



SUBCORTICAL INVOLVEMENT IN DEVELOPMENTAL DISORDERS OF SPEECH AND LANGUAGE

Kate Watkins

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December 10, 2025 (Wednesday)

3:00pm - 4:00pm

Room 703 - 704, Meng Wah Complex, HKU

Chair: Professor Ding-lan Tang



Registration

Abstract:

Up to 8% of children experience stuttering, and a comparable proportion struggle with developmental language disorder (DLD), a condition marked by unexplained difficulties in acquiring a first language. Despite their prevalence, the neural bases of these developmental conditions remain poorly understood. Using quantitative MRI, our work has identified distinct alterations in subcortical brain structures: elevated iron concentration in the putamen in stuttering, and reduced myelin in the caudate nucleus in DLD. These findings highlight separable subcortical circuits underlying motor control for speech and language learning. In stuttering, we combined non-invasive brain stimulation with fluency training to reduce speech disfluencies, linking behavioural improvement to functional changes in the putamen and connected speech motor cortex. In DLD, our results challenge the dominant view that the disorder stems solely from deficits in procedural learning circuits. Instead, we find involvement of additional subcortical learning systems, including the medial temporal lobe and cerebellum. Ongoing longitudinal studies are mapping how these neural differences shape developmental trajectories in speech, language, and brain maturation.

About the speaker:

Kate Watkins, Professor of Cognitive Neuroscience, Department of Experimental Psychology, University of Oxford.

Professor Watkins trained in neuropsychology and neuroimaging at University College London where she completed her Masters in Neurological Science and PhD in Cognitive Neuroscience. Following postdoctoral training at the Montreal Neurological Institute where she applied brain stimulation to studies of speech perception, she return to the UK and to Oxford. There she set up the Brain, Speech and Language Research Group and her investigations using brain imaging and brain stimulation to study speech and language in the typically developed brain and in conditions of atypical speech and language development. Professor Watkins is also the co-founder and co-Editor-in-Chief of the open-access journal *Neurobiology of Language*.

ALL ARE WELCOME