



**University of
Zurich** ^{UZH}

Department of Economics – Neuroeconomics Seminar

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Jessica R. Cohen
UNC Chapel Hill

The Cognitive Relevance of Functional Brain Network Dynamics across Different Timescales

The brain's ability to adaptively engage different functional networks in the face of a changing environment is an important characteristic that enables a wide variety of behaviors. The goal of my research program is to understand how distinct brain networks interact with each other and flexibly reconfigure on different timescales when confronted with a dynamic environment, as well as how these network dynamics contribute to individual differences in cognition in both typical and atypical populations. In this talk, I will first present research from my laboratory examining how moment-to-moment changes in brain network organization underlie cognitive ability, followed by research examining how task-related reconfiguration of brain networks benefits cognitive performance. Finally, I will discuss a new line of research investigating how developmental trajectories of brain network organization impact cognitive development. In each of these sections I will cover research we have conducted in both typical populations and in youth with ADHD, to address how disruption of normative functional brain network dynamics relates to impairments in cognitive performance in ADHD. Together, this research provides evidence that the dynamic reconfiguration of the healthy brain across multiple timescales subserves cognition, and that dysfunction in this dynamic network behavior underlies ADHD.