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A landmark-based approach to transcribing systematic variation in the implementation of /t, d/ flapping in American English

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ABSTRACT

A model of human speech processing based on individual cues to distinctive features of phonemes, such as the acoustic landmarks (abrupt spectral changes) that signal manner features, is proposed to provide a more accurate account of American English flapping of /t/ and /d/ than an allophonic or phone-based model. To test this hypothesis, this study analyses the phonetic realization of /t, d/ in the context of flapping using the acoustic landmark cues of abrupt stop closure, abrupt stop release and glide-like amplitude minimum (Stevens 2002), in subsets of the TIMIT corpus. Results show that the majority of flapped variants of /t, d/ preserve their stop closure landmark and there are several cases where they preserve both of their stop landmarks (stop closure and stop release), while exhibiting the landmark modification for flapping (e.g., t-glide-+). Additionally, flapped /t/ is more likely to maintain stop landmarks than flapped /d/. This is unexpected from the traditional view of the flap as a categorical phenomenon, and suggests that acoustic landmarks are useful in capturing systematic phonetic variation in flapping. It will be important to test whether this landmark-based analysis yields a better result in automatic speech recognition than (allo)phone-based approaches.

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