Reviewer’s report

Title: The overall decline of core executive function components in patients with amnestic mild cognitive impairment: a cross-sectional study

Version: 1 Date: 22 March 2012

Reviewer: Michael Malek-Ahmadi

Reviewer’s report:

Major Compulsory Revisions

I have been asked to review the manuscript’s statistical methodology and will attempt to limit my comments to these areas as other clinical experts will be reviewing the other aspects of the paper.

Background

2nd paragraph, line 15 “…are under the umbrella of EF” need to cite this information. Recommend using Chan et al (2008) Arch Clin Neuropsychn

Statistical Analysis

1. The section on the z-score transformations of the executive tests is unclear. The authors state that because the measures were correlated that a direct comparison of the aMCI and NC groups could not be carried out. I disagree with this assertion. Although the correlations were statistically significant, the strength of these correlations was weak to moderate. This does not justify the rationale for not doing the aMCI vs NC comparison. In addition, these same executive measures are compared in a more specific sub-group analysis (Table 4) which also contradicts the rationale of not doing the group comparison.

The subsequent table (Table 5) showing the paired z-score comparisons is not informative as it appears to simply pool the aMCI and NC individuals together, which contradicts the overall rationale of the study. There appears to be no methodological value in using the z-score analyses.

2. When describing the binary logistic regression analysis, please state which group will be used as the reference and which group will be used as the outcome. A listing of the predictor variables would also be helpful.

Results and Tables

1. In general, all group comparisons for the t-tests should include measures of effect size. In this case, the authors will want to use Cohen’s d. Given the relatively small sample, reporting the magnitude of these effects will be provide a more meaningful interpretation that goes beyond simply reporting results that showed a statistically significant effect. Cohen’s d values can be calculated very easily using the means and standard deviations for the variables for each group.
There is a very reliable Cohen’s d calculator which can be found at http://www.uccs.edu/~faculty/lbecker/. The Cohen’s d values can be reported next to the p-values in the tables (Tables 1, 3, 4). For Table 1, the authors need only to report effect sizes for the neuropsychological tests. The interpretive scheme for Cohen’s d is: .00-.49 = small effect, .50-.79 = medium effect, .80 = large effect.

2. Table 5 – Significant differences between the respective groups are noted, but it is unclear what the p-values for these are. The last column of the table appears to report a p-value for the overall effect, but the specific groupwise p-values (NC vs. EF intact aMCI, NC vs. EF deficit aMCI, EF intact aMCI vs. EF deficit aMCI) do not appear to be reported. In addition, Cohen’s d values should also be reported for the respective group comparisons (NC vs. EF intact aMCI, NC vs. EF deficit aMCI, EF intact aMCI vs. EF deficit aMCI).

Table 5 could be separated into 2 tables (NC vs. EF intact aMCI and NC vs. EF deficit aMCI) to facilitate the reporting of p-values and effect sizes for the group comparisons.

3. In reporting the logistic regression results in Table 6, there are some serious errors. First, logistic regression analyses typically report odds ratios (OR) and not betas. Although SPSS does report betas for logistic regression, my experience is that odds ratios are also given in the SPSS output. Given that the authors are using the EF measures to classify aMCI and NC, odds ratios are more appropriate in this context.

Regardless of whether odds ratios or betas are reported, they MUST be accompanied by 95% confidence intervals. If these are not automatically reported in the SPSS output, there is an option to have 95% CI’s reported, if my memory serves me correctly. In addition, the authors must indicate whether they are reporting unstandardized or standardized betas. This is usually indicated in the SPSS output.

4. Page 12, 5th line: “…but the other three tests did not…” There are only two p-values reported after this statement.

5. ANOVA – Is there a rationale for using the LSD post-hoc test? Tukey HSD and Bonferroni corrections are more common. In truth, there is not much difference between the various post-hoc tests, but my preference is to use post-hoc correction methods that are consistent with similar studies.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.