Reviewer's report

Title: Meta-Analyst: software for meta-analysis of binary, continuous and diagnostic data

Version: 3 Date: 26 August 2009

Reviewer: Rob J Scholten

Reviewer's report:

To me it is of great value that a freely available package is available that can deal with many aspects of meta-analysis, including metaregression and meta-analysis of diagnostic accuracy studies. The test methods that the authors used, look very thorough. Unfortunately, I was unable to execute the provided software on my home computer or on my office computer. This applied to both the version that was uploaded on the Journal’s site and the one that I retrieved from the authors' site (https://research.tufts-nemc.org/metaanalyst/), so I couldn’t test the software. My comments, therefore, only pertain to the written paper.

- Major Compulsory Revisions

1. In the diagnostic data module the authors have implemented methods that are now considered obsolete (e.g. the methods used in MetaDiSc and MetaTest). Because a diagnostic study results in two parameters (sensitivity and specificity) that are related, those parameters should be analysed with methods that address both parameters simultaneously. The methods mentioned in references 7-10 of the paper are correct methods. The program, however, also seems to allow for separate analyses of all possible parameters (sensitivity, specificity, accuracy, positive and negative predictive value, positive and negative likelihood ratio, and the diagnostic odds ratio). Such analyses (except for the odds ratio) don’t address the related pairs of parameters. In addition, it’s now advocated to use only the pairs of sensitivity and specificity for meta-analysis (or the odds ratio) and to derive other parameters (likelihood ratios, predictive values) from the summary estimates of sens and spec. To me, only the methods mentioned in references 7-10 should be included in this package (and the more complex Bayesian methods).

2. Diagnostic testing has not been extensive because of the lack of suitable reference datasets. Therefore, the authors compared their results with those of MetaDiSc or MetaTest which use incorrect methods (see also above). The authors should compare their results with procedures run in SAS or STATA. If they have not already done so, the authors could consult members from the Cochrane Screening and Diagnostic Test Methods Group, who might be able to help.

- Minor Essential Revisions

None.
- Discretionary Revisions

None.

**Level of interest:** An article of importance 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.