The Syllabification of Vowel Sequences in Spanish and Brazilian Portuguese
Daniel Scarpace, University of Illinois, Urbana-Champaign

The notion of the syllable is fundamental to a great deal of phonological research, but objective methods for measuring where syllables begin and end are lacking. Traditionally, syllabification is determined by appealing to native speaker intuitions of how many syllables are in a word (Blevins 1995:209). Syllabification can be problematic in words with vowel sequences: the sequence can be disyllabic, i.e. vowels in hiatus, or monosyllabic, i.e. a diphthong. Syllabification may also be affected by prosodic position in the word. The difference between hiatuses and diphthongs is difficult to measure acoustically. This study seeks to find acoustic correlates of the syllabification of the vowel-sequence /Ciá/ where the non-high vocoid is stressed. In this study, vowel-sequence duration and F0 alignment are used as potential acoustic correlates of syllabification in Brazilian Portuguese (BP) as well as Mexican Spanish (MS). Differences in vowel-sequence duration are found between initial and medial positions in different prosodic environments in both BP and MS, although to different degrees. F0 alignment, for the most part, offers corroborating evidence for syllabification.

Vowel-sequence duration has been used to explain differences in speakers’ intuitions regarding syllabification of /Ciá/ sequences. Hiatus realizations have longer total durations than diphthong realizations (Hualde & Prieto 2002, Chitoran & Hualde 2007). The start of rising F0 contours is known align with the onset of the stressed syllable (Torreira 2007, Ladd & Schepman 2003). Speaker intuitions are also used to show contrasts in syllabification (Simonet 2005, Cabrè & Prieto 2007). Previous work on Portuguese has shown that all vowel sequences of the type /Ciá/ syllabify as [Ci.a] regardless of position (Chitoran & Hualde 2007, Mateus & d’Andrade 2000) but may syllabify as [Cja] for some speakers (Mateus & d’Andrade 2000). In Peninsular Spanish, word initial /CiV/ are syllabified as hiatuses (except for /Cie/) while word medial /CiV/ are syllabified as diphthongs (Chitoran & Hualde 2007). No published work has focused on Latin American Spanish, although anecdotal evidence has hypothesized that /CiV/ sequences surface as diphthongs in all positions (Hualde 1999).

Torreira 2007 reports that for Castilian Spanish initial vowel sequences, which are syllabified as [Ci.a], show a late F0 rise, whereas medial vowel sequences, which are syllabified as [Cja], manifest an early F0 rise and pattern with /Ca/ type words. If BP or MS has a syllabification contrast for sequences occurring in initial and medial position, the results will be identical. If both initial and medial sequences are [Ci.a] as has been reported for Portuguese, both categories should manifest late F0 rises. If the sequences in initial and medial positions syllabify differently, their durations should be significantly different from each other. If they syllabify the same way, their durations should be similar.

In the present study, five BP speakers and six MS speakers read words aloud in a carrier phrase with a rising accent over the stressed /a/ in the target word. Six words contained the sequence /lia/ in word-initial position, six words contained the sequence /lia/ in word-medial position, and three words contained an initial /la/ syllable with no sequence of vowels. Words plus fillers were repeated three times. Speakers later were asked for their syllabic intuitions of these words. F0 contours were measured from the onset of the /l/ segment to the upcoming peak; a second-order polynomial function was fitted to the curve and its coefficients were analyzed. The duration of the /lia/ sequence was measured separately. Additionally, Mexican Spanish speakers were recorded producing /ie/ and /io/ in both initial and medial positions.

In BP, both initial and medial vowel sequences manifest later F0 rises than rises in monophthongs, although initial rises are later than medial rises. For the duration measurement, initial sequences were significantly longer than medial sequences (pace Chitoran & Hualde 2007) suggesting that the two categories syllabify differently. Speakers’ intuitions of the two categories did not differ significantly; the speakers preferred a hiatus pronunciation for all words. For MS, F0 rises for initial and medial sequences occurred no later than rises for monophthongs, but duration measurements show that initial sequences are longer than medial sequences. Speakers’ showed differences between the categories as well. However, MS /Cie/ sequences did not differ between initial and medial positions, suggesting that these sequences have been phonologized as diphthongs and are not subject to word-initial lengthening effects.
Works Cited


