Names: Rebeka Campos-Astorkiza, Paige Cordero, Katriese DeLeon and Shannon Sullivan

Affiliation: Ohio State University

Emails: campos-astorkiza.1@osu.edu, cordero.31@osu.edu, deleon.88@osu.edu, sullivan.1114@osu.edu

Paper title: Creating new categories vs. learning new distributions in L2: Acquisition of Spanish voiced stops by L1 English learners

Creating new categories vs. learning new distributions in L2:

Acquisition of Spanish voiced stops by L1 English learners

Theories of SLA highlight the role of the (dis)similarity between L1 and L2 sounds in explaining patterns of acquisition of new L2 sounds (Flege 1995, Best & Tyler 2007). However, L2 acquisition might also involve learning new L2 distributions for sounds present in the L1. This study compares these two SLA scenarios by analyzing the acquisition of the Spanish voiced stop allophones by L1 English speakers. In this case learners need to acquire a new set of allophones, i.e. the weakened approximants [β̞, ð̞, ɣ̞], and a new distribution for their L1 voiced stop allophones, namely [p, t, k] and [b, d, g], since voiceless stops are allophones only of /p, t, k/ in Spanish. Previous studies on L2 Spanish /b, d, g/ focus mainly on the acquisition of the approximant allophones (e.g. Lord 2010, Face & Menke 2009, Alvord & Christiansen 2012). While some work examines stop allophones production for Spanish voiceless and voiced stops (see Face & Menke 2020), there is a need to build a more comprehensive analysis that includes all allophones of /b, d, g/ and compares the acquisition of the two scenarios mentioned earlier. Thus, we consider a range of productions, including voiceless stops and approximants, and examine a variety of contexts to contribute to our understanding of the difference between learning a new distribution of allophones vs. new sounds. In addition, the acquisition of approximant allophones has been analyzed either categorically, i.e. voiced stop vs. approximant (see references above), or gradiently, i.e. using the Consonant-to-Vowel (CV)-intensity ratio to capture the degree of weakening (e.g. Rogers & Alvord 2014, Bongiovanni at al. 2015). Only a couple of studies combine these two methodological approaches: Solon et al. (2018) to analyze L2 Spanish /d/ and Face (2018) to examine very advanced learners. We expand on these by using both types of analyses to examine intermediate learners. Taking all of this into consideration, our research questions are: (i) how do voiced stops categorical realizations, i.e. approximants, voiced stops and voiceless stops, change in the acquisition process? (ii) how does the degree of weakening as manifested in the CV-intensity ratio change in the acquisition process?

The data comes from a bigger project that combines pedagogy and research. More precisely, it comes from a teaching module developed for college-level Spanish Pronunciation courses at a major Midwestern university. In this module, students record themselves reading a list of words in isolation via a web-based interface and get instant feedback on their pronunciation via that interface. Students complete the module at the beginning (time point T1) and end of the semester (time point T2) – we can compare their production at T1 vs. T2 and analyze any changes as manifestations of the students' acquisition process. Data from 30 learners was examined. Tokens of /b, d, g/ in different contexts (word medial vs. initial) were acoustically analyzed for two dependent variables: type of allophone (voiced stop, voiceless stop, approximant) and CV-intensity ratio. We tested the effect of time point (T1 vs. T2), stress, position and place of articulation on the two dependent variables using linear and multinomial regression (only the most relevant results are discussed below).

For the type of allophone variable, results indicate a significant increase in approximants, a decrease in voiced stops and a small change in voiceless stops in T2 compared to T1. As Fig. 1 shows, there is an effect of position: most voiceless stops occur initially, as expected since this context correlates with utterance-initial position and voiceless allophones of /b, d, g/ in English are common in this context. This initial effect decreases in T2 in favor of voiced stops and even some approximants (Fig. 1). However, the change in type of allophone is greater in word-medial contexts where the rate of approximants changes from 50% to 73% (Fig. 1). We argue that the smaller change in type of realization initially than medially suggests that learning a new distribution of L1 allophones, voiced stops in utterance-initial position, is more challenging than learning the new approximant allophones in medial position. Further evidence for this is the presence of approximants utterance-initially in T2.

As for the CV-intensity ratio, this variable is higher in T2, in unstressed positions, and in word-medial positions, indicating that these contexts present the highest degree of weakening. The positional effects mirror those found for native Spanish speakers (Carrasco et al. 2012). Consequently, we conclude that learners not only become more native-like in their production of approximants but also in the degree of weakening depending on context.

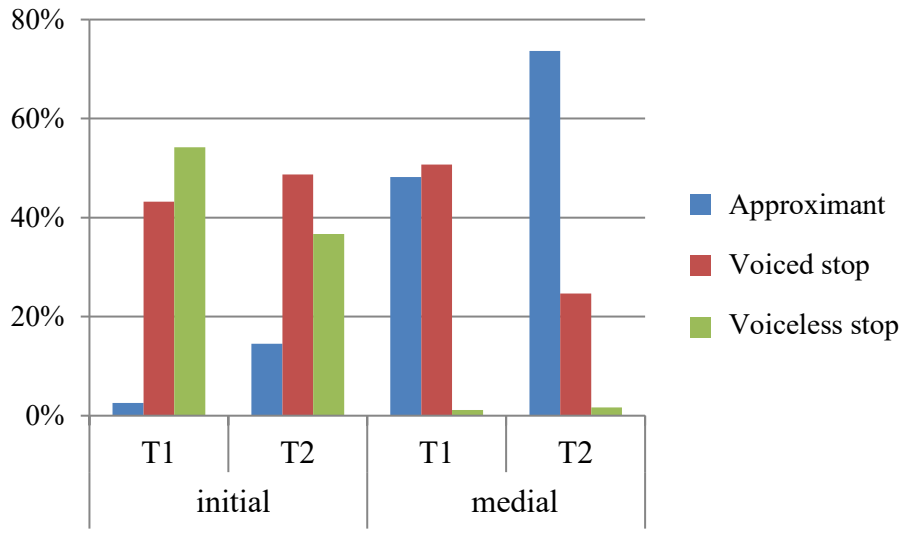

Fig. 1 Percentage of types of realization by timepoint (T1 & T2) & position

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