Author’s response to reviews

Title: Brain mapping in cognitive disorders: A multidisciplinary approach to learning the tools and applications of functional neuroimaging

Authors:

Daniel J Kelley (djkelley@wisc.edu)
Sterling C Johnson (scjohnson@wisc.edu)

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Author’s response to reviews: see over
Authors’ cover letter and response to reviews

Brain mapping in cognitive disorders: A multidisciplinary approach to learning the tools and applications of functional neuroimaging.

Authors:

Daniel J Kelley (djkelley@wisc.edu)
Sterling C Johnson (scj@medicine.wisc.edu)

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July 18, 2007

Dear Dr. da-Silva,

Enclosed is our revised manuscript entitled Brain mapping in cognitive disorders: A multidisciplinary approach to learning the tools and applications of functional neuroimaging. We have revised the manuscript as suggested by the reviewer and are also including a file of supplemental information. Our revisions are delineated on the following pages of this letter.

We thank you and the reviewer for the helpful feedback on the paper. We look forward to your editorial decision.

Sincerely,

Sterling Johnson, PhD
**Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)**

- While the authors provide good reasons for the necessity of courses such as theirs for medical education, this section could be extended to include more specific examples. **How exactly are insights gained from functional neuroimaging research going to impact medical diagnosis and practice?**

The following will be appended to the opening paragraph:

Brain mapping has great potential to influence medicine by serving as a biomarker for cognitive disorders that has utility in predicting or detecting disease, and in quantifying the effect of therapeutic intervention [1]. For example, longitudinal studies of people at risk for Alzheimer’s Disease may identify patterns of functional brain networks that are predictive of disease susceptibility. In addition, brain mapping studies may influence medical education by providing a rapidly growing knowledge-base of functional neuroanatomical relationships. However, to actualize the potential of brain mapping in medicine, practitioners must be educated in both the benefits and limitations of brain mapping in order to adequately interpret prior studies, take part in ongoing studies, and implement new studies.


- While the program is certainly forward looking and important there is very little detail of what particular topics were covered and how these were discussed. In order for other educators to adopt this approach it would be good to provide more details and perhaps publish the syllabus (outlining topics and assessments) as a supplement to the paper.

We have included a supplement to the manuscript which contains excerpts from the syllabus listing the lecture topic and the sources of educational materials including textbooks and journal articles.

- While the results are convincing they are not discussed in great detail. Why were certain associations between "Neuroimaging Cognition" and "Course Design" significant and others not? This should be discussed in more detail. In fact the discussion is really not very detailed. Simply reporting significant associations is not going to help to optimize the design of courses such as the one presented.

The following will be added to the Discussion section and appended to the second to last paragraph in this section:

Aspects of neuroimaging cognition (Q3,6,7,9,10) which were not significantly associated with any aspect of course design included instilling student confidence (Q6) and the notion of improving medicine through current imaging practices (Q3,7,9,10). This result
may be related to the introductory nature of our course or insufficient multidisciplinary prerequisites for students to build confidence and, respectively, the course emphasis on laboratory research methods for imaging rather than clinical practice methods for individualized medicine which are largely in development. Aspects of course design which were not significantly associated with any aspect of neuroimaging cognition included subcategories of the online system (Q11,Q14), subcategories of active learning engagement activities (Q10,16,19,20,21), subcategories of course materials (Q8,22), and subcategories of overall course content (Q4,Q12). Nevertheless, our course design was assessed favorably overall by students (Table 1) and both the significant and non-significant associations between course design and neuroimaging cognition (Table 2) may be useful metrics to modify subcategories in this course design to further align instructor learning goals with student outcomes.

- The assessment of the course here is restricted to student reports. What were the precise instructions given to students? Was it made clear to students that the questionnaires were for research purposes and that they would be kept anonymous and would not affect grades?

The following will be added as the second sentence in the Survey and Statistical Analysis section of Methods:

Students were instructed that the questionnaire would be kept anonymous, would not affect grades, and would help inform future offerings of this course. Results are reported here in accordance with the University of Wisconsin IRB guidelines.

What other measures might the authors propose for future studies assessing the efficacy of courses such as theirs? Would it not be interesting to investigate the actual long-term effects of this educational "intervention" on the practice of the individuals in the class? Given that the authors only report results from self-report such future possibilities should be discussed and the limitations of their approach clarified.

The following will be added at the end of the discussion section:

Based on our experience, future introductory neuroimaging courses should incorporate more active learning exercises into their multidisciplinary course design. For example, an introductory laboratory unit using neuroimaging software may be a useful alternative to oral presentations by students. Incorporating the design of a neuroimaging experiment as an active learning activity may engage students and foster gains in neuroimaging cognition and confidence. Future studies should consider investigating the efficacy of course design on neuroimaging cognition using alternative measures. Although the SALG instrument is a useful tool to examine the association between course design and student learning gains, these self-report measures are limited by the qualitative subjective experience of each individual that we are attempting to quantify. As an alternative, results from laboratory analysis exercises could provide objective student outcome measures.