R truncation, thus, respecting the syllable constituency of the base prevails over general foot-wellformedness considerations.[58] To

[58] Nevertheless, notice that Catalan and Spanish present unpredictable variation in truncated forms ending in a consonant. These final consonants are optional in some Spanish forms, e.g., Spanish ró.dol ~ ródo < ro.dól.fo. In both languages, final consonants are either left behind, as in Spanish má.ti < ma.tíl.de, or they

account for this behavior, this study proposes a constraint Wt-Ident BT σ, modified from Wt-Ident BT, previously described in Kager (1999), which penalizes shortening or lengthening of vowels from input to output and also applies to syllables, preventing BT syllable shortening, e.g., sá.tur > *sá.tu, to observe WSP-Ft.

(57) Wt-Ident BT σ » WSP-Ft

Wt-Ident BT σ (modified from Kager 1999: 269): if α ∈ Domain (*f*); If α is monomoraic, then *f*(α) is monomoraic; If α is bimoraic, then *f*(α) is bimoraic. (One * for every shortened or lengthened syllable in the truncated form).

The next tableau displays the effects of the previous ranking and establishes the preference for a nickname *Sátur*, even if it disobeys WSP.

(58) Spanish

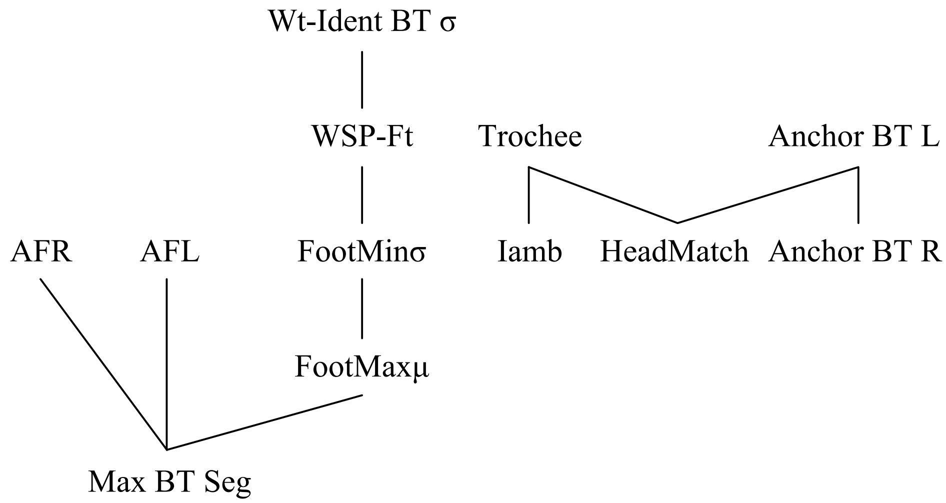
Wt-Ident BT σ » WSP

Base: sà.tur.ní.no	Wt-Ident BT σ	WSP
☞ a. sá.tur		*
b. sá.tu	*!	

A Hasse diagram summarizing the main constraint interactions responsible for Ibero-Romance disyllabic Type R truncatory process is next.

are obligatorily present, e.g., Spanish ró.ber < ro.bér.to. this unpredictability may be the result of the free ranking of Wt-Ident BT σ and WSP.

(59) Hasse diagram for Spanish and Portuguese disyllabic Type R truncation



Monosyllabic Type R truncated forms also appear in Ibero-Romance. Whereas in Spanish the monosyllabic truncated word is always bimoraic and alternates with the more productive disyllabic pattern, e.g. fér ~ fér.nan < fer.nán.do, in Portuguese we find both bimoraic and monomoraic nicknames, e.g., í < i.ná.sjo. To account for Spanish monosyllabic bimoraic truncatory pattern, the constraint Align Head Right, used in the previous section to account for monosyllabic Type L Portuguese nicknames, is freely ranked with FootMinσ, as in (60).

(60) Spanish

Trochee, Align Head Right » FootMinσ

Base: fer.nán.do	Trochee	Align Head Right	FootMinσ
☞ a. fér			*
b. fér.nan		nan!	
c. fer.nán	*!		

The constraint FootMinμ, dominating Align Head Right also prevents the emergence of monosyllabic monomoraic truncated words in Spanish. In addition, the next tableau motivates the domination of Trochee over Align Head Right. For instance, a name such as Spanish ra.fa.él can only produce a Type R hypocoristic rá.fa, as FootMinμ bans a potential candidate *rá, as seen in the next tableau.[59]

(61) Spanish

FootMinμ, Trochee » Align Head Right

Base: ra.fa.él	FootMinμ	Trochee	Align Head Right
☞ a. rá.fa			*
b. rá	*!		
c. ra.fá		*!	

[59] A potential candidate *ráf, complying with FootMinμ and Aligh Head Right, would be penalized by Wt-Ident BT σ, since it lengthens the first syllable in the base form (ra.fa.él).

The previous analyses in (60) and (61) explain the observation that Spanish only allows Type R monosyllabic truncated words when the leftmost syllable is heavy: highly ranked FootMinμ only allow monosyllabic bimoraic truncated forms to emerge.[60] However, in Portuguese, the emergence of monosyllabic monomoraic truncated forms can be analyzed as the demotion of FootMinμ under Align Head Right and Trochee, in a parallel fashion as in the Portuguese monomoraic Type L truncatory process seen above.

(62) Portuguese

Trochee, Align Head Right » FootMinμ

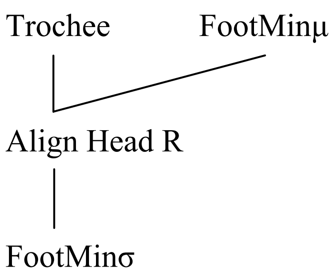
	Base: i.ná.sjo	Trochee	Align Head Right	FootMinμ	FootMinσ
☞	a. í			*	*
	b. í.na		na!		
	c. i.ná	*!			

In sum, the promotion of Align Head Right in both Spanish and Portuguese explains the emergence of monosyllabic truncated forms. The difference between the two dialects has to do with the ranking of FootMinμ. In Spanish, FootMinμ is ranked over Align Head Right, allowing only monosyllabic bimoraic truncated forms to surface. On the other hand, Portuguese freely accepts both monosyllabic and disyllabic truncated

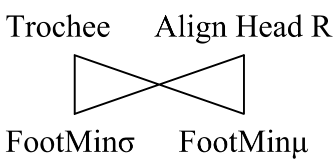
[60] The possibility of making the leftmost light syllable in the base heavy in the truncated form by lengthening is banned in Spanish by Wt-Ident BT, which prohibits lengthening or shortening of syllables in a BT correspondence. However, in Portuguese, a nickname with a leftmost light syllable can build a bimoraic hypocoristic. The truncated nickname kléw < kle.o.ní.si is made up by adding the second syllable in the form of a glide, thus minimally violating Wt-Ident BT. Alternatively, the initial heavy syllable in a base can shorten and become a light syllable in the truncated form, e.g., ká < kár.la.

forms since FootMinμ is dominated by Align Head Right. A Hasse diagram for Spanish and Portuguese monosyllabic Type T truncated forms is offered next.

(63) Partial Hasse diagram for Spanish monosyllabic Type R truncation



(64) Partial Hasse diagram for Portuguese monosyllabic Type R truncation



4.2.3. Summary

Eastern Catalan and Spanish are consistently QS regarding prosodic processes: stress is assigned considering moraic structure and the minimal size of a truncated form is bimoraic. On the other hand, Valencian Catalan and Portuguese use weight considerations differently. Both languages assign stress in a QS manner whereas their truncatory morphology is QI. However, Valencian and Portuguese truncation are different. Whereas Valencian truncated words are always disyllabic, Portuguese truncated words can be minimally monomoraic.

Truncation is produced by the ranking of AFR/L over Max BT Seg. This ranking forces the erasure of any unparsed syllables and misaligned feet, leaving a truncated word formed by exactly one foot. The main difference between Type L and Type R truncatory patterns resides in the material that is kept in the truncated form. The different ranking of Anchor BT L and Anchor BT R determines both patterns. The same initial QI » QS ranking proposed in section 4.1 for QS stress placement, FootMinσ » FootMaxμ, holds for both QS and QI truncatory patterns in Ibero-Romance.

In all truncation types, the initial QI » QS ranking partially explains the emergence of disyllabic patterns. In Type L truncation, which is foot sensitive, highly ranked HeadMatch and Trochee help monosyllabic truncated words to surface by fatally penalizing the presence of any elements at the left of the main foot of the base. Disyllabicity is not forced in Eastern Catalan, Spanish and Portuguese, languages in which Dep BT Seg is undominated.

On the other hand, Valencian Catalan forces all truncated words to form disyllabic feet by adding an epenthetic vowel to monosyllabic feet in the base. In Valencian Catalan, thus, FootMinσ dominates Dep BT Seg. The rest of monosyllabic truncated forms in Spanish and Portuguese are obtained by the promotion of different constraints, mainly Align Head Right. This constraint, together with Trochee, forces monosyllabic truncated forms to appear. The difference between Spanish and Portuguese is that Portuguese allows monomoraic or bimoraic monosyllabic truncaded words, whereas

Spanish monosyllabic truncated forms can only be bimoraic. The difference ranking of Align Head Right over or under FootMinμ determines this difference.

In sum, the initial ranking QI » QS holds for both prosodic QI and QS behavior shown so far, truncation and Type A non-verbal main stress assignment. The next section, 4.3, deals with the different role syllable weight plays in Ibero-Romance verbal and secondary stress assignment compared to main stress.

4.3. Weight inconsistency in Ibero-Romance rhythm

In an earlier chapter, this study showed how Ibero-Romance languages were inconsistent in the way syllable weight was treated in main verbal and non-verbal stress and secondary stress assignment.

(65) Inconsistency in Ibero-Romance rhythm

a. Main non-verbal stress assignment is QS, as it builds moraic trochees, right-aligned with the prosodic word.

b. Verbal stress is QI, since it does not consider moras but morphological considerations, i.e., Oltra-Massuet (1999) argued that Catalan stresses the vowel immediately preceding the Tense node, regardless of any quantity criteria.

c. Secondary stress assignment was QI because it does not take moras into account but syllables, i.e., some dialects were concluded to stress every two syllables from right to left from the main stress foot.

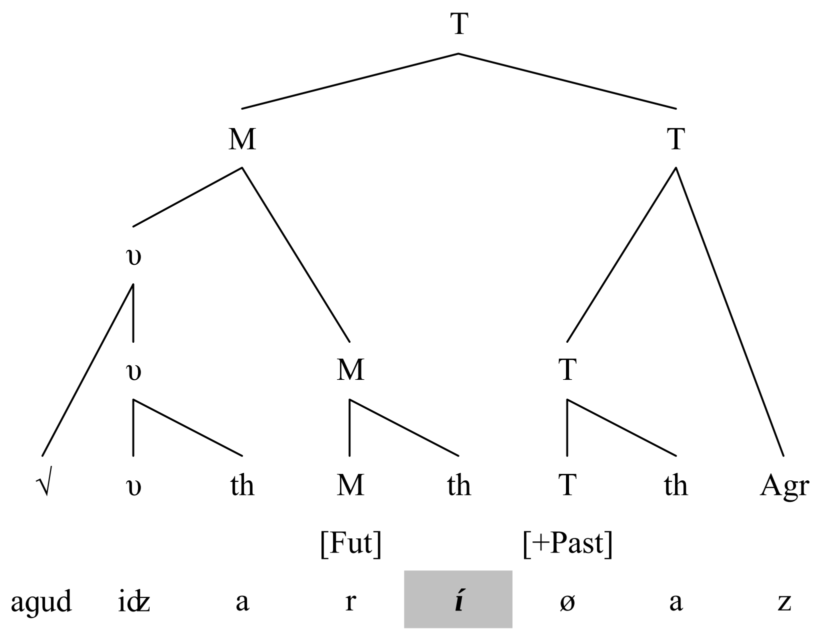
The remainder of this section deals with this inconsistency, providing a unified OT analysis of verbal and secondary stress patterns. In other words, the same ranking used to deal with main non-verbal stress assignment in §4.1 is also partially responsible for secondary stress and verbal stress. Section 4.3.1 analyzes verbal stress whereas §4.3.2 accounts for secondary stress assignment. Finally, a summary is offered in §4.3.3.

4.3.1. Verbal stress assignment

For an OT analysis on verbal stress placement in Ibero-Romance, this study relies on the verbal morphology analysis proposed by Oltra-Massuet for Catalan. Oltra-Massuet (1999: 310) analyzes Catalan verbal morphology and stress assignment and offers the generalization that the vowel to the left of the Tense node element is stressed. According to Oltra-Massuet, all simple finite tenses may be maximally composed of three functional heads, υ(verb), T(ense) and M(ode), and each of these three heads projects a thematic vowel (th) node. Oltra-Massuet's model is schematically represented in (66) with a Catalan example *aguditzaries*, 2nd person singular, conditional tense, 1st conjugation verb *aguditzar* 'to sharpen' (slightly simplified from Oltra-Massuet 1999: 280).[61]

[61] √ = Root, Agr = Person features

(66) Catalan



This section extends Oltra-Massuet's morphological analysis to Spanish and Portuguese verbs, as in (67), and proposes a suitable OT analysis.

(67) Morphological analysis of Ibero-Romance finite tenses

a. Imperfect Indicative

Catalan	Portuguese	Spanish
(kant á$_{th}$)$_{\upsilon}$ (b a$_{th}$)$_{T}$	(kant á$_{th}$)$_{\upsilon}$ (v a$_{th}$)$_{T}$	(kant á$_{th}$)$_{\upsilon}$ (b a$_{th}$)$_{T}$

b. Imperfect Subjunctive

Catalan	Portuguese	Spanish
(kant á$_{th}$)$_{\upsilon}$ (r a$_{th}$)$_{T}$	(kant á$_{th}$)$_{\upsilon}$ (r a$_{th}$)$_{T}$	(kant á$_{th}$)$_{\upsilon}$ (r a$_{th}$)$_{T}$

c. Preterite

Catalan	Portuguese	Spanish
(kant ø$_{th}$)$_{\upsilon}$ (í$_{th}$)$_{T}$	(kant ø$_{th}$)$_{\upsilon}$ (é$_{th}$)$_{T}$	(kant ø$_{th}$)$_{\upsilon}$ (é$_{th}$)$_{T}$

d. Future

Catalan	Portuguese	Spanish
(kant a$_{th}$)$_{\upsilon}$ (r é$_{th}$)$_{M}$ (ø$_{th}$)$_{T}$	(kant a$_{th}$)$_{\upsilon}$ (r é$_{th}$)$_{M}$ (ø$_{th}$ j)$_{T}$	(kant a$_{th}$)$_{\upsilon}$ (r é$_{th}$)$_{M}$ (ø$_{th}$)$_{T}$

e. Conditional

Catalan	Portuguese	Spanish
(kant a$_{th}$)$_{\upsilon}$ (r í$_{th}$)$_{M}$ (a$_{th}$)$_{T}$	(kant a$_{th}$)$_{\upsilon}$ (r í$_{th}$)$_{M}$ (a$_{th}$)$_{T}$	(kant a$_{th}$)$_{\upsilon}$ (r í$_{th}$)$_{M}$ (a$_{th}$)$_{T}$

f. Present Indicative

Catalan	Portuguese	Spanish
(kánt ø$_{th}$)$_{\upsilon}$ (o$_{th}$)$_{T}$	(kánt ø$_{th}$)$_{\upsilon}$ (u$_{th}$)$_{T}$	(kánt ø$_{th}$)$_{\upsilon}$ (o$_{th}$)$_{T}$

g. Present Subjunctive

Catalan	Portuguese	Spanish
(kánt ø$_{th}$)$_{\upsilon}$ (e$_{th}$)$_{T}$	(kánt ø$_{th}$)$_{\upsilon}$ (i$_{th}$)$_{T}$	(kánt ø$_{th}$)$_{\upsilon}$ (e$_{th}$)$_{T}$

h. Pluperfect

Catalan	Portuguese	Spanish
n/a	(kant á$_{th}$)$_{\upsilon}$ (r a$_{th}$)$_{T}$	n/a

As seen in the previous tableau, Ibero-Romance verbs follow Oltra-Massuet's generalization that the vowel immediately preceding the Tense node is stressed. In OT terms, this generalization can be expressed through an alignment constraint, in (68).

(68) Align Verbal Stress (Align (V́, R, T, L)): align the right edge of the verb's stressed vowel with the left edge of the Tense node. (One * for every segment between the stressed vowel and the Tense node).

This constraint predicts the right placement of the stress in all Ibero-Romance finite tenses. Main foot formation is determined by the same ranking responsible for main non-verbal stress assignment, shown in (27). Paroxitone verbal forms form a syllabic trochee, as seen in the next tableau.[62]

(69) Spanish

Align Verbal Stress » WSP-Ft, RightMost

Input: $(\text{kant á}_{th})_{\upsilon}$ $(\text{b a}_{th}\text{ n})_{T}$	Align Verbal Stress	WSP-Ft	RightMost
☞ a. kan (tá.ban)		*	
b. kan (tá) ban			ba!n
c. kan.ta (bán)	b!		

[62] To avoid confusion with foot boundaries, the verb's morphological information is present only in the input form.

Candidate c would receive the stress under non-verbal conditions. The winning candidate surfaces due to the pressure of RightMost, even though it minimally violates WSP-Ft.

In addition, proparoxitone verbs form a trisyllabic foot, also due to the pressure of Rightmost.[63]

(70) Spanish

Align Verbal Stress » WSP-Ft, RightMost

Input: (kant a_{th})$_{\upsilon}$ (b a_{th} mos)$_{T}$	Align Verbal Stress	WSP-Ft	RightMost
☞ a. kan (tá.ba.mos)		*	
b. kan (tá.ba) mos			mo!s
c. kan (tá) ba.mos			ba!mos
d. kan.ta.ba (mós)	b!amo		

Oxitone verbs ending in a vowel form a monosyllabic foot. Align Verbal Stress and Trochee constraints ranked over FootMinσ and FootMinμ do not allow the emergence of disyllabic iambic feet, as seen in the next tableau.

[63] Notice, however, that no additional external evidence supports this particular formation of feet in this section.

(71) Catalan

Align Verbal Stress » Trochee » FootMinσ

	Input: $(kant\ a_{th})_{\upsilon}\ (r\ e_{th})_{M}\ (ø_{th})_{T}$	Align Verbal Stress	Trochee	FootMinσ
☞	a. kan.ta (ré)			*
	b. kan (ta.ré)		*!	
	c. kan (tá.re)	r!e		

As in the previous tableaux, candidate c would be the winner in the non-verbal category but Align Verbal Stress fatally penalizes it. Trochee over the foot minimalism constraints chooses the winning candidate with a monomoraic foot.

In sum, the ranking for main non-verbal stress assignment in Ibero-Romance is also valid to account for verbal stress with the addition of an undominated alignment constraint targeting a certain view on verbal morphology.

4.3.2. Secondary stress assignment

In a previous chapter, this dissertation outlined the proposals different studies on Ibero-Romance pretonic secondary stress assignment have put forward.

a. Rhythmic hypothesis states that secondary stress is manifested in every other syllable from the right or left of the main stressed syllable. This is the hypothesis supported by Coromines (1987) for Catalan and Abaurre et al (2001) for Brazilian Portuguese, e.g., Catalan kos (mò.po) (lí.ta) 'cosmopolitan'. These studies also notice that, sometimes, the leftmost syllable receives prominence, even at the cost of retracting the secondary stress, creating an initial dactyl foot, e.g., Catalan kos (mò.po) (lí.ta) ~ (kòs.mo) po (lí.ta). For these studies, secondary stress is overruled by the application of the stress clash rule, e.g., Portuguese sìm.pá.ti.ko > sim.pá.ti.ko 'friendly', which prevents two adjacent stressed syllables to surface.

b. Non-rhythmic hypothesis claims that secondary stress is only assigned word-initially. The experimental studies of Prieto and Van Santen (1996) and Díaz Campos (2000) and Abaurre et al. (2001) support this thesis for Spanish and Iberian Portuguese respectively, e.g., Spanish (xè.ne) ra (tí.bo) 'generative'.

This section attempts to suggest an OT analysis of the different patterns of Ibero-Romance secondary stress assignment taking into account both syllable wellformedness considerations, especially in §4.1, and the initial stress retraction and the clash rule in rhythmic languages.

Rhythmic dialects, Catalan and Brazilian Portuguese, pack all their feet at the right edge of the prosodic word. This generalization can be captured in OT terms by the ranking of Parse-σ and All Feet Right over All Feet Left. Parse-σ demands all syllables be parsed into feet, whereas All Feet Right dominating All Feet Left ensures that all feet be grouped at the right edge of the word.

(72) Parse-σ » All Feet Right (AFR) » All Feet Left (AFL)

This ranking is tested with Catalan example *cosmopolita* '*cosmopolitan*' in the following tableau.

(73) Catalan

Parse-σ » AFR » AFL

Input: kosmopolita	Parse-σ	AFR	AFL
☞ a. kos(mò.po)(lí.ta)	kos	li ta	kos, kos mo po
b. kos.mo.po(lí.ta)	kos mo! po		kos mo po

This tableau shows how rhythmic languages prefer misaligned feet than unparsed syllables.

The winning candidate in the previous tableau, kos (mò.po) (lí.ta), could avoid the violation of Parse-σ by building a leftmost monosyllabic foot, *(kòs) (mò.po) (lí.ta). However, this candidate would violate highly ranked *Clash, a constraint penalizing two adjacent stressed syllables. On the other hand, highly ranked constraint Trochee would eliminate a candidate with exhaustive parsing that avoids *Clash by building iambic feet, *(kòs) (mo.pò) (li.tá). The building of a trisyllabic foot in a candidate such as (kòs.mo.po) (lí.ta) would be penalized by FootMaxμ ranked over Parse-σ. The previous constraint interactions are exemplified in the next tableau.

(74) Catalan

Trochee, *Clash » FootMaxμ, Parse-σ

Input: kosmopolita	Trochee	*Clash	FootMaxμ	Parse-σ
☞ a. kos(mò.po)(lí.ta)				kos
b. (kòs.mo.po)(lí.ta)			*!	
c. (kòs)(mò.po)(lí.ta)		*!		
d. (kòs)(mo.pò)(li.tá)	*!*			

Observing the previous tableau, exhaustive parsing is not obtained at any costs in Catalan and Portuguese.

An additional constraint plays a role against exhaustive parsing. In inputs with two initial heavy syllables, WSP-Ft prohibits the creation of a disyllabic foot with an unstressed heavy syllable. The monosyllabic foot necessarily violates FootMinσ minimally. Therefore, even though secondary stress has been claimed to be QI due to the observation that it is assigned iteratively every two syllables, the presence of QS constraints such as WSP-Ft high in the hierarchy forces a QS formation of feet. This point is displayed in the following tableau with the Portuguese name *Constantino*.

(75) Brazilian Portuguese

WSP-Ft » FootMinσ » Parse-σ

Input: konstantino	WSP-Ft	FootMinσ	Parse-σ
☞ a. (kòns)tan(tʃí.nu)		*	tan
b. (kòns.tan)(tʃí.nu)	*!		

An additional candidate *kons (tàn) (tʃí.nu) would be banned by highly ranked *Clash. Thus, through the previous constraints dominating Parse-σ, initial prominence is obtained in inputs with two initial heavy syllables. Initial prominence in rhythmic dialects is achieved in the rest of inputs by ranking Align Word Left, a constraint that forces words to start with a foot, over AFR.

(76) Align Word Left (AWL) » AFR

AWL (Align (PrWd, Left, Foot, Left), Kager 1999: 169): every PrWd begins with a foot. (One * for every segment between the left edge of a PrWd and the left edge of the leftmost foot).

(77) Catalan

AWL » AFR

Input: kosmopolita	AWL	AFR
☞ a. (kòs.mo)po(lí.ta)		polita
b. kos(mò.po)(lí.ta)	k!os	lita

AWL is dominated by *Clash to avoid the presence of two adjacent stressed syllables in trisyllabic paroxitone candidates, as seen in the next tableau with the Spanish example *pescado* 'fish'.

(78) Catalan

*Clash »AWL

Input: peskado	*Clash	AWL
☞ a. pes (ká.do)		pes
b. (pès) (ká.do)	*!	

Secondary stress can be obtained in paroxitone words with an even number of syllables, even if the second syllable is heavy. For instance, a Catalan example like *forastera* '(female) foreigner', cannot be parsed *(fò.ras) (té.ra) as it would violate WSP-Ft. A parsing *(fo.ràs) (te.rá) is banned due to the action of Trochee and (fò) ras (té.ra) would violate FootMinσ. Therefore, according to the constraints already presented, a candidate *fo.ras (té.ra) would be wrongfully chosen. To select a candidate with initial prominence, even if the initial foot is to small, a constraint such as *Lapse, which excludes candidates with adjacent unparsed syllables, must dominate FootMinσ.

(79) *Lapse » FootMinσ

*Lapse (Green and Kenstowicz 1995: 1): no two adjacent unstressed syllables, unless separated by a foot boundary. (One * for every adjacent unstressed syllable).

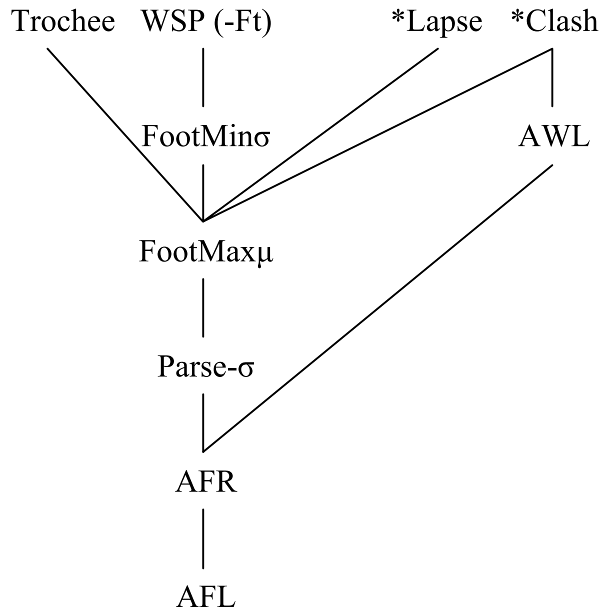
(80) Catalan

*Lapse » FootMinσ

Input: forastera	*Lapse	FootMinσ
☞ a. (fò)ras(té.ra)		*
b. fo.ras(té.ra)	*!	

In sum, Parse-σ dominating AFR ensures exhaustive parsing in rhythmic dialects and AFR outranking AFL packs feet to the right edge of the prosodic word. However, this exhaustive parsing forced by Parse-σ is limited by WSP (-Ft) and Trochee, consistent with main stress assignment, and *Clash and *Lapse, which do not allow two adjacent stressed unstressed syllables, respectively. On the other hand, AWL outranks AFR, permitting the occurrence of initial prominence. A Hasse diagram for Catalan and Brazilian Portuguese is offered next.

(81) Hasse diagram for Catalan and Brazilian Portuguese secondary stress assignment



Non-rhythmic dialects only differ from rhythmic dialects in the ranking of AFR over Parse-σ. AFR » Parse-σ guarantees that unparsed syllables are more optimal than misaligned feet. In addition, AWL dominating AFR certifies initial prominence, as shown in the next tableau with Spanish example *Constantinopolitano* 'Constantinopolitan'.

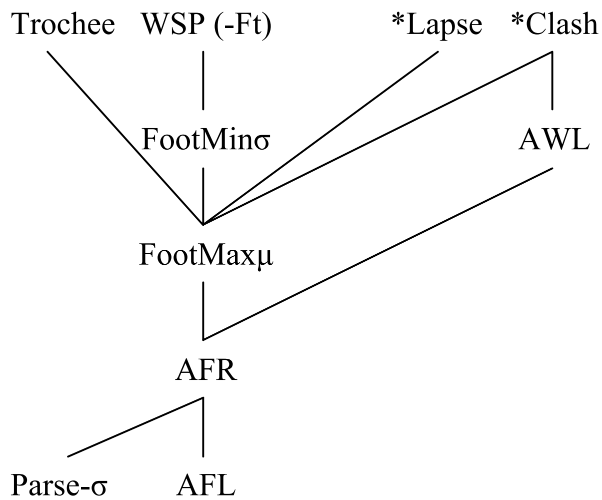
(82) Spanish

AFR » Parse-σ

Input: konstantinopolitano	AWL	AFR	Parse-σ
☞ a. (kòns)tan.ti.no.po.li(tá.no)		15*	tantinopoli
b. (kòns)tan(tì.no)(pò.li)(tá.no)		15*,!8*,4*	tan
c. kons.tan.ti.no.po.li(tá.no)	!15*		

The resulting Hasse diagram for Non-Rhythmic dialects is next.

(83) Hasse diagram for Spanish and Iberian Portuguese secondary stress assignment



4.3.3. Summary

Even though it has been claimed that verbal stress and secondary stress in Ibero-Romance are not sensitive to consider moraic structure in their formation, they are partially assigned using the same basic initial constraint ranking QI » QS, responsible for QS main non-verbal stress placement.

My OT analysis of verbal stress relies on the particular view on verbal morphology Oltra-Massuet puts forward for Catalan. The same analysis is proven adequate for Portuguese and Spanish. The simple generalization regarding stress (stress the vowel immediately before the Tense node) can be captured by an alignment constraint that predicts the right position of stress in verbs when outranking QI » QS. The rest of the constraint interactions responsible for main stress foot formation determine the formation of verbal feet, which can be disyllabic, monosyllabic or even trisyllabic. However, this analysis has the limitation of providing no external evidence to support this foot formation. Further studies will be necessary to prove these arguments.

Secondary stress behaves differently in Ibero-Romance. Brazilian Portuguese and Catalan are claimed to be rhythmic languages. They assign secondary stress in regular binary intervals, with a stress clash rule, which prohibits two adjacent stressed syllables, and an initial prominence rule, which grants initial prominence in words with an odd number of syllables to the left of the main foot. The outranking of AFR by Parse-σ ensures exhaustive parsing in rhythmic dialects, whereas the reverse ranking is necessary in non-rhythmic dialects, Spanish and Iberian Portuguese, which only have initial prominence. In my OT analysis of the facts, the formation of feet follows the same conditions imposed for main stress assignment. Mainly, Trochee and WSP-Ft guarantee that no iambic feet or feet with an unstressed heavy syllable surface. However, in both rhythmic and non-rhythmic dialects, the presence of AWL outranking FootMinσ forces the formation of monosyllabic monomoraic feet in long words that begin with a light syllable followed by a heavy one.

4.4. Summary of conclusions

To finish this chapter, the basic initial assumption holds for all the instances of prosodic phenomena analyzed. The basic assumption was that Ibero-Romance prosody, although displaying both QS and QI patterns, followed the same basic initial ranking QI » QS, FootMinσ » FootMaxμ.

Quantity sensitivity in main non-verbal stress assignment was achieved by ranking different constraints over QI » QS, mainly WSP-Ft and Trochee, forcing generalized trochees to emerge. Verbal stress is assigned by means of the ranking of an alignment constraint, targeting verbal-specific morphological assumptions, over QI » QS and the rest of the main non-verbal stress ranking, creating syllabic trochees, monosyllabic and trisyllabic feet. The analysis of secondary stress also depended on the main stress assignment ranking; the same conditions on trochaicity and quantity sensitivity in foot formation applied, even though the pressure of alignment constraints such as AWL forced sub-minimal initial feet to appear.

The analysis on truncation relied on the view that disyllabicity was the most productive shape in all truncation patterns. The initial ranking QI » QS accounted naturally for this disyllabic pattern, especially in the case of Valencian Catalan, whose truncatory pattern only allows disyllabic results. Monosyllabicity in truncation resulted from foot sensitivity in Type L truncation, where Trochee and HeadMatch played a significant role in avoiding undesired disyllabic results, and from the promotion of an alignment constraint. Align Head Right, which, ranked with Trochee over FootMinσ, forced monosyllabicity, and the different ranking of FootMinμ in both languages allowed or disallowed monomoraic results in Portuguese and in Spanish respectively.

CHAPTER 5

SUMMARY OF CONCLUSIONS

A main objective in this study has been to evaluate the role syllable weight plays in the prosody of the Ibero-Romance languages. The analysis of the data concludes that quantity sensitive (QS) and quantity insensitive (QI) patterns can coexist within the same language: Valencian Catalan and Portuguese display a QS non-verbal regular stress system and a QI prosodic morphology. On the other hand, not all languages under study in this dissertation behave identically: unlike Spanish and Valencian Catalan, Eastern Catalan and Spanish are consistently QS regarding main non-verbal stress assignment and prosodic morphology. Another primary objective of this dissertation has been to propose a unified analysis of the different, and sometimes conflicting, quantity patterns in Ibero-Romance in the framework of Optimality Theory (Prince and Smolensky 1993 [2002]). A summary of the conclusions drawn in the previous chapters is next.

In chapter 2, the main conclusion is that the different manifestations of stress assignment in Catalan, Portuguese and Spanish consider weight differently. Main non-verbal stress is assigned in a quantity sensitive manner, whereas secondary and verbal stress placements do not consider weight.

In the different Ibero-Romance languages considered in this dissertation, Catalan, Portuguese and Spanish, posttonic consonants have been claimed to add syllable weight. Syllables were considered either heavy, they dominate two moras, e.g., $(C)V^{\mu}C/G^{\mu}$, or light, they dominate only one, e.g., $(C)V^{\mu}$.

The analysis of stress in Ibero-Romance languages was divided in three major categories, main verbal and non-verbal stress and secondary stress. While verbal and secondary stress assignment is almost uncontroversially quantity insensitive, the analyses on main stress placement in non-verbs have produced a plethora of opposing conclusions based on different pieces of evidence, some more controversial than others.

Catalan, Portuguese and Spanish group together in their identical treatment of quantity sensitivity in stress assignment: main non-verbal stress is placed according to a QS algorithm, whereas secondary stress and main verbal stress is assigned in a QI manner. Considering this previous conclusion, Trubetzkoy's (or rather Kuryłowiz's) Generalization is supported to be invalid. Languages, such as the ones treated in this dissertation, without phonemic vowel length distinction, can assign stress quantitatively.

Prosody rather than morphology plays a crucial role in assigning stress in non-verbs. Morphology only plays a role when the addition of a few derivational and flexive suffixes seems to affect stress placement. Conversely, regular stress assignment in non-verbs depends on the prosodic nature of the rightmost syllable in a prosodic word. The evidence presented was the following:

a. Rightmost heavy syllables attract stress, e.g., Catalan a.rós 'rice', and form a disyllabic trochaic foot, e.g., a $(\text{ró}^{\mu}\text{s}^{\mu})_{Ft}$.

b. Rightmost light syllables form a syllabic foot with the preceding syllable, e.g., Catalan se.ra $(\text{lá}^{\mu}.\text{da}^{\mu})_{Ft}$ 'foothill', $(\text{fé}^{\mu}\text{s}^{\mu}.\text{ta}^{\mu})_{Ft}$ 'party'.

c. The minimal word in Ibero-Romance languages is bimoraic, coinciding with the size of the minimal foot, e.g., Catalan $[(\text{fú}^{\mu}\text{m}^{\mu})_{Ft}]_{PrWd}$ 'smoke'.

On the other hand, Morphological structure and rhythmic considerations and not prosody is decisive in determining the placement of stress in verbs and secondary stress respectively. This dissertation agreed with Oltra-Massuet (1999) in considering that the mein stress in verbsis placed at the right of the Tense node. On the other hand, rhythmic factors were key to placing secondary stress. Some dialects assign secondary stress in the leftmost syllable and some assign it in binary intervals, regardless of weight considerations. The domain of stress placement is not based on morphological units but on prosodic ones. The prosodic word, rather than the derivative stem is supported as the right domain for stress assignment.

The analysis of Ibero-Romance truncation processes provided in Chapter 3 supported the view that Spanish and Eastern Catalan prosodic morphology is QS, as it conforms to the moraic word minimum. Conversely, Valencian Catalan and Portuguese truncated words do not comply with the former generalization. Truncation in Valencian Catalan only forms disyllabic results, whereas Portuguese truncated words appear in different sizes, including monosyllabic monomoraic. Conversely, QI in the placement of stress is justified in Type R and M truncated words. Type R disyllabic truncated forms in Portuguese and Spanish and Type M disyllabic truncated words in Portuguese invariably bear stress in the first syllable, regardless of syllable weight considerations and stress placement in the source. On the one hand, Type L truncation in Ibero-Romance keeps the main foot, including the head, of the source.

The study of reduplication in Eastern Catalan and Spanish concludes that these languages consider a moraic minimal reduplicated word and that the placement of stress conforms to a QS manner. Alternatively, some Portuguese reduplication patterns do not consider weight limitations. Verbal reduplication only takes paroxitone disyllabic forms and sub minimal monosyllabic monomoraic reduplicative morphemes appear. The assignment of stress in Portuguese reduplicative words does not consider weight either.

On the other hand, there is a lot of variation regarding Spanish diminutive and augmentative formation. This process is quantity insensitive in some dialects of Spanish. In these varieties, the majority of morphemes, before suffixation, have to form a disyllabic template. Monosyllabic morphemes add an epenthetic vowel to comply with this constraint. However, some varieties are QS, as they do not observe this requirement and monosyllabic bases can add the augmentative and diminutive suffix without having to undergo epenthesis.

A summary of the morphological processes considered in Chapter 3 and the role weight plays in their formation and stress assignment is repeated in (84) (Dim/Aug = diminutive and augmentative, QI = quantity insensitive, QS = quantity sensitive, n/a = weight considerations irrelevant, — = unattested, ? = Unclear).

(84) Syllabic weight influence in Ibero-Romance prosodic morphology

	Catalan		Portuguese	Spanish	
	Eastern	Valencian	Brazilian	Iberian	Other
Truncation	QS	QI	QI	QS	
Stress in Truncation					
Type L	The stress syllable of the source is generally kept [64]				
Type R	—		QI	QI	
Type M	—		QI	—	
Reduplication	QS	—	QI	QS	
Dim/Aug Formation	n/a	n/a	n/a	QI?	n/a

The different Ibero-Romance dialects under scrutiny in this chapter treat quantity constraints differently. The two major Catalan dialectal areas considered in this study are internally consistent regarding the influence syllabic structure plays in their morphological processes. Eastern Catalan has truncatory and reduplicative processes that adhere to the bimoraic minimal word requirement, whereas Valencian Catalan only has a productive QI truncation pattern. Brazilian Portuguese produces truncated and

[64] Except in monosyllabic monomoraic Brazilian Portuguese examples such as ní < ai.vál.ni, where the last syllable is kept, regardless of its being stressed or not in the base.

reduplicative words that do not respect the bimoraic minimal word requirement. Finally, some Spanish varieties, such as Bolivian Spanish, are consistently minimally bimoraic in all morphological processes treated here. Other varieties, such as Iberian Spanish, which complies with a minimally disyllabic base when adding the diminutive/augmentative suffix, are internally inconsistent regarding the influence weight plays in prosodic morphological processes.

Comparing the conclusions summarized in (69) with the conclusions drawn in Chapter 2 on stress assignment, repeated here in (70), it is clear how Spanish and Eastern Catalan main stress assignment and prosodic morphology processes are consistent in their quantity sensitive treatment of syllable weight. On the other hand, Valencian Catalan and Portuguese treat weight differently in their prosodic morphology processes and their main stress placement, as seen in the previous chapter.

(85) Syllable weight influence in Ibero-Romance stress placement

Non-verbal stress	QS
Verbal stress	QI
Secondary stress	QI

The basic initial assumption outlined in Chapter 4 holds for all the instances of prosodic phenomena analyzed. The basic assumption was that Ibero-Romance prosody, although displaying both QS and QI patterns, followed the same basic initial ranking QI » QS, FootMinσ » FootMaxμ.

Quantity sensitivity in main non-verbal stress assignment was achieved by ranking different constraints over QI » QS, mainly WSP-Ft and Trochee, forcing generalized trochees to emerge. Verbal stress is assigned by means of the ranking of an alignment constraint, targeting verbal-specific morphological assumptions, over QI » QS and the rest of the main non-verbal stress ranking, creating syllabic trochees, monosyllabic and trisyllabic feet. The analysis of secondary stress also depended on the main stress assignment ranking, the same conditions on trochaicity and quantity sensitivity in foot formation applied, even though the pressure of alignment constraints such as AWL forced sub-minimal initial feet to appear.

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APPENDIX

INDEX OF OT CONSTRAINTS

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