Author's response to reviews

Title: The use of research questionnaires with hearing impaired adults: Online vs. paper-and-pencil administration

Authors:

Elisabet S Thorén (elisabet.thoren@liu.se)
Gerhard Andersson (gerhard.andersson@liu.se)
Thomas Lunner (tlu@oticon.dk)

Version: 2 Date: 29 August 2012

Author's response to reviews: see over
Dear Dr Emelie Aimé,

I am here by submitting a revised version of the manuscript entitled “The use of research questionnaires with hearing impaired adults: Online vs. paper-and-pencil administration”.

Thank you to the reviewers’ for helpful comments; these have now been incorporated in the revised manuscript. My answers to the comments are marked with blue font color in the following text and the changes are highlighted with yellow color in the manuscript. The manuscript has also been through proofreading.

This article presents a study evaluating the way of administrating questionnaires when presented online and with paper-and pencil. We used four standardised healthcare questionnaires intended for hearing impaired adults. Each participant completed all four surveys twice in a cross-over design with half of the participants assigned to each condition. In the study, \( N = 53 \) filled out the questionnaires in both formats. We found out that there was a significant main effect of format in one of the questionnaires (HHIE, \( p < 0.001 \)) in which the participants reported a significantly higher amount of participation restriction and activity limitation in the online format compared with the paper format. No significant main effects of format were reported for the other three questionnaires (IOI-HA, SADL and HADS). We could also report significant correlations between the results from the paper format and results from the online format for each of the four questionnaires (\( p<0.001 \)). The results from reliability tests using Cronbach’s \( \alpha \) showed that the results for all four questionnaires were over 0.70 and that the differences between formats were negligible for each individual questionnaire. From the study we can conclude that the format of the questionnaires do not affect the results of outcome measures for adult hearing aid users. This article makes an important contribution to the literature on the role of using online tools in rehabilitation for hearing impaired adults and will therefore be of interest to the readers of BMC Ear, Nose and Throat Disorders.

The study was approved by the local ethics committee and the data presented in this paper have not been published previously, except where stated. I will be serving as the corresponding author for this manuscript. All of the authors listed in the byline have agreed to the byline order and to submission of the manuscript in this form. I have assumed responsibility for keeping my coauthors informed of our progress through the editorial review process, the content of the reviews and any revisions made.

Reviewer 1

1. **Major compulsory revisions.** For me it is unclear, why a statistically significant main effect of format was found on the HHIE, as outlined in the results section, but nevertheless it is concluded that the format of the questionnaires does not affect the results. The authors have to solve these issues in the abstract and the respective sections, as any reader understands what the key message would be then.

   Thank you for your remark which we find very appropriate. We have now included clarifications of how the results can be interpreted by including results of Cohen’s \( d \), effect size and refer to the developer of the questionnaires data of test-retest. In the respective section has following changes been done:
In abstract/results is following clarified; “The results from reliability tests showed Cronbachs α’s above .70 for all four questionnaires and differences in Cronbachs α between administration formats were negligible.”

In abstract/conclusions is following inserted; “For three of the four included questionnaires the participants’ scores remained consistent across administrations and formats. For the fourth included questionnaire (HHIE) a significant difference of format with a small effect size was found. The relevance of the difference in scores between the formats depends on which context the questionnaire is used in. On balance, it is recommended that the administration format remain stable across assessment points.”

In method/statistical analysis is following inserted: “After ANOVAs were performed calculation of effect size (Cohen’s d) was used. According to Cohen (1988), d = 0.2-0.5 is small; d = 0.5-0.8 is medium and d > 0.8 is considered to be a large effect.”

In results/Effects of order and format of administration following is inserted: “Participants indicated on average a higher score of 3.9 points on the HHIE in the online version of the questionnaire than in the paper version. The effect size of the result was small (d = 0.37). Other than this, no significant main effect of group or interaction effects were observed for HHIE.”

In Discussion is following inserted: “A significant main effect of format showed that the participants in general rated a higher HHIE score of 3.9 points, on a scale of 100 points, in the Internet format than in the paper format.” and “The effect size of the difference between the formats was small therefore it depends on the context where the questionnaire will be used in, which the actual relevance of a difference of this magnitude is [30].”

In Conclusions is following clarification inserted: “In conclusion, there is sufficient evidence that participants’ scores remained consistent across administrations and formats for three of the four included questionnaires. For the fourth included questionnaire (HHIE) a significant difference of format with a small effect size was found. The relevance of the difference in scores between the formats depends on which context the questionnaire is used in.”

2. **Minor essential revisions.** The first sentence in the methods section of the abstract is grammatically wrong or too complex. Please make it clearer and use maybe two sentences instead.
   
   Thank you for spotting this error. We have now divided the sentence into two sentences: “A cross-over design was used by randomly letting the participants complete the questionnaires either online or on paper. After 3 weeks the participants filled out the same questionnaires again but in the other format.”

3. Introduction part (page 3) the second sentence has an error as stated by Saunders stated........
   
   Thank you for observing this writing error, we have now edited the text and “stated” after Saunders is deleted.

4. The second to the last sentence is wrong on page 3, there seems some part of the sentence be missing in front of .... should be obtained...
Thank you for highlighting this error, we have now inserted “that” right before “norms and criteria”, and the sentence is now “Because of these potential disadvantages are why the American Psychological Association has suggested that norms and criteria for online questionnaires should be obtained before the questionnaires can be used as a replacement for the paper-and-pencil questionnaires [9,10].”

5. Is table two not already more like a result than a method table?
   You have totally right, the table 2 is part of the results and the table is now into the Result section.

6. Results, again significant order or format effects detected on ANOVA, which is not reflected in the conclusion.
   Thank you for your remark, this question has been handled in response to question 1 (Major Compulsory Remark).

7. Discussion, last two sentences: no order or presentation effects, see criticism above.
   Thank you for your remark, this question has been handled in response to question 1 (Major Compulsory Remark).

Reviewer: 2

1. Overall, the article is well-written and the subject should be of interest to the journal’s readership. I have just one Major Compulsory Revision to suggest: in the Abstract and the body of the manuscript, the authors state that "A significant effect of format was found on the HHIE (p< 0.001), with participants reporting higher scores on the online format than in the paper format." However, in the Conclusions section, the authors state that "The overall results from this study indicate that the format of the questionnaires do not affect the results of outcome measures for adult hearing aid users." These contradictory statements probably result from the authors' decision to use 2-way ANOVA and F statistics to compare results from online vs paper questionnaires. If the authors used any type of simple t-test to compare the online and paper results on the HHIE, there would be no statistically significant difference between these means because of the relatively large standard deviations reported for each HHIE method. I suggest that a different statistical method should be used to compare the results from online and paper questionnaires utilized in this study. Then the authors' conclusion ("The overall results from this study indicate that the format of the questionnaires do not affect the results of outcome measures for adult hearing aid users") will be supported by comparative statistics for all of the questionnaires, including the HHIE.

   Thank you for your remark which we find very appropriate. We have used t-test on our data with the same result as the results from the ANOVA. We have now included clarifications of how the results can be interpreted by including results of Cohen’s d, effect size and refer to the developer of the questionnaires data of test-retest. In the respective section has following changes been done:

   In abstract/results is following clarified; “The results from reliability tests showed Cronbach’s α’s above .70 for all four questionnaires and differences in Cronbach’s α between administration formats were negligible.”

   In abstract/conclusions is following inserted; “For three of the four included questionnaires the participants’ scores remained consistent across administrations..."
and formats. For the fourth included questionnaire (HHIE) a significant difference of format with a small effect size was found. The relevance of the difference in scores between the formats depends on which context the questionnaire is used in. On balance, it is recommended that the administration format remain stable across assessment points.”

In method/statistical analysis is following inserted: “After ANOVAs were performed calculation of effect size (Cohen’s d) was used. According to Cohen (1988), d = 0.2-0.5 is small; d = 0.5-0.8 is medium and d > 0.8 is considered to be a large effect.”

In results/Effects of order and format of administration following is inserted: “Participants indicated on average a higher score of 3.9 points on the HHIE in the online version of the questionnaire than in the paper version. The effect size of the result was small (d = 0.37). Other than this, no significant main effect of group or interaction effects were observed for HHIE.”

In Discussion is following inserted: “A significant main effect of format showed that the participants in general rated a higher HHIE score of 3.9 points, on a scale of 100 points, in the Internet format than in the paper format.” and “The effect size of the difference between the formats was small therefore it depends on the context where the questionnaire will be used in, which the actual relevance of a difference of this magnitude is [30].”

In Conclusions is following clarification inserted: “In conclusion, there is sufficient evidence that participants’ scores remained consistent across administrations and formats for three of the four included questionnaires. For the fourth included questionnaire (HHIE) a significant difference of format with a small effect size was found. The relevance of the difference in scores between the formats depends on which context the questionnaire is used in.”

I hope you will find the revised article suitable for publication in BMC and I look forward to hearing from you soon.

Yours sincerely

Elisabet Thorén, M.Sc.

Phone: +46 10 103 28 57
elisabet.thoren@liu.se