

On Southwestern *Sinalefa*

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In rapid speech, Spanish phrases that contain a vowel sequence across a word boundary can undergo a process of syllable contraction known as *sinalefa* (cf. Hualde 2005). One of the two vowels of the sequence must minimally lose its syllabic feature in this process. Two common results of *sinalefa* are gliding and vowel coalescence. In Castilian Spanish, acoustic analyses show that there are three possible results of *sinalefa* for sequences with an initial mid-vowel: a high-glide in the second position (V2), a mid-glide in the V1 position, or vowel coalescence (see Hualde, Simonet & Torreira, 2008). [See patterns and examples of Castilian *sinalefa* in (1)].

For the Spanish spoken in the US Southwest, impressionistic observations maintain that glides in V2 position are not permitted when speakers produce *sinalefa*. This restriction is said to affect mid-vowel gliding. Mid front vowels result in a high-front glide in a process I will refer to as *palatalized gliding*, /e/ > [i], and mid back vowels result in a high-back glide in a process I will call *velarized gliding*, /o/ > [u]. Vowel coalescence is also said to be more frequent in this dialect and to follow a pattern different from other dialects (Martinez-Gil 2000, Bakovic 2006, Colina 2009). [See patterns and examples of Southwestern *sinalefa* in (2).] **Goal:** The present paper reports the results of a phonetic production experiment of Southwestern *sinalefa*.

Method: Eight (8) female Spanish-English early-onset, proficient bilinguals from Southern Arizona participated in a speech-shadowing task in which they repeated Spanish phrases in which *sinalefa* was possible. All phrases had a /CV#VC/ sequence in which the consonants were bilabials, the first vowel was always a mid-vowel (/e o/) and the second vowel was any of the phonemic Spanish vowels (/i e a o u/). Five phrases were constructed for each of the ten possible vowel sequences. Four versions of each phrase were created as stimuli for the shadowing task: an unaltered male voice, a temporally condensed male voice, an unaltered female voice, and a temporally condensed female voice. Gaussian noise was inserted to each stimulus to minimize effects of acoustic imitation of the stimulus. The study found 1107 utterances in which syllable contraction occurred in the target sequences. Formant values were extracted for each utterance at 20%, 40%, 60% and 80% of each vowel sequence. This was done to assess the coarticulatory patterns of these vowels and their dynamicity. Linear regression was the statistical test of choice.

Findings: The contracted sequences /e#e/ and /o#o/ were considered monophthongs and used for comparison with other sequences to evaluate the acoustic behavior of those sequences, i.e. they were considered baseline tokens. **(1)** An analysis of sequences /e#i/ and /o#u/ revealed significantly more formant movement (measured as the Euclidean Distance across points between 20% and 80% of the sequence) for these two sequences than for the sequences /e#e/ and /o#o/ respectively. Consequently, these speakers did not produce coalesced vowels for the sequences /e#i/ and /o#u/ when they produced *sinalefa*. **(2)** Figure 1 shows F1 and F2 values for /e/-initial sequences at 20% of the sequence. A *palatalized* glide should have F1 and F2 values moving in the same direction as the coarticulated /e/ in the sequence /e#i/ relative to the /e/ in the sequence /e#e/. These speakers, therefore, did not produce *palatalized* glides for the sequences /e#u/, /e#o/, and /e#a/. **(3)** Figure 2 shows F1 and F2 values for /o/-initial sequences at 20% of the sequence. A *velarized* glide should have F1 and F2 values moving in the same direction as the coarticulated /o/ in the sequence /o#u/ relative to the /o/ in the sequence /o#o/. These speakers, likewise, did not produce *velarized* glides for the sequences /o#i/, /o#e/, and /o#a/. **(4)** Finally, it was found that mid-vowels in mid + mid (/e#o/, /o#e/) sequences are more susceptible to coarticulation in the V2 position, rather than in the V1 position. This suggests that the second vowel, rather than the first, glides in these sequences for these speakers.

Conclusion: The results of the present acoustic study find robust evidence for a process of assimilatory coarticulation not dissimilar from that reported in other dialects but no evidence for Southwestern *sinalefa* as it has been described in the phonological literature (see citations above). I will discuss reasons and implications of these findings.

(1) *Sinalefa* in Castilian Spanish

- a. High-glide: /o#i/ > [oi̯]; /o#u/ > [ou̯]
- b. Mid-glide: /o#e/ > [œ̯]; /o#a/ > [ɔ̯]
- c. Coalescence: /o#o/ > [o]

(2) *Sinalefa* in Southwestern Spanish

- a. Palatalized gliding: /e#u/ > [iu̯]; /e#o/ > [io̯]; /e#a/ > [ia̯]
- b. Velarized gliding: /o#i/ > [ui̯]; /o#e/ > [ue̯]; /o#a/ > [ua̯]
- c. Coalescence: /o#o/ > [o]; /e#e/ > [e]; /o#u/ > [u]; /e#i/ > [i]

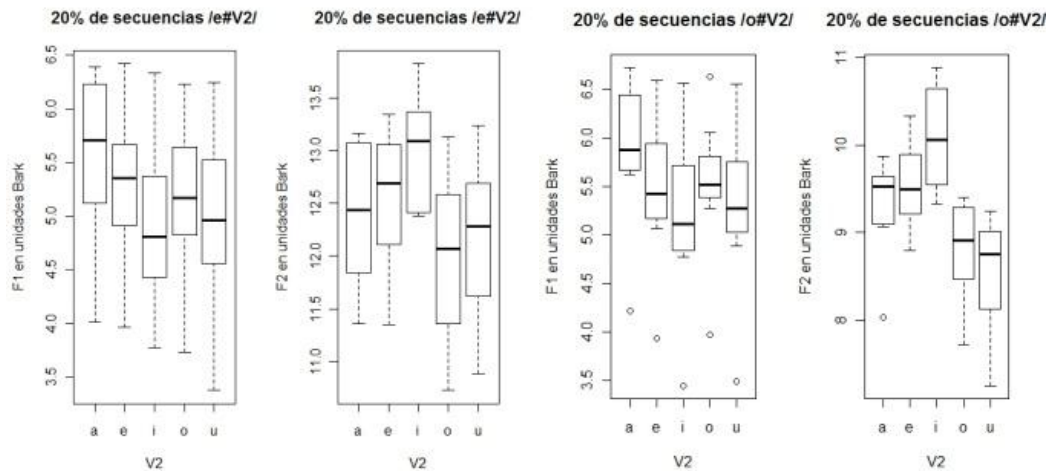


Figure 1. /ei/, /ee/, /ea/, /eo/, /eu/.

Figure 2. /oi/, /oe/, /oa/, /oo/, /ou/