

A „Phonological Mind“ in our brains? Evidence from patients with brain lesions.

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According to a theory proposed by Iris Berent, the human mind is equipped with a universal stock of “core phonological knowledge”, which is considered purely algebraic and autonomous from the perception/production channels of linguistic communication (Berent, 2013). As a part of the human genetic endowment, this knowledge is mediated by a dedicated neural network in the brain (Berent et al., 2014).

The present study was based on the assumption that sound production impairments resulting from lesions to this network provide insight into the architecture of the “Phonological Mind”. We examined (i) whether phonological impairment destroys the alleged “core phonological knowledge” postulated by Berent, and (ii) to what extent phonological impairment conforms to a model based on principles of intergestural coordination (Tilsen, 2016; Ziegler & Aichert, 2015).

Fifteen patients with phonological impairment after left hemisphere infarctions were administered a word repetition task using 32 German nouns with varying phonological structures (1 – 4 syllables, simple vs. complex syllables, varying stress patterns). Their sound production errors were assessed by phonetic transcription. In a first analysis, the transcripts were examined for violations of core phonological regularities and of markedness constraints. In a second step, latent trait analyses were performed to map patterns of phonological errors onto an existing gesture-based model of sound production impairment, with the aim of testing a specific substance-based explanation of phonological processing in aphasic speech production.

The results are incompatible with the assumption that lesions of a phonological neural network interfere with the core knowledge postulated in the Phonological Mind Theory.

References:

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