Author's response to reviews

Title: Autobiographical memory and hierarchical search strategies in depressed and non-depressed participants

Authors:

Shamsul Haque (shamsul@monash.edu)
Eka Juliana (ekajuliana_01@yahoo.com)
Rahmattullah Khan (rahmatullah@fppm.upsi.edu.my)
Penelope Hasking (penelope.hasking@curtin.edu.au)

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Reviewer 1

Q: The sample size is very small, so any parametric comparisons are likely to be affected by outliers. I think there should be an indication of the distributions of the scores and whether there are outliers.

On pages 12 onwards the differences in mean scores between the two groups are examined using independent groups t-tests where the degrees of freedom are given as 313 but with 26 participants this number should be 25. Also the values of p are highly significant which would only be achieved in this small sample with extremely large difference in means. I doubt that they will be at that level once the test is applied correctly. The chi square tests have the same problem. In addition they are reported as comparisons of numbers of memories of various kinds, but chi square can only compare numbers of individuals with particular types of memory. The authors will need to explain in their response how these calculations were performed, both how they generated much higher degrees of freedom than the sample size and what the results are with appropriate tests.

The examination of the LTP#GE#ESK sequence has the same problem. Either the number of those sequences per subject in each group should be compared, and as the distributions are likely to be skewed compared using non-parametric statistics with 25 degrees of freedom, or the numbers of subjects with for example 1 or 2 or more such sequences needs to be compared using chi square with appropriate degrees of freedom.

R: As each participant was asked to retrieve 15 memories in response to 15 word cues, there was a possibility to gather 390 memory protocols from 26 participants. However, as some participants failed to retrieve any memory in some trials, we ended up with 315 memories. Initially, we treated each memory as a unit of sample, resulting in large DF values. These kinds of analyses are common in autobiographical memory research published in various journals, and have been analyzed with chi-squared test for independence (Haque & Conway, 2001) and log linear analysis (Conway, Collins, Gathercole, & Anderson, 1996).

However, we accepted the reviewer’s concern and reanalyzed our data. Now, DF is calculated directly from the number of participants as it is usually done in inferential statistics. The dependent measures such as retrieval time, memory elements, emotional valence, and knowledge sequence are calculated for each participant (see highlighted Results section for further detail; page 14-18). Moreover, we’ve added several memory protocols in the text to clarify how the scoring has been completed. We’ve dropped the two chi-squared tests, and replaced them with two independent sample t-tests. The results of all t-tests are now reported in a single table (Table 1). Assumptions such as homogeneity of variance were assumed for all tests except one, which we have noted in a footnote.

References

Q: It looks from Table 1 as though the depressed participants provide fewer memories so examination of differences in completed LTP#GE#ESK analyses will need to control for total memories.

One might argue that evidence for truncated search is only relevant as one possible explanation for elevated general memories in depressed subjects, but they are not elevated in this study. What do the authors make of that?

R: We initially looked at distinct types of knowledge (LTP knowledge, GE knowledge, and ES knowledge) reported in each memory by the participants. In terms of GE knowledge, depressed participants reported less than the non-depressed (Table 1), but this finding doesn’t necessarily justify that depressed participants retrieved less overgeneral memories, as GE knowledge is a component of both overgeneral and detailed autobiographical memories.

The knowledge sequence data, however, could offer evidence of whether the depressed participants had elevated overgeneral memories. Out of five knowledge sequences, LTP>GE and GE>LTP clearly resemble overgeneral memories (lacking specific event information), and if we look at those two patterns (in combination), we see that depressed participants retrieved more overgeneral memories (51%) than the non-depressed participants (33%). This finding is now discussed in the Results section (highlighted in page 18).

We think, a comparison between two groups in terms of LTP#GE#ESK while controlling for the total memories is not required anymore. The reason being we’ve transformed our data and reanalysed to compare between two groups of participants (in terms of memory elements reported in their retrieved memories) rather than two groups of memories (DF values are thus reduced). The number of memories recalled by each participant is now collapsed and single scores are calculated for all six memory elements.

Reviewer 2

Q: Since the major goal of this manuscript is to determine whether depressed participants exhibited truncated search strategies. The authors should give a more detailed introduction on the hierarchical representation of autobiographical knowledge and the retrieval processes, rather than the interpretative model called CaR-FA-X.

R: The introduction is now revised with further discussion of the retrieval model called Self-Memory System (SMS) proposed by Conway and Pleydell-Pearce (2000) (highlighted in page 4-5). We have
also retained our discussion on the Car-FA-X model as it presents possible reasons why people exhibit truncated search strategies when they are depressed or suffer from PTSD.

Reference

Q: The sample size may be too small—just 13 depressed patients and 13 no-depressed individuals.

R: As mentioned in the Method section, we initially approached 25 depressed patients (highlighted in page 9), but 12 declined to take part. We have noted the small sample as a limitation in the discussion.

Q: The inclusion criteria and the exclusion criteria which participants meet should be detailed.

R: Three exclusion criteria are stated in the Method section under Participants (highlighted in page 9).

Q: Page 13 line 2-11. I am unsure why the degrees of freedom quoted are 313 and 388 given a total of 26 participants.

R: An explanation for this concern is given in our response to the previous reviewer. We’ve reanalysed our data accordingly (highlighted in the Results section; page 14-18)

Q: I think the paragraphs 1-2 of the part of Results would better be removed to the part of autobiographical memory test by cue words

R: The text is now transferred to the Method section with necessary revision (highlighted in page 12-13).

Q: The ways of presentation of the cue words of AMT should be introduced.

R: The way cue words were presented is now written in the Procedure (highlighted in page 12).

Q: The response latency of the cue words is an important variable of AMT. I wondered why it was not analyzed in the current study.

R: Thank you for this suggestion. Response latency data is now reported in the beginning of Results section (highlighted in page 13)