Reviewer’s report

Title: Measuring determinants of implementation behavior: psychometric properties of a questionnaire based on the Theoretical Domains Framework

Version: 2
Date: 28 October 2013

Reviewer: diane dixon

Reviewer’s report:

This paper works to assess the psychometric properties of a questionnaire designed to measure the TDF in relation to health care professionals’ implementation behaviours.

The study follows on from an earlier DCV study. This cumulative approach to measurement development is to be welcomed.

The study applies Oblique Multiple Group Method (MGM) to the responses of physical therapists to TDM items targeting the behaviour of implementation of physical activity interventions according to guidelines. MGM (sometimes termed OMG) is a relatively infrequently used method of confirmatory factor analysis. I have no practical experience of the method but know of its use. The authors appear to have applied the method carefully and appropriately and, with the one caveat listed below, the method is adequately described.

I think this study will be of interest to the readers of implementation science and is suitable for publication.

I would like to raise the following issues for consideration by the authors.

• A cut off inter-domain correlation 0.85 was used to identify domains that did not show discriminant validity. It would be helpful to understand why 0.85 was used as the criterion correlation value. Application of this criterion indicated that two domains only were non-discriminant – the text quotes a correlation of 0.86 between the domains skills and social/profession R&I but the data in additional file 3 indicates the correlation between these two domains was 0.76.

• The authors compare the MGM solution with the factor solution generated by PCA. I tend to have reservations about the use of PCA because it is not a theory based form of factor analysis. I am generally concerned that the use of PCA introduces a danger of losing theoretical coherence. The data indicate that the PCA solution accounts for more variance in both the 12 and 18 domain versions of the questionnaire. I think it would be useful if the authors could comment on the extent to which the difference between the variance explained is significant (48% cp to 56.5% for the 12 domain and 63.3% cp to 68% in the 18 domain version) and the extent to which the use of PCA threatens theory.

• In the discussion the authors recommend the TDF includes some aspects of the 18 domain structure. I feel that this recommendation is too strong. It would be helpful first to carryout replication studies with different HCP and different target behaviours to ensure that the new 18 domain structure is reliable and not simply
applicable to the current dataset. The development of the TDF was anchored to existing psychological theory and changes to it require strong theoretical reasoning. I am not sure the authors have provided this, for example, memory, attention and decision processes have been added to the nature of behaviours domain because of factor loading data. I do not think a strong theoretical rationale for this decision has been provided. The factor loading data could simply be indicative of a poor relationship between the items and the definition of the theoretical domains.

• It was my pleasure to review the DCV study from this group and i feel it would be of interest to readers if the authors could comment on the relationship between the DCV data and the MGM data, for example were items that performed well on the DCV strong indicators of their target domain. The DCV data might also assist the authors to select items into a shortened questionnaire.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests