Author's response to reviews

Title: Motivational component profiles in university students learning histology. A comparative study between genders and different health science curricula

Authors:

Antonio Campos-Sanchez (acampos@ugr.es)
Juan Antonio López-Núñez (juanlope@ugr.es)
Victor Carriel (carriel.victor@gmail.com)
Miguel-Angel Martin-Piedra (mangel19@gmail.com)
Tomas Sola (tsola@ugr.es)
Miguel Alaminos (malaminos@ugr.es)

Version: 2 Date: 9 February 2014

Author's response to reviews: see over
Dear Dr, Fernando Marques,

Thank-you for giving us the opportunity to revise and resubmit our manuscript entitled "Motivational component profiles in university students learning histology. A comparative study between genders and different health science curricula" (MS: 1406750969119557) and for sending us the careful comments by the reviewers.

In the revised version of the manuscript we have very carefully evaluated all points made by the reviewers which require changes or comments. The arguments raised by the reviewers were very helpful and have helped us to improve the quality of the paper considerably. We also thank both reviewers for their positive comments on the quality of the manuscript.

As you can see in the specific responses to each comment, we have made all the changes and accepted all the suggestions raised by the reviewers, including the following:
- We have structured the background and discussion sections according to the suggestions of referee 1.
- We have included relevant information in the methods section as suggested and we have justified the selection of the statistical methods used in this study.
- We have modified the results section as indicated by referee 1.
- We have carefully revised the grammar and style of the manuscript, which has been edited by a professional native English-speaker, as indicated by referee 2.

All changes in the revised manuscript have been highlighted in yellow.

We hope that we have been able to properly respond to all questions and suggestions made by the reviewers, and we hope that the revised manuscript will be found acceptable for publication in BMC Medical Education.

Thank-you again for the very cooperative review process.

Sincerely yours,

Miguel Alaminos, M.D., Ph.D., B.Sc., Ph.D.
Department of Histology
University of Granada
Avenida de Madrid 11
E-18012. Granada
Spain
Tel.: +34-958-241000 extension 20461
Fax: +34-958-244034
E-mail: malaminos@ugr.es
- Major Compulsory Revisions

1. Background: A more thorough review of the literature will help set the background of the research problem. The importance of the motivation on learning has been reminded several times throughout the background section of article. However the components of the motivation based on theories should be explained more. There is no description of the components of motivation that authors used.

The background section should be structured with theory and earlier studies on research questions. The study was aimed to investigate gender difference and relationship with achievement. Therefore the literature about that should be added in background section to explain problem situation of research.

The research questions should be defined clearly at the end of the section.

**Authors’ response (Au):** The background has been revised and important references have been included in this section. In addition, we have moved parts of the discussion section to the background as suggested by the reviewer (page 4, lines 7-10). The components of motivation and the most relevant theories of motivation have been more clearly explained in the background section of the revised manuscript, and earlier studies have been included (page 3, lines 7-10, 19-27; page 4, lines 1-8; page 5, lines 11-16). The influence of gender has been also considered in the background section according to the suggestions of the reviewer (page 5, lines 19-27).

The research questions have been redefined at the end of the background.

2. Methods:

**Instruments:** Science Motivation Questionnaire II were used. Therefore the psychometric properties (reliability and validity) of the scale should be reported. Is the scale used original language or adopted?

**Au:** The questionnaire was translated to Spanish language and students answered to each question following the same rules established by the original authors.

The reliability of the scale was 0.8596 as determined by the Cronbach’s alpha coefficient. According to DeVellis (2003), a coefficient above 0.80 is “very good,” 0.70 to 0.80 is “respectable,” 0.60 to 0.69 is “undesirable to minimally acceptable,” and below 0.60 is “unacceptable”. The validity of the questionnaire was demonstrated by the authors in their previous publications (Glynn SM, Brickman P, Armstrong N, Taasoobshirazi G: Science Motivation Questionnaire II: Validation with Science Majors and Nonscience Majors. J Res Sci Teach 2011, 48:1159-1176).

All this information has been included in the revised manuscript text (page 8, lines 9-11, 16-17; page 9, lines 22-26).

Information about components of the items (how many items included, any inverted items, how the score of components calculated) should be added.

**Au:** The total number of items was 25, as stated in the revised manuscript (page 7, lines 6-17). As said in the methods version of the manuscript (page 7, lines 19-21), items were randomly sorted as recommended by DeVellis.
The mean score of each component was calculated by determining the average value of the 5 items included in each component (page 8, lines 3-4).

It is expected to write items based on the rules of writing items while developing the original scale. It is not clear why the author needed to chance sort of items, and sentences.

**Au:** We have used the original questionnaire developed by Glynn et al. and validated in their studies (Glynn SM, Brickman P, Armstrong N, Taasobshirazi G: Science Motivation Questionnaire II: Validation with Science Majors and Nonscience Majors. J Res Sci Teach 2011, 48:1159-1176), and we only translated each item to Spanish without changing the sort of the items. The questionnaire published and validated by these authors was already randomly sorted, and we have followed this order in our translation to Spanish. This information has been included in the revised manuscript text (page 7, lines 17-21).

It was reported that the word “science” was changed with the word “histology” in the questionnaire. I think some of the word did not need to change. For instance in item 25 “histology problem-solving skills”.

**Au:** We agree with the reviewer that this could not be necessary. However, in order to increase the internal validity and consistency of the questionnaire, and to follow the indications of Glynn et al., we decided to use the term “histology” throughout the questionnaire. In their publication, the authors state that “The instrument is readily adapted to specific disciplines by replacing the word ‘science’ in each item with the name of the discipline of interest”.

Statistical analysis: The reason of the statistical analysis might be explained. Why was Mann-Whitney U test preferred instead of parametric one? Why was Mann-Whitney U test preferred to compare different curricula instead of variance analysis?

**Au:** We first analyzed the normality of the variables using the Kolmogorov-Smirnov test. Then, we used the non-parametric test of Mann-Whitney because the distributions did not fulfill the minimal criteria for the use of parametric tests, including ANOVA. This information has been included in the revised manuscript text (page 8, lines 4-7).

The same test was previously used in several related publications by our group:


Additionally the implementation process of the study (when were the questionnaire administered) should be explained in the method section. As the instruction might have an effect on motivation, brief information about instruction process, methods used should be added in the method section. The design of the study should be written.

**Au:** We used the questionnaire after most of the course had been taught, in an advanced period of the course.

According to the accurate suggestions of the reviewer, a brief description of the system used and the design of the study have been included in the methods section of the manuscript (page 6, lines 17-20).
3. Results: The first paragraph of the result section should be summarized. Result of the correlation might be presented with table to reported values of correlations coefficients. **Au:** The first paragraph of this section has been summarized as suggested. The suggestion on the possibility of including a table with the correlations is good, but due to the high number of tables that the article already contains, we have now shown the correlation coefficients in the results section of the manuscript.

4. Discussion: The information in second paragraph should be given in background and method section. **Au:** This paragraph has been moved to the background and methods sections according to the reviewer’s suggestion.

The satisfaction described as a component in third paragraph of the result section. But results have not included this component. The description of the component should be reviewed. **Au:** We agree with the reviewer in that this term could generate confusions. Actually, the term “satisfaction” was used to define intrinsic motivation in the background section -as suggested by several authors- and it was not an independent component. To clarify this, we have deleted the term “satisfaction” from the discussion section.

The discussion section should be re-written based on the literature on self-efficacy, achievement motivation, control of learning. Limitation of the study should be discussed. **Au:** The discussion section has been modified as suggested by the reviewer, and some parts of this section have been transferred to the background and methods sections. Some comments on self-efficacy literature have been included in the discussion (pages 10-14). Furthermore, a paragraph discussing the limitations of the study has been introduced in the discussion section of the manuscript (page 14, lines 8-12).

- Minor Essential Revisions
  none
- Discretionary Revisions
  none

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**
None
Referee 2:

Reviewer's report
Title: Motivational component profiles in university students learning histology. A comparative study between genders and different health science curricula
Version: 1 Date: 13 January 2014
Reviewer: Vivek Mudera

Reviewer's report:
Recommend accept without any revisions.
Note to authors: This is a well written manuscript which has analysed motivational profiles in medical, dental and pharmacy students who all take the same taught course in histology. This is a special situation as not many medical schools teaching histology would teach such a diverse cohort making this study unique. The study has a robust experimental design and the authors have analysed and presented their findings in a coherent manner. There are a few minor grammatical errors which will be picked up while proof reading and I would recommend publishing this manuscript without any revision.

Authors' response (Au): We really appreciate the positive comments raised by the reviewer. We have carefully revised the grammar and style of the manuscript, which has been edited by a professional native English-speaker.

Level of interest: An article of outstanding merit and interest in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:
I declare that I have no competing interests