

Redefining Sociophonetic Competence: Mapping COG Differences in Phrase-Final Vowel Devoicing in L1 & L2 speakers of French

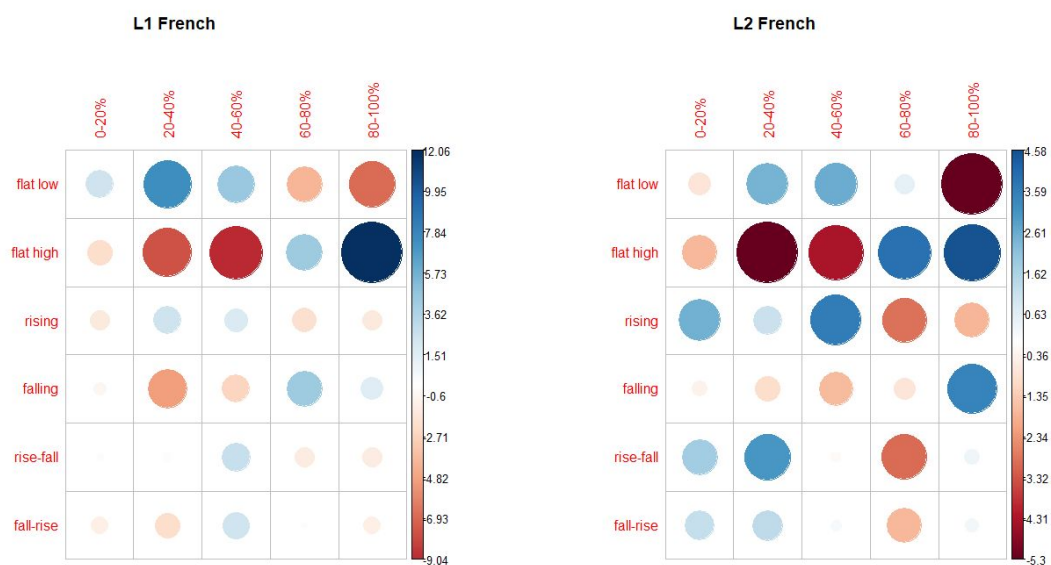
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Phrase-final vowel devoicing (PFVD) is a phenomenon of Continental French (CF) in which utterance-final vowels lose their voicing and produce intense fricative-like whistles, e.g. *mais oui_hhh*. In its initial observation, Fónagy (1989) speculated that PFVD's phrase-final whistles weren't uniform in nature, but rather corresponded to the identity of the host vowel. A subsequent center of gravity (COG) analysis of devoiced French /i,y,u/ corroborated this, reporting significant differences in each vowel's spectral energy during the first half of the segment (Dalola, 2015). Much of the scholarship on PFVD has documented its phonological and pragmatic conditioning, pinpointing its most robust occurrence to high vowels (/i,y,u/) (Fónagy, 1989; Smith, 2003; Martin, 2004; Fagyal & Moisset, 1999), read speech (Fagyal & Moisset, 1999; Dalola, 2015), following stop consonants (Dalola, 2015), intonation phrase finally (Fagyal & Moisset, 1999; Smith, 2003), declarative phrase finally (Fagyal & Moisset, 1999; Smith, 2002) and in words with high lexical frequency (Dalola, 2015). Although characteristic of native CF speakers, PFVD has also been attested in L2 French speakers (Dalola, 2014; Dalola & Bullock, 2017). Differences in L1 and L2 PFVD have been examined in terms of both production and perception. Dalola (2014) reported production differences across speaker groups in percent devoicing, while Dalola & Bullock (2017) found differences for vowel type, speech rate, register and constituent location. A perception task revealed speaker group differences in not only the features associated with the phenomenon, e.g. *middle class*, *formal*, etc., but also in its overall affective value (positive or negative) (Dalola, in progress). It is thus the goal of the present study to extend previous COG investigations of L1 PFVD to a population of advanced L2 French speakers, in order to understand at the most primitive level if and how the phenomenon can be said to differ in terms of articulation across speaker groups.

40 speakers of CF (31 L1, 9 L2) completed a reading task targeting 98 tokens of /i,y,u/ in phrase-final position. The final vowel of target words was examined for presence of PFVD, assessed via the loss of voicing and the onset of high-frequency aperiodic energy. Praat scripts were used to measure PFVD segments for duration and COG at the 25%, 50% and 75% marks (Erker, 2010). Normalized measures were submitted to mixed linear regression. Results revealed significant interactions between percent devoicing and speaker group, such that L2 speakers showed higher COG values than L1 speakers in low PFVD-to-vowel ratios at the 25% ($p=.011$), 50% ($p<.001$), and 75% marks ($p=.006$). Because vowels with greater backness and lower percent devoicing exhibited lower COG values, COG measures were categorized into profile types on the

basis of their frequencies over the three timepoints. Measures at each point were categorized as high, medium, or low, and the resulting contours (e.g. HML, MHH, LLL) were classified into six profile types: flat-low (LLL), flat-high (MMM, HHH), rising, falling, rising-falling, and falling-rising. Counts of COG profile were then submitted to multinomial logistic regression. Results revealed a significant effect for speaker group: While L1 speakers produced predominantly flat-low profile types at lower percent devoicings, L2 speakers preferred multiple strategies involving high levels of articulatory energy (rising, falling, rise-fall; see Figure 1). These results suggest that, while L1 speakers realize PFVD differently with respect to phonological context, L2 speakers rely on its most common allophone, strong frication, in most contexts. The implications of this study for sociophonetics and L2 acquisition are significant because it argues for an additional phonetic dimension to the construct of “L2 sociophonetic competence” (Dalola & Bullock, 2017).

Figure 1. PFVD COG Profile Type by Percent Devoicing



Works Cited

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