

Diphthongization of Mid/Low Vowel Sequences in Colombian Spanish

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1. Introduction

This paper is concerned with a phenomenon of language variation affecting the articulation of vowel sequences in Spanish. Although there are established prescriptive rules, which predict if two adjacent vowels are to be pronounced as a diphthong (VV) or as a hiatus (V.V), the articulation of these sequences has been reported to be subject to dialectal and sociolectal variation.

Hiatus or heterosyllabic sequences, which according to the rule result from the combination of a stressed high vocoid in contact with a non-high vocoid, two non-high vocoids or a sequence of identical vocoids, tend to be dispreferred in different Spanish varieties. Thus, sequences of the type [a.í], [e.o] or [o.o] undergo some type of phonological change to avoid the hiatus articulation.

Speakers recur to different strategies to resolve hiatus sequences, including diphthongization (e.g. *peón* [pe.ón]>[pjón] ‘farm worker’, coalescence (e.g. *no me acuerdo* [no.me.a.kwér.do] > [no.mæ.kwér.do] ‘I don’t remember’, Jenkins 1999), elision (e.g. *creer* [kre.er]>[krer] ‘to believe’) and epenthesis (e.g. *canoa* [ka.nó.a] > [ka.nó.ʎa]).

Among all strategies, diphthong formation stands out as one of the striking developments which characterized the evolution of Spanish. The general tendency has been for original hiatus sequences to become diphthongs, e.g. *Ital*[i.a] > *Ital*[ja], *Hispan*[i.a] > *Hispan*[ja] (> *España*). New hiatus sequences created by the deletion of intervocalic consonants have also tended to reduce to diphthongs (e.g. *regina* > re.í.na > réi.na). Diphthongization is still an on-going phenomenon in Modern Spanish, as reported in dialectal studies by Alonso 1930, Flórez 1951, Albar 1996, Moreno de Alba 1992, Jenkins 1999. Hiatus sequences undergo diphthongization via stress dislocation (e.g. *maíz* [ma.ís] > [máis] ‘corn’) or by alteration of the vowel quality of one of the elements in the sequence (e.g. *petróleo* [pe.tró.le.o] > [pe.tro.ljo] ‘oil’).

The resolution of hiatus sequences in Spanish has been extensively studied. Previous phonological studies have focused in establishing the internal factors that constrain this phenomenon, including the principle of least effort (Straka 1956, Quilis 1993), syllable structure (Monroy Casas 1980, Quilis 1993), proximity to stress effect (Jenkins 1999, Hualde and Chitoran 2003), position of the vowel sequence in the word (Jenkins 1999, Hualde and Chitoran 2003), and sensitivity to morpheme boundaries (Hualde 1999).

Although a variety of potential internal factors has been identified, the external factors playing a role in hiatus resolution has been documented to a lesser degree. This article aims to contribute to the study of Spanish diphthongization by considering social variables. Variation in the articulation of mid/low hiatus sequences is analyzed by comparing data from two dialectal regions of Colombian Spanish (Andean and Caribbean) and two different speech styles. This research paper departs from other studies on hiatus resolution in that it presents results based on acoustic analysis of the sequences and not merely on impressionistic coding. Frequency values and segments’ duration were measured to determine if a sequence was pronounced as a diphthong or as a hiatus.

2. Socio-historical background

The diphthongization of mid/low vowel sequences has been reported in Spanish dialectal studies for over a hundred years. Alonso (1930) compiles examples of diphthongized forms (e.g. *acordeón* > *acordiún*, ‘accordion’, *león* > *lion* ‘lion’, *toalla* > *tualla* ‘towel’) from Castilian territory as well as the

Americas dated in the late XIX and early XX centuries. This tendency to resolve hiatus forms by alteration of the vowel quality of one of the elements occurred along with diphthongization via stress dislocation (e.g. caído [ka.í.ðo] > [káí.ðo] ‘fallen’).

A remarkable point in the spreading of this change is that it found a more fertile soil in Latin America than in Spain. Alonso (1930) observes that the phonetic tendency to diphthongize hiatus sequences has spread to a greater degree in the Americas, in some cases reaching the educated social classes. He reports alteration of hiatus sequences in Argentina, Chile, Colombia, Mexico, Guatemala, El Salvador, Nicaragua, Costa Rica, Venezuela, Ecuador, Perú and Bolivia. Similar findings are reported by Moreno de Alba (1994) and Alvar (1996) for Mexican Spanish. In a more recent study Frago-Gracia and Franco-Figueroa (2001) consider hiatus diphthongization as one of the general characteristics of American Spanish, excepting Paraguay, where the influence of Guaraní tends to favor hiatus forms.

According to Alonso (1930) the greater acceptance in the Americas of the cases of diphthongization obeys to differences between the peninsular society and the newly established countries. Although there is evidence of the diphthongizing tendency in both places, there was a rapid reaction against it in Spain to keep the cultivated speech according to the norms proposed by the Spanish Academy and the literary canons. On the contrary, in the Americas the popular oral tradition had more prestige, resulting in a lesser resistance to the diphthongized forms. In sum, the difference is explainable in terms of the degree of success that each society has had in eradicating these forms from ‘good conversation’.

In spite of the widespread use of diphthongized forms in Latin America, they are generally described as non-educated or vulgar forms, used by ‘ordinary people’. Batres-Jauregui (1904) lists diphthongized forms such as *‘lión’, ‘pión’, ‘rial’* as ‘vices’ of American Spanish pronunciation. Referring to Mexican Spanish, Moreno de Alba (1994) states that although hiatus diphthongization is a constant, it is still considered a characteristic of “low socio-cultural levels and rural areas more than of urban spaces.”

Concerning Colombian Spanish and the regional varieties selected for this study, previous research reports the gliding of mid/low vowels sequences as a characteristic of vulgar, rustic or peasant speech (Flórez 1951). A non-exhaustive list of the most commonly diphthongized forms in the Andean dialectal region includes over fifty examples (Flórez 1951). Caribbean Spanish, the second region considered in this paper, displays a profuse use of diphthongization as well. An evidence of that is the listing of over one hundred diphthongized forms of the type oa>ua, ea>ia, eo>io, ee>ie as a characteristic of coastal speech. (Cury-Lambrano 2004).

These two regions were selected based on the dialectal zones proposed by Lipsky (1994). They represent a well-acknowledged regional, cultural and linguistic distinction. Colombians are aware of the speech differences that distinguish “cachacos” (residents of the interior highlands) from “costeños” (coastal residents). The Andean zone (Central highlands) includes the capital of the country, which represents the prestige variety. The educated speech of Bogotá and other highland cities enjoys the popular reputation of being the ‘purest’ Spanish of Latin America (Lipsky 1994). People from this region are known for their more conservative and formal speech style as compared to other regions. The Caribbean variety on the other hand extends along the lowlands of the Atlantic shore and is characterized by its less formal and sometimes ‘careless’ speech style. Caribbean Spanish features (e.g. /s/ aspiration, preference for the ‘tú’ form) are often the object of jokes, or represent stereotypes. However, it is important to point out that in spite of the low prestige that this variety may have as compared with the capital speech, coastal speakers identify their speech features as a symbol of group or regional identity.

The consideration of dialectal variation and the prestige associated with each region adds to the study of hiatus resolution since it accounts for the speakers’ acceptance or avoidance of diphthongized forms.

3. Study set-up

3.1 Site and participants

The data analyzed in this study were collected from 17 (10 male, 7 female) Spanish monolingual speakers, aged 18-25. Participants were regular students at the Universidad Industrial de Santander in Bucaramanga, Colombia. The selection criterion was based on their education level (all of them were

college students) and their place of origin. Eight speakers were from Bucaramanga, a city located in the interior highlands (Andean Spanish), and nine were from the Departments of Cesar and Atlántico (Caribbean region).

3.2 Data collection

Speech material for this study was elicited through the recording of two different tasks. The first one consisted of a reading task, in which participants were asked to read a list of target words embedded in the carrier phrase “Digo _____ para ti”. In the second task participants were presented some pictures and were asked to narrate a story using the words they saw represented in the pictures. The target words used in the study (given in Table 1) were Spanish words containing the sequence IO pronounced as a diphthong and the sequence EO, which is pronounced as a hiatus according to the rule. In both tasks the target words were mixed with distracters. Words were classified in three different contexts with respect to the stress position (pretonic, tonic and posttonic).

Table 1
Target words

Category	Stress pattern		
	Pretonic	Tonic	Posttonic
Diphthong	violencia violín	misiones mansiones	cambios utensilios
Hiatus	leopardo teoría	peones acordeones	núcleos arbóreos

3.3. Procedure

An acoustic analysis on the pronunciation of adjacent vowels by Spanish native speakers was carried out to establish the degree of diphthongization. Considering the findings of previous studies, the duration of the segments and the formant values (F1) were the acoustic correlates selected to determine if a given sequence was pronounced as a diphthong or as a hiatus. Concerning the duration of the segments, previous studies (Aguilar 1999, Hualde & Prieto 2002, Face and Alvord 2003) have reported that hiatus sequences are pronounced with a considerable longer duration than diphthongs. The formant values (F1) were considered to establish changes in the vowel quality of one of the elements in mid/low vowel sequences. (i.e. The lower the value of the F1 in the first element of a mid/low vowel sequence, the higher the degree of diphthongization.) The duration and formant values were measured from a wave form and spectrogram produced by the Praat 4.3.20 software program.

4. Results

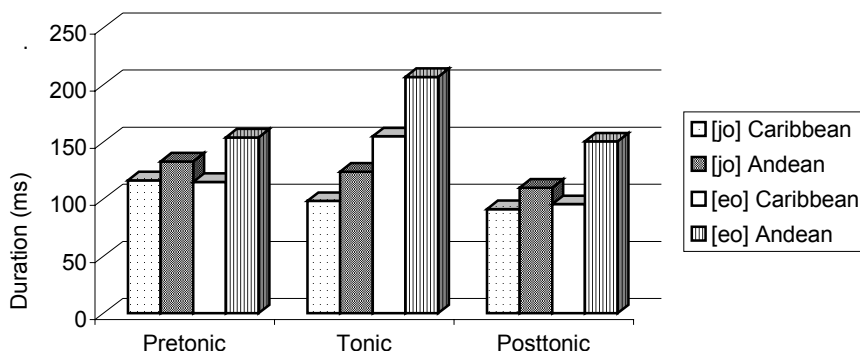
The results presented here are based on the analysis of 568 tokens extracted from the reading and story narration task. The duration and formant values of the hiatus sequence [eo] are compared with the values of the etymological diphthong [jo] to establish the degree of diphthongization of the former.

4.1 Reading task

4.1.1 Duration

The results of the reading task are presented in Figure 1. The vertical axis represents the mean duration of the VV sequences in milliseconds. This figure compares the duration of diphthong sequences [jo], as produced by Caribbean and Andean speakers, with the hiatus sequences [eo] in three different stress contexts (pretonic, tonic and posttonic). One-way analysis of variance tests (ANOVA) were applied to each stress group to establish significant differences. The compared results for the first two columns in each group (Caribbean [jo] vs. Andean [jo]) did not show a significant difference in the duration means; these findings correspond to the expectations for these sequences since they represent the pronunciation of etymological diphthongs.

Figure 1 Duration means compared (Caribbean vs. Andean)



On the contrary we note that a comparative test between etymological diphthongs [jo] and hiatus sequences [eo] shows important differences between Andean and Caribbean speakers. While Caribbean speakers do not display a significant difference between [jo] and [eo] in pretonic position (the duration mean values of the two columns are very close), Andean speakers pronounce the sequences [eo] with longer duration (ANOVA test, $P < .05$). In tonic and posttonic position, we observe the same tendency. Although in tonic position there is a significant difference between [jo] and [eo] for Caribbean Spanish ($P < .05$), the difference in the duration means is greater for Andean Spanish ($P < .01$). Considering the findings of previous studies, which report that hiatus sequences are pronounced with longer duration than diphthongs (Aguilar 1999, Hualde & Prieto 2002, Face and Alvord 2003), these initial results suggest that in Caribbean Spanish there is a higher tendency to diphthongize hiatus sequences (the duration difference between [jo] and [eo] is neutralized), while in Andean Spanish speakers tend to keep the contrast between diphthongs and hiatuses.

4.1.2 Frequency values

Formant values were measured to establish changes in the vowel quality of the sequence. In particular the values of the first formant (F1) are relevant for the purpose of this study since changes in this formant help to determine if the first vowel in the sequence [eo] rises to [j], indicating diphthongization. The F1 values were extracted by taking a manual measurement in the middle of the first vowel [e]. Results for pretonic and tonic position are summarized in Table 2. A one-way ANOVA test was run to establish significant variation between Caribbean and Andean Spanish. Observing the values in Table 2, we note that the Andean speakers display the highest F1 values both in pretonic and tonic position, indicating that the first element in the sequence remains as a mid vowel. On the contrary Caribbean speakers pronounce the [e] with lower F1 values, suggesting that in their articulation the first element is similar to a semiconsonant [j]. In tonic position Andean speakers display a greater difference between [jo] and [eo]. While for Caribbean speakers there is significant difference of $P > .05$, for Andean speakers the ANOVA test showed $P > .01$. These results suggest that although both Caribbean and Andean speakers keep the vowel quality contrast between [e] and [j], the former group's articulation has a higher tendency to be neutralized.

Table 2
Formant values (F1), Reading Task

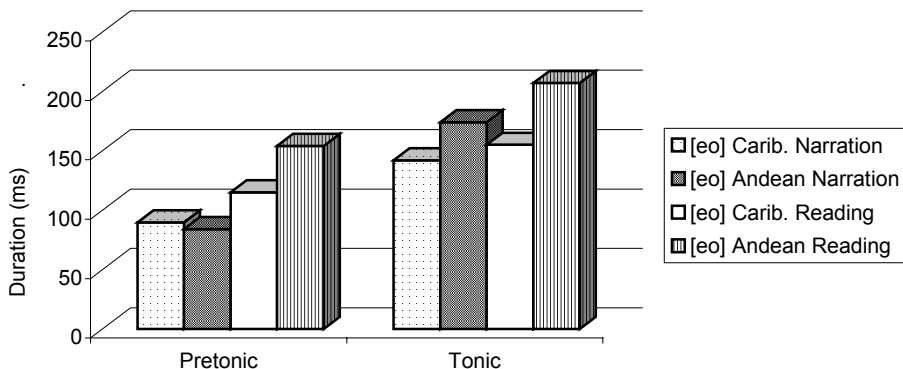
	Region	N	F1 (Hz)
Pretonic			
[jo]	Caribbean	40	321.34
[jo]	Andean	46	349.67
[eo]	Caribbean	48	409.60
[eo]	Andean	48	476.39
Tonic			
[jo]	Caribbean	50	363.32
[jo]	Andean	48	395.14
[eo]	Caribbean	48	392.53
[eo]	Andean	47	448.19

4.2 Narration task vs. Reading task

4.2.1 Duration

The narration task was designed to elicit the pronunciation of the sequence [eo] in a more informal or spontaneous style. Figure 2 compares the duration means for the narration and the reading task in pretonic and tonic position.

Figure 2 Duration means compared (Narration vs. reading)



The bar graph shows that speakers pronounce sequences in the reading task with longer duration, as expected in formal style. However, we notice a significant difference ($P < .01$) in the pronunciation of [eo] between Andean and Caribbean speakers. On the contrary the sequences in the narration task display shorter duration and the regional difference displayed in the reading task is not highly marked. The neutralization of the regional contrast in the narration task indicates that style is also a constraining factor in the diphongization of mid/low vowel sequences. For Andean speakers the contrast hiatus/diphthong is clearly displayed in formal or careful style, but tends to disappear in more informal speech.

4.2.2 Frequency values

Comparative results of the F1 values for the narration and the reading task (in pretonic position) show that in the former the difference between Caribbean and Andean is minimal. On the contrary, in the reading task there is a significant difference ($P < .05$), indicating again that in formal style the contrast diphthong/hiatus tends to be kept. In tonic position the differences were not significant.

The overall pattern of the F1 values shows that Caribbean speakers display the lowest frequencies in both narration and reading, while Andean speakers articulate the first element of the sequence [eo] with higher F1 values, which correspond to the quality of a mid vowel.

Table 3
Formant values (F1), Narration Task

Region	Task	N	F1 (Hz)
Pretonic			
[eo] Caribbean	Narration	9	448.22
[eo] Andean	Narration	9	451.11
[eo] Caribbean	Reading	48	409.60
[eo] Andean	Reading	48	476.39
Tonic			
[eo] Caribbean	Narration	11	373.72
[eo] Andean	Narration	10	419.1
[eo] Caribbean	Reading	48	392.53
[eo] Andean	Reading	47	448.19

5. Discussion

This study has shown that there is dialectal/ regional variation in the diphthongization of mid/low vowel sequences in Colombian Spanish. Results from both the reading and the narration task suggest that there is a higher tendency to diphthongize in Caribbean Spanish as compared with speakers from the city of Bucaramanga (Andean Spanish). These results indicate that in addition to the internal linguistic factors, which were controlled in this experimental study, the resolution of hiatus sequences is constrained by external factors. Differences between regions in the evolution of this sound change support the variationist approach which contends that sound change does not get initiated in the language, but in the different communities of speakers that make use of it (Milroy 2003).

If region is a relevant variant, an important question to answer is what contributes to the avoidance or incorporation of diphthongized forms into the speech of a particular variety. This issue may be discussed in terms of language attitude and “acts of identity” (Le Page and Tabouret-Keller, 1985). The greater usage of the diphthongized forms in Caribbean Spanish may be associated with their ‘attitude’ towards the linguistic features that characterize their regional variety. Coastal speakers are aware of the fact that for the rest of the country they represent the ‘costeños’, a region that differentiates by its speech style and culture. ‘Costeños’ want to perpetuate that difference because it makes part of their identity. The diphthongization of mid/low vowel sequences is widely accepted by coastal speakers because it represents a characteristic of their speech. In a recent publication on ‘*costeñol*’ (name chosen by the author to refer to the Spanish variety spoken on the Atlantic coast) Cury-Lambrano (2004) includes an extensive list of diphthongized forms as part of the coastal lexicon.

The Andean region, on the contrary, characterizes by its tendency to preserve the ‘good speech’ reputation that the region enjoys. The stigmatization of diphthongized forms as signs of rustic, vulgar, or non-educated speech has contributed to its identification as a stereotype. Moncayo-Rosales (1991) reports frequent cases of diphthongization (e.g. *pión*, *pior*, *puaquí*, *quihubo*) in rural Spanish of Santander (the province where the Andean speakers of this study came from), a region in which rural or peasant speech is generally associated with ‘backwardness’ (Moncayo-Rosales 1991).

According to Labov (2001) “the fact that speakers talk in certain ways is taken as evidence for their desire to be identified with or be differentiated from a particular group”. In this particular case the two dialectal variants under study may be aiming at different directions. Coastal speakers use diphthongization as an identity mark, and Andean speakers avoid diphthongization because they do not want to be identified with the rural or peasant speech group.

The results from the narration task, which were elicited to be contrasted with the reading task, constitute another source of evidence for the relevance of extra linguistic factors in diphthongization.

Speakers' articulation of mid/low vowel sequences varies according to the task. For the narration task, which represents an informal speech style, the differentiation between Caribbean and Andean speakers is almost neutralized. On the contrary for the reading task, which represents formal and careful speech style, the results show a differentiation between the two dialectal regions. The dialectal difference is more evident in formal or careful style.

6. Conclusion

The diphthongization of non-high vocoid sequences is influenced by different factors. In addition to the internal forces, it is affected by the social context. The acoustic analysis of the articulation of these sequences by Colombian Caribbean and Andean speakers have shown that there is a regional differentiation. Results from Caribbean speakers display a higher tendency to diphthongization than Andean speakers. It has been argued that this differentiation may be related to the subjects' attitude towards the diphthongized forms. While people from the highlands (Andean) see them as stigmatized forms and try to avoid them, coastal speakers see them as part of their speech identity. In addition it has been shown that the pronunciation of hiatus sequences is affected by style. The contrast hiatus/diphthong and the differentiation in articulation between coastal and high-mountain speakers is clearly established only in formal and careful speech. In informal style the difference tends to be neutralized. Future studies will need to further examine the influence of other social factors such as sex, social class, and education.

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