Author's response to reviews

Title: Dalhousie Dyspnea Scales: construct and content Validity of pictorial scales for measuring dyspnea.

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Version: 3 Date: 12 May 2005

Author's response to reviews: see over
We have responded to each reviewers issues in turn.

Reviewer: Dr. Anbar

1. In the methods section, the focus groups consisted of children between the ages of 8 and 19 years. Yet, when the validation of the scales was undertaken, participating children ranged in age between 6 and 18 years. Why was there a discrepancy between the ages of the children in the focus groups and validation groups? Is it possible that this discrepancy may account for the inability of 6 and 7 year old children to use the scales appropriately? The authors should address this possibility in the discussion.

Response:

We have added this sentence in the discussion. “Our focus groups were conducted with children 8-19 years and the validation sample included children 6-18 years. We designed the scales for use of 8-19 year olds and then challenged the scales with younger children to see if the scales were robust in this age group. We believe that the constructs are difficult for children below 8 years to use. However we cannot rule out that a scale developed for the younger age group could not be developed.”

2. The dyspnea scales appear to have been developed with patients from Dalhousie. In the discussion, the authors should address the cultural impact on interpretation of pictorial scales, and that the results of this study may not apply to other cultures. (For example, a description of a dyspneic sensation as being sharp, burning, or needle-like, may be culturally based. Therefore, the rough rope used to depict such sensations may not be perceived in the same way by a member of another culture.)

Response:

We agree and have added the following to our discussion “These scales were developed with Caucasian children in our centre in Canada. The results may not apply to other cultures that may conceptualize breathlessness in different ways.”

3. Children with asthma and cystic fibrosis can have disease that ranges from slight to severe. In order to understand the results of this study, we need to have an appreciation of the severity of illness of the subjects. For example, it is possible that the children with cystic fibrosis rated the 7th picture of the chest tightness pictorial scale lower than children with asthma or healthy children, because the children with cystic fibrosis were very ill, and had in mind an even tighter chest appearance that would have fallen higher on the VAS.
Response
We have added the following note when describing our subjects:

“Children with CF had mean (SD) FEV1 of 75 (22) % predicted. Our children with CF had the full spectrum of mild to severe breathing difficulty. Children with asthma had mean (SD) FEV1 of 103 % predicted, though we do not know how low their FEV1 dropped during exercise induced bronchoconstriction, or during flare-ups. Overall, they had mild to moderate disease.”

4. Table 1 and Figure 2 mostly present the same information. One of these should be eliminated.

Response
We agree and have eliminated the table as the figure provides data in a way that is easier to understand.

5. There are several small typographical errors within the manuscript that must be corrected. For example, there is an extra period at the end of the second sentence of the Background section. At the end of the same paragraph there is a superscripted reference 1 that appears extraneous.

Response
We have corrected these errors. The superscripted note referred to the footnote, which has now been incorporated into the text.

6. The references should be provided in the text only by number, rather than by number and names of the authors.

Response
We have corrected this error.

7. At the beginning of the methods section IWK should be spelled out.

Response
The IWK is now the official and only name of the Health Centre. Consequently, we have not changed this.

8. In the reference section, the references need to be written in BMC style, e.g., there should be no comma after the journal name, and the volume number should be in bold face.

Response
We have insured that this is the case.
Discretionary Revisions
9. In the abstract results section, consider adding “approximately” before equal.

Response
We have inserted approximately.

10. In the Results section, consider describing the themes that were not included in the scales, and the reasons for their exclusion. For example, why did the authors choose to exclude an affective response scale?

Response
We have added an explanation of our choice.
“Although negative affect was mentioned by the children, we decided not to include an affective scale as it was mentioned only in conjunction with physical sensations represented by the three constructs: throat constriction, chest tightness and exhaustion.”

11. I found the effort scale confusing (as shown in Figure 1). For example, it is not obvious to me that the 4th picture should precede the 5th picture. Perhaps it is for this reason that only 76.8% of 8-18 year old subjects placed the 4th picture in the “correct” order, and only 66% of them placed all of the effort scale pictures in the “correct” order. Perhaps the authors should discuss that based on this result some of the pictures, and especially the 4th picture might be redrawn. In such an event, the scale would need to be revalidated.

Response
We have now noted that the effort scale is less robust and that future research may require revision of this scale.

12. Consider showing the scatter plot of the data that revealed the break between 6-7 year old subjects and the older ones.

Response
We feel that this would be redundant to the table that describes this

13. The authors may wish to discuss whether the statistical differences of p = .015 and .013 were significant, given the multiple comparisons undertaken. Also, they may consider a statement in the discussion regarding the power of the study to detect statistically significant differences based on the number of enrolled subjects.

Response
We have discussed this issue in the discussion.

14. In the Discussion section the authors state that this study demonstrates the pictorial scales were valid psychophysical measures of dyspnea. Would it be
more accurate to state that the scales appeared to be a valid measure for reporting dyspnea for healthy children, and those with asthma and cystic fibrosis? The current study does not address the correlation of the scales with physical measurements.  

Response  
We have revised our discussion to reflect this suggestion.

15. The authors may wish to speculate how children with causes of dyspnea other than asthma and cystic fibrosis would respond to the dyspnea scales. For example, children suffering from vocal cord dysfunction and other upper airway problems may react differently to the throat closing scale than children with asthma and cystic fibrosis who predominantly have lower airway disease. The authors might suggest that studies in such populations are necessary. Similarly, it is unclear how children with dyspnea that arises from lack of conditioning would react to the scales.  

Response  
16. It is not clear to me why PTP’s honoraria from Merck Frosst are a competing interest with this study.  

Response  
We have removed it.

Dr. Marinez

1. The authors must justify the reasons why the results related to effort pictures were missing for one child (Figure 2). In the same way, why the information obtained analyzing only the patients older than eight years did not reach a total of 56 subjects in any scale (Figure 3)?

Response  
One child declined to respond to the effort pictures. This is now noted in the results. In Figure 3, as the legend mentions, these are the number of children who seriated the pictures perfectly. The denominator is the total. This is made clearer in the legend.

2. The authors could add more information about the distribution of the patients according their age. A graphic with such data would be useful.  

Response  
A table is now included that shows the age distribution.

Discretionary Revisions (which the author can choose to ignore)
# The authors could comment in the Discussion, the possible reasons why the asthmatic children placed the sixth and seventh pictures of chest tightness at a different position than the normals and the CF patients.

**Response**
We don’t know and have indicated this in the text.

# The authors could also comment in the Discussion, how they think the present scales should be employed. Would be correct to sum the three scores obtained with the pictures to obtain a global dyspnea index?

**Response**
We have included a brief discussion of the use of the scales