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Neural Processing of Sign Language: Increased Attention Without Enhanced Tracking in Adult Novice Learners

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Neural tracking is a core mechanism supporting speech processing and language learning. It funnels the chunking of continuous speech into words and syllables, being shaped by bottom-up cues as well as top-down predictions and language proficiency. While neural tracking is well established in the domain of speech, current understanding of how the mechanism works for visual language, including sign languages, is limited. Here we test whether beginning learners of Czech Sign Language (CSL) differ from sign-naïve controls in their neural processing and overt perception of CSL. Attention is quantified via alpha power suppression; neural tracking via backward mTRF reconstruction of the sign-language visual envelope. Compared to controls, sign-language learners exhibited increased alpha suppression and higher perceptual accuracy but did not show enhanced neural tracking of CSL. We conclude that limited prior exposure to sign language may not be enough to entrain the brain to the rhythms of sign language.