Reviewer's report

Title: Different neural substrates of memory deficits in diffuse traumatic brain injury: a Diffusion Tensor Study.

Version: 1 Date: 4 January 2011

Reviewer: Ryan D'Arcy

Reviewer's report:

This study examined the relationship between DTI and neuropsychological tests of memory in TBI patients. It is a well-written paper and a pleasure to read. The experiment is tightly presented and there is solid potential as a contribution to the literature. The only major revision concerns the need for a better characterization of significance and the ‘take-home’ message in the Abstract, Introduction, Discussion, and Conclusion sections. This will help to maximize the paper’s impact. A number of minor edits/comments are also provided below:

The term “neural substrates” in the title is meaningless. Suggest a more direct title like:
“Diffusion tensor imaging differences relate to memory deficits in diffuse traumatic brain injury.”

Page 4 (top): Why switch back to DAI after introducing concept of TAI?

Page9/10: “In order to exclude the effect of the wide range in the time of evolution in the TBI group, correlations were covariated for this variable.” Please provide further detail.

Page 13 (middle paragraph): It appears that there is bilateral involvement of the arcuate fasciculi. So, why implicate only phonological loop and Broca’s/Wernicke’s involvement? A more parsimonious interpretation that addresses verbal/non-verbal WM and both hemispheres is needed.

Discussion section in general: Whole text is meandering. This section needs to be shortened and more focused.

Figure Legend Figure 1: “It can be observed a widespread white matter affectionation.” Please correct grammar.

Figures 2, 3 and Table 5: Please include correlation coefficients in figures so the reader can evaluate plots against numeric values. Please also provide these values in Table 5.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
**Statistical review:** Yes, and I have assessed the statistics in my report.