Weakening of intervocalic stops in Colombian Spanish
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Various studies have shown that intervocalic stop weakening in Spanish is a variable process affected by factors such as syllable stress, phonetic context and speech style (e.g., Cole, Hualde & Iskarous, 1999; Lewis, 2001; Ortega-Llebaria, 2004). Moreover, studies have found that the degree of lenition varies as a function of the Spanish dialect (e.g., Lewis, 2000, for Peninsular and Colombian Spanish). The majority of the studies on lenition can be categorized based on two types of analyses: articulatory models (e.g., Kirchner, 2004) and perceptual models (e.g., Kingston, 2008). Although many studies have focused on lenition, not many have investigated the process in a dialect where voiced stops are not weakened. In contrast with other Spanish varieties, Colombian Spanish (CS) is described as having a wider distribution of the voiced stops, where these can appear even in intervocalic position (Hualde, 2005, p.143). Furthermore, few studies have investigated lenition of both voiced and voiceless stops in the same dialect. As such, the present study aims to investigate whether Kirchner’s (2004) articulatory model can account for the degree of lenition of intervocalic /p t k b d g/ in CS.

Based on Kirchner’s (2004) model, three hypotheses were tested: Hypothesis 1: Voiced stops are expected to be more lenited than voiceless ones. Voiced stops require more articulatory effort, since it is more difficult to maintain voicing during closure (Piñeros, 2002; Solé, 2013, p.134); Hypothesis 2: Stops that are flanked by open vowels will be more lenited (Kirchner, 2004, p.316). If the stop is flanked by open vowels, the articulator is already in a more open position. In this case, it would require more effort to arrive at a point of constriction in order to produce the stop; therefore, the stop will be lenited; Hypothesis 3: Neither syllable stress, nor place of articulation, will affect the degree of lenition (Kirchner, 2004). To test these hypotheses, 659 stimuli with stops in intervocalic position were extracted from the University of Toronto Romance Phonetics Database¹. The stimuli were recorded by 4 native speakers of CS, who produced the target words in two reading tasks and two spontaneous tasks. To quantify the degree of lenition, the following parameters were measured using Praat (Boersma & Weenink, 2011): the duration of the closure portion of the stop and the duration of the lenited consonant (Lavoie, 2001; Lewis, 2001), and the intensity difference between the lowest value in the target consonant and the highest value in the following vowel (Lewis, 2001). A shorter duration and a smaller intensity difference were taken to indicate a higher degree of lenition (Colantoni & Marinescu, 2010).

Results demonstrate that voiceless stops show almost no signs of weakening when compared to voiced stops – the voiceless stops were longer than the voiced ones (103 ms versus 66 ms, respectively) and the intensity difference was smaller for the voiced stops (7 dB versus 25 dB, respectively). This is consistent with Kirchner’s (2004) first hypothesis. Kirchner’s (2004) second hypothesis was not supported, as no clear patterns emerged with regard to flanking vowels. It was not always the case that segments flanked by /a/ were more lenited; in fact, only /g/ was more lenited when flanked by /a/ – its duration was shorter and it had a smaller intensity difference – but this was not true for the other stops. The third hypothesis was not supported, as the type of syllable had a clear effect on the degree of lenition. Specifically, all of the stops were longer in stressed syllables (95 ms versus 80 ms) and had a smaller intensity difference than in unstressed syllables (18 dB versus 13 dB). Taken together, these findings show that an effort-based model cannot fully account for lenition in CS. Moreover, the results for CS show that this dialect may be situated at an earlier stage of the lenition continuum than Argentine Spanish (AS), since the CS

¹ http://rpd.chass.utoronto.ca/
consonants were longer and had higher intensity differences than the values reported by Colantoni & Marinescu (2010) for AS.

References
Kirchner, R. (2004). Consonant lenition, B. Hayes, R. Kirchner, & D. Steriade, (Eds.), Phonetically Based Phonology, (pp. 313-345), Cambridge, UK: Cambridge University Press.