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THE DEFICITS OF DECISION-MAKING CONFIDENCE IN OBSESSIVE-COMPULSIVE DISORDER

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Background: Decision-making confidence is a subjective estimation for the accuracy of decision- making(Rahnev et al., 2015), which has great impact on decision-making. Previous literature has indicated that decision-making confidence of patients with obsessive-compulsive disorder (OCD) is obviously lower than that of health control (HC) subjects(Nisticò et al., 2021, Hauser et al., 2017, Marton et al., 2019, Dar et al., 2022), suggesting it as one of the core cognitive defects of OCD(Nisticò et al., 2021).

Aims & Objectives: This study aimed to validate and elucidate the decision-making confidence deficit in OCD while preliminarily exploring its neural underpinnings.

Method: This study included two sub-studies, behavioral and imaging, which were both case-control studies. A total of 23 OCD subjects and 28 HC subjects matched on gender, age, years of education, and intelligence quotient were included in the study. The experimental task was a randomized dot motion (RDM) task under a repeated decision-making scenario(Qiu et al., 2018). Functional Magnetic Resonance Imaging (fMRI) was employed for neural imaging. Clinical features were assessed using scales such as YBOCS, HAMD-17, STAI, and FOCI.

Results: In the behavioral study: (1) Notably lower confidence improvement was identified in the OCD group compared to the HC group. (2) Negative correlations between response time and confidence were noted in both decision-making phases, with significantly higher correlation coefficients in the HC group. (3) The greater the first confidence, the less confidence improvement for the second confidence. (4) The greater the confidence, the higher accuracy.

In the imaging study: (1) The significant neural deactivations of default mode network (DMN) during both the two decision-making phases. (2) During both the two decision-making phases, the neural activities of DMN were positively correlated with confidences, whereas the neural activities of the metacognition network (MCN) were negatively correlated with confidences. (3) During the first decision-making phase, primary visual cortex in OCD group had significant smaller regression strengths than that in HC group. (4) During the second decision- making phase, precuneus had significant smaller regression strengths in OCD group than HC group.

Discussion & Conclusion: There was a significant defect of OCD in decision-making confidence, which is manifested as an obvious lack of confidence. But the defect is more reflected in the confidence of repeated decision-making, which is related to the lower confidence improvement of OCD. Decision making confidence is significantly negatively correlated with the severity of symptoms, but the confidence improvement of OCD is not affected by the severity of symptoms, which indicates that the abnormality of confidence improvement may be a common and stable defect of OCD. Primary visual cortex and precuneus cortex are the sensitive brain regions of the decision-making confidence defect in OCD, and precuneus may be closely related to the defect of confidence improvement.

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