Talker Interference in Speech Perception Adaptation

Rachel Sabatello, Shawn Cummings, & Florian Jaeger

Spoken language is one of the most prevalent forms of human communication, yet it is highly variable by nature. Even talkers with similar language backgrounds differ in how they produce speech sounds, blurring the boundaries between one sound category and another both within and across talkers. Still, listeners can understand a newly encountered talker when hearing them speak for the first time. To overcome the lack of one-to-one mapping of speech sounds to speech categories, the human brain has cognitive mechanisms that actively learn how talkers speak and constructs expectations about how unfamiliar talkers will sound. This process occurs unintentionally, without the listener noticing how their perception of speech changes over time. However, this process still requires cognitive resources. In this experiment, we limit the available resources for speech perception by exposing a listener to two talkers speaking simultaneously in a virtual forced-choice lexical decision task. We then test the effects of directing the listener's attention to one talker on the listener's ability adapt their speech perception to both talkers. If listeners will adapt their perceived categorical boundary more to the talker they are instructed to attend to, then this would suggest a difference between passive and active attention in speech processing. Additionally, the results of this experiment will give insight into how our brains allocate resources in the context of speech perception when under higher cognitive loads.