Author's response to reviews

Title: Empathy in senior year and first year medical students: A cross-sectional study

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Author's response to reviews: see over
Revisions unsolicited by the reviewers

As a result of the text review by a colleague who is native English speaker – whom we now acknowledge in the manuscript – we introduced a significant number of minor rearrangements in the text that improved phraseology and corrected grammatical errors. Extreme care was taken so that textual changes did not interfere with the content. A noticeable revision was the replacement of the previous title of the manuscript – “When empathy is higher in senior than in first year medical students: A cross-sectional study” by “Empathy in senior year and first year medical students: A cross-sectional study”.

As a consequence of a comment by one reviewer, there was a need to update the reference list. We introduced a new reference with the number #29, which relates to the discussion of the explained variance.

ANSWERS TO COMMENTS BY REVIEWER Gary Rogers

Major Compulsory Revisions

The assertions as ‘empathy declines throughout medical school’ were replaced by the authors in the paper. Specifically, in the third paragraph of background, the authors reinforced that empathy decline was reported merely by “some studies in the North-American context” [8, 9, 10]; in the abstract these assertions were also replaced. Moreover, the statements that suggested the “loss of empathy” as a universal phenomenon were eliminated or replaced by more rigorous observations.

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<tr>
<td>Paradoxically, available results based on self-reported measures reveal that student empathy declines during undergraduate medical training (page 2; lines 5-7).</td>
<td>Paradoxically, some studies in the North-American context using self-reported measures have found that empathy declines during undergraduate medical training. (page 2; lines 5-7).</td>
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<td>Such results are reassuring in the sense that they provide one example of a medical school that seems contradict the empathy decline of medical students (page 2; lines 11-14).</td>
<td>This cross-sectional study in one medical school in Portugal showed that the empathy measures of senior year students were higher than the scores of freshmen (page 3; lines 10-12).</td>
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<td>Despite a general awareness of the importance of physician empathy in patient care, studies</td>
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continue to indicate that empathy of undergraduate students declines throughout medical school (page 4; 2nd paragraph; lines 1-3)

patient care, some studies in the North-American context have found a decline in self-reported measures of empathy of undergraduate students throughout medical school [8, 9, 10]. (page 4; 2nd paragraph; lines 1-4)

Clearly, the data contradict the first hypothesis - The empathy of entering students is higher than seniors – and conclusions from previous studies which suggested that empathy declined with level of training [8,9, 10, 14]. (page 4; 3rd paragraph; lines 1-3)

Therefore, the data contradicted the first hypothesis that the empathy total score of entering students is higher than in seniors and concur with previous cross-sectional studies that found highest measures of empathy in senior medical students [15,16]. (page 12; lines 1-4)

Our study disagrees with empathy declines reported in previous cross-sectional and longitudinal studies [8,9,10, 14] that suggests that undergraduate medical education might impede the desire to understand and “help” patients [8, 9]. (page 14; 2nd paragraph; lines 1-4)

Our findings are similar to those of past studies undertaken with 6 year undergraduate medical programs with Japanese and Korean versions of the instrument [15,16]. (page 13; lines 8-11)

The point made by reviewers in comment 4 of the original review (that the methodology in the current paper gives an accurate account of empathy trends) was fully addressed by the authors at this review. The phrase ‘an even more accurate account’ was rephrased (page 13, lines 11-14) and now reads “Even though no causal interpretations should be made in terms of increases empathy scores due to the cross-sectional design of the study, they open the possibility that the measures might have increased during medical training”.

The reviewer made relevance comments in terms of phraseology and grammatical errors. The authors requested the assistance of a native speaker - Dr Yonah Yaphe, born in Israel – and now are certain that the flaws have now been corrected. There were numerous small textual changes in the manuscript that did not interfere with the content.

**ANSWERS TO COMMENTS BY REVIEWER Barbara Griffin**

The reviewer calls our attention to the low explained variance of the Portuguese JSPE-sv. Nevertheless, in the Social Sciences, values of identical magnitude are accepted as satisfactory [29] [page 14; lines 15-17] and published in many reports. In fact the current figure of 37% is congruent with previous studies that have used the JSPE [16,17].

A second concern of the reviewer was the ambiguous and the poor loadings obtained for some items, and the effect that may have on the psychometric
qualities of JSPE-vP. We are convinced that the items should be part of the scale, since we tested the effect of deleting the poor items (we included the new results in the paper revised; page 14, lines 23-24; page 15, lines 1-8). Our results were:

- Poor loadings (items 18 and 19): we calculated the reliability of the instrument “if items deleted”; in terms of total score (Cronbach’s Alpha) the scores if items deleted is 0.78, as compared to 0.77 reported Alpha for the scale including the items; the presence of the items has marginal effect on the reliability of the scale.

- We tested the effect of the exclusion of the items on the analysis of variance by running an ANOVA with empathy scores calculated with the scale without the poor items. The results were: [Gender: F(1,380)= 6.77, p<.05; Specialty Preferences: F(1,380)= 3.17, p=.08; Medical stage of training: F(1,380)= 16.07, p<.001]. [Pages 14-15; lines 22-29] (page 14, lines 23-24; page 15, lines 1-8). All our conclusions remain, which means that these two items didn’t impact significantly our results. Then, we favor the argument of maintaining the items since a primary intention of the research we are conducting, is to contribute to cross-cultural international research in medical education. Therefore, although excluding the items would be a reasonable choice if this would be a stand-alone research project, we attach great importance to use adaptations of instruments that are as faithful as possible to previous studies run elsewhere. Therefore, we share the reviewer’s concern but decided to maintain the items.

- Ambiguous loadings (items 2, 10, 13, 18, 19, and 20): considering that our main conclusions were based on the total score of JSPE-sv, we are convinced that these ambiguous loadings don’t bias our results.

A third concern related to the conclusions about the “empathy of students”. We are sensible to the reviewers’ point and carefully rephrased in the paper; for example, we replaced this statement by “the empathy scores” (pages 3,6,12,13,15) “students' understanding about empathy” (pages 4,13) and “self-reported empathy” (pages 5,16) to reinforce that this study describe the understanding of students about empathy assessed by the JSPE and not the “actual empathy” of students.

Finally, the reviewer’s “minor point”: gender and specialty preference, stated as “if these hypotheses are “not original,” “a repetition of what others have said,” and “would not add significant value”, one wonders why they are included at all.” The reviewers agree that these are not major focus of the manuscript. This is not the same as saying that deleting those results would improve the manuscript, since empirical research on a complex construct like ours should explore the influence of variables identified in previous studies (gender and specialty preference in this case). The fact is that the topic “gender or specialty preference) and empathy” have been extensively explored in the literature and we do not have relevant additions to make.
3. The verb "to fill" was replaced by "to complete" (page 6, line 7).