Reviewer's report

Title: A stable pattern of EEG spectral coherence distinguishes children with autism from neuro-typical controls A large case control study

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Reviewer: Robert John Barry

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This is an interesting paper that contains a mass of useful information on coherence patterns in ASD. It appears technically excellent, and the large N makes the results extremely important.

However, there are a number of problems with the present MS that should be rectified before publication.

Minor essential revisions

Sample age and numbers begin with 1409 children aged 1-18, and 1034 of these satisfied selection criteria and were used in a PCA of coherence data across sites and frequencies. Subsequently, because of “well known age effects on EEG and spectral coherence”, these PCA data from 985 2-12 year olds were analysed. The reporting of the characteristics of these groups is tedious and somewhat confusing. It would be preferable to have the PCA conducted only on the 985 2-12 year olds. Given that the age-effects on EEG were known before the PCA, this should have been an early decision. I think the present PCA would include noise from both age extremes that should have been avoided. I am loath to recommend re-analysis, but at the very least, this problem needs to be mentioned as a study limitation.

Please streamline the sample descriptions; also add gender information.

The findings of the study are related poorly to prior work cited in the Introduction. This needs to be discussed before the more speculative material.

Other

P. 3: Delete “of” from “as of yet”; change “to 2005” to “and 2005”; delete “largely” from “now largely”.

P. 4: change “left yet” to “left but”.

P. 5: What are “putative children”?

P. 6: third and last para: be consistent on semicolons before numbers. Fourth para: delete “at” from “studied at”.

P. 7: rephrase sentence containing “after measurement with collodion”.

P. 8: delete “reference” from “(CSD) reference” – CSD data are reference-free. Delete “may” from “may such”.

P. 9: Top para mentions “adding” the residual data – surely this was in replacement of the uncorrected channels? Second para: delete “response” from “average response”. I’d prefer “Jackknifing” to not be capitalised.

P. 11: unnecessary to note that factors remained orthogonal after Varimax rotation. Remove italics from subsequent “When”.

P. 12: for the age subgroup analyses, the question of whether the same factors apply arises, but is not answered until near the end of the page – consider earlier mention. Please supply information on variance carried by each of the 33 factors – missing but important in Discussion – add to Fig. 2 if possible; address in Discussion.

P. 14: top para provides first information that Table 3 col. 6 data are from whole 2-12 population. Add to Table and/or to P. 12 when Col. 6 is first mentioned. Methodological consideration section is largely a repeat of methods information and should be trimmed substantially.

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.