Research code: 3202, 3209

Real-world listening environments are not quiet or ideal for speech perception. While the human auditory system is proficient in organizing the everyday mixture of incoming sounds into distinct perceptual streams, we do not fully understand how this process is represented in the brain.

It is well established that cortical activity entrains to temporal fluctuations in speech and that it reflects intelligibility and attention outcomes. Cortical speech tracking using electroencephalography (EEG) is a popular and successful approach in auditory neuroscience for monitoring how neural oscillations align with the envelope of a speech signal. However, it is unclear how robustly cortical speech tracking can be recorded and how informative it is when intelligibility is improved with access to spatial cues. Spatial cues are of interest because they enable the listener to identify streams of interest, a process often called stream segregation.

With this in mind, this project aims to assess whether stream segregation in the presence of continuous competing talkers is measurable at the cortical level and how this cortical response is modulated by access to spatial cues in normal-hearing (NH) listeners. We will also compare cortical data with behavioral speech perception outcomes to determine whether enhanced cortical entrainment to the target speech correlates with improved behavioral speech intelligibility. This project will provide the necessary foundation to expand this investigation to hearing device users to uncover how neural activity may vary across individuals with hearing loss and how these differences are shaped by device intervention.