

## Preceding vowel duration as an indicator of the origin of aphasic substitution errors: a case study

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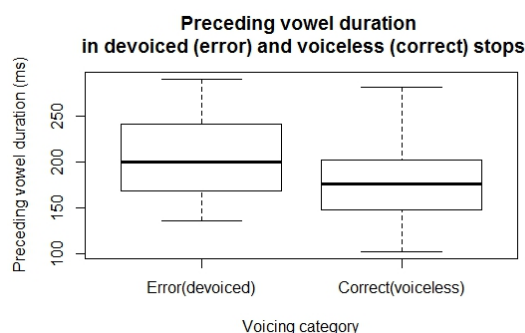
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This paper proposes to assess the claim about the phonetic nature of errors' origin in Broca's aphasia. According to this claim, the phonemic paraphasias that arise in Broca's aphasia result from a disruption at the level of phonetic encoding as opposed to paraphasias encountered in conduction aphasia, assumed to arise during phonological stage of speech production.

Previous research has been inconclusive as to the mechanisms responsible for errors in both Broca's and conduction aphasia (ex.: Laganaro, 2015). Issues were also raised regarding the adequacy of methodologies to study the separation of these two representational levels (phonetic and phonological) in speech architectures, especially through the measurements of VOT, a primary parameter for voicing perception (Pouplier, Marin, & Walzl, 2014).

Here we report on one Spanish speaking Broca's aphasic patient who produces devoicing errors. We evaluated the patient's ability to discriminate between voiceless (correct) and devoiced (error) stops by analyzing the preceding vowel durations, reported to be one of the cues for the perception of voicing. A phonetic origin of errors predicts systematic differences between these two categories of sounds in terms of this parameter while a phonological origin of errors predicts no significant differences.

Our result approached but failed to achieve a customary threshold of statistical significance ( $t(11.20)=1.84, p=.092$ ). The devoiced stops were longer ( $M=205.40, SD=50.15$ ) than voiceless correct stops ( $M=174.53, SD=37.23$ ).



We discuss this result in relation to the general pattern of patient's performance.

Laganaro, M. (2015). Paraphasies phonémiques et/ou phonétiques? Des raisons et des difficultés de cette distinction. *Revue de Neuropsychologie*, 7, 27–32.

Pouplier, M., Marin, S., & Walzl, S. (2014). Voice Onset Time in Consonant Cluster Errors: Can Phonetic Accommodation Differentiate Cognitive From Motor Errors? *Journal of Speech, Language, and Hearing Research*, 57, 1577–1588.