Author's response to reviews

Title: An accurate and efficient Identification of Children with psychosocial Problems by Means of Computerized Adaptive Testing

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Version: 2 Date: 6 April 2011

Author's response to reviews: see over
To the editors of
BMC Medical Research methodology

Subject
Response comments

Dear editors,

First of all, we want to thank you for the opportunity to revise our manuscript originally titled ‘An accurate and efficient identification of children with problems by means of Computerized Adaptive Testing’. We also want to thank the reviewers for their helpful comments. Attached you will find our response to the reviewers remarks and criticisms.

As you suggested we asked an editor to check the text and we have incorporated his suggestions in the text we are submitting now.

Although our study is not an experimental one, according to Dutch law we needed the approval by an ethics committee. The Leiden University Medical Center Medical Ethics Committee approved the study and this is now mentioned in the text.

We adapted the abstract according to the guidelines and included some information about the context of the study and adapted the style in accordance with the journal style guidelines.

We highlighted the changes made in response to your suggestions and those of the reviewers. We did not do so with regard to the changes made by the editor and the changes in the references, as this lead to a very unclear overall picture.

We hope our response will satisfy you and look forward to your decision.

With kind regards,
also on behalf of the other authors,

Dr. A.G.C. Vogels
Reactions to the reviewers

**Reviewer L. Anselmi**
We appreciate the remarks of the reviewer about the relevance of the study and the study design.

She suggests to include in the title that the mentioned problems relate to children's mental health.

We added the term psychosocial in the title. The revised title is:

Following her suggestions we also have included the acronym CAT after the first time Computerized Adaptive Testing is mentioned and corrected the second sentence (can can).

Also, we added "Item Response Theory" after IRT.

The reviewer is right in asking ‘Would it be PSYBOBA instead SDQ?’ We corrected this mistake.

We corrected the problems in the reference list, with our sincere apologies for the mistakes that we made.

**Reviewer F. Feron**
We appreciate the appraisal of the manuscript by this reviewer too. He is, of course, right in stating that real life implementation of the instrument by means of internet needs to answer more questions than only those questions that we raised in the discussion. We adapted the text in this regard.

We corrected the spellings errors he signalled ("can can", "oureachingly" "specifity" and "threatens"). As mentioned before in our response to Reviewer Anselmi, we corrected the references.

We are not completely sure in what sense the graphics should be adapted, as the reviewer suggests. We clarified the titles of the legends (item location (i.e. severity of items) and person locations (low versus high problem scores) and added corresponding legends to the horizontal exes.

**Reviewer C. Bann**
This reviewers critical questions helped us to improve our manuscript also very much. Overall, the reviewer asks for more information in order to be able to interpret the results. As outlined below we have provided that information.
- She asks how organizations we selected
We clarified this in the text of the Methods section, indication that is concerns a random selection. The adapted sentence is:
“In the first step nine randomly selected regional PCH organizations were found willing to participate in our study.”

- Were the patients invited as a part of regular care?
Yes, we adapted the text of the Methods section to clarify this more explicitly. The adapted text is:
“Second, parents who were invited for a regular care routine health examination of their child…”

- 84% of the parents were invited to participate, but what percentage agreed to participate?
We adapted the relevant sentence to avoid a clear misunderstanding. All parents were invited to participate, 84% of them did so.

- The authors state that the sample is representative of the population for this age group. If possible, please provide a reference regarding the population demographics.
We stated in the previous version that the sample is representative for the group under PCH care, not for the population as such; our claim is therefore based on the large response and the small differences (as indicated by Cohen’s W) between response and nonresponse, not on a comparison between the sample and the population as such.

- Explain what the Cohen’s W is testing.
We added: “(a measure of effect size)”

- Please include a table with the demographic characteristics of the population.
As stated above, our argument is that the sample is representative for the group under care; this claim is based on the small differences between response and non response.
To provide insight in the sample we added a new table 1, presenting demographic characteristics of the respons and non-respons.

- Please provide information about the measures (PSC, SDQ, and PSYBOBA) and their psychometric properties, including references to relevant literature, for readers who are not familiar with these measures.
A more detailed description of the measures was added.

- The authors mention the distinction between clinical and non-clinical CBCL scores; however, a clinical score is not defined. Please indicate what cut score is used to define a clinical CBCL score.
We followed the Dutch CBCL manual; which is now stated explicitly. This concerns the following text:
“A clinical score was defined as a score above the 90th percentile for specific age/gender groups in the Dutch normative sample, following the Dutch CBCL manual[37].”

- Were items exhibiting DIF excluded from the bank of items for the computerized adaptive assessment?
  The text already stated that no items were removed, because all items which showed some DIF were items with a very low prevalence and were expected to have a small impact on final estimations. The original text was: “These items may therefore be expected to have a small overall impact on the final estimations. We therefore decided not to remove them.”

- The authors discuss the statistical results for the items. Was item content included in the decisions regarding item selection to maintain content validity?
  Only items that did not show the pre-required outfit were removed. It was assumed that all other items were valid indicators of the concept to be measured.

- Provide a table with the item characteristics, including the response distributions and/or means, descriptions, item locations, infit/outfit, etc., so readers can see the characteristics used in selecting items for the computerized-adaptive assessment. A table containing item, source, mean, standard deviation, outfit and item location has been made and has been uploaded as a supplementary file.