

## **The challenge of word articulation: A neurophonetic view.**

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At a general level of behavioral research, pathology can be revealing about normal function. In speech, more specifically, pathologies of the brain or the peripheral speech organs may inform us about the mechanisms governing normal speech production. Note that the evidence we can hope to establish in clinical speech research depends upon the pathology underlying the medical condition we study.

Neural pathologies afflicting a circumscribed cortical region in the inferior frontal lobe of the left brain, resulting in a syndrome termed *apraxia of speech*, are revealing, because this brain region is considered to store the processes of speech motor planning we have acquired during childhood. As a consequence, investigations into the patterns of apraxic speech impairment may contribute to our knowledge about the architecture of the phonetic planning processes involved in the production of a speaker's native language. Therefore, apraxia of speech turns out to be particularly relevant for empirical research in phonetics and phonology.

In this talk, I will review some of the research devoted to the speech error patterns observed in individuals with apraxia of speech. A major focus will be on the linguistic factors determining the likelihood that apraxic patients commit errors. I will describe a non-linear probabilistic model based on gestural decompositions of words. The model allows us to predict the relative vulnerability of individual words to apraxic speech impairment by delineating, at the word level, the fracture points of phonetic planning.

Several clinical and non-clinical applications of the model will be outlined to demonstrate its usefulness.