

Stage 2, Round 2 Review of *Neuroanatomical Correlates of System-justifying Ideologies: A Pre-registered Voxel-based Morphometry Study on Right-Wing Authoritarianism and Social Dominance Orientation*

I found the discussion of this paper interesting to read; the paper provides evidence of a more nuanced relationship between RWA and SDO than has previously been reported/theorised.

The authors have conducted a follow up atlas-based ROI analysis. I'm not sure which atlas(es) were used but the vmPFC ROI may have been included lateral and dorsal parts of the PFC as well – see my comments below.

The discussion & conclusion could incorporate the atlas-based ROI results more clearly (see my specific feedback below).

We are immensely grateful for the reviewer for their recommendations into improving the submission up until this later stage into the stage 2 process. We address each point below individually. These revisions and clarifications have undoubtedly improved the clarity of our presented findings, particularly the reviewer's keen eye for methodologically permissible interpretations. Our responses to the reviewer's comments are marked in 'bold' and the new added text to the manuscript is marked in 'green'.

Section 3.3.2, line 5: To be completely clear, it should be specified that the correction referred to is FWE correction.

We thank the reviewer for identifying this omission and we have added the term to highlight specific correction used.

Part 3.4 – the 20mm radius spherical ROI results

In Section 3.4.1, this phrasing is used: *“associated with GMV in a cluster within a 20mm radius of the left amygdala”*. I find this phrasing very clear and unambiguous. I would recommend that all the ROI results in this section are reported in similar fashion. This way, it's clear that the authors are not necessarily claiming that, e.g., the clusters shown in Fig 2b are in the amygdala.

We thank the reviewer for this recommendation and agree that our results should reflect explicitly the methodology we used for our analysis. The results and discussion sections, including figure captions, where necessary, have been appended with the phrase ‘within a 20mm radius of’ when reporting spherical ROI-related results.

Part 3.5

The atlas(es) used to make the atlas-based ROIs needs to be specified.

Figure 6: The cluster shown looks like it is in dorsolateral PFC, rather than ventromedial PFC ?

We thank the reviewer for highlighting this omission. We have included the atlas used to specify the ROIs, with specific mention to the Brodmann areas that made up the vmPFC region in section 3.5. We would like to clarify that the Brodmann areas were based on Mackey & Petrides' (2014) in-depth anatomical analysis of the human vmPFC that have been used in other social neuroscientific endeavours and so we believe that

this mask constitutes a scientifically valid ROI localisation for the vmPFC – with the aim of ensuring that our findings are ultimately replicable.

“...and circumscribe our analysis within established regional boundaries of the brain. We defined these ROIs using the Human Atlas of the WFU PickAtlas Tool (<http://www.fmri.wfubmc.edu/cms/software#PickAtlas>). With regards to the vmPFC, as the atlas did not have pre-specified option for this region, we created a custom mask combining the following Brodmann areas used in Mackey & Petrides’ (2014) analysis of the architecture of the human vmPFC: 10, 11, 14, 24, 25, 32.”

Part 4 – Discussion

As there have now been two separate ROI analyses conducted, it should be specified whether the spherical or atlas-based analysis is being referred to – e.g. in lines 11 to 15, I think the results referred to are from the spherical ROI analysis. Similar to my comment on Part 3.4, it might make for a clearer narrative if the spherical ROI results are reported as being “within a 20mm radius” as otherwise it seems like the findings summarised in lines 11 to 15 are contradicted on page 30 (lines 5 – 9).

Page 29, paragraph 2 & page 30, paragraph 1: While the authors have stated at the end of this paragraph that it is likely that the localisation method (i.e. spherical ROIs) may have inadvertently identified voxels beyond the amygdala, it would aid clarity if this was stated earlier.

We thank the reviewer for this suggestion and so we have explicated this concern in section 3.5.

“We also should note that localisation using spherical ROIs may identify significantly associated voxel clusters outside of the brain regions we sought to investigate... and circumscribe our analysis within established regional boundaries of the brain.”

Page 31, lines 12 & 13: Which atlas was used to create the atlas-based vmPFC ROI? As I mentioned above, the main cluster shown in Fig 6 appears too dorsal and lateral to be vmPFC.

We thank the reviewer for highlighting this omission. We have included the atlas used to specify the ROIs, with specific mention to the Brodmann areas that made up the vmPFC region in section 3.5. We would like to clarify that the Brodmann areas were based on Mackey & Petrides’ (2014) in-depth anatomical analysis of the human vmPFC that have been used in other social neuroscientific endeavours and so we believe that this mask constitutes a scientifically valid ROI localisation for the vmPFC – with the aim of ensuring that our findings are ultimately replicable.

Page 31, paragraph 2: While the authors have stated at the end of this paragraph (on page 32) that it is likely that the spherical ROIs localisation method may have inadvertently identified voxels beyond the left anterior insula, it would aid clarity if this was stated earlier.

We thank the reviewer for this suggestion and so we have explicated this concern in section 3.5.

Part 5 – Limitations & future directions

Page 32, line 17: there seems to be an incomplete sentence or typo here.

We thank the reviewer for identifying this incomplete sentence and have made the necessary amendments.

“...improve the power and consequently, the reproducibility of such findings (Button et al., 2013).”

Page 33, line 2: If the radius of the spheres was 20mm, then their volume would be 30,000 mm³

We thank the reviewer for pointing out this error and have made the necessary amendments.

“(i.e. radius of 20mm)”

Part 6 - Conclusion

Lines 9 – 12: It should be made clear that the spherical ROI clusters were not necessarily in the amygdala and left anterior insula.

We thank the reviewer for ensuring that we are thorough in our interpretation and reporting of our findings from results to conclusion and have made the necessary amendments.

“Our exploratory analysis, however, suggests that our spherical ROI localisation approach may have identified clusters that were not necessarily within the amygdala and left anterior insula. Nevertheless...”