

**Nasal coda weakening and regressive vowel nasalization:
Uncoupled regional markers in Spanish**
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Introduction: In Spanish, nasal codas /n, m/ assimilate to the place of articulation of the following consonant and, if followed by a pause, only /n/ occurs word-finally (Harris, 1969). However, in Caribbean Spanish dialects as well as in Andalusian and Extremaduran varieties, nasal codas may be weakened, i.e. velarized or elided, both word-medially and word-finally. Sociolinguistic studies have found regional, linguistic, and social variation regarding the frequency of velarization and elision in the different Caribbean varieties (Terrell, 1975; Cedergren & Sankoff, 1975; D’Introno & Sosa, 1988; Sampson, 1999; Colantoni & Kochetov, 2012). In addition, some studies have reported that, when the nasal coda is weakened, the previous vowel is nasalized (Cedergren & Sankoff, 1975; Quilis, 1993).

Objective: The present study aims to establish if the weakening of nasal codas causes a phonological nasalization process in Caribbean Spanish by determining whether (a) the degree of nasalization is higher in Caribbean Spanish than in non-Caribbean Spanish, (b) nasalization is categorical or gradient, (c) the same or different factors affect the nasalization process in the two varieties, and (d) the degree of nasalization is higher when the vowel is followed by a weakened nasal coda in Caribbean Spanish.

Methodology: A grand total of 125 tokens were extracted from the corpora *Spanish Audio Gazette* and *University of Toronto Romance Phonetics Database*. Recordings of short stories read by 3 Caribbean speakers (Cuba, Dominican Republic, Venezuela) and 2 non-Caribbean speakers (Mexico, Argentina) were used (25 tokens per individual). The F1 bandwidth of vowels followed by a nasal coda was measured at three points in each vowel (25%, 50%, and 75%) in Praat (Boersma & Weenink, 2014) to establish the degree of nasality. The duration of vowels and their corresponding codas was also measured and the following factors were considered: previous segment, number of nasal segments in the word, place of articulation of the coda, manner of articulation of the segment following the coda, syllable stress, and intonation.

Results and discussion: The acoustic analysis showed that (a) the F1 bandwidth average was 57 Hz higher for the vowels produced by Caribbean speakers than by non-Caribbean speakers, (b) although nasalization was categorical in the Caribbean variety, there was a bandwidth increase between the second and third points of the vowels in both varieties (37 and 20 Hz, respectively), (c) different factors affected the nasalization process in the two varieties with a stronger sensitivity to surrounding nasal segments in Caribbean Spanish, and (d) the weakening of the coda, based on its duration and place of articulation (alveolar vs. velar), did not have an effect on nasalization in the Caribbean variety.

Conclusion: Although these results cannot be generalized to spontaneous speech, the categorically higher F1 bandwidth in the vowels produced by Caribbean speakers and the finding that surrounding nasal segments other than the coda also affect nasalization indicate that this process is not merely coarticulatory, but also phonological in the Caribbean variety. However, as Hajek (1997) argued, this phenomenon appears to be uncoupled from the weakening of nasal codas and it should therefore be investigated separately to better understand the evolution of nasalized vowels in Spanish and other Romance languages.

References

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