Author’s response to reviews

Title: Choosing implementation strategies to address contextual barriers: Diversity in recommendations and future directions

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Author’s response to reviews:

We appreciate the constructive comments from the reviewers and believe these have strengthened the manuscript. Substantive changes to the manuscript have been noted in the replies to the reviewers including the page numbers and lines of the revisions. Additional minor edits were made to improve economy of expression and the clarity of the document.

Reviewer #1:

1. The title does not convey what the paper provides. I don't think they have a tool for mapping. Rather, they have as stated in their conclusions they attempted to develop "an implementation strategy selection tool."

Reply: We appreciate this observation. The title has been changed to “Choosing implementation strategies to address contextual barriers: Diversity in recommendations and future directions” (Lines 1 and 2)

2a. external validity of the findings - the participants in the survey are self-described experts, but there is no information provided as to whether they are indeed implementation experts, i.e., have they actually implemented anything. This becomes even more of issue because of the mode of selection. Invitations were sent to individuals who published a paper citing CFIR, i.e., researchers. This might contribute to internal validity, but takes away from external validity.
Researchers may have implemented research studies, but that is a far cry from the usual implementation of practice change or system redesign.

Reply: Our team struggled to find a strong working definition for “implementation expert” and found little guidance in the literature. Many people may be comfortable indicating that they have some expertise implementing a particular innovation in a specific setting but would be reluctant to claim broad expertise outside of their direct experience. The question we developed for self-identified expertise had participants evaluate their knowledge and experience related to changing care practices, procedures, and/or systems of care. Given their knowledge and expertise, would others consider them an expert (see page 7, lines 161-165)? Given that we asked about both knowledge and experience we feel that affirmative responses include participants who have direct implementation experience.

We do not know how much experience had (i.e., number of innovations, number of sites, staff, etc.) but we tried to capture the context of that experience by asking about how much of their current employing was dedicated to research and clinical responsibilities. Our recruitment strategy (page 7, lines 150 to 157) aimed to be broad and those with published articles citing the 2009 CFIR article were only part of the target audience. Users of www.CFIRGuide.org include a mixture of researchers and boots-on-the-ground practitioners. Notices of the study were also distributed through the National Implementation Research Network (NIRN), the Society for Implementation Research Collaboration (SIRC), and the Implementation Networks’ message boards and mailing lists. These mailing lists include both researchers, administrators, and practitioners.

2b. For example, recognizing that the results are what they are, what is one to make of the finding that the level of difficulty, i.e., the work and resource requirement for the strategy were not influential in more than 25% and extremely influential in only 20%? Should this be interpreted as 45% came with enough resources?

We do not believe that all level of difficulty responses falling outside of the “somewhat influential” category should serve as a proxy for whether an organization does or does not have enough existing resources. Difficulty was anchored to work and resources in the question. These are finite in all organizations, even those well-resourced. Whether an organization can realistically deploy the resources for an implementation strategy has a stronger bearing on feasibility (can the strategy realistically be applied to the barrier?). We believe that the higher ratings of feasibility over level of difficulty support this interpretation.

Overall, the data in Table 3 indicate that when barriers are present they need to be addressed with relevant strategies that are likely to have a big impact. These variables are key considerations in the intervention mapping approach addressed in the discussion and a more explicit connection
between the variables influencing rankings and intervention mapping has been added to the manuscript (page 16, lines 373+).

3. Even the internal validity is somewhat questionable based on the free text responses indicating difficulty in interpretation.

Reply: Qualitative comments accompanied 18.2% (count = 188) of the 1030 responses provided. Issues related to CFIR barrier (5% or count = 9) and issues related to context (7%, or count = 13) reflect statements that most closely reflect difficulty in interpretation. These numbers do not reflect widespread confusion that would undermine internal validity. The table note for Table 4 provides the context for the percentages reported.

Had the respondents produced high consensus on the strategies relevant for each barrier, would some participants communicating want for additional details be viewed with the same weight? The study was designed to identify whether there are strategies that are a good match for specific types barriers. In any particular implementation initiative the strategies and barriers would be operationalized in greater detail as needed for the initiative. We had deemed it impractical to create 20+ page dossiers on specific initiative(s) because the time commitment for participants would have been much more extensive and the results would be limited to the example initiative(s). Including multiple initiatives would have compounded the problem. We stand by the approach taken in this study and enumerate its limitations on pages 12-13, lines 276 to 284, pages 14-15, lines 316 to 340, and page 17, lines 397 to 401...

4. Have the strategies really been mapped to barriers?

4a. So many of the strategies seem to be generic and all-purpose. What does mapping mean in this circumstance?

Reply: While tailoring strategies to a specific initiative would be expected the details of that tailoring would have been overly specific for the task in this study. The aim of the study was to identify whether invariant recommendations could be obtained given project independent characterizations of implementation strategies and CFIR-based barriers. This level of breadth/abstraction is also what is necessary for any metanalytic characterization of implementation strategies and implementation barriers in the broader research literature. This aim has been clarified in the abstract (page 2, lines 32-35) so it’s scope is more clearly consistent with the introduction’s summary (page 6, Lines 133-137).

b. the degree of heterogeneity of responses is very great.
Reply: Yes, and more than anticipated. The revised manuscript highlights this as the primary finding in the title, abstract, discussion, and conclusion.

5. Although a study in which the authors tried to illustrate the potential is cited (ref 32). In addition to the reference not being readily available, the discussion is not really on point. The authors describe associations between outcomes and barriers, but there is no discussion about how or even whether interventions mapped to those barriers were or could even be effective.

Reply: There appears to have been some confusion regarding which study was used to illustrate the potential value of the study’s results. The telephone lifestyle coaching program (TLC) is reference 31 (Damschroder et al., 2017) and is published in Administration and Policy in Mental Health and Mental Health Services Research (APMHMHSR) APMHMHSR is a public health journal published by Springer with a 2017 impact factor of 2.821 and Scimago ranks this journal in the top quartile of health policy journals (https://www.scimagojr.com/journalsearch.php?q=26613&tip=sid&clean=0).

Reference 32 serves as the citation for the TLC’s project’s definition of implementation effectiveness. Translational Behavioral Medicine is published by Oxford Academic and is one of the two journals sponsored by the Society of Behavioral Medicine, a multidisciplinary society with strong interests in implementation science.

Damschroder et al., (2017) focused on the relationship between CFIR-based barriers and outcomes. As such, a mapping of ERIC strategies to barriers was not obtained. ERIC strategies related to TLC were noted in that study’s Appendix File 1; however, this list was not a stakeholder driven accounting of ERIC strategies used in TLC. As a result, the implementation strategies noted in this study were not linked to outcomes. This study was selected as a case example precisely because specific barriers had been identified in relation to implementation outcomes and we wanted a case example that focused on a limited number of key and demonstrably meaningful barriers. A prospective study linking barriers to strategies to outcomes would be necessary to fully answer the reviewer’s concern. While we share this reviewer’s interests, such a study is beyond the scope of this paper.

6. The discussion does a very nice job of addressing the problems with the nature of the survey itself as well as what it is trying to get at. However, given the findings and the discussion, I think that the authors go too far in concluding "This tool can aid implementers and researchers in identifying a more targeted set of candidate implementation strategies that may best address CFIR-based barriers.” Admittedly that is a very wishy washy statement - the word 'may' could mean anything from a 1% to 99% chance.
Reply: We agree with the reviewer’s analysis of the word “can” and this word choice was deliberate. The discussion highlights the need for more detailed intervention mapping and that the tool can be viewed as an aid to facilitate taking a broad look at potential implementation strategies during the intervention mapping process. We believe the updates to the title, abstract, discussion, and conclusion help emphasize the qualified nature of the study’s conclusions and in context should not over-inflate the reader’s estimate of the tool’s status.

7. Finally, it seems to me that the major finding is not the putative mapping, but rather the heterogeneity and explaining or at least speculating further about why there is such heterogeneity would make for a more solid contribution.

Reply: We agree. The title, abstract, discussion, and conclusion have been updated to more strongly emphasize the heterogeneity of the findings and the implications this has.

Reviewer #2:

1. The example provided in the discussion, of application of the CFIR-ERIC Implementation Strategy Matching Tool, based on a published evaluation of a telephone lifestyle coaching program (TLC) within VHA provides useful practical context. It would be interesting to know how the strategies selected by experts in the current study mapped to those actually implemented in the TLC program, by those with knowledge of local context and underlying factors, and whether this corresponded with implementation effectiveness across different sites. I.e. did experts select strategies that were actually implemented and associated with greater intervention effectiveness? Or did they endorse strategies that were less effective in practice?

Reply: See the reply to Reviewer #1, comment 5. Additional File 1 of the TLC paper provided an informal inventory of ERIC strategies employed at the national level in support of TLC. Nine of the 13 strategies (about 70%) listed in the TLC Additional File 1 were also identified in the case study mapping in the current paper. We decided not to integrate the information provided in the TLC Additional File 1 with the case study because the additional file did not reflect a comprehensive accounting of the strategies employed from the view of key stakeholders and the summary focused on national level strategies and not locally arranged strategies.

2. An aspect I feel is missing from the current study is the lack of inclusion of implementation recipients. Obviously this is not possible when assessing theoretical barriers through a survey but
it would be useful to provide guidance as to how to include the opinions of those 'on the ground' when selecting implementation strategies to address locally identified barriers.

Reply: We agree that engagement with key stakeholders is important, but a more full treatment of this is not well situated for this paper. Stakeholder engagement is integral to Intervention Mapping and we believe the revised manuscript’s increased emphasis on this type of process will direct interested readers to resources that will emphasize stakeholder engagement.

3. If the purpose of a tool such as CFIR-ERIC is to simplify the implementation landscape then one wonders if finding a way to reduce the number of possible intervention strategies, by excluding those infrequently endorsed by experts, coupled with more detailed mapping of determinants, may be one way to achieve this.

Reply: The revised manuscript places an increased emphasis on the role of a detailed mapping of determinants (e.g., Intervention Mapping) in line with this comment.