

Neural Speech Tracking and Accents: Are You Familiar with My Accent?

Shang-En Huang

University of California, San Diego, La Jolla, California, United States

Ian Martindale

San Diego State University, San Diego, California, United States

Seana Coulson

UC San Diego, San Diego, California, United States

Abstract

This study explores neural speech tracking of local and foreign accents. Studies have found neuro-cognitive differences for foreign accent processing in lower-level acoustic extraction and higher-level predictive mechanisms. However, how these mechanisms are recruited in speech tracking for different accents remains unclear. We explored neural speech tracking while 24 native English speakers listened to local and foreign accents in an EEG experiment. We examined the decoder accuracy of predicted speech envelopes using the Temporal Response Function to the speech envelope of our stimuli. Results showed stronger tracking for the local accent, and for accents participants rated more familiar. Findings suggest that participants utilized available cognitive resources to recruit predictive mechanisms during local accent processing, allowing them to attend to speech cues more efficiently. This top-down benefit was less available for foreign accents as listeners could not effectively access pre-stored sound variations for predictions.