
Prosodic gesture-speech synchrony in persons with Broca's and Wernicke's Aphasia

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Aphasia is a neurogenic language disorder often classified as fluent (incoherent, but intact utterance structure, e.g., Wernicke's type) or non-fluent (coherent telegraphic utterances, e.g., Broca's type) (Manasco 2017) types. Persons with aphasia (PWA) are purported to use gestures either to compensate for language impairments or for word retrieval (de Beer 2012; Sekine et al. 2013). Recent findings (e.g., Jenkins & Pouw 2023) suggest that gesture-speech coupling may be intact in PWA, however, it is not known if this coupling varies with aphasia and gesture typologies. We aimed to investigate the pattern of prosodic synchrony between gestural and spoken units in persons with Broca's and Wernicke's types of aphasia. We hypothesize that the patterns of prosodic synchrony will vary as a function of gesture type (referential vs non-referential), spoken unit type [words that do vs do not suggest the level of informativeness (Correct Information Units/CIU)], and discourse type (narrative vs procedural) across both groups.

Data included ten native American-English speaking PWA (five with Broca's and five with Wernicke's aphasia) from 40 - 90 years of age, selected from the AphasiaBank database (MacWhinney et al. 2011). Video recordings and audio transcripts of narrative discourse (Cinderella story) and procedural discourse (making a sandwich) were analyzed. Words (CIUs and non-CIUs) with and without pitch accents were transcribed in PRAAT (Boersma & Weenink 2023). Gestures were coded into two types (i.e., referential and non-referential), and the gestural phases were annotated using ELAN (Lausberg & Sloetjes 2009). The PRAAT files are imported into ELAN to document the temporal overlap between gestural strokes and pitch accented words. The results, thus far, reveal that, within the Broca's group, the co-occurrence of beats with spoken units (69.79%; CIUs+non-CIUs) is more during narrative discourse while co-occurrence of referential gestures with spoken units (51.28%; CIUs+non-CIUs) is more during procedural discourse. We anticipate that the results of this study will help us understand the effect of language impairments on the co-production of both modalities in PWA. Limitations and future directions will be discussed.

References: • de Beer, C. D., Carragher, M., Nispen, K. V., Hogrefe, K., Ruiter, J. P. D., & M. L. Rose (2017). How Much Information Do People with Aphasia Convey via Gesture? *AJSLP*, 26(2), 483–497. • Jenkins, T., & W. Pouw (2023). Gesture–speech coupling in persons with aphasia: A kinematic-acoustic analysis. *Journal of Experimental Psychology: General*, 152(5), 1469–1483.