

“Reliability of behavior performance and functional activation in aphasia”

Brielle Stark, Ph.D.

Postdoctoral Fellow, C-STAR, University of South Carolina

Longitudinal fMRI studies have been used to investigate brain plasticity associated with training or treatment, attributing post-treatment behavioral change to brain plasticity. It is largely agreed upon that behavioral performance is relatively stable in healthy adults and not susceptible to significant changes upon retest. Over one hundred studies of fMRI reliability have been performed in healthy adults (Bennett & Miller, 2010) and there is consensus that functional activation during test-retest in this population is reliable. However, this is an issue that has received somewhat limited attention in the aphasia literature, which is surprising given that clinical experience suggests considerable fluctuations in language performance across sessions in persons with aphasia. Therefore, the need to establish reliability in pre-treatment behavioral performance and functional activation is of great interest for post-stroke aphasia research. Aphasia treatment studies are often small and rely on within-subject behavior changes to drive conclusions about brain plasticity. The reliability of behavior performance and functional activation in aphasia during test-retest has been addressed in very few studies, all including small sample sizes (fewer than five participants). This lecture will focus on the reliability of behavior performance and functional activation in aphasia and its relevance for longitudinal treatment designs. Results from our lab on a test-retest paradigm in a relatively large sample of participants with aphasia will be reported, and future directions will be discussed.