Reviewer's report

Title: Re-evaluating a vision-related quality of life questionnaire with item response theory (IRT) and differential item functioning (DIF) analyses

Version: 2 Date: 3 May 2011

Reviewer: Elizabeth Hahn

Reviewer's report:

This is a revision of a manuscript that addresses two important psychometric issues in the measurement of self-reported quality of life (the use of item response theory for calibrating item responses, and the extent to which a multi-item questionnaire provides an unbiased measure across various subgroups). The authors satisfactorily addressed the initial review and the manuscript remains interesting and is now clearer. There are a few issues that would benefit from some further clarification.

Major Compulsory Revisions

Since many readers will not be familiar with the psychometric methods, it would be useful to add a horizontal reference line on the last figure that corresponds to a classical reliability of 0.9 or better. The line may be derived by assuming unit observed variance, i.e., \( r_{xx} = \frac{\text{var}_t}{\text{var}_o} = \frac{\text{var}_o - \text{var}_e}{\text{var}_o} \), where \( \text{var}_o = \text{observed variance} \), \( \text{var}_t = \text{true variance} \), and \( \text{var}_e = \text{error variance} \) (reciprocal of information).

Although the authors’ response letter discussed the characteristics of the subsets used in the DIF analyses, this information does not seem to be included in the manuscript itself. This information should be briefly included in the manuscript.

Minor Essential Revisions

The figure legends and manuscript text refer to Figures 1A, 1B, etc. However, the figures themselves are labeled Figure 1, 2, etc. This should be revised for consistency.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:
I declare that I have no competing interests