

FROM THE EDITOR

For the third time in its history, *Hispanic Linguistics* has found a new home. Founded by Bruce Stiehm at the University of Pittsburgh in 1984, the first pioneering volumes of *Hispanic Linguistics* bear the mark of Bruce's perseverance and dedication to the profession. The torch was then taken up by Carol Klee at the University of Minnesota, under whose expert guidance the journal continued its growth and worldwide circulation. Both of these editors are responsible for the high quality of this unique journal, and to follow in their footsteps requires a very large stride indeed. I am honored to have been associated with *Hispanic Linguistics* since the very beginning, as author, editorial board member, and manuscript reader. As the new editor, I will rely on the continued support of the *HL* editorial board, the former editors, and the cadre of expert readers who insure the high quality of the articles. I also feel compelled to ask readers to begin or renew their subscriptions, and to ask their institutional libraries to subscribe. *Hispanic Linguistics* is a not-for-profit scholarly journal which must rely on the financial support of its readers for its continued existence. I gratefully acknowledge the generous support provided by the University of New Mexico, specifically the Department of Spanish and Portuguese, under the leadership of Erlinda Gonzales-Berry, and the College of Arts and Sciences, through Dean (now Provost) William Gordon. Finally, my heartfelt thanks go to Eric Jewell, the editorial assistant responsible for the very professional manuscript production. As always, *Hispanic Linguistics* solicits contributions in all areas of linguistics which impinge upon the Ibero-Romance languages. Authors will receive a prompt response to their submissions (typically within two months of receipt of the manuscript), and accepted articles will be published in a timely fashion. I look forward to continuing the *Hispanic Linguistics* tradition.

J.M.L.

DIPHTHONGIZATION IN SPANISH DERIVATIONAL MORPHOLOGY: AN EMPIRICAL INVESTIGATION

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The alternation between the mid-vowels /e/, /o/ and the diphthongs /je/ and /we/ is widespread in Spanish, and several rule-based analyses claim to account for it. However, they are founded on a small body of evidence. These analyses are evaluated against data from a large corpus, and cannot account for the non-discrete nature of diphthongization as evidenced in the corpus. The corpus data suggest that diphthongization has a gradient relationship to the derivational suffixes. A non-derivational account, based on Bybee's model (1985, 1988, 1991), better embodies the scalar relationship between diphthongization and the suffixes. This relationship was tested using a questionnaire involving nonce words and neologisms. The results support the hypothesized relationship in most instances.

1. INTRODUCTION.

In Spanish, there are a great many morphemes containing unstressed /e/ and /o/ which have morphological relatives in which these unstressed mid-vowels become the diphthongs /je/ and /we/ when stressed (e.g. *vejéz* 'old age', *viejo* 'old'). This alternation can be traced to a historical development in which the open mid-vowels /ɛ/ and /ɔ/ became diphthongs when stressed and closed to /e/ and /o/ when unstressed. This alternation is much more complex synchronically given the existence of unstressed diphthongs (e.g. *viejíto* 'little old man'). Consequently, the alternation between the mid-vowels /e/ and /o/ and the diphthongs /je/ and /we/

has received a great deal of attention in the literature (e.g. Carreira 1991; García-Bellido 1986; Halle, Harris and Vergnaud 1991; Harris 1969, 1977, 1989; Hooper 1976). Most researchers assert that this alternation, hereafter referred to as the D/M alternation, is dependent on stress. For example, the frequent incidence of this alternation in both the derivational and inflectional morphology of Spanish, prompted Malkiel to state (1966:432):

The entire edifice of the Spanish language is characterized by the limitation of its characteristic diphthongs *ie* /je/ and *ue*, /we/ to the stressed syllable. Predictably, where in the process of extracting one word from another through some morphological device --inflectional or derivational-- the place of the original word stress is shifted, *ie* yields to *e* and *ue* to *o*, as in *hierro* 'iron' beside *herrero* 'blacksmith' and *cuero* 'rawhide, leather' beside (mass-noun) *corambre* 'hides, skins'. Exceptions exist, but they are few and narrowly circumscribed.

While it is true that [je] and [we] are generally found in stressed position, it is not at all uncommon to find them without stress. Several analyses have been proposed to account for the existence of both stressed and unstressed diphthongs which alternate with mid-vowels (e.g. *vejéz*, *viéjo*, *viejito*). However, in these analyses only a handful of lexical items are presented as examples. This raises the question of whether they can account for the D/M alternation if a larger body of evidence is considered. Therefore, in order to evaluate more fully the existing analyses, a large corpus of Spanish words, in which the D/M alternation plays a role, was compiled. This corpus is described in Section 2.

In Section 3, Harris' (1969, 1977, 1989) and Halle, Harris and Vergnaud's (1991) analyses are examined in light of their ability to account for the D/M alternation in the words of the corpus. The major drawback of these approaches is that there are a great many words from the corpus which these analyses cannot adequately account for in a straightforward manner.

Section 4 describes an alternative, non-derivational analysis of the problem at hand. It is argued that the D/M alternation is morphologically conditioned. Moreover, the alternation is claimed to be one which is not governed by a

disembodied rule of diphthongization, but by associations between lexical items in the mental lexicon. Section 5 describes an experiment which was designed to test the hypothesis that knowledge of the D/M alternation is derived from the contents of the mental lexicon.

2. UNSTRESSED DIPHTHONGS IN DERIVATIONAL MORPHOLOGY.

In Spanish, derivational suffixes usually bear main stress. This means that the root of suffixed words is normally unstressed. In many cases, roots exhibiting the D/M alternation will contain a mid-vowel when unstressed, and a diphthong when stressed (e.g. *vientre* 'abdomen' *ventral* 'abdominal').

Nevertheless, researchers have noted a number of different contexts in which unstressed diphthongs are commonly encountered: 1) Diminutives, superlatives and pejoratives, as well as adverbs ending in *-mente*, usually retain the diphthongs of their respective roots (e.g. *viejito*, 'little old man' *nuevísimo*, 'very new' *pueblácho* 'ugly village'); 2) Words containing certain suffixes, such as *-ero* and *-ista*, sometimes conserve the diphthong of their roots; 3) Verbs which are based on nouns or adjectives, which contain a diphthong, and which are prefixed by *a-*, often retain the diphthong even though they are unstressed (e.g. *amueblár*, 'to furnish' *adiestrár* 'to train').

2.1. The D/M alternation in the Spanish lexicon.

In order to explore the D/M alternation more fully, an extensive search of the derivational lexicon was done. Ten suffixes were chosen as test cases: the nominals *-ista*, *-(i)dad*, and *-ero*, the adjectivals *-oso*, and *-al*,¹ the diminutives *-(c)ito*, *-(c)illo*, and *-uelo*, the augmentative *-azo*, and the superlative *-ísimo*. These suffixes were chosen for several reasons. First, they are fairly common in the language. Therefore, there are sufficient lexical items with each suffix that their relationship to the D/M

alternation can be observed from a language-internal point of view. These suffixes are also diverse in meaning, as well as in degree of productivity. As a result, they provide a sampling of frequent derivational suffixes. Furthermore, words with these suffixes are often cited as examples in the literature on the D/M alternation.

A corpus of words with each of these ten suffixes was compiled from a word list containing about 90 thousand Spanish words. The list includes all of the entries in the *Diccionario de la Lengua Española* (1970) along with about 15,000 words added from other available electronic corpora.² The words found in the search were verified in one or more dictionaries (Martínez 1958; Peñalver 1940; Real Academia Española 1984; Stahl and Scavnicky 1973; Vox 1945). The resulting corpus, (Appendix A), is fairly extensive, but by no means exhaustive.

In order to be included in the corpus, words must meet certain criteria. The first criterion is that a word must be comprised of a root, followed immediately by one of the ten suffixes. Several analyses of the D/M alternation suggest a relationship exists between derivational suffixes and the D/M alternation in word roots. Therefore, it is necessary to eliminate any other intervening material which could also possibly influence the alternation.

A word such as *fogonazo* 'flash' (derived from *fuego* 'fire') is not admitted into the corpus because it does not meet this criterion; the morpheme *-on-* falls between the root *fog-* and the suffix *-azo*. However, in certain instances the suffixes *-(i)dad* and *-zuelo* are preceded by an epenthetic /e/ which serves to break up illicit syllables. For example, the diminutive of *cuerno* 'horn' is *cuernezuelo*. Without the epenthesis of /e/, the resulting **cuernzuelo* would have either an illicit rhyme with /rn/, or an illicit onset with /n/. Therefore, words in which an epenthetic /e/ appears between the root and suffix are admitted into the corpus.

Not all words which are historically related were admitted into the corpus. Another requirement is that a suffixed form of the word must bear a synchronic semantic relationship to its base form (e.g. *pimienta* 'pepper', *pimentero* 'pepper shaker'). Words which are historically related, yet no longer bear a semantic relationship to the

base form were excluded (e.g. *pimientilla* 'species of bush' from *pimienta*).

The third criterion for inclusion in the corpus is that the root must demonstrate the D/M alternation. That is, the same root must exist with a diphthong in one morphemically related word, and with a mid-vowel in another. As a result, words such as *grietos* 'crack-filled' (*grieta* 'crack') does not figure in the corpus because there are no related words with the root **gret-* with a simple mid-vowel. The diphthongs in these cases may be considered underlying. On the other hand, derivational relatives of *mueble* 'piece of furniture' are permitted given the existence of *moblaje* 'set of furniture'. This requirement also eliminates consideration of words with diphthongs which arise across morpheme boundaries (e.g. *nervi+ecillo* 'diminutive of nerve').

As is often the case, one suffix may embody more than one meaning. Therefore, in order to control for any possible semantic influence, the meaning of each of the ten suffixes is held constant. The existence of different meanings is especially apparent in the suffixes *-ero*, *-al*, and *-azo*. Therefore, only words with *-al* as an adjectival suffix, *-azo* as an augmentative suffix, and *-ero* to denote occupation were included.

2.2. Results of the word search.

The complete results of the words search appear in Appendix A, but are summarized in Table 1:

TABLE 1.
Results of the word search

SUFFIX	TOTAL # OF WORDS	% OF WORDS WITH DIPH.	% OF MID-VOWELS.
-ISTA	10	50	50
-(I)DAD	8	13	88
-ERO	37	30	70
-OSO	30	23	77
-AL	25	12	88

-(C)ITO	20	50	50
-(C)ILLO	32	41	59
-ZUELO	56	41	59
-AZO	10	10	90
-ISIMO	16	19	81

As can be seen, the suffixes *-al*, and *-(i)dad* are the least likely of the ten suffixes to co-occur with a root diphthong. The suffixes *-oso* and *-ero* occur most frequently in words with mid-vowels in the root, (e.g. *cenagoso* 'marshy' *aspaventero* 'affected person'), although there are several instances of words with root diphthongs which end in these suffixes (e.g. *cienoso* 'muddy' *fiestero* 'party goer'). The suffix *-ista* is equally likely to appear with a root containing a mid-vowel as with a root which includes a diphthong (e.g. *huelguista* 'striker' *concertista* 'concertist').

What is surprising about these figures is that the diminutive suffixes *-(c)ito*, *-(c)illo*, and *-zuelo* are almost as likely to appear with root diphthongs as they are to appear with mid-vowels. It also seems anomalous that most words with the superlative suffix *-ísimo* and the augmentative *-azo* have no root diphthong. Most Spanish speakers would probably agree that in actual usage, these suffixes are most often associated with root diphthongs and not mid-vowels.

These unexpected findings may be due to the extremely productive nature of the augmentative, diminutive and superlative suffixes in Spanish. Theoretically, the augmentative and diminutive suffixes can be attached to any noun or adjective, and the superlative to any adjective. Therefore, it would be unrealistic for any dictionary to list all possible augmentative, diminutive and superlative forms. It may be that dictionary compilers limit themselves to listing the most common diminutive forms, or those which are of the learned variety. Perhaps it is for this reason that the word search yields such unexpected results for these suffixes.

Dictionary entries may not fairly represent words with highly productive suffixes. By the same token however, they are more likely to contain a good sampling of words with less productive suffixes since they are much more restricted in their application. Based on the results of the word search, it is possible to establish a rough hierarchy of

less productive suffixes which represents their relationship to the D/M alternation.

The number next to each suffix in Table 2 is the percentage of words ending in each suffix which have mid-vowels in the root.

TABLE 2.
Results of the word search

Suffix	% of mid-vowels	Example
<i>-al</i>	88	<i>ventral</i>
<i>-(i)dad</i>	88	<i>bondad</i>
<i>-oso</i>	77	<i>forzoso</i>
<i>-ero</i>	70	<i>casamentero</i>
<i>-ista</i>	50	<i>hacendista</i>

It is unfortunate that the corpus is unable to give us better insight into the relationship between the D/M alternation and words with highly productive suffixes. For this reason, the remainder of this paper will focus principally on words with the less productive suffixes. However, judging by actual usage, diphthongs are extremely common in the roots of augmentatives, superlatives and diminutives. Therefore, it is fair to assume that words with these productive suffixes are ranked somewhere below the less productive ones in regard to the percentage of words with each suffix which have mid-vowels in the root.

The results of the word search suggest that there is a correlation between the D/M alternation and certain derivational suffixes. Suffixes such as *-(i)dad*, almost always appear in words with a mid-vowel in the root, while other suffixes, such as *ista*, are encountered in words containing both diphthongs and mid-vowel in the root. Usage suggests that diminutives, superlatives and augmentatives are associated with root diphthongs. Several different theoretical analyses have been proposed to account for this sort of data.

3. RULE-BASED ANALYSES OF THE D/M ALTERNATION.

3.1. *Harris' analysis.*

According to Harris (1969, 1977, 1989), the D/M alternation, and more specifically, the existence of unstressed diphthongs, may be accounted for by means of morphological bracketing and cyclic rule application. Words with unstressed diphthongs, such as *viejito* 'little old man' and *aviejar* 'to grow old' are underlyingly [[vej]ito] and [a[vej]ar]. In those instances in which an unstressed mid-vowel is found, (e.g. *vejez*, 'old age' and *envejecer* 'to grow old'), the root is not bracketed: [vej+ez], [en+vej+ecer]. Of course, since not all mid-vowels are subject to diphthongization, those which are must be so designated by means of a diacritic or some other formal entity, represented in Table 3 as italicized vowels.

TABLE 3.
Sample derivation

	[[vej]ito]	a[vej]ar]	[vej+ez]	[en+vej+ecer]
Inner Cycle	věj	věj	-	-
Stress				
Outer Cycle	vėjíto	avėjár	vejéz	envejecér
Stress				
Diphthong-ization	viėjíto	aviėjár	-	-
Erase non-right most Stress	viejíto	aviejár	-	-

The advantage of utilizing a powerful mechanism such as cyclic rule application, is that it allows all words with mid-vowels, stressed diphthongs, and unstressed diphthongs to be accounted for. In this framework, there are no exceptions to the rule. For example, consider the alternate forms of the superlative of *ferviente* 'fervent' (*fervientísimo* versus *ferventísimo*). In the first case, the bracketing would arguably have to be [[fervent]ísimo]. In the second, the root would not be enclosed in brackets: [fervent+ísimo]. In other words, the appearance of unstressed diphthongs crucially depends on the placement

of morphological brackets and the cyclic application of stress.

Cyclic rule application has proven to be a useful tool in accounting for many phonological phenomena. However, its use in the case of the D/M alternation in Spanish seems ad hoc. This was observed quite early by Hooper (1976:45) who notes that:

There is no independent justification for the different morphological structure of, for example, *pueblito* and *población*. The cycle and the posited constituent structure of these forms do only one job: They solve the problem they were created to solve.

The only evidence that a word is bracketed in a certain way in the deep structure is the existence of a mid-vowel or diphthong in the surface structure.

Of course, one could argue that the alternation of mid-vowels and diphthongs in the lexicon of Spanish is by itself sufficient evidence that the analysis is correct. However, this line of reasoning is ultimately circular. The observations which form the basis for assuming a theoretical entity, (such as differential morphological bracketing), may not at the same time, constitute proof of the existence of the entity. Failure to make this distinction results in equating the phenomenon explained with the explanation of the phenomenon (Ohalá 1990:159).

In order to avoid circularity, such linguistic entities must be demonstrated valid on independent grounds (Lass 1984:214-5; Ohalá 1990:160; Searle 1980:37; Wheeler 1980:54). Therefore, this analysis would be more plausible if there were some sort of independent evidence for the type of morphological structure it assumes words to have.

3.2. *Halle, Harris and Vergnaud's analysis.*

A more recent account of the D/M alternation is given by Halle, Harris and Vergnaud (1991), hereafter HHV. This analysis is similar to Harris' in that stress triggers the diphthongization of mid-vowels. It also utilizes the cyclic application of rules which permits stress to trigger

diphthongization, and then to be shifted to another syllable thereby accounting for unstressed diphthongs. The reader is referred to the article for the exact details which are irrelevant to the present discussion. The fundamental difference between HHV's and Harris' analysis lays in the mechanism which accounts for unstressed diphthongs.

Harris suggests that words with unstressed diphthongs have a different underlying morphological composition than words that retain the mid-vowel in the root. HHV, on the other hand, assume that both classes of words have a similar underlying morphological composition. The difference is in the kind of affixes the words contain.

HHV divide affixes into cyclic and noncyclic affixes. Words with noncyclic affixes pass through the derivation in such a way as to yield unstressed root diphthongs. Superlative and diminutive affixes are given as examples of noncyclic affixes. Words with cyclic affixes, such as *-oso* and *-(i)dad*, pass through the derivation in a different fashion, so that diphthongs are not derived from the underlying mid-vowels.

The difference between Harris' and HHV's analyses is clearly illustrated in the underlying representations of the words *viejito* and *vejez*. In Harris' analysis, they would arguably have to be $[[vej]ez]$ and $[vej+ito]$. This differential morphological structure is crucial to the analysis in spite of the fact that both words are composed of the root $[vej]$ followed by a suffix. In HHV's account, the underlying representations would be $[[vej]^Cito]^N$ and $[[vej]^Cez]^C$. Here the differentiating factor is that *-ito* and *-ez* belong to distinct suffixal categories, cyclic vs. non-cyclic.

Unfortunately, HHV do not give a detailed account of which derivational affixes are to be considered noncyclic and which are cyclic, nor do they identify an independent basis for their classification. It is apparent from their examples that *-(i)dad*, and *-oso* are cyclic while the superlative, and diminutive affixes are noncyclic. According to this analysis, roots followed by cyclic suffixes retain their mid-vowels, while roots followed by noncyclic affixes yield diphthongs.

HHV's analysis correctly accounts for the majority of the words from the corpus with the suffix *-(i)dad*. Most words with this suffix contain mid-vowels in the root.

Only one word ending in *-(i)dad* was found to have a root diphthong (*huerfanidad* 'orphanhood'). Moreover, there is an alternative form without a diphthong (*orfanidad*). Of course, there are exceptions to all generalizations, and *huerfanidad* can always be marked as an exception.

HHV categorize *-oso* as a cyclic affix. As such the cyclic application of rules should result in roots without diphthongs. However, this is not always the case. In the corpus, there are thirty words with the suffix *-oso*. Of these 30, seven must be considered exceptional since they contain root diphthongs (e.g. *liendroso* 'nitty') instead of the expected mid-vowels.

The ability of HHV's analysis to account for the lexical items in the corpus is further complicated by the suffix *-ista*. How is a suffix such as *-ista* to be formalized in this framework? The word search reveals five words ending in *-ista* with diphthongs (e.g. *fuerista* 'partisan of statutory law'), and five which have mid-vowels (e.g. *dentista* 'dentist'). The only possible way to account for this in HHV's framework would be to posit two different *-ista* suffixes. The suffix $[ista]^N$ would appear next to roots which surface with diphthongs, while the suffix $[ista]^C$ would be affixed to roots surfacing with mid-vowels. In this way, all ten instances of words with *-ista* could be accounted for.

Unfortunately, except for their behavior in regards to the D/M alternation, there is no motivation, semantic or otherwise, for supposing that there are two different *-ista* suffixes. For this reason, suggesting that Spanish has two *-ista* suffixes solely on the basis of their behavior in relationship to the D/M alternation would surely be a faux pas. Goldsmith (1990:264) notes that, 'assigning a suffix to both classes without independent justification can, under certain circumstances, be just a sign that the model is in trouble, and is making wrong predictions'. The division of Spanish derivational suffixes into cyclic and noncyclic is simply not a suitable method of accounting for a large number of words in the corpus.

The difficulties with both of these analyses are similar; they cannot provide a straightforward account of the data

in the corpus, or do so only with the aid mechanisms which are motivated solely on the data they attempt to explain. Accounting for the alternation between unstressed diphthongs and unstressed mid-vowels is not an easy task because the alternation is not clear-cut, but gradient. That is, although a suffix such as *-dad* is strongly correlated with roots with mid-vowels, and the diminutive suffixes normally allow unstressed diphthongs, there are several suffixes which appear with both mid-vowels and diphthongs in the root. In sum, it appears rule-based analyses are unable to adequately account for the non-discrete nature of the D/M alternation, as it is evidenced in the corpus.

4. A NON-DERIVATIONAL ANALYSIS.

As indicated from the outset, the purpose of the present study is not to propose an alternative rule-based account, but to suggest a non-derivational analysis which may be tested experimentally. Experimental evidence is crucial in avoiding circular argumentation. A hypothesis which is founded on observation of language internal data is supported when independently acquired language external data such as experimental evidence corroborates it.

In the present analysis, the existence of unstressed diphthongs, and their alternation with unstressed mid-vowels is not dependent on stress. Instead, it is related to the derivational suffix which follows the root. I propose that the D/M alternation is governed by analogies or associative linkages arising from the contents of the mental lexicon. It is difficult to find a precise correlation between the D/M alternation and the suffixes because the relationship is simply not one-to-one, as the corpus demonstrates. The primary advantage to this sort of analysis is that it explains how a morphophonemic alternation, such as the D/M alternation, can be gradient in nature. Derwing (1990:259-60) notes that,

While the generative rule-based approach implies categories whose boundaries are well-defined, and transitions in

predicted behavior that are sharp and precise, the analogical approach implies categories and transitions in predicted behavior that are gradual and imprecise.

The next section introduces a model in which such imprecise correlations may be accounted for.

4.1. Bybee's model.

The present analysis follows most closely the model proposed by Bybee (1985, 1988, 1991). In this model, the lexicon is the storehouse of all words, both simple and morphologically complex. This view is consistent with the psycholinguistic evidence which indicates that words are stored as wholes³ (see Aitchison 1987; Butterworth 1983; Cutler 1983 for summaries). The lexicon also includes a network of relationships which tie similar words together. Therefore, words are related if they are synonyms, or belong to the same semantic field (adjective, noun, etc.). Words that are semantically and phonetically similar are also associatively connected. Since whole words are not built up from their constituent morphemes, there must be a way in which morphemic relatives are grouped. According to this model,

When a new morphologically complex word is learned, it forms connections with existing lexical material on the basis of its meaning and phonological shape. The word is not physically dismembered, but its parts are identified. (Bybee 1988:127)

In this way, a recurring phonological pattern in the words of the lexicon, which is consistently associated with the same semantic information constitutes a morpheme.

Another aspect of Bybee's model of lexical associations is that it involves no rules per se. The organization, and associations among lexical items are responsible for rule-like behavior. There is no morphological parser, no rules of morphological concatenation, nor rules to account for allomorphy.⁴

Of course, any theory of language must account for the productive aspect of language production and comprehension. Once again, the productive nature of certain morphological and phonological patterns is seen as a result of lexical organization. Patterns which are common in the lexicon are more salient and likely to be used productively, and in novel situations (Bybee 1988:125). The more often a pattern is processed, and the more connections it has to other lexical items, the more dynamic it is, and the more likely it is to be used productively.

The patterns and generalizations which are found in languages are not thought to have an existence of their own separate from the lexicon. Instead, they exist in the network of associations between lexical items. This is the crucial difference between rule-based models and Bybee's lexically-based model. As already mentioned, due to their binary nature, rule-based approaches fail to account for the gradience seen in the D/M alternation. In a lexical model, on the other hand, the gradience of the D/M alternation is merely a reflection of the contexts of the lexicon.

4.2. A nonderivational approach to the D/M alternation.

It is easy to see how the alternation between diphthongs and mid-vowels can be treated in this framework. Instead of assuming a rule which converts mid-vowels to diphthongs (or vice-versa), words which surface with diphthongs are stored underlyingly with diphthongs. Furthermore, the D/M alternation is not triggered by stress since lexical items are stored along with their inherent stress pattern. The network of associations between related lexical items can be best illustrated with an example.

Consider words ending in *-ista*. All words ending in *-ista* are associated on the basis of the phonetic similarity of the suffix. A second association exists between any subset of these words which has the meaning 'one who deals with X'. X represents the semantic properties of the word's root. Therefore, a *dentista* 'dentist' deals with *dientes* 'teeth'. *Dentista*, in turn has both semantic and phonetic associations with other lexical items such as *dentudo*

'big-toothed', *dentadura* 'set of teeth', and *dientecito* 'small tooth'. Its relationship to these words is what includes it in the set of words which exhibits the D/M alternation.

Suppose for the sake of argument, that a Spanish speaker's lexicon contains the same ten words with the suffix *-ista*, which are found in the corpus. The roots of all these words exhibit the D/M alternation. However, five of them have diphthongs (e.g. *cuentista* 'tale bearer'). The other five contain mid-vowels (e.g. *dentista*).

According to this model, what could be characterized as a speaker's intuitions or knowledge of his/her language is a direct result of the contents of the lexicon. Therefore, it would predict that when the need arises to produce a new suffixed word from an extant word exhibiting the D/M alternation, there is roughly a 50% chance that it will appear with the diphthong in the root if it is suffixed with *-ista*.

Along the same lines, if the speaker's mental lexicon contains the same lexical items with *-(i)dad* as the corpus does, a newly formed word ending in this suffix will most likely have a mid-vowel in the root. This is because the majority of lexical items which take part in the D/M alternation, and which end in *-(i)dad*, have mid-vowels.

The production of neologisms provides good evidence that morphological and phonological patterns have some sort of mental representation. If the patterns which emerge in novel words coincide with the contents of the mental lexicon, then that constitutes evidence that the representation of the patterns is based on the lexicon. This is especially true in cases such as the D/M alternation in which rule-based analyses are unable to account for the data.

There are two ways in which the mental lexicon may influence a speaker's production of neologisms. The first involves what Bybee terms lexical strength (1988). Patterns which are found in a greater number of lexical items, and which are accessed more often are etched more deeply into the mind's network. A nonlinguistic example should make this clear.

Consider the color scheme of mens' pants. Daily exposure to the world gives us a sense of what is common

and what is considered a deviation from the norm. An average person has been subject to thousands of encounters with mens' pants. In most of these encounters, mens' pants have been observed to be dark in color. The connection between mens' pants and dark colors is a deeply ingrained one since it is reinforced by numerous observations. It is the strong association between dark colors and mens' pants which we use to determine that brightly colored pants are uncommon for men.

In a similar way, the common cooccurrence of the suffix *-(i)dad* with roots containing mid-vowels may be responsible for speakers' tacit knowledge that this combination is normal. It is this kind of knowledge that may influence the formation of neologisms.

The second way in which the lexicon may aid in the formation of neologisms is through analogy. When deciding whether to produce a novel form with a root diphthong or mid-vowel, speakers may access the lexicon for a word (or words) with the semantic properties they wish to express. For example, imagine that a speaker wants to express the idea 'a person who builds foundations'. The word *cimientos* 'foundation' could serve as the base form. The semantic property 'one who deals with X' is found to be associated with words ending in *-ista*. A word, (or several) is then accessed which has the morpheme *-ista* and whose root displays the D/M alternation. Assuming that the speaker's mental lexicon contains the same 10 items with *-ista* as the corpus, the chance is 50-50 that the word or words accessed will have a root diphthong. Therefore, there is roughly a 50% chance that the novel word the speaker formulates will be **cimientista*, and a 50% chance that it will be **cimentista*.

Of course, it is unrealistic to assume that all of the words in the corpus also exist in the minds of the average Spanish speaker, and that the words themselves, or the associations between them, are equally accessible. The concept of lexical strength suggests that frequent words are more salient and more likely to influence the formation of novel words. Therefore, in order to get some kind of idea of what exists in the mental lexicons of Spanish speakers an index of lexical strength is needed.

At first it seemed that a dictionary of word frequency could be helpful. Unfortunately, the available frequency dictionary of Spanish words (Juilland and Chang-Rodríguez 1964) includes only a small percentage of the words from the corpus. For example, it does not contain such seemingly common words as *dentista* and *escolar* 'school, adj'.

In order to get some sort of measure of lexical strength, 5 native, college-educated Spanish speakers were asked to rate all of the corpus items with the five less productive suffixes. Four of them are natives of Spain, and one is from Colombia. They were to give a word a 5, on a scale of 1 to 5, if they felt that most adult Spanish speakers know the word. If they felt the average adult speaker does not know the word, they were to rate it as a 1 on the scale. Words which received an average score of 4.0 or higher were considered common. These are indicated in Appendix A with a cross (†).

Once uncommon words are factored out of the corpus, the relationship between the D/M alternation and the less productive suffixes becomes clear. The number in Table 4 indicates the percentage of common words in the corpus which have mid-vowels in the root.

TABLE 4.
Mid-vowels in common words with
less productive suffixes.

Suffix	% of mid-vowels	Example
<i>-al</i>	100	<i>ventral</i>
<i>-(i)dad</i>	100	<i>bondad</i>
<i>-ero</i>	100	<i>forzoso</i>
<i>-oso</i>	83	<i>casamentero</i>
<i>-ista</i>	50	<i>hacendista</i>

These common words are a better estimate of what is in the average Spanish speaker's lexicon, (or at least which words are the most salient), than the contents of the corpus as a whole. These results can be compared with the results from the entire corpus (Table 2). In general, the more common words with these suffixes contain a higher

percentage of mid-vowels in the root.

The model just presented holds that linguistic knowledge is rooted in the lexicon and in the associations which are made between related lexical items. If this view is accurate, then there should be a direct correspondence between the contents of the mental lexicon and the way speakers put their linguistic knowledge to use. This, of course, is a hypothesis which may be tested. The next section describes an experiment which attempts to answer two questions: 1) Do Spanish speakers perceive a relationship between the D/M alternation and the derivational suffixes? 2) More importantly, does this relationship coincide with the contents of the mental lexicon?

5. THE NEOLOGISM AND NONCE WORD QUESTIONNAIRE.

5.1. Subjects.

A total of 51 subjects took the questionnaire. The majority (49) were from Spain, and the remaining two from Argentina.⁵ Thirty of the subjects were college age (18-21), 11 were between 22 and 29 years of age, and 8 between 30 and 49 years old. The remaining two were 54 and 61 years old. Twenty-three males and 28 females participated. Thirteen of the subjects had concluded their formal education between the ages of 14 and 17. Thirty-six had finished their formal education, or were currently university students at the ages of 18 to 25. Two subjects acknowledged having been enrolled in school past 26 years of age.

5.2. Questionnaire design.

One nonce word was invented to be combined with each of the ten test suffixes. These words were made to conform to the standard orthographic and phonotactic conventions of Spanish. In addition, a common attested word was also chosen to be combined with each of the

suffixes to form a neologism. Each of these have morphemic relatives with mid-vowels as well as diphthongs. This yielded a total of 20 test words, each of which has a diphthong in the root. Half of the test words include the diphthong /je/ and the other half /we/.

TABLE 5.
Test Words.

SUFFIX	WORD USED IN NEOLOGISM	NONCE WORD	ATTESTED WORD WITHOUT DIPHTHONG
-ISTA	piedras	trotamueras	hacendista
-(I)DAD	miel	sierco	novedad
-ERO	tropieza	almiega	aspaventero
-OSO	cuernos	amonieros	nevoso
-AL	truenos	estiejás	foral
-(C)ITO	infierno	empruego	calentito
-(C)ILLO	puerco	tuérfole	ventrecillo
-ZUELO	tuerca	merieco	dentezuelo
-AZO	puente	ciebre	vejaza
-ISIMO	muerto	resogueto	valentísimo

In addition to the test words, the questionnaire contained a large number (41) of distractor items. An attested word with each of the 10 suffixes was included, which have mid-vowels in the root, and whose unaffixed forms have diphthongs (Table 5). Several other attested words served as distractors also. Five items were included whose suffixed form is attested to, both with and without diphthongs (e.g. *huerfanidad*, *orfanidad* 'orphanhood'). Another five items had suffixed forms that are attested to only with root diphthongs (e.g. *cuentista*, **contista* 'tale-bearer'). An additional 21 test items were included which did not involve the D/M alternation. Five of these words were existing words, five were neologisms and the remaining 11 were nonce forms.

Each of the test words in the questionnaire appeared in the definition of a suffixed word. For example:

DEFINITION: WORD:*Calidad de miel* (a) *meldad*'honey quality' (b) *miel**dad*

The order of appearance of the test words and distractor items was randomized, as was the order in which the two possible responses appeared. Definitions consistent with the nominal meanings of words ending in *-ista*, *-(i)dad*, and *-ero* were chosen. Words with *-oso-*, and *-al* were given adjectival definitions; words with *-(c)ito*, *-(c)illo*, and *-zuelo* received diminutive definitions; words with *-azo* received augmentative definitions, and words ending in *-ísimo* were given superlative definitions.

5.3. Procedure.

Subjects were told that their task was to determine which of the two words following each definition was correct. They were informed that all the words were taken from a large Spanish dictionary, and as a result, they could expect to find words that they knew, as well as words that they were not familiar with. In case they were not familiar with a word, they were asked to use their intuition to decide which of the two options sounded better to them. The subjects were allowed as much time as necessary to complete the questionnaire.

5.4. Results.

The results of the questionnaire are summarized in Table 6. For example, under the suffix *-(i)dad*, the test word *miel* was combined with *-(i)dad* to form a neologism. The third column of Table 6 indicates the number of responses to each test item which contained a diphthong. In the case of *miel*, 24 subjects preferred the neologism *miel**dad*, while 27 preferred the response with a mid-vowel, *meldad*. The total number of responses to all

test words containing a mid-vowel which ended in the suffix *-(i)dad* is 39. That is, 27 preferred the response *meldad*. These 27 responses were added to the number of responses (39) who preferred the nonce word with a mid-vowel (*serquedad*) over the response containing a diphthong (*sierquedad*). A Chi-square analysis was performed on the results. Responses which are significant at the $p < .05$ level or better are indicated with a cross (†) in Table 6.

TABLE 6.
Results of the questionnaire.

TYPE OF WORD	TEST WORDS AND SUFFIXES	# OF RESPONSES WITH DIPHTHONG	# OF RESPONSES WITH MID-VOWEL
	<i>-ISTA</i>		
Neologism	<i>piedras</i>	26	25
Nonce	<i>trotamueras</i>	25	26
		51 Total	51 Total
	<i>-(I)DAD</i>		
Neologism	<i>miel</i>	24	27
Nonce	<i>sierco</i>	12†	39†
		36† Total	66† Total
	<i>-ERO</i>		
Neologism	<i>tropieza</i>	7†	44†
Nonce	<i>almiega</i>	21	30
		28† Total	74† Total
	<i>-OSO</i>		
Neologism	<i>cuernos</i>	25	26
Nonce	<i>amonieros</i>	16	35
		41 Total	61 Total
	<i>-AL</i>		
Neologism	<i>truenos</i>	12†	39†
Nonce	<i>estiejas</i>	22	29
		34† Total	68† Total
	<i>-(C)ITO</i>		
Neologism	<i>infierno</i>	45†	6†
Nonce	<i>empruego</i>	31	20

		76† Total	26† Total
	- <i>(C)ILLO</i>		
Neologism	<i>puerco</i>	46†	5†
Nonce	<i>tuérfo</i>	33	18
		79† Total	23† Total
	- <i>ZUELO</i>		
Neologism	<i>tuerca</i>	34	17
Nonce	<i>merieco</i>	19	32
		53 Total	49 Total
	- <i>AZO</i>		
Neologism	<i>puente</i>	46†	5†
Nonce	<i>ciebre</i>	31	20
		77† Total	25† Total
	- <i>ÍSIMO</i>		
Neologism	<i>muerto</i>	22	29
Nonce	<i>resogüeto</i> ⁶	9	21
		51 Total	50 Total

The results of the questionnaire make it very easy to divide the suffixes into three categories: suffixes which are associated with a significant number of responses with mid-vowels, suffixes which are associated with a significant number of responses with diphthongs, and suffixes for which there is no significant preference for either. In Table 7, the number next to each suffix indicates the number of responses given which contained a mid-vowel.

TABLE 7.
Suffixal Categories.

MID-VOWELS PREFERRED	NO SIGNIFICANT PREFERENCE	DIPHTHONGS PREFERRED
- <i>ero</i> 74	- <i>oso</i> 61	- <i>(c)ito</i> 26
- <i>al</i> 68	- <i>ista</i> 51	- <i>azo</i> 25
- <i>(i)dad</i> 66	- <i>ísimo</i> 50	- <i>(c)illo</i> 23
	- <i>zuelo</i> 49	

5.5. Discussion.

The results of the questionnaire clearly indicate that the test subjects' choice of root allomorphy was not random for test words ending in six of the ten test suffixes. Furthermore, these results correspond to a high degree with the D/M alternation as found in the common words of the corpus (Table 4). For example, none of the common words in the corpus with the suffixes *-ero*, *-al*, and *-(i)dad* contain root diphthongs. This is mirrored in the responses to questionnaire items; words containing mid-vowels which end in these three suffixes were preferred to a significant degree over responses with diphthongs.

While none of the common words in the corpus with *-ero*, *-al*, and *-(i)dad* have diphthongs, some words ending in *-oso* and *-ista* do. In a similar manner, the subjects showed no statistical preference for either diphthongs or mid-vowels in test items with the suffixes *-oso* and *-ista*.

One assumption which was made is that words with the diminutive, augmentative, and superlative suffixes commonly cooccur with root diphthongs. This assumption is partially confirmed by the questionnaire. Responses containing root diphthongs were more common in these productive suffixes than in any of the less productive suffixes (see Table 7). However, the superlatives with *-ísimo*, as well as diminutives with *-zuelo*, were not found to contain a statistically greater number of diphthongs than mid-vowels as originally assumed.

The unexpected outcome for *-ísimo*, and *-zuelo* may be due to the small number of test items for each suffix. Of the 61 questionnaire items, only 20 were actual test items. A large number of real word distractors was included in an effort to make the task of making decisions about unfamiliar words less awkward. This means that only two test items were relevant to each suffix. The small number of relevant test items opens up the possibility that one test word, which may be exceptional in some way, may strongly influence the overall outcome. Of course, further experiments of this nature can avoid this potential difficulty by including a larger number of test items.

In any case, there is reason to believe that one of the test items for *-ísimo* and *-zuelo* skewed the results. In fact, the responses to the neologisms and the nonce words for both suffixes are diametrically opposed. For example, most subjects preferred the neologism *torquezuelo* with a diphthong, while at the same time preferring the neologism *merequezuelo* with a simple mid-vowel. Careful examination of Table 6 shows that the only suffixes for which the results of the nonce words and neologisms are opposed are for the suffixes *-ísimo* and *-zuelo*. In contrast, the responses of the subjects to the test words for the remaining eight suffixes are always in the same direction.

In general, however, the results of this study provide evidence that Spanish speakers have some sort of tacit awareness of the fact that diphthongs are more common in the roots of words ending in certain suffixes, while mid-vowels are expected in the roots of words with other suffixes. Furthermore, the relationship between the suffixes and the D/M alternation is seen to be gradient instead of binary. The fact that the subjects' responses coincide with the D/M alternation, as evidenced in the common words of the language, may be explained by a model such as Bybee's which holds that alternations exist in the lexicon among the lexical items which demonstrate them.

The findings of this study are encouraging, but they are of course preliminary. It is evident that the derivational suffixes played a role in the subjects' decisions about the D/M alternation. However, the exact relationship which exists between the D/M alternation and the derivational suffixes is an area which needs to be explored in more depth. The outcome of the present study suggests that neologisms are better than nonce words in eliciting responses which reach statistical significance. Only one question involving a nonce word was statistically significant, while five neologisms reached significance. The implication this has for further research is that it include a greater number of neologisms.

As I discussed in section 2.1.1., because of the extremely productive nature of the diminutive, augmentative, and superlative suffixes, dictionary entries are probably not a

good source from which to infer what lexical items with these suffixes exist in the mental lexicon of Spanish speakers. As a result, I have focused on the correspondences found between the corpus and the questionnaire results of the less productive suffixes. Further research into this issue will need to address the question of the D/M alternation as it relates to the more productive suffixes. Perhaps the results of the present study in regards to the less productive suffixes can be considered groundwork for future studies.

6. CONCLUSIONS.

Although preliminary, the present study adds to the growing body of evidence that groups of words in the lexicon with similar characteristics can influence linguistic behavior. Elsewhere, such effects have been referred to as *gang effects* (Stemberger 1994; Stemberger and MacWhinney 1988). Several recent studies have produced evidence which supports such lexical influence. Aske (1990), for example, had Spanish speakers read sentences containing nonce words in order to determine where they would place word stress. He found that the placement of stress did not reflect the word stress rules proposed for Spanish. Instead it was more closely related to the stress patterns found in lexical items which were phonetically similar to the nonce words. Ohala and Ohala (1986) found similar results in a study on morpheme structure constraints in English. They carried out an experiment in which the subjects judged the similarity or dissimilarity of nonce words to English. They were told that the words were from foreign languages, some of which were closely related to English and others which were not related. The outcome of the study suggests that the subjects did not make use of lexicon-independent rules, but rather, that they responded as if they had accessed the lexicon directly in making their decision.

The present analysis of the D/M alternation has several advantages over rule-based analyses. The relationship of the suffixes to the D/M alternation is gradient, and not

discrete. In order to account for this, rule-based analyses rely on the ad hoc use of formal phonological mechanisms. On the other hand, the lexicon-based approach suggests that speakers' knowledge or intuition about the D/M alternation is a reflection of the contents of the mental lexicon.

In the questionnaire, the subjects did not prefer responses with diphthongs over those with mid-vowels for test items ending in *-oso* or *-ista*. In order to account for this there is no need to assume the existence of some sort of rule or other formal device. The subjects showed no significant preference in these cases simply because the relationship between these suffixes and the D/M alternation is not clear cut in the lexicon either, and their responses are influenced by the contents of the lexicon.

Of course, the best evidence that the D/M alternation resides in the lexicon is that the responses to the items in the questionnaire correspond to a high degree to the common words of the corpus. It is hoped that this study will prompt further experimental research on the D/M alternation.

NOTES

¹Both allomorphs of *-al* (i.e. *-al* and *-ar*) were included in the study.

²The corpus of 90 thousand words is available via anonymous ftp on the Internet. It is located in *linguistics.archive.umich.edu* in the directory */linguistics/lexica* under the file name *span-lex.zip*.

³The evidence suggests that some inflectional affixes may be added in the course of speech production, and therefore, are not stored as wholes. However, the present study deals entirely with derivational morphology, and is justified in assuming that complex derivational words are stored unfragmented.

⁴In addition to Bybee, several others have proposed ruleless models of linguistic processing (e.g. MacWhinney 1994; Seidenberg and McClelland 1989; Skousen 1989, 1992; Stemberger 1985, 1994).

⁵Since the D/M alternation may vary somewhat from dialect to dialect, it is important to hold this factor constant in the study. This was done

since the majority of the test subjects, as well as the majority of the people who rated the corpus words for commonness, were Spaniards.

⁶One subject failed to respond to this item.

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APPENDIX A

Words with less productive suffixes which were rated as commonly known are indicated with a cross (†).

-ISTA	
aguafuertista	'engraver'
concertista †	'concertist'

cuentacorrentista
 cuentista †
 dentista †
 forista
 fuerista
 hacendista
 huelguista †
 mueblista

-(I)DAD

bondad †
 ceguedad
 grosedad
 huerfanidad
 orfanidad
 orfandad †
 novedad †
 vejedad

-ERO

agorero
 aguardentero
 almucera
 anzolero
 aspaventero
 boyero
 buñolero
 casamentero †
 cuentero
 cuevero
 destrero
 dezmero
 diezmero
 estercolero
 ferrero
 festero
 fiestero
 grosero †
 herrero †
 huertero
 huevero
 lebrero
 lencero
 melero
 molero
 nuecero
 pedrero
 picapedrero †
 pielero

'current account holder'
 'tale bearer'
 'dentist'
 'partisan of statutory laws'
 'treasurer'
 'striker'
 'furniture dealer'

'goodness'
 'blindness'
 'thickness'
 'orphanhood'

'news, innovation'
 'age'

'fortune teller'
 'brandy seller'
 'cooked food seller'
 'fish hook dealer'
 'affected person'
 'ox driver'
 'fritter maker'
 'matchmaker'
 'tale bearer'
 'cellar maker'
 'expert'
 'tithe payer'

'dung gatherer'
 'blacksmith'
 'partier'

'crude person'
 'blacksmith'
 'gardener'
 'egg dealer'
 'hare hunter'
 'canvas dealer'
 'honey dealer'
 'millstone maker'
 'walnut seller'
 'stone cutter'
 'stone cutter'
 'fur dealer'

portero
 ruedero
 sacamolero
 sanguijolero
 sanguijuelero
 sobredezmero
 sortero
 tendero †

-OSO

aguardentoso
 aspaventoso
 aspavientoso
 cenagoso
 cenoso
 cienoso
 correntoso
 fogoso
 forzoso †
 gobernoso
 hacendoso †
 herboso
 huesoso
 ososo
 lendroso
 liendroso
 meloso †
 merdoso
 miedoso †
 muermoso
 nevoso
 paciencioso
 pedroso
 revoltoso †
 sarmentoso
 tembloso
 terroso
 tropezoso
 ventoso
 vergonzoso †

-AL

aparencial
 boyal
 cervical
 dental †
 diezmal
 escolar †

'doorman'
 'tire maker'
 'tooth puller'
 'leach vendor'
 'assistant tithe collector'
 'fortune teller'
 'store owner' †

'mixed with brandy'
 'affected person'

'marshy'
 'muddy'

'rapid (stream)'
 'fiery'
 'obligatory'
 'methodical'
 'diligent'
 'grassy'
 'bony'

'nitty'

'honey-like'
 'dirty'
 'scared'
 'glanderous'
 'snowy'
 'patient'
 'rocky'
 'unruly'
 'sarmentose'
 'trembly'
 'earthy'
 'clumsy'
 'windy'
 'shamefaced'

'apparent'
 'bovine'
 'deer-like'
 'dental'
 'tenth'
 'school'

feral	'cruel'
foral	'statutory'
herbal	'cereal'
hibernal	'wintery'
hibiernal	
infernal †	'infernal'
invernal †	'wintery'
interdental †	'interdental'
melar	'honey-tasting'
molar †	'molar'
mortal	'mortal'
obedencial	'according to the rules of
obediencial	obedience'
oval †	'oval'
parental	'parental'
premolar †	'premolar'
recental	'recent'
sentimental †	'sentimental'
ventral	'ventral'

-(C)ITO

calentito	'dim. of hot'
cieguito	'dim. of blind'
cielito	'dim. of sky'
cornecito	'dim. of horn'
corpecito	'dim. of body'
cuerpecito	
corvecito	'dim. of raven'
cuentecito	'dim. of tale'
fuegucito	'dim. of fire'
hacendita	'dim. of farm'
herbecita	'dim. of grass'
merendita	'light lunch, snack'
muertito	'dim. of dead'
nietecito	'dim. of grandson'
piernecita	'dim. of leg'
portecita	'dim. of door'
pielecita	'small hide'
sueñecito	'dim. of sleep'
ternecito	'dim. of tender'
vejecito	'dim. of old'

-(C)ILLO

bueyecillo	'dim. of ox'
ceguecillo	'dim. of blind'
cieguecillo	
cornecillo	'dim. of horn'
corpecillo	'dim. of body'
cuerpecillo	

costecilla	'dim. of slope'
dentecillo	'dim. of tooth'
fierecillo	'dim. of beast'
fortecillo	'dim. of strong'
fuertecillo	
fuegucillo	'dim. of fire'
hacendilla	'small farm'
hortecillo	'dim. of orchard'
huesillo	'dim. of bone'
infernillo	'spirit lamp'
infiernillo	
liebrecilla	'dim. of hare'
merendilla	'light lunch'
nuececilla	'dim. of walnut'
pedrecilla	'dim. of stone'
pliegucillo	'dim. of plait'
pontecilla	'dim. of bridge'
puentecilla	
porquecilla	'dim. of pig'
portecilla	'dim. of door'
portilla	'gate' opening'
portillo	'passage, gap'
sarmentillo	'dim. of vine runner'
ventecillo	'dim. of wind'
ventrecillo	'dim. of abdomen'
viejecillo	'dim. of old'

-ZUELO

bueyezuelo	'dim. of ox'
boyezuelo	
ceguezuelo	'dim. of blind'
cieguezuelo	
contezuelo	'dim. of tale'
cordezuela	'dim. of string'
cuerdezuela	
corezuelo	'baked pig skin'
cuerezuelo	
corpezuelo	'dim. of body'
costezuela	'dim. of slope'
cuestezuela	
covezuela	'dim. of cellar'
cuentezuela	'dim. of bill'
cuerezuelo	'dim. of horn'
dentezuelo	'dim. of tooth'
foguezuelo	'dim. of fire'
fueguezuelo	
fontezuela	
fuentezuela	'dim. of fountain'

fortezuelo	'dim. of strong'
fuertezuelo	
grosezuelo	'dim. of thick'
herrezuelo	'piece of iron'
hierbezuela	'dim. of grass'
hierrezuelo	'dim of iron'
hortezuela	'dim. of garden'
huertezuela	
hortezuelo	'dim. of orchard'
huertezuelo	
huesezeuelo	'dim. of bone'
huevezuelo	'dim. of egg'
ovezuelo	
jueguezuelo	'dim. of game'
lenzuelo	'piece of canvas'
liebrezuela	'dim. of hare'
netezuelo	'dim. of grandson'
nietezuelo	
pedrezuela	'dim. of stone'
piedrezuela	
pernezuela	'dim. of leg'
poblezuelo	'dim. of town'
pontezuelo/a	'dim. of bridge'
porquezuelo	'dim. of pig'
puerquezuelo	
portezuela	'dim. of door'
portezuelo	'dim. of port'
puertezuelo	
rodezuela	'dim. of tire'
serrezuela	'dim. of saw'
tendezuela	'dim. of store'
ternezuelo	'dim. of tender'
terrazuela	'small piece of ground'
vejezuelo	'dim. of old'
ventrezuelo	'dim. of abdomen'
viejezuelo	'dim. of old'
-AZO	
bonazo	'good natured'
buenazo	
collazo	'thick neck'
corpazo	'aug. of body'
poblazo	'ugly town'
vejazo	'aug' of old'
boyazo	'aug. of ox'
herbaza	'aug. of grass'
pernaza	'aug. of leg'
nevazo	'snowfall'

<i>-ISIMO</i>	
ardentísimo	'very hot'
bonísimo	'very good'
buenísimo	
certísimo	'very certain'
ciertísimo	
destrísimo	'very skillful'
ferventísimo	'very devout'
fervientísimo	
fortísimo	'very strong'
grosísimo	'very thick'
incertísimo	'very uncertain'
lucentísimo	'very shiny'
novísimo	'very new'
recentísimo	'very recent'
ternísimo	'very tender'
valentísimo	'very valient'