

## **"The Brain & I": Network Dynamics and Individual Emotional Experience**

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Dynamic functional integration of distinct neural systems plays a pivotal role in human emotional experience. In this lecture I will present our work focus on portraying such dynamics with relation to various behavioral and physiological indices of emotional experience. We recently propose a new tool to probe changing interactions within and between networks using fMRI (Raz,Hendler. Neuroimage, 2012). It is based on continuous computation of an index of network cohesion, which is sensitive to both strength and variability of signal correlations between predefined regions included in subcortical-limbic and cortical-control networks. Participants passively viewed emotion-inducing films while their brain activity and heart-rate were recorded simultaneously. Individually obtained indices of brain and physiological dynamics were compared to the on-going changes in reported emotions during a second viewing of the films. Networks integration or segregation was demonstrated in correspondence to dramatic periods in the films, pointing to this networks role in cognitive driven dynamics and related emotional regulation. These finding demonstrate the advantage of a multi-layered dynamic analysis for elucidating the uniqueness of emotional experience. This individual network specification approach has been lately applied in our lab for closed loop procedures in which people are on-line being guided how to monitor their neural activity patterns (based on EEG or fMRI) for achieving regulated emotional state. The importance of such procedures will be discussed in the context of brain-driven psychiatric management.