Reviewer's report

**Title:** Stability of empathy among undergraduate medical students: A cohort study at one UK medical school.

**Version:** 1  **Date:** 25 August 2011

**Reviewer:** Bruce Newton

**Reviewer's report:**

Major Revisions:

1. Throughout the manuscript it is difficult to tell what group of students is being discussed. The participants section in the methods section needs to be rewritten so that the reader understands that this is a cross-sectional study since no one cohort of students has been followed for all six years. In other longitudinal studies this reviewer has read, the students in a particular graduating class were followed throughout their medical education, and this study has not done that. An additional descriptor can be used, i.e., also state which graduating class each data point represents. It appears that students entering into medical school as early as 2002 filled out the survey instrument. Did all entering year 1 students have IRI-EC & IRI-PT scores that were equivalent? If so, then combining the cohorts makes sense; if not, then each class must be followed in a longitudinal fashion.

2. At the end of the abstract, the authors indicate that changes in the curriculum may have lessened empathic erosion. There are no data to substantiate this claim. If this is true, then the changes in their curriculum need to be addressed in the discussion to support this claim.

3. The authors make a point of using an empathy scale that measures both affective and cognitive empathy, yet in many places in the manuscript they simply refer to "empathy" without differentiating between the two. Considering that one large longitudinal study by Newton et al. used the BEES scale measuring affective (vicarious) empathy, and that many other studies, most by Hojat et al., have used the JSPE to measure cognitive empathy, the distinction needs to be made within this manuscript when discussing results.

4. In the background section, third paragraph, the authors state there are no norms with which to compare medical student empathy. The BEES does have a population norm, so that the vicarious empathy loss (as reflected by BEES scores) seen by medical students can be compared to the general population. This fact needs to be addressed. The authors suggest a norm needs to be established for the JSPE. It is probable that the JSPE can not establish a general population norm, since it was specifically developed for medical education.

5. The last paragraph for the background section needs to be rewritten. The first phrase in the first sentence needs to be struck. Start with, "In October 2007..."
The sentence about offering additional educational support is never discussed in the manuscript and needs to be eliminated.

6. In the methods section, measures section, second sentence, there needs to be an explanation concerning the statement "Given the age of the students...". A novice reader in this field of study will not be familiar with age issues with regard to empathy.

7. In the results section, there needs to be more times at the end of sentences indicating which table is being discussed. This reviewer was often confused as to what table to look at. Furthermore, the appendix is never cited in the text.

8. This reviewer is wondering why you removed the outliers? In every population, there are going to be individuals that are more than two S.D. away from the norm. If the authors feel it is valid to remove the outliers, than an explanation needs to be given to support this decision. In addition, in every survey there are those students that do not fill out the instrument in a valid fashion. For example, filling out all answers with a single number on the Likert scale. Were these "bogus" data removed from the study.

9. In the discussion section, when citing the paper by Colliver, there also needs to be a reference to the letters to the editor that addressed his paper. (cf. Acad. Med., 85(12: 1812-14, 2010).

10. In the conclusions section, the last sentence needs to be rewritten. The study by Newton et al. (2008) was done when there was no change in the curriculum over the seven-year period of the longitudinal study. Therefore, the sweeping statement made that curricular changes account for changes in empathy can not be made.

Minor revisions:
1. Please cite the appendix in your text.
2. In some places, the numerical order of cited references is jumbled. Make sure that all cited references in the text are in rank order.
3. The overall number of references can be reduced.
4. In the results section, with the paragraph starting with, "For IRI-EC, gender differences...", the expression of results as a percentage of S.D. is confusing. An further explanation of why the data would be discussed in this fashion would be helpful.

Discretionary revisions:
1. It may be that those students who continued to take the time to respond to the survey are those that are naturally more pro-social. If so, they be more empathic as well. In light of this, this reviewer was able to see a very clear association between students that refused to participate in the longitudinal BEES study, or who filled out "bogus" forms, with those students who were consistently not following medical school rules and procedures (unpublished observation). It may
be of value to the reader to mention the potential for the more pro-social students filling out the survey as their educational career progressed.

2. It would be interesting to see what specialty the graduating students selected vs. their IRI-EC & IRI-PT scores. The findings would be interesting and help to further enhance your study. Although, this may be a topic for another manuscript.

**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."