Reviewer's report

Title: Rarely selected distractors in high stakes medical multiple-choice examinations and their recognition by item authors: A survey and simulation

Version: 1 Date: 30 September 2010

Reviewer: Jacqueline van Wyk

Reviewer's report:

1. Is the question posed by the authors well defined? (Can be improved)

The Background section in the Abstract is vague. I would have preferred to see a rationale for the study also in the abstract.

I think paragraph 1 and 2 under background should be swapped (first to describe current practice in terms of NF-distracters and then to explain its relation in the current study.

"The number of plausible distractors may vary from setting to setting (this is not clear - settings like educational environments/different types of examinations or accepted as norm in different parts of the world?)

The expertise of the "experts" was not clearly defined. Were these subject specialists as well as educationalists?

Last line of the Background section: to what extent authors can detect these NF.(authors vs designers MC questions)

2. Are the methods appropriate and well described?

I cannot comment on appropriateness of Stats methods used. My statistical knowledge is too limited to be able to contribute to specific details of the analysis that had been performed.

I could follow clearly until the calculative consequences section.

Here the idea of assigning answers to candidates that they did not choose originally threw me off track.

The section referring to the conduction and analysis of the expert survey was also a section that I did not understand.

I think it would have been a valuable exercise not to have identified the correct answer for the experts. (In my experience with assessment moderators, some do not even agree on the correct option).

"If an expert chose two options as equally implausible, One of these was randomly picked out"-(Which one? -the first option or every alternate option)

3. Are the data sound? (No sure)
4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?

   I am hesitant to agree/disagree with the discussions since I think that I may have missed some of the statistical interpretations. The logical conclusion that (less distractors will make the exam easier is understood.) The suggestion to increase the pass mark when less distractors are use makes sense.

   I am not sure whether a sufficiently wide sample of items were analyzed (need to consult a statistician) to verify the conclusions.

   Practically, I can understand the reason to reduce the distractors to 3 (i.e. best of 4 options) but not sure why a further reduction to 2 was deemed necessary.

6. Are limitations of the work clearly stated? (I have include issues for further description e.g. experts)

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

8. Do the title and abstract accurately convey what has been found?

   Rarely selected distracters in high stake medical MC examinations: A survey and a simulation

   I think the title (survey and simulation has connotations that are misleading (an investigation and prediction into .) might be more accurate.

9. Is the writing acceptable? Yes

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

   **Quality of written English:** Acceptable

   **Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

   **Declaration of competing interests:**

   'I declare that I have no competing interests'