

Lexical Stress in Brazilian Portuguese in Contrast with Spanish

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Abstract

This study discusses stress assignment in prosodic, non-verbal words in Brazilian Portuguese, in comparison with descriptions of stress assignment for Spanish [9, 13, 15, 16, 17, 18]. Given the conflicting claims regarding stress assignment in Brazilian Portuguese (see [11, 1, 2, 10, 3]) there is still a need to revisit discussions on stress assignment in Portuguese. In general, stress assignment in Spanish has been explained through the interplay between the morphological and phonological domains. Similar descriptions for Portuguese still requires far more abstraction and use of artifacts than in Spanish, which makes Mattoso Câmara Jr.'s [4, 5] claim that lexical stress is unpredictable in Brazilian Portuguese surprisingly unchallenged.

Index Terms: stress assignment, prosodic stress, syllable weight, Spanish and Portuguese

1. Introduction

This is a phonological study in progress developed to provide the author with adequate grounds for future phonetic analyses of stress and intonation systems in Spanish (SP) and Brazilian Portuguese (BP) in contrast. Therefore, this study is not yet based on actual data analysis, but instead on current theoretical descriptions of stress assignment.

In BP and SP there is a strong pressure to stress words on the penultimate syllable, i.e. paroxytones. In both languages, the great majority of words are paroxytones. Despite this coincidence, predicting lexical stress BP is not as governable as in Spanish. Among the differences in phonological and phonetics patterns between both languages, the most significant is perhaps the phonetically weak or unstable surfacing of postonic syllables in BP and the relatively stable surfacing of postonic syllables in Spanish.

This different behavior of postonic syllable in both languages is reflected in versification. Spanish and Portuguese count syllables in verses differently, in ways that reflect their rhythmic patterns. Portuguese counts the number of syllables until the last stressed syllable, whereas in Spanish the number of syllables is computed until the last stressed syllable plus one, regardless of the physical existence of a postonic syllable.

Thus, Martí's verses below have eight syllables each. As an illustration, if we did the counting of Spanish verses in the way Portuguese versification does, these verses would have seven syllables each. But in fact, they have eight syllables each. The dot (.) indicates syllable boundaries after resyllabification, accounted as needed. The last lexically stressed syllables in each verse are in capitals.

Yo . soy . u . (also so . yu) nhom.bre . sin.CE.ro (8 syllables)
De . don.de . cre.ce . la . PAL.ma, (8 syllables)
Y an.tes . de . mo.rir.me . QUIE.ro (8 syllables)
E.char . mis . ver.sos . de.l AL.ma. (8 syllables)
(...)

Oi.go un . sus.pi.ro, a . tra.VÉS (7+1 = 8 syllables)
De . las . tie.rra.s y . la . MAR, (7+1 = 8 syllables)
Y . no . e.s un . sus.pi.ro,—ES (7+1 = 8 syllables)
Que . mi hi.jo . va a . des.per.TAR. (7+1 = 8 syllables)
(*Poesía de José Martí*, Versos Sencillos, 1981)

These differences and similarities of both languages can be further refined. Similar trends to move stress in proparoxytones to paroxytonic position happen in both languages, although the phonological processes are different.

Spanish	Brazilian Portuguese
<i>olimpiadas</i> → <i>olimpiAdas</i>	<i>abóbora</i> → <i>aBObra</i>
<i>¡Pórtate bien!</i> → <i>¡PorTate bien!</i>	<i>xícara</i> → <i>XlCra</i>

The preceding examples show similar trends in both languages. There are, however, important differences to take into account when attempting to propose stress assignment algorithms in Portuguese. For example, in SP, and only to a certain extent in Portuguese, a great number of words stressed on the antepenultimate syllable are learned words or *palabras cultas* or *palavras cultas* in both languages, which are sometimes taken from Greek sometimes from Latin, e.g. *Arquímedes* in SP but *ArquiMEdes* in BP, *Demóstenes* in both languages, *hypérbaton* in SP and *hipérbato* in BP, *épsilon* in SP and *ép[i]silon*, *ép[i]silo*, *íp[i]silon* or *ip[i]diLOne* in BP, *máximo* or *máximo* in SP and *máximo* in BP, *régimen* in SP but *reGlme* in BP and many other examples. Thus, while trends in SP are relatively more predictable, BP shows no clear trends, i.e. less predictability. This lack of clear trends permeates BP, contrary to SP.

A comparison of trends to paroxytone patterns in SP hypocoristics with no such trends in BP further reveals the difficulty researchers face to create an algorithm to predict stress assignment in BP. Hypocoristics in both languages are enlightening in this discussion. Whereas SP has a predominant pattern of disyllabic paroxytones for hypocoristics, BP produces disyllabics, monosyllabics, paroxytones and oxytones hypocoristics, without particular trends, as the Table 1 illustrates.

SP does have dialectical variations that use monosyllables in hypocoristics, e.g. Daniel ~ Dan, Cristina ~ Cris, but it happens less frequently than the patterns above, and it usually happens in closed syllable (CVC), while monosyllables in BP have open syllables (CV). In BP the variations are much greater.

Penultimate stress is also more predictable in SP loanwords, acronyms and foreign proper names, but not in BP, as depicted in the comparison below in Table 2. These examples show further the greater tendency in SP to stress penultimate syllable, compared to Portuguese.

The next section will discuss the notion of prosodic words and metrical notions common in the American generative frame of Metrical Theory. This study is only using the generative frame to discuss metrical theory as it has been applied to SP, and to show how difficult if not impossible and unmotivated it is to attempt to predict lexical stress in Portuguese. In other words, although the generative frame is very useful to discuss stress

assignment in any language, this study does not support the claim that it can predict stress assignment in Portuguese.

Table 1. A comparison of trends in Spanish hypocoristic and the lack of trends in hypocoristic in BP.

Spanish			Brazilian Portuguese		
Noun	Hypocoristic	Stress Pattern	Noun	Hypocoristic	Stress Pattern
Adriana	<i>Adri</i>	paroxytone	Benedito	Benê	oxytone
Daniel	<i>Dani Dan</i>	paroxytone mono-syllable	Fernando	Nando Fê	paroxytone mono-syllable
Francisco	<i>Pancho</i>	paroxytone	Francisco	Chico Chicó	paroxytone oxytone
Juan Ramón	<i>Juanra</i>	paroxytone	Gustavo	Gugu Gu	paroxytone mono-syllable
José	<i>JOse, Pepe</i>	paroxytone	José	Zé	mono-syllable
MiGUEL	<i>MiGuel</i>	paroxytone	Rodrigo	Ro	mono-syllable
Ignacio	<i>Nacho</i>	paroxytone	Pedro	PePEU PEpe	oxytone, paroxytone
Ariel	<i>Ari</i>	paroxytone	Maria José	ZeZê	oxytone
Antonio	<i>Toño</i>	paroxytone	Antônio	Totonho Tonho Tunico	paroxytone trisyllable

Table 2. A comparison of paroxytone and oxytone trends in SP and BP loanwords. This table was produced with the help of eleven native speakers of SP and five native speakers of BP, who answered to a questionnaire (not here for lack of space), sent to them by e-mail. LW stands for loanwords, AC for acronyms and FN for foreign proper names.

Spanish		Brazilian Portuguese	
LW, AC, FN	Stress Pattern	LW, AC, FN	Stress Pattern
barman	BARman	barman	barMAN
email	Email	email	eMAIL
cocktail	COctel	cocktail	coqueTEL
karaoke	karaOke	karaoke	karaoKE
Gorbachev	GorbaCHEV, GorBACHEv	Gorbachev	GorbaCHEV[i]
Muhammad Ali	MuhamMAD MuHAMmad	Muhammad Ali	MuhamMAD[i]
PEMEX	PEmex	PEMEX	peMEX
PC	Pc (PEce)	pC (peCE)	pC

Given the three types of syllable prominences in words of the two languages, e.g. the SP triplet *CÉlebre, ceLEbre, celeBRÉ*, the BP triplet *PÁssara, pasSArá¹, passaRÁ*, the two languages have proparoxytones, paroxytones and oxytones. In order to discuss stress assignment in the following sections, it would be helpful to firstly review the concepts of prosodic word, prosodic stress and syllable weight, and then discuss the case

¹ Postonic vowels in BP change considerable in quality, but in the case of the /a/, an inherently strong vowel and more resistant to significant changes in quality, the stress contrast in this triplet is still a valid one, especially in careful clear speech.

of the most common pattern, the paroxytones, then the proparoxytones and finally the oxytones.

2. Discussion

Although I do not follow the common division of words into a simple classification of two main classes, **content** and **function** words, it is helpful to use them in this discussion. Thus, in Linguistics it is common to say that content words are the only ones that receive lexical stress, while function words are unstressed. By the same token, prosodic words have stress and function words or **clitics** do not. Although I do not see a problem to classify words in terms of content and function words, I do not agree that they correlate 100% with having or not having (lexical) stress. Function words sometimes have one **prominent** syllable if they have more than one syllable, e.g. the word for “while,” *enquanto* in Portuguese and *mientras* in SP. But it is helpful to assume the notion of stress used here, because it makes it easier to compare stress assignment in SP and Portuguese within the generative frame of Metrical Theory. I am also using this view to make this discussion manageable. I am using this view to refuse current explanations that generative grammar is capable of predicting word stress in BP.

Taking the preceding remarks into consideration, mora (μ) is the unit that makes the prominent weight of prosodic feet. In SP, its weight is generally uniform, one mora. In SP, contrary to English, even in complex nuclei like diphthongs, all vocalic features of a syllable nucleus fit into one mora, as illustrated with the word *sentimiento*:

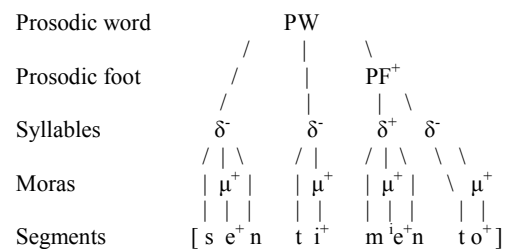


Figure 1. The prosodic structure of the Spanish word *sentimiento*, to illustrate the concept of mora (μ).

SP does not contrast the so-called heavy or bimoraic syllables and light or monomoraic syllables. The words “array, key, pie and tear (=rip)” in English, for example, contrasts heavy and light syllables: a^μ.’rra^μy^μ, ’ke^μy^μ, ‘pi^μe^μ, ‘tea^μr^μ. Hence, in English one syllable words are binary in terms of the number of moras. The majority of English words have one syllable. SP needs two syllables to have two moras and the majority of SP words have two syllables. BP shows these SP characteristics without the regularity or uniformity found in SP. For example, in Rio, and maybe in some other areas of Brazil, but particularly in Rio, we find bimoraic and monomoraic contrasts, e.g. when answering the phone: “Alô!,” “a^μ.lo^μa^μ.” It is important to keep in mind that we are thinking of a system found in social middle classes and higher. If we go into the SP spoken in rural areas of the Hispanic world and in the underworld of drug dealings, these will be completely different varieties of SP. The same can be said about Portuguese spoken in similar contexts.

The structure of paroxytonic words contains a nucleus in the two last syllables, identified with the symbols “<” and “>”:

cua<derno>, <casa>, carre<tera>, pensa <miento>, <traíga> melo, desespe<rando>nos, desafortunada<mente>. These nuclei are *prosodic feet*, as illustrated with the word *final<mente>*, in Figure 2.

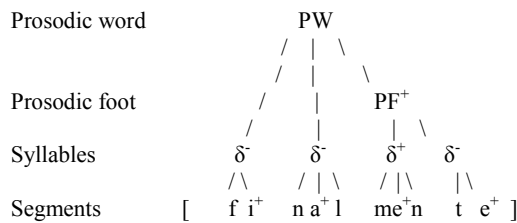


Figure 2. *The prosodic foot <mente> in the Spanish word finalmente.*

Given the framework used in this discussion, the preceding structure helps determining stress in SP paroxytones because words like “finalmente” contain all the basic structural requirements of finality, trochaicity and binarity. In BP we also find similarities in paroxytones. The obstacle one will find in BP is to fit proparoxytones and oxytones into these ideal structural property requirements. According to the generative frame, in SP, although oxytones seem, in a superficial look, to have unary foot (co.li.<brí>), and proparoxytones tertiary foot (<sá.ba.do>), this can be solved with a morphological interpretation, as shown later in this discussion.

SP is known to have words with proparoxytonic stress because proparoxytones include vowels without morae, resulting in **extrametrical** elements.

Words like *mínimo*, *sábana*, *número* will have a non-moraic vowel in its root (mínim-o, sában-a, númbr-o). Consequently, root morphemes such as these, with one syllable without weight, carry the potential to cause **retraction of stress**, as illustrated with the word *espárrag-o* in Figure 3, because their penultimate syllable (-rra- in the case of *espárrago*) is invisible to rules, or extrametrical. This characteristic or idiosyncrasy of proparoxytones leads to the conclusion in the generative framework that stress assignment in SP is morphologically conditioned. This morphological condition also applies in a different way to oxytones.

This invisibility, usually considered a relatively “small problem” in generative Metrical Theory, can be said to reduce the transparency of these processes. Other words carry this invisibility: *murciélago*, *máscara*, *árabe*. Portuguese for example, commonly deletes the non-moraic vowels like the one in *máscara* as *mascra*.

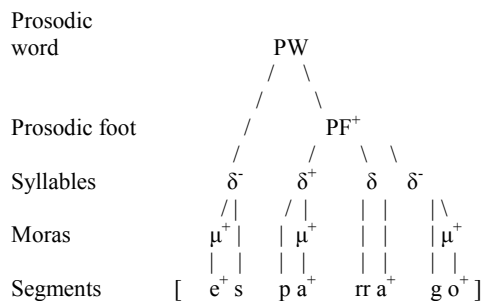


Figure 3. *The morphological interpretation of proparoxytones as underlying paroxytones.*

Therefore, root morphemes can result in stress retraction. Suffixes can also cause retraction. Derivative suffixes also result in retraction, as in words with the suffixes *-ic* as in *metálico*, *canónico*.

Here, as in other seemingly exceptional cases, morphological elements help understanding. The main explanation in cases such as *astronómico* is based on the concept of morphological nuclei. In other words, the morphemes in *astronómico* are *astr-o-nom-ic-o*. The morphemes *-nom* and *-ic* are some of the morphemes that have a non-moraic vowel. Given that *-ic*, and not *-nom*, is the morpheme that characterizes “astronómico” as adjective, then *-ic* is the nuclear morpheme that keeps the vowel invisible. In this exceptional case, *-nom* then is not a nuclear morpheme and consequently it carries one mora.

The same arguments can be attempted in Portuguese and most of the examples in SP are similar in BP: *mínimo*, *número*, *canônico*, *metálico*, *cronômetro*, *astrônomo*. Therefore, according to the preceding discussion, proparoxytones have the conditions of syllable foot on the right of the word, just as paroxytones do, as follows. (1) Only morphemes that function as morphological nucleus can retain non-moraic vowels. This also explains why this type of word is not common; (2) Given the condition above, the same principles of paroxytones apply to proparoxytones: binarity, finality and trochaicity.

If we keep the same view we have been using in this discussion, oxytonic words are also morphologically conditioned. Whereas derivative morphemes or morphemes with morpho-syntactic function interferes in the irregularity of stress assignment of proparoxytones in SP, in the case of oxytones the reason of irregularities has to do with morphemes whose function is exclusively morphological. In SP, the morphemes that have an exclusively morphological function are the class markers and markers of person/number, which normally appear at the very end of words. A distributive test helps knowing which ones mark class and the ones that do not. For instance, if we add *-er* morpheme to *joya*, we obtain *joyero*, and not **joyaero*. Therefore this *a* in *joya* is a class marker. Likewise, *guante* obtains *guantero* (not **guanteero*).

In the case of *café*, we obtain *cafetera* with the insertion of *t* to preserve the *e*, which indicates that *e* in *café* is not a class marker. Likewise *maní* – *manicito*, *sofá* – *sofacito*, with the insertion of *c* to preserve the vowels *i*, *a*, in these cases with diminutive *-ito*, these vowels are not class marker either. The conclusion is that oxytones ending in vowel behave as if they lacked class marker.

Oxytones ending in consonants also share this trait, *mujer*, *laurel*, *caimán*. Taking into account that in SP the majority of words ending in consonant are oxytones, there is a relation between oxytones and the lack of word markers. Furthermore, this lack of word marker leaves an “empty” slot at the end of words.

All common SP words or *palabras patrimoniales* have class markers. That is because some words have prosodic structure, but not segmental structure. In other words their morphemes are **catalectic**. Basically, SP has regular moraic class markers (all five vowels a, e, i, o, u) and catalectic class markers.

Having prosodic but not segmental structure creates opacity. Such a description of stress assignment in oxytones says that the segment is invisible although there is a prosodic structure.

There is evidence for this claim. For instance, if we take into account the singular and plural forms for *sofá* and *mujer*, this claim may be more easily accepted despite the opacity of the description with respect to the oxytones.

Therefore, plural formation in SP also supports this idea of catalectic class markers. SP forms plurals with the morpheme/suffix *-s*. Since *-s* is inflectional, it will go after derivate morphemes. In words with regular plural formation, the process is transparent: *pal-o-s*, *car-a-s*, *cruc-e-s*, *curs-i-s*, *trib-u-s*. But in the case of catalectic class markers adding plural morphemes forces the catalectic element to acquire a segmental content: *sofá-e-s*, *maní-e-s*, *mujer-e-s*, *caiman-e-s*.

This additional *e* with the plural morpheme reveals the “emptiness” of the catalectic space, as well as other characteristics of SP such as the preference for CV sequences and the use of epenthetic *e*, which is the only vowel that SP uses in epenthesis. In its plural form, the word becomes paroxytone. Given this argumentation, it is reasonable to say that all oxytones, regardless of its ending in vowels or consonants and contrary to paroxytones and proparoxytones, lack a class marker, that is to say inflectional morphemes.

A way to explain this lack of inflectional morphemes is to assume that the space is there, and it can be said to be a prosodic “space,” not segmental. Therefore, the underlying structure of oxytones should have a prosodic mora that is filled out with a physical segment as needed. This leads, among other consequences, to assigning an underlying *e* vowel that will surface in plural forms of oxytones. This description has a number of advantages and the most obvious is the generalization of assigning only *-s* to plural, instead of two rules, one for adding *-s* and another to add *-es*.

In the case of words like *café* and *té* the insertion of *e* still happens, and in actual speech this fusion is common in SP (*mijito* for *mi hijito*) or *alcol* for *alcohol*). Some dialects have variations (e.g. *sofás*, *rubís*), but the description of stress assignment must be maintained within the same register of a dialect of reference. Otherwise, if one considers how different SP can be throughout the Hispanic world, stress assignment as a general trend would be unnecessarily difficult if not impossible to describe. It is simpler and desirable to stay within the limits of a given register that is considered representative, and then move on into different dialectical variations. For the intended description of stress assignment for this discussion, we used the acrolect as reference. Taking the educated register into consideration, we need to keep in mind that the morphological nucleus changes by adding a derivative suffix, e.g. *verd-e*, *verd-ur-a* or *verd+or+catalexis*.

As *-ur* and *-or* become the morphological nuclei, they select the segment *a* and a prosodic mora as class markers. Among morphemes that select class markers, the most commons in SP are *-dad*, *-itud*, *-ción*, *-zón*, *-dor*, *-al*, *-il*, and *-r*.

There are obviously serious flaws with the framework just discussed. It requires accepting an *ad hoc* description and the assumption that the opacity is an acceptable price to pay, given the other advantages of the description. These flaws are even worse in the case of Portuguese.

In the case of oxytones in BP, for example, one can attempt to propose a process similar to the one in SP. All non-verbal plural would be formed with one rule, by adding *-s* to the singular form. Through this view, in BP, in the case of

oxytones, there is no physical segment in the slot where normally an inflectional morpheme is expected. Words need a class marker to indicate its lexical class. The explanation then, seems to be similar to the one for SP, which would be desirable without flaws because it would require only one rule of plural formation. Therefore, if oxytones have an invisible prosodic unit that we can call mora, it materializes as *e*. Portuguese words like *sofá*, *café*, *colibri*, *mulher* and *mar* would then add *-s* in their plural. After the addition of *s*, *e* would be inserted before *s*, and finally carry on other known phonological processes of BP as needed:

sofá → *sofá_s* → *sofáes* → *sofás*
café → *café_s* → *cafées* → *café*s
colibri → *colibri_s* → *colibries* → *colibris*
mulher → *mulher_s* → *mulheres* → *mulheres*
mar → *mar_s* → *mares* → *mares*
azul → *azul_s* → *azules* → *azues* → *azuis*

The processes above can also be viewed as tree diagrams in the singular and plural forms:

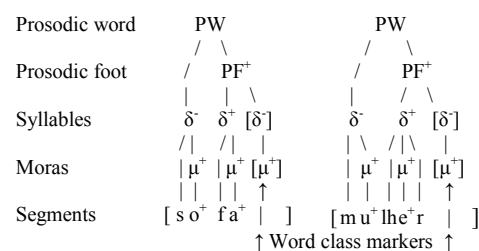


Figure 3. Brazilian Portuguese words *sofá* and *mulher*.

As it can be seen, however, it would be necessary to propose biased underlying forms based on historical forms for other words **brasiles*, **papeles*, **colchones*, which have no synchronic correspondences or motivation in BP. Then, it may be simpler, more efficient and more realistic to maintain Mattoso Câmara Jr.’s [4, 5] claim that lexical stress in Portuguese is unpredictable. One must use memory to learn stress placement in Portuguese.

3. Conclusions

This study examined lexical stress assignment in SP to help understanding why lexical stress is unpredictable in BP. The degree of abstraction, the creation of artifacts and various other flaws to create an algorithm for lexical stress assignment in BP make such an algorithm unnecessarily complicated. In the history of sciences we well know that the more complicated a description is, the far we are from truth.

Unpredictability should not be regarded as undesirable. It is just inherent in some aspects of natural human languages. Stress assignment is most likely unpredictable in Russian [12], to appear) and very likely in English as well [14], in spite of the claims in Chomsky and Halle [6] that it can be predicted.

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