Reviewer's report

**Title:** Measurement of a model of dissemination for health care: Toward a testable theory

**Version:** 2  **Date:** 16 January 2012

**Reviewer:** Jill Francis

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This paper reports the development of operational definitions for measuring constructs in Greenhalgh et al’s model of dissemination and implementation. Interview and questionnaire approaches are developed in the context of specific evidence-based treatments for PTSD in the USA’s Department of Veterans Affairs. This is important work. In theory-informed investigations it is vitally important to address gaps between conceptual definitions (what the construct label means) and operational definitions (how the construct is measured) in order to shift theoretical models from “armchair” theories into scientific theories that can be tested empirically. The paper would thus be of interest to the readership of Implementation Science.

The study involves, of necessity, a complex and ‘messy’ process of identifying measurement approaches in the literature and using these to inform the operationalisation of the 53 constructs in the model. It represents a large amount of complex conceptual work and it is very difficult to represent this kind of work within the constraints of a research paper. Hence, the following may seem like a long list of criticisms but they are offered in the spirit of wanting to enhance the robustness of this very interesting paper.

**Major Compulsory Revisions**

1. The rationale for this study lacks a fundamental justification for focusing on the Greenhalgh et al model. The background and conclusion both note that there are numerous other models but that this model appears promising. So, why is it promising? In what way are the numerous other models deficient and what does this model potentially offer (if it can be operationalised) – especially in the light of the identified problems with the model (eg overlapping constructs mentioned in the methods section; possibly a saturated model). This field can progress not by a proliferation of models per se but only if new models address the limitations of older models without introducing too many new limitations.

2. Methods - Systematic review: What steps were taken to validate the search strategy? On the face of it the search terms may not have adequately identified all the relevant papers. For example, there are several other terms that may have captured the “implementation” domain (eg uptake, adoption, knowledge transfer). Also, searching for the specific labels used in the model assumes that there is consensus in the research community about the meaning of these terms and that no other terms are ever used to label these constructs. This is a brave
assumption but could be supported with some conceptual analysis and an argument to defend this approach. For example, I would be surprised if all the relevant researchers consistently use labels such as “cosmopolitan”, “homophily”, “boundary spanner”, “slack resources”. In addition, could the authors provide more detail about how the de-duplication process was conducted? A reduction from 28,637 papers to 3,555 (before reviewing titles and abstracts) seems to be more than a straightforward electronic de-duplication process.

3. Methods - At the end of the second paragraph I assume that the review resulted in a pool of the ‘potential items’ referred to in paragraph 3. Or was there some other process (eg brainstorming) for identifying potential items? This part of the procedure needs much more clarity.

4. Methods – At “The resulting pool of items was presented to 12 mental health professionals who offered feedback on item redundancy and response burden, and items were further revised by the team for clarity and consistency”, I am left wondering whether any of these efforts included an attempt to assess or achieve construct validity, which would be the primary objective of a study that develops operational definitions of theoretical constructs.

5. Despite an acknowledgement of “limitations” in the final paragraph of the paper, there is no section in this manuscript that explains what these limitations are, nor what are the limitations of the study itself, or of the model. It would be helpful to add a Limitations section that refers to the specific context of this study and why/how the measurement approach can be used in other contexts. In terms of the primary objective of the paper (Toward a Testable Theory), it would be worth noting that operationalising constructs is only one aspect of making a model testable. It also requires, for example, information about construct validity (not just psychometric properties); a clear statement of the proposed relationships between elements in the model that would inform an analysis strategy; and a clear statement about the generalisability of the model and which contexts or factors might limit its generalisability.

Minor Essential Revisions

6. The term ‘dissemination’ is frequently used (eg, pp. 4,5) as though it were synonymous with ‘uptake’. Definitions suggest that dissemination is closer to ‘mere’ information provision as opposed to actual adoption. As the whole field of implementation science indicates that change is difficult and that uptake requires more than passive dissemination, it would be important to use these terms with precision and not to imply that dissemination and uptake are synonymous.

7. Abstract, Methods: This section appears to describe objectives but not methods.

8. Abstract, Results: The second sentence is the only sentence in this section that reports results. Perhaps the other sentences could be moved to Background or Conclusions. Also, given that, in the main text, the results cover about 14 of the 18 pages, I would urge the authors to attempt to report more of the results in the abstract. The abstract appears to contain mostly rationale rather than methods and results.
9. Abstract, Conclusions: The conclusions do not follow from the results presented in the Abstract. It would be helpful to include a conclusion that relates to the findings before broadening the conclusions to the wider issues.

10. Main text - Background: The first paragraph argues that there are three kinds of approaches to facilitating change: individual, contextual, and organisational. One could argue about this three-way split but my major concern here is that the theories that are selected to exemplify the individual approach (notably the ‘knowledge-attitude-behaviour’ model and the transtheoretical model) have been the subject of considerable debate in recent literature and appear to have a poor evidence base. It has been recommended that these models be discarded. It would provide a stronger opening to this paper if more robust theoretical models were used to exemplify the individual approach, as the inaccuracy here may become distracting to readers.

11. This paper cites 104 references. Is this really necessary? For example, the citation to the key paper that is the focus of this study (Greenhalgh et al 2004) is the 20th reference cited. I am not convinced that all of the first 19 citations add to the argument at this point.

12. Results: The first word of the results section is the heading “Innovation”. The results section would benefit from an initial sentence that explains how the results will be structured and explained. This is especially needed because the first actual results from this study are not presented until paragraph 4 (“Questions concerning potential for reinvention were not taken from existing surveys…”). Because comprehension is a function of reader expectation, the reader needs to be told that the section will proceed by first presenting the background relating to each construct and then presenting the study findings.

13. Table 1: I realise that the table is a key aspect of the findings and so is not amenable to extensive change, but I would urge the authors to consider the following points:

a. Complexity is conceptually distinct from ease of use;

b. Knowledge (ie knowing that X is the case) is distinct from skills (ie knowing how to do X)

c. Risk-taking may be distinct from experimentation.

d. High quality data may not be the same as routine data.

e. Some sample items do not conform to generally accepted best practice in design of questionnaire items (eg double barrelled questions).

f. Implications may be different from unintended consequences.

g. An incentive is different from an expectation.

h. Table 1 is formatted to present a survey question and an interview question for each construct. However, there are actually three types of data capture proposed: questionnaire item, interview question, and administrative data. The table would be easier to follow if the administrative data items were presented in a separate column, not in the “survey question” column.
Discretionary revisions (potentially substantial issues)

14. As the results section forms the large majority of the text in this paper, I wonder if it would be more effective to reduce this by limiting it to the findings relating to main objective (ie operationalising the constructs), and leaving the critique of the model (eg overlapping constructs) to the final section?

Discretionary revisions (not for publication)

1. The table would benefit from proof reading (eg Add “what” to “Are the advantages and disadvantages of using the treatment?”; change “Administrative data program adherence to national patient admission change” to “Administrative data program from adherence to national patient admission”; change “There is adequate consultation to support me” to “There is adequate opportunity for consultation to support me”; change “Have there been opportunities to you provide and receive feedback” to “Have there been opportunities for you to provide and receive feedback”).

**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.