Author’s response to reviews

Title: Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures

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Author's response to reviews: see over
December 10, 2012

Dear Dr. O’Connor,

On behalf of my co-authors, I’d like to thank you for again providing detailed feedback about our manuscript entitled “Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures.” We are pleased that you and the reviewers found our manuscript revisions to be satisfactory.

In the pages below, we identify how we have again revised the manuscript in order to address each of the reviewer’s comments and critiques as well as your specific requests. Our responses appear in boldface font beneath each of the reviewer’s comments below. In the text, red font indicates material that has been added or edited since the last revision.

We greatly appreciate the opportunity to again revise the manuscript, and we appreciate the time and effort you and the reviewers have contributed in order to help strengthen this manuscript for publication.

Please do not hesitate to contact me if any of our responses require additional clarification or if there are any other issues that you would like us to address.

Sincerely,

Stephenie Chaudoir, Ph.D.

Dear Dr. Chaudoir,

Thank you for submitting a revised version of your manuscript. I am pleased to tell you that your manuscript has been accepted pending some further minor revisions. Reviewer 1 has recommended a few additional minor revisions, relating mainly to clarification of terminology and use of examples (see link below). I would like you to consider addressing most of these as I think they are reasonable and will improve the paper. We have addressed each of these points, including the vast majority of recommended changes. However, I don’t want you to change the section heading ‘Methods’ as suggested (comment 7). We have not made this change. Also, I have some additional comments regarding the presentation of Methods and Results, so please read my instructions below (rather than comment 8). We have made your suggested changes.

Your revised manuscript and updated search addressed some of reviewer 2’s comments but I would like you to add an extra sentence to your limitations section that deals with the truncation and restricted fields issues. Please add the following (or a variation) following the first sentence appearing on page 24: ‘We did not account for truncation or spelling variants in our search and, in two databases, we limited our search to two instrument-related fields which could have resulted in missing potentially relevant studies and measures.’ Thank you for this suggestion. We have added this sentence to the ‘limitations’ paragraph at the top of page 24.
Additional editorial comments:

1) Figure 2 should be referred to in the main text under ‘Results’. At the end of the (current) first sentence in the first paragraph seems a reasonable place to me.

**We have added the Figure 2 reference to the first sentence of the Results section.**

2) Under Results, paragraph 6 (pg 15, line 5) I think it would be better to replace ‘Our search..’ with ‘Our screening..’ to distinguish the yield of 61 measures from the earlier 112 measures (pg 12).

**We have made this change.**

3) Under Discussion, replace ‘multiple’ with ‘two’ in line 4 of paragraph one (if this is a correct interpretation of your approach).

**We have opted not to change the term ‘multiple’ to ‘two.’ While it is true that the Damschroder et al. and Durlak and DuPre papers are the two frameworks that we most closely adapt in the current work, these two were not necessarily the first (or only) to suggest that a multi-level framework best conceptualizes the variables that affect implementation success. Shortell, 2004; Glasgow et al., 1999; and Proctor et al., 2009, etc. have each articulated the appropriateness of multi-level frameworks for implementation science research. Thus, we’d prefer to acknowledge the cumulative contribution of this wider array of papers through our use of the term “multiple.”**

4) Please include a reference for the ‘General Social Survey’ mentioned on pg 20 of discussion.

**We have now added a citation for the General Social Survey.**

5) Please check your numbers in Figure 2 (598 minus 379 DOES NOT equal 210).

**Thank you for pointing out this error. We have edited Figure 2 to correct for this mistake. The value 598 should have been 589.**

6) In paragraphs 4 and 5 of Methods (pgs 11-12) you include numbers of studies found (598) and full-text articles retrieved (210, 125). While I want you to retain the description of ‘what you planned to do’ in the Methods, I want you to move the numbers (these are results of ‘what you found’) into the first paragraph of the Results (this is consistent with my previous request (of 19/4) for you to report the ‘search yield’ (i.e. numbers) in the Results rather than Methods). This is easily achieved by removing the first sentence from paragraph 4 of Methods on pg 11 (‘This search yielded 598 unique peer-reviewed journal article records’) and the third sentence on page 12 (‘This two-step process yielded a total of 125 full-text articles’) and moving these (or a slight rewording, see below for example) to the Results. Secondly, remove the number ‘210’ from the sentence on line two of pg 12 (replace with ‘Second, full-text articles were then reviewed.’). So the first few sentences of the results should read something like: ‘The search yielded 598 unique peer-reviewed journal article records. After screening titles and abstracts 210 full-text articles were obtained for further screening. 125 articles reporting 112 measures were identified (Figure 2)’.

**Thank you for this suggestion. We have made these changes.**

Similarly, the following sentence (or a slightly reworded one) should be moved to the Results: ‘...interrater reliability was relatively high, ranging from 87 to 100%.’ (as again this is a finding, not a method).

**We have relocated this sentence to pg. 16 after we finish describing each of the coding steps.**

7) In paragraphs 1 to 4 of Results, you describe what you did (methods) to code the measures to your five-factor framework. Much of this belongs in the Methods (after the last paragraph in this section starting with ‘Together...’ on page 12). Again, I would like you to move the bits related to ‘what you planned to do’ (eg. ‘Whenever a measure was identified... we used three methods.’ ‘We then coded each of the identified measures to determine whether it...’ etc) and place this in the Methods section, but leave any numbers, relating to what you found in the Results section. Please contact me again if you
aren’t clear on what I am asking you to do. It might be helpful (as reviewer 1 suggests) to include a subheading in the Methods section on ‘Measure Item Coding’.

Thank you for this very detailed and helpful feedback. We have relocated information about our search and coding strategies to the Method section and have relocated the results of these strategies in the Results section. We have also added three additional subheadings to the Method section—Screening Study Records and Identifying Measures; Measure and Criterion Validity Coding; and Reliability—in order to further clarify the steps in the coding process.

8) Finally, my knowledge of the instrument used by Amemori (2011) (ref 12 in Additional File 2) suggests that it measures at least provider-level, if not also organisational-level constructs. Perhaps it is worth revisiting your coding on this one. Happy to be disagreed with if my interpretation differs from yours.

Thank you for this suggestion. We reviewed the instrument again and provided Amemori (2011) measure with provider-level, patient-level and organizational-level constructs, and updated the manuscript accordingly. To ensure we had no additional measures in our exclusion list that were misallocated we completed an additional review of each of our excluded measures. We made no additional changes to our exclusion list after this additional review.

If you would like to address these comments and submit a revised manuscript, please provide a cover letter responding to the issues above and how you have addressed them. Again, it would be helpful if you highlighted changes to the manuscript (with 'tracked changes'/coloured/underlines/highlighted text) to make it easier to give you a prompt response.

I look forward to receiving your revised manuscript at your earliest convenience. I don’t think the suggested revisions will take very long. Please don’t hesitate to contact me if you have any problems or questions.

With best wishes,
Denise O’Connor, Associate Editor
On behalf of the Implementation Science Editorial Team

Reviewer's report
Title: Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures
Version: 5 Date: 31 October 2012
Reviewer: Laura Damschroder

Reviewer's report:
This draft of the manuscript has significantly improved. The high quality writing and organization result in a very clear and accessible paper that will be of interest to a broad spectrum of readers. Thank you for your very thorough work on this and your attention to all the reviewers’ comments. Table 1 is a treasure-trove of information.

Thank you for your comments and for reviewing this manuscript again.

Minor Revisions:
I do still struggle with the term “Structural” to mean External Context (Pettigrew, A. M., R. W. Woodman and K. S. Cameron (2001). "Studying organizational change and development: Challenges for future research." Academy of Management Journal 44(4): 697-713.) or Outer Setting (CFIR). There are many researchers who refer to structural characteristics of organizations... it might be good to at least qualify “Structural” as e.g., “External Structure” or “Outer Structure.”

We appreciate your concern about our terminology. We have chosen to retain the term ‘structural’ for its simplicity and its precedence for use in many other related behavioral science disciplines. However, in order to further clarify how the ‘structural’ term relates to similar constructs in other existing implementation science frameworks, we have edited the first sentence of that paragraph (pg. 6) to read: “The Structural-level factor encompasses a number of constructs that represent the outer setting or external structure of the broader sociocultural context or community in which a specific organization is nested.”

ABSTRACT

1. A picky wording suggestion # Method: Change “an adapted” to “a modified” – you are proposing a modified framework – it’s not adapted to a particular setting.

Thank you for this wording suggestion. We have made this change.

2. Results: adoption may not be the best example because it is controversial as an implementation outcome – though it is included in the list from Procter and colleagues’ paper. You cite its definition later in your paper: the “intention, initial decision, or action to try or employ an innovation or evidence-based practice”...which implies it is an antecedent to implementation, not an outcome of implementation. To avoid this bit of a minefield, list another example like sustainability which will resonate with more people. It’s ok to leave adoption in your list, however, because there are differing opinions about its place.

Thank you for this suggestion. We have removed the word ‘adoption’ and have simply retained ‘fidelity’ in the parenthetical example.

BACKGROUND

1. “Multi-level variables” add an e.g., team-level, organizational-level, policy-level

Thank you for this suggestion. We provide examples of multi-level variables in the sentence, including the innovation and the implementation context, so we have opted not to add additional examples here.

2. You characterize QUERI as an example of “organization” – if you keep the QUERI example, it should be “health system.” A clearer example might be Klein & Sorra’s Implementation Effectiveness model (Klein, K. J. and J. S. Sorra (1996). "The Challenge of Innovation Implementation." The Academy of Management Review 21(4): 1055-1080.) at the organizational level. Also, you cite #15 (the IHI Breakthrough Series), this is related to QUERI.

We agree that Klein & Sorra’s Implementation Effectiveness model offers a better example of a framework that focuses on organization-level constructs (e.g., organizational climate for implementation), and have changed the text accordingly.

3. Bottom of page 5. Constructs related to the individual provider and those related to organization are examples, right? This needs to be indicated.

Thank you for noting this point. Our use of “e.g.” and parentheses was confusing. We have edited this line to be clearer.

METHOD

1. This section should be called something like “Synthesis Method”
Per the editor’s request, we have not made this change.

RESULTS
1. Move the 2nd, 3rd, and 4th paragraphs under METHODS in a subsection entitled something like “Measure Item Coding”

Thank you for this suggestion. Per the editor’s request, we have relocated some information from the results section to the method section. We have added 3 new subheadings in the Method section in order to clarify the points we make in the text.

2. Bottom of page 14: did you include any unpublished measures that you were able to obtain from the authors? If so, then you should say that you did not include “unpublished and unobtainable” measures.

We have made this change to the text of pg. 14 and to Figure 2.

DISCUSSION
1. You can considerably condense the 1st and 2nd paragraphs.

We have condensed these paragraphs into one.

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' below

Reviewer's report
Title: Measuring factors affecting implementation of health innovations: A systematic review of structural, organizational, provider, patient, and innovation level measures
Version: 5 Date: 31 October 2012
Reviewer: Heather Colquhoun

Reviewer's report:
The author’s response and revisions to this manuscript are well thought through and articulate. I appreciate the time taken to address each of the points raised by all reviewers. The terminology issues that were present throughout many aspects of the paper have been resolved and are consistent. There is now clarity in terms of the objectives of the paper, required detail regarding the search strategy, the coding process, coding reliability, and the inclusion of education-based measures. Your response to my issues regarding placement of methods versus results content is well taken. I am keen to be consistent with the Implementation Science guidelines and am happy to defer to the journal editor for this particular issue.

Many improvements to the conclusion are noted as is the addition of a limitations section. The scope of hat was achieved is now consistent with the paper. Well done. I am pleased to accept this paper for publication and look forward to reading it online.

Thank you for your comments and for reviewing this manuscript again.

Major Compulsory Revisions
None

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