

Abstract

A Functional Neuroimaging Study of Self-Regulatory Control in Adults with Gambling and Obsessive-Compulsive Disorders

By

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Objective: Recent findings suggest phenomenological similarities across gambling and obsessive-compulsive disorders. The key similarity between the disorders is the failure to inhibit or control a repetitive behavior (or urges to engage in a behavior) and intrusive thoughts. Our current understanding of the neural pathophysiological mechanisms linking gambling and obsessive-compulsive disorders is limited. Thus, the aim of the present study was to examine the functioning of frontostriatal brain regions that support self-regulatory control in adults with gambling and obsessive-compulsive disorders.

Methods: The study compared functional magnetic resonance imaging blood oxygen level dependent response in 19 adults with pathological gambling (PG), 29 adults with obsessive-compulsive disorder (OCD) and 34 healthy controls (HC) during performance of a Simon task. Patterns of brain activation associated with correct responses to conflict stimuli were compared across the groups, and associations of activation and clinical characteristics were explored.

Results: Behavioral performance on the Simon task did not differ across the three groups, but group differences in conflict-related activations were observed. In contrast to HCs, PG participants showed conflict-related deactivation of the right inferior frontal gyrus (IFG) and amygdala, and OCD participants showed deactivation of the bilateral IFG, bilateral middle occipital gyri, bilateral cuneus, right amygdala, left hippocampus and left fusiform. Deactivation

of right IFG was negatively associated with illness duration in the PG group. No significant differences in conflict-related activation between PG and OCD were detected.

Conclusion: Adults with gambling and obsessive-compulsive disorders displayed deactivation of right IFG when engaging in control processes needed to resolve conflict. This finding suggests that deficient activation of top-down prefrontal regions may be a possible endophenotype for compulsivity across disorders.

Keywords: Gambling, Obsessive-compulsive disorder, Self-regulatory control, FMRI, Simon task, Inferior Frontal Gyrus (IFG)