

The Function of Neural Synchrony Between Speakers and Listeners During Language Comprehension

When listening to someone tell a story, do we adopt the mental life of the speaker in the service of understanding? For example, if a friend tells you a harrowing tale about the time they were chased by a masked man down an alley, do you spontaneously imagine yourself in your friend's place? If so, is the brain activity of the speaker similar to your own brain activity as the passive listener? This study is designed to examine the extent to which neural activity in speakers and listeners spontaneously becomes aligned during natural communication. To test this, we recruit vivid storytellers and measure EEG and other physiological signals (e.g., activity of facial muscles involved in smiling and frowning, pulse, and skin conductance) that capture the state of speakers' brains and bodies in real time as they tell a series of unrehearsed, emotional stories. The same set of measurements is later made in participants as they listen to each of the previously recorded stories. The correlation between speaker and listener on each of these measures will be used to address the consequences of neural synchrony during language comprehension. Specifically, we ask whether synchrony of this sort predicts (1) how well the listener understands and remembers the story, (2) how strongly their mood is influenced by the story, and (3) the degree to which emotions induced by the story affect the listener's ability to perceive emotion in visually presented faces. The findings from this research will inform our understanding of the role that neural synchrony plays in naturalistic communication.

Keywords: Neural synchrony, convergence, language comprehension, communication, emotion, empathy