**Reviewer’s report**

**Title:** Effects of Attentional Bias Modification on Residual Symptoms in depression. A Randomized Controlled Trial.

**Version:** 0  **Date:** 11 Jan 2019

**Reviewer:** Fritz Renner

**Reviewer’s report:**

The authors report the results of an RCT on a 2 week Attention Bias Modification Training (vs. neutral ABM control training) for patients with a history of depression. The authors report outcomes on self-reported (BDI) and clinician rated (HRSD) depression levels. ABM vs. control training led to a greater decrease in clinician rated depression symptoms. There were no differences in decrease of self-reported depression levels between the two groups. AB change towards positive stimuli was associated with a decrease in clinician rated symptoms.

Strengths of the study include a large sample size (N=321) of individuals with a history of depression, assessment of both self-report symptoms as well as clinician rated symptoms, and pre-registration of the study design though registration was partially retrospectively as the authors acknowledge. Moreover the hypotheses were not part of the pre-registration document and the authors have chosen to only report part of the outcomes (selection of those taken immediately after the intervention). I assume this is because the longer term FU data and secondary outcomes will be part of subsequent papers.

Overall the paper is well written and the methods seem appropriate.

My main point relates to the interpretation of the analysis relating change in AB in the ABM group to change in depressive symptoms. The authors conclude that change in AB towards positive stimuli is associated with a decrease in symptoms. However in the Fig 3 note on page 7 the authors state for AB that: "positive values = change towards more positive bias" and for HRSD that changes in HRSD = "two weeks follow up minus baseline" so for HRSD this would mean a negative HRSD change score is = decrease in symptoms. But Figure 3 shows a positive association between change AB and change HRSD. So increase in positive AB is related to increase in symptoms from BL to FU? This seems inconsistent with the authors' interpretation of this finding. Please clarify.

**Additional comments:**

- The intervention targeted residual depressive symptoms in patients with a previous episode of depression. Do the authors have information about the time since the last episode? Residual symptoms of a recent episode are probably more malleable than persistent residual symptoms from an episode many years or decades ago?
The ABM condition had an 87% to 13% ratio of positive/negative probe location - I was wondering on what grounds this was based and why the authors did not use 100% positive probe location trials? Also why were 13% of trials in the active treatment condition probe replaced by negative stimuli rather than neutral? Related to this, the control condition had a 50/50 ratio of positive/negative probe locations. Why did the authors choose for this control condition rather than e.g. 100% of trials probe replacing neutral stimuli? It seems that with the scheme that was used in the study both conditions contain some elements of the active ABM towards positive stimuli intervention.

The AB computation on page 5 is a bit hard to follow and could benefit from further explanation or a reference.

The AB measurement used novel stimuli. Do the authors have any ratings of how positive the positive faces and how negative the negative faces were actually perceived?

Means (SD) in text do not always match those reported in Table 1. Rounding errors?

In general the authors could be more specific in their description of the data/results e.g.

- Table 1 state what the numbers in the Table represent (M, SD, n, % etc.). What does "Medication (SSRI) represent? Number of participants currently receiving SSRI treatment? or percentage?"

- Primary outcomes: "… changed to 8.3 (5.9) and 8.8 (5.7) at two weeks follow up". To which conditions are these numbers referring to?

- Page 7 line 35-44. Change in AB was associated with change in HRSD in the ABM group. From the text the direction of this effect remains unclear. More change towards positive AB related to stronger decrease in symptoms on HRSD?

- P9. Line 19. The authors state that the finding that ABM had an effect on clinician rated symptoms cannot be considered clinically significant? Why not? What would be a clinically significant effect?

Thank you for the opportunity to review this manuscript. I hope that my comments and suggestions are useful in improving the manuscript.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes
Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

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