

Thursday March 25th, 2pm ET

Presentation in Zoom, accessible via the C-STAR website:

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Multiple white matter pathways for language processing in the human brain

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The idea that different aspects of language are processed in the brain along distinct pathways has been extremely productive. In this talk, I will tell two stories: A ventral pathway story about morphological decomposition in Hebrew and English and a dorsal-cerebellar story about developmental stuttering and sensorimotor synchronization. Our experimental approach combines diffusion MRI and targeted cognitive measurements, in order to relate specific aspects of language processing with structural tract properties in the same individual. We use tractography and automatic tract segmentation in order to identify dorsal and ventral language-relevant tracts in each participant. We then quantify associations between cognitive measures and microstructural measures along the central portion of each tract. Both stories will highlight generalizations across independent samples and across language, modality and task. I will show that cognitive associations with tractometry successfully differentiate adults who stutter from control participants, even in tracts that fail to demonstrate significant group differences in tractometry alone. This is a broad phenomenon that extends to other subpopulations (e.g., children born preterm). I will discuss the implications of our findings in the context of dual stream models of speech perception and written word recognition.

The online lecture can be followed online from your computer, tablet or smartphone, in **Zoom**. The zoom link is accessible via the C-STAR website: <http://cstar.sc.edu/lecture-series/>

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