Reviewer's report

Title: Risk assessment and reward processing in problem gambling investigated by event-related potentials and fMRI-constrained source analysis

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Reviewer: Yin Wu

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Discretionary Revisions

The authors described a study investigating brain activities during risk assessment and reward processing among occasional gamblers and problem gamblers. Based on the results, they suggested that pathological gamblers showed enhanced cue-related craving during risk assessment, and increased affective modulation and then action preparation during reward processing. The paper was well-written, the description was clear and the rationale was understandable. I have limited knowledge on fMRI constrained source analysis. I only have a few minor concerns.

1. Some very recent ERP studies on reward processing among problem gamblers were missing in the Introduction, e.g. Kreussel et al. 2013, Behavioral Brain Research.

2. During risk assessment, PG showed enhanced activities in thalamic, superior frontal and orbitofrontal in the high- vs. low-risk comparison, the authors infer this was related with cue-related craving, is there any ERP study that could support this argument?

3. During reward processing, the authors only observed differences in the 100-150 ms and 390-440 ms. It has been demonstrated that feedback-related negativity is sensitive to loss vs. win (Gehring & Willoughby, 2002). This effect is robust and has been replicated in many studies with different gambling paradigms. The authors might need to discuss the absence of this effect in their data set.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.