Spanish non-continuants at the prosody-phonetics interface

The Spanish of Gran Canaria has been reported to have post-vocalic voicing (/p t k tʃ/ -> [b d g ɟ]) inside words and across word boundaries (e.g. Oftedal 1985): *apasionado* [a.**b**a.sjo.na.ðo̞] 'enthusiastic', *fonetica* [fo.ne.**d**i.**g**a] 'phonetics', *tengo una prima* [teŋ.go.u.na.**b**ri.ma] 'I have a cousin', etc. What is more, the process is blocked after vowels which become adjacent to the stop as a result of elision: *caracteristicas* [ka.rak.te.ri.**t**i.ga] features' (*[ka.rak.te.ri.**d**i.ga]), *hacer tonterias* [a.se.**t**on.te.ri.a] (*[a.se.**d**on.te.ri.a]). Thus, coda consonant deletion seems to be of consequence for the phonology: an otherwise extended process of voicing is blocked in the speech of the same speaker that produces voicing elsewhere in the same utterance. At the same time, deletion does not block other phonological processes, such as spirantisation. Given these observations, it can be concluded that both post-vocalic voicing and coda elision are connected speech phenomena belonging to the phonological component.

This study challenges the abovementioned assumption. The data gathered in the course of an experiment conducted among 20 native speakers suggest that the process of post-vocalic voicing is highly coarticulatory and phonetic rather than phonological. First, it can be either partial or total, with inter- and intraspeaker variation. Second, substantial statistical differences can be observed in the frequency of voicing between dorsals (*k* tʃ) and non-dorsals (*p t*). Finally, whereas word-internal voicing is fairly consistent, it is variable across a word boundary, sensitive to pauses and to prosodic phrasing (if speakers parse phonological constituents differently, the voicing does not occur). Given the above, it is difficult to explain why the apparently phonetic process of voicing does not take place in cases of elided consonants.

The study consisted of 79 phrases containing contexts for post-vocalic voicing across a word boundary. Each sentence was structured in the same way: *He comprado cinco* 'I have bought five', followed by a noun phrase, e.g. *panes de millo* 'corn bread'. There were 49 target phrases, each starting with a voiceless non-continuant followed by a vowel or a sonorant (13x[p], 13x[t], 13x[k], 10x[tʃ]) and 15 controls. Each sentence was prerecorded by a trained native speaker in two versions: with and without voicing. The stimuli were then put in random order and presented aurally to the participants in two randomized sets (one per 10 participants). The participants were to listen to the phrases and repeat them. In the second part of the experiment, they were to read the same tokens in a different order. The principal aim of the experiment was to see whether there would be differences in the production of voicing depending on the immediate phonetic context. It was assumed that (1) the process would be consistent, (2) there would be no substantial differences depending on the place of articulation and (3) that the voicing would occur regardless of the (lack of) voicing in the audio stimuli.

The conducted study revealed that there is substantial variability in the produced outputs. Only the third hypothesis was confirmed. Given the variables influencing voicing across participants (context, pauses, phrasing), and the fact that the abovementioned blocking effect of elision needs to be explained theoretically, I assume that non-melodic phonological remnants in the form of structural elements must be visible in the phonetics component and can exert influence on phonetic processes such as voice spilling across sonorants (e.g. Goldrick 1998). Another, perhaps complementary explanation can be sought in the theory of fine-grained phonetic modulation of speech production at prosodic junctures (Keating 2006; Cho 2016), which assumes phonetic strengthening at domain boundaries (Fougeron & Keating 1997). The gathered data suggest that fast speech rate and lack of physical pauses do not necessarily imply voicing, whereas differences in NP phrasing and the accompanying differences in rhythm, pitch and stress do affect the production of non-continuants. This is in line with the literature on Spanish prosody (Quilis 1993, Navarro 1944). Moreover, it is possible that elided phonological segments structurally mark prosodic boundaries, which is then translated into blocking at the prosody-phonetics interface.

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