Reviewer's report

Title: Discriminant content validity of a Theoretical Domains Framework questionnaire for use in implementation research

Version: 1 Date: 7 August 2013

Reviewer: diane dixon

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This paper employs the method of discriminant content validation to identify measurement items that target the 14 domains of the Theoretical Domains Framework (TDF). The study has delivered a TDF questionnaire for use in implementation research. I feel there is much merit in this paper. The need for such a questionnaire is well argued. The strength of the DCV method is that it enables measures to be developed that possess discriminant validity. Discriminant validity is essential for theory testing because it ensures measured relationships between theoretical constructs are free from measurement confound.

The methods used are robust and replicable. I believe the method will have reliably identified items that are pure measures of the target domains.

Minor Concern

1. I have one main concern with the methods used. The definitions used in the DCV were at the level of theoretical domains rather than individual constructs within domains. I don’t think there is anything wrong with this per se, but I am left wondering whether some items, that at face value would appear to be valid measures of the theoretical constructs were not assigned to the domain definition. For example, no items were assigned to the Goal domain. The Goal domain is composed of two constructs action plans and priority. I was left wondering if the items listed under the goal domain in table 4 would have been matched to action plans and priority if the judges had been matching to the definitions of action plans and priority. I suspect that it is possible that items from existing questionnaires may have been developed to target the theoretical constructs rather than the broader domains. The matching to domain definition might, as a consequence, be influenced by the closeness of the definition of the domain and its constituent constructs. However, I also agree with the explanation provided by the authors for the lack of discriminant items for domains such as goals – intention is often measured in terms of ‘i plan to X’, so it is not surprising that the action plan items within Goals shows such overlap with the intention domain. I think it would be useful if the authors could consider the relationship between the domain definitions and the definitions of the individual theoretical constructs within each domain. That said, I do not think this issue is a fatal flaw; I think it can be adequately addressed in the discussion.

I would also like to suggest to the authors that they consider to what extent the
items they have selected for the questionnaire cover the full range of each domain. This is not a task for a DCV study, which simply assesses discriminant validity. It is possible that one could develop measures with very good discriminant validity that only sample a small portion of the full range of a target domain or construct. I don’t think this is a central issue for this paper but I assume the authors will take this work forward and I make this suggestion in the spirit of collegiality - I share their interest in measurement and have always had a concern about how best to determine whether our measures sample across the full breadth of our constructs.

**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 i have no competing interests