

How the Human Brain Introspects about One's Own Cognition and Behavior

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Presentation Abstract Summary Understanding of the relationship between metacognition (our capacity to reflect upon our experiences and decisions) and cognitive control functions remains incomplete. It is unclear how the human brain builds an internal model of one's recently past experiential and control states during behavioral performance. We conducted 2 fMRI Experiments in which brain activity was recorded 'online' as participants engaged in a memory-guided search task and then later 'offline' when participants introspected about it. The patterns of brain activity, including frontoparietal regions, were similar during 'on-task' and introspection states. However the connectivity profile amongst frontoparietal areas was distinct during introspection, which was also characterized by increased temporal correlation between the default-model network (DMN), frontoparietal including dorsal attention networks and visual cortex. We suggest that memories of one's own experience during task performance are encoded in large-scale patterns of brain activity and that coupling between DMN and frontoparietal control networks may be crucial to build an internal model of one's behavior.

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