Reviewer’s report

Title: Measurement Properties of a Novel Survey to Assess Stages of Organizational Readiness for Evidence-Based Practice in Community-Level Prevention Programs

Version: 2 Date: 2 September 2011

Reviewer: Sue Brennan

Reviewer’s report:

General

The authors report development and initial testing of a 23 item instrument designed to measure organizational readiness for evidence-based practice (EBP) in public health agencies responsible for delivering community-based prevention programs. The instrument was designed to operationalise a four stage model of the implementation of evidence-based practice, which is based primarily on diffusion of innovation theory. Measures of this type are important for understanding the factors that promote or impede adoption of EBP. Publications explicitly reporting development and evidence of the validity and reliability of these measures provide important guidance for other researchers.

The evidence of measurement properties reported in this paper is preliminary; however, the paper makes a potentially useful contribution. The analyses reported are based on administration of the instrument to a single sample of public health professionals (RR 277/393, 70%; 243 of which provided usable data for the analysis). Confirmatory factor analysis was appropriately used to test the construct validity of the instrument, and the methods and results of the CFA appear adequately reported. The relationship between scale scores and scores on a 3 item (untested) measure of organisational climate was assessed as an additional, albeit limited, test of construct validity. Internal-consistency was assessed for the final set of scales (Cronbach’s alpha reported for each). A subsample of professionals in the original sample (n=92) were administered the instrument a second time to assess test-retest reliability.

Major Compulsory Revisions

1. Overall: Throughout the background (and some parts of the discussion) the authors need to improve the clarity of writing. In part, this could be done by using more consistent terms and phrasing. There are two main areas where I felt this applied:
   - In describing the construct measured by the instrument (is it ‘readiness for EBP’, ‘organization readiness for delivering EBP’, ‘characteristics … that signal [organizational] readiness to incorporate evidence into practice’, ‘organizational readiness for integrating research evidence into practice’, ‘readiness for evidence-based decision making’). Using a consistent term/phrase would make
the text easier to follow, and potentially provide greater conceptual clarity around the construct itself. As it stands, I am left with the impression that the authors are unsure whether they are measuring ‘readiness’ or ‘contextual factors that are antecedents of readiness’. I am also unsure whether they are intending to measure readiness for a specific intervention (as implied by item wording) or readiness for EBP in general.

- When referring to the adoption or implementation of evidence-based interventions the authors use a wide range of terms that have subtly different meanings, but are used largely as synonyms (e.g. dissemination, adoption, implementation, use, uptake, ‘connecting with’ (?), replication (?), applying, integrating, incorporate, ‘moving … into practice’). I realise this is complicated by the fact that ‘adoption’ and ‘implementation’ are stages within the implementation process, but I think this only heightens the need for consistent language. It would be easier for the reader to follow if the authors used a consistent term, stated they were using this throughout as an overarching term, and used other terms only when explicitly referring to a specific stage of implementation.

2. The description of the theoretical basis for the instrument (paragraph 3) is, in my view, difficult to follow and too vague to enable readers to assess the appropriateness of the instrument content for measuring the intended domain. An overarching description of the staged model on which the instrument is based and a brief description of each of the stages is needed. An explicit definition of ‘readiness’ as the authors intended to operationalise it, and a brief description of how their definition relates to recent conceptualisations of readiness is also required (e.g. {Holt, 2010 #3454; Weiner, 2009 #3065; Weiner, 2008 #2355; Holt, 2007 #1880} or equivalent from the diffusion of innovation literature). The description should clearly identify the critical factors thought to create ‘readiness’ at each stage of implementation of EB practice, be referenced to supporting literature, and provide sufficient detail to allow the reader to judge whether the items adequately assess these factors. The brief definition of the stages provided in the methods sections goes some way to addressing this, but needs fuller explanation in relation to the theoretical model.

3. Study participants: Clarification about the sampling methods and rationale is required. The rationale for using a purposive sample, with subsequent snowballing, rather than a random sample is unclear, with potential ramifications for the analysis. The method(s) used to identify potential respondents needs to be specified (e.g. individuals know to the investigators, from a database or mailing list, those with specific positions or roles ???). It is also unclear to me whether potential respondents in the purposive and snowball samples were sampled as representatives of their organisation, representatives of particular programs that are independent of organisations, or on some other basis. Presumably, the units sampled relate directly to the intended unit of analysis for the instrument (which appears to be organizational-level), but I am unclear when reading the sampling methods what the intended sampling unit and unit of analysis was. Overall, I found the section on sampling difficult to follow, and have made some additional comments under minor essential revisions.
Minor Essential Revisions

4. Bckgrnd, para 2, sentence 1: I am not sure what is meant by ‘connecting with’ and ‘ready for replication’ — do you mean ‘using’ and ‘implementation’. I encourage the authors to check both the background and discussion for unnecessarily complicated phrasing and replace with plain language (e.g. bckgrnd para 3 ‘lay much of the groundwork’; discussion para 4 ‘fabric of the organization’).

5. Bckgrnd, para 3: There are two ideas in this paragraph and the mixing of the two is confusing. The first idea, I think, is about what constitutes EBP in a public health organisation. The second is that models of dissemination and implementation (of innovations?) provide a framework for understanding the process and necessary conditions for adoption of EBP. Splitting these two ideas into separate paragraphs would be clearer and allow the authors to provide a clearer description of the theoretical framework (see point 2, major compulsory revisions).

6. Bckgrnd: There is a growing body of research in health care on the assessment of ‘organisational readiness’, including a comprehensive systematic review of instruments referenced by the authors in the discussion {Weiner, 2008 #2355}, and ‘organisational context for evidence-based practice’ (e.g. {Estabrooks, 2009 #3134;Helfrich, 2009 #2747}). The case for a new measure needs to be presented in the background and argued within the context of existing instruments, to allow the reader to assess how this new instrument will contribute something over and above existing measures.

7. Methods, Study participants, para 2: The number of unique organisations represented by respondents should be reported for both the overall sample, and the repeat administration.

8. Methods, Study participants, para 2: The final analytical sample is stated as 243 in the text and the header of table 1. However, the numbers in table 1 (mostly) add up to 242. Does this discrepancy reflect missing responses to demographic items or is there an error?

9. Methods, Study participants, para 2: The time interval between the first and second administration of the instruments needs to be reported. The response rate for the repeat administration should also be reported.

10. Methods, Study participants, para 2: Was ethics approval required for this project? If exempt, then there should be a statement to this effect (I couldn’t see this stated anywhere, but may have missed it).

11. Methods, measures para 1: The description as it stands provides the reader with little information to assess whether the selection of a subset of items from the original instrument was appropriate and how the other sources of information were used to guide selection and modification of items. For example, did the Steckler instrument include subscales that measured the same dimensions (or
stages) as in the new instrument? If so, were a subset of items chosen from each subscale or were subscales used in their entirety? Did the results of the qualitative study [20] and review [19] referenced by the authors provide a basis for identifying and/or prioritising key dimensions to measure? Were other content experts involved in selecting, refining or grouping items? The authors need to provide a description of the decisions made and how the additional sources mentioned informed these decisions.

12. Methods, measures para 2: The appended version of the instrument and table 3 only report items against the factors from the final model. The authors should report the initial set of items against the original four-factor model. This could be done with footnoting in results table 3.

13. Results, table 3: The factor loading for all three models should be reported to allow the reader to compare results across the different models, most importantly allowing comparison of the hypothesised four factor model with the final model.

14. Discussion, para 3: The 3 item measure of climate is a new measure, and it appears from this paper that its measurement properties are yet to be established. The construct validity of the measure is therefore unknown and, as such, the authors’ finding that climate was related to each of the stages of readiness should be stated with appropriate caveats.

15. Discussion, para 4: Claims that other measures are i) not sequential and ii) substantially longer, should be supported by referenced examples, preferably of the widely used instruments.

16. Discussion, para 4 & Conclusion para 1: Spell out dissemination and implementation (D&I) in full.

17. Discussion, para 5: Additional testing is required to determine whether this measure of readiness for EB is indeed predictive of actual adoption and implementation of EB. This should be discussed.

18. Discussion, para 5: The authors do not mention conceptual or analytical issues associated with measuring an organisation-level construct from individual level data (i.e. level of analysis issues), and how clustering and consensus of views (or the absence thereof) may influence how data is analysed and findings interpreted. This has important ramifications for the valid measurement of an organisation level construct and should be considered (see for example, {Klein, 2000 #3875}).

Discretionary Revisions

19. Title/abstract: The assessments of measurement properties presented in this paper are preliminary (single sample, most based on single administration, limited range of assessments) – the authors might consider rewording their abstract, and possibly the title, to reflect this.

20. Bckgrnd, para 2. I found the shifting between practitioner- and
organisation-level when referring to failure to implement EB interventions confusing. Given the instrument aims to measure organisational-level readiness for adoption of EB interventions, I would expect the need for this measure to be argued based on failure to adopt EB interventions at organisational level and the need to understand the factors that lead to this. Perhaps reword the first sentence to focus on organisation-level or explicitly state the link between individual level adoption and organisational level.

21. Methods, study participants: Did the authors aim to recruit multiple informants per organisation and, if so, did they pre-specify a minimum number of respondents required per organisation for data to be used in the analysis (I see in the discussion, there was only one respondent in some organisations, so presumably not but this should be stated)?

22. Methods, measures para 1: A minor point, but I am unsure why the authors have not stated the exact number of items in the item pool from the Steckler instrument and the number selected for the new instrument.

23. Methods, test-content validity: The methods and purpose of the ‘cognitive response testing’ should be specified in more detail. (e.g. individual interviews in which respondents were asked to think aloud when responding to items? Used to assess clarity of wording, interpretation of items, acceptability of the instrument and ease of completion??).

24. Methods, measures para 2: The description of the organisational climate measure should be reported in a separate paragraph and the number of items for this scale reported separately. As it stands, it is confusing as to whether this is part of the ‘readiness’ measure or a separate measure.

25. Methods, CFA, para 2: Following on from comment 24, the same applies to the description of the analysis of correlation between readiness scale scores and the climate measure (CFA section, para 2). This is a separate test of construct validity from the CFA and would be clearer reported in a separate paragraph. A subheading ‘additional analyses’ or something more specific, might also be appropriate.

26. Results, table 5: The authors report mean scale scores by program type and whether scores are significantly different (p<.05) from the reference group. It would be preferable to report the difference in scale scores compared to the reference group and confidence intervals for each.

27. Discussion, para 4: Is it the ‘degree of integration of EBP’ or is it the degree to which an organisation is capable of integrating evidence-based practices. I don’t think the measure is assessing actual integration so much as capability, resources etc for integrating. Perhaps consider rewording.

28. Discussion, end of para 4: The developers of this instrument are best placed to make a call on whether their instrument is measuring ‘readiness’, ‘determinants of readiness’, or a combination of both. As a researcher who has attempted to wade through these instruments and separate measures of
readiness for an imminent to change from those that measure contextual factors that support change in general (i.e. potential antecedents of readiness), I would welcome the authors providing guidance to the reader about where there measure fits! This is more than a trivial request; such interpretations can make an important contribution to the definition of the readiness construct.

29. Discussion, para 5: what additional data do the authors have to support their statement that the instrument is ‘easy to complete’ other than response rate. Data about missing items, for example, would strengthen this case.

30. Discussion, para 5: I am not sure what the authors mean by the ‘which suggests the feasibility of … longitudinal assessments’. Is this speculative? In the absence of data from a longitudinal study, I would prefer to see this statement removed.

31. Discussion, para 6: Shifting this definition of EBP to the background would address some of the confusion I had around whether the focus was on implementing a specific intervention/program or on implementing EBP in general.

32. Conclusion, para 1: As I understand it, there is conflicting evidence around whether interventions tailored to stage are more effective (see {Riemsma, 2002 #2488}). However, there may be a more recent reference (ideally to a systematic review) available supporting the authors’ statement? If not, perhaps this statement could be made less strong.

33. Appendix, instrument: addressing the following may provide greater clarity about the intended content of the measure for those seeking to administer the instrument and potential respondents.

- Community awareness domain: There seems to be a mismatch between the introductory statement for items measuring ‘community awareness’ and the content of items 9 and 10. The second sentence in the introductory statements says respondents will be asked about ‘your agency’s awareness of sources for evidence-based intervention’, however the items appear to be measuring whether there is community support for change (ie. obesity is considered a problem, the proposed intervention is supported as a solution). Has this sentence been included in error?

- Resource maintenance domain: These items appear to measure ‘capacity’ to maintain or sustain the intervention, rather than whether a specific intervention has been sustained. A change to the introductory statement as follows would make this clearer … ‘to understand capacity to maintain or sustain the intervention.’

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

**Quality of written English:** Needs some language corrections before being published

**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 related to this manuscript. My research is on methods used to evaluate quality improvement interventions in healthcare, with a particular interest in measurement of organisational context. However, I am not currently developing a measure of this type and see no obviously conflict related to review of this paper.