Reviewer's report

Title: Serum brain-derived neurotrophic factor concentrations and personality trait in patients with major depression

Version: 2

Date: 10 November 2014

Reviewer: Maria de las Mercedes Perez-Rodriguez

Reviewer's report:

This study adds to the literature regarding the role of brain-derived neurotrophic factor (BDNF) in major depressive disorder (MDD).

Specifically, the authors investigate an association between serum BDNF concentrations and depression-related personality traits in 123 inpatients with MDD.

The study has several strengths, including: 1) Moderate sample size; 2) Use of multivariate statistical analysis techniques to address the issue of multiple comparisons, 3) Controlling for several confounding variables which can potentially affect BDNF levels, such as antidepressant treatment, age, sex, and depression severity. The main limitation is the concurrent treatment with antidepressants, which the authors acknowledge and attempt to control for statistically.

The study could be improved by addressing the following comments:

Major Compulsory Revisions

1. After reading the paper, it is somewhat unclear what the authors' model and hypotheses are. They discuss temperament features as “traits”, but then mention that they can be “altered” by the “state” of depression. Then in the discussion they seem to suggest that the temperament trait “self-directedness” influences the levels of BDNF. The paper would significantly improved if the underlying model and hypotheses were described in the introduction and discussed in the discussion section.

2. Page 7, lines 13-15: The authors should highlight what in my opinion is the most intriguing result: the different (opposite) relationship between self-directedness and BDNF levels in depressed subjects and in healthy controls (i.e., comparing the study findings with Yasui-Furukori’s). This paragraph should be moved to the beginning of the discussion section.

3. The conclusion that “serum BDNF concentrations tend to not decrease in MDD patients with 17 low SD personality trait” cannot directly be derived from the results, and should be removed or rephrased.

4. If the authors have any serum BDNF data available in healthy controls, it would be of interest to compare BDNF levels in MDD patients and HCs among those who have high vs low self-directedness levels.

Minor Essential Revisions:
1. There are some minor typos throughout that should be corrected, for example: “trait” instead of “traits” in the title;

2. In the abstract, “reveal” seems to imply that an association will certainly be found. Please substitute for the more neutral “investigate”, or “examine”.

3. Page 4, line 8 and Page 6, line 15: “influence” seems to imply causation, which cannot be inferred with the current, cross-sectional study design. Please rephrase using more neutral, non-causal terms (e.g., correlation, association or relationship).

4. Please clarify whether any comorbid psychiatric disorder was an exclusion criterion. The current phrasing, “Patients were excluded if they had a history of other psychiatric disorders including delusions,” is too vague (i.e., were they only excluded if they had a psychotic disorder?) If other comorbid disorders were present in the sample, the authors should report them in the descriptives table and in the statistical analyses.

5. Since HAMD scores likely changed throughout the admission, it would be of interest to report data about the number of days after admission (mean and range) when BDNF levels were obtained (i.e., number of days between HAMD and BDNF measures).

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

Quality of written English: Needs some language corrections before being published

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