A Lenition Continuum: Relative Intensity of Spanish Stop Consonants /ptk/ and /bdg/

Previous work on consonant lenition has focused on the driving factors behind language variation and change; however, most studies do not provide acoustic data on stop consonant variation or the effects of linguistic and extralinguistic factors. Regarding dialectal variation, many scholars have acoustically analyzed only one or two varieties per study; for example, Hualde (2014) and Offedal (1985) show voicing of /ptk/ in some Spanish varieties, Lewis (2001) and Colantoni & Marinescu (2010) highlight varieties that exhibit more occluded realizations of /ptk/, and Carrasco, Hualde & Simonet (2012) identify still other varieties with occlusive realizations of /bdg/ where spirants are expected [βðɣ]. Based on previous acoustic studies which have focused on either voiceless /ptk/ or voiced /bdg/, my study analyzes and compares both /ptk/ and /bdg/ across multiple varieties of Spanish within the same study, providing commentary on the current state of their variation across the Spanish-speaking world and generating a lenition continuum (see Figure 1) ranging from conservative non-leniting varieties to innovative weakening varieties.

Using PRAAT (Boersma & Weenink 2013), I acoustically analyzed the relative intensity of intervocalic /ptk/ and /bdg/ (Lavoie 2001; Lewis 2001). The data, extracted from the Atlas interactivo de la entonación del español (Prieto & Roseano 2009-2013) corpus, comes from native speakers of the following regions: Spain (n=5), the Canary Islands (n=2), Argentina (n=4), Chile (n=2), Mexico (n=3), the Caribbean (n=2) and the Andes (n=5). The varieties were selected based on their wide geographical range and because the Spanish of each of these regions is characteristically distinct from the others (Hualde 2005; Lipski 1994). To determine statistical significance, I employed R (R Core Team 2012) and lmerTest (Kuznetsova, Brockhoff & Christensen 2017) to perform a linear mixed effects analysis of the relationship between relative intensity and the independent variables investigated: phoneme, sonority, point of articulation, lexical stress, prosodic position, and region using a series of chi-square tests. The data show that while /ptk/ and /bdg/ remain distinct categories within each variety, the degree of occlusion varies significantly inter-dialectally; particularly noteworthy is that segments /ptk/ and /bdg/ are significantly more occluded in Mexican Spanish than in Peninsular and Caribbean varieties, where /bdg/ often experience total deletion. The data also show a slight overlap of the production of the most radical, less occluded /ptk/ in Caribbean Spanish with the most conservative production of /bdg/ in Mexican Spanish, yielding implications for future work on consonant perception.

The acoustic nature of this study on synchronic lenition across different varieties of Spanish contributes to the field of Spanish Linguistics by making suggestive points regarding diachronic language change, the evolution of multiple Spanish varieties, and the geographical spread of the phenomenon of consonant lenition. Acoustically analyzed synchronic data sheds light on processes that could drive diachronic language change by creating a present-day model to show how linguistic and extralinguistic factors play a role in consonant lenition variation and comparing it to similar consonant lenition variation of the past (Labov 1972, 1974).

Word Count: 490
Figure 1. Proposed lenition continuum based on the results of this study.

<table>
<thead>
<tr>
<th>Conservative</th>
<th>Slight/Sporadic</th>
<th>Progressive</th>
<th>Innovative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-leniting</td>
<td>Weakening</td>
<td>Weakening</td>
<td>Weakening</td>
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Bibliography


