Reviewer’s report

Title: Validation of a core patient-reported-outcome measure set for operationalizing success in multimodal pain therapy: Useful for depicting long-term success?

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Reviewer: Peter Newcombe

Reviewer's report:

This is an interesting manuscript that reports the validity (and to some extent, reliability) of a "success criterion" for patients following multimodal pain therapy. It is generally well written and covers, in detail (and understandably) the statistical analyses that give confidence in the research achieving its aims.

The Abstract summarizes the research. More detail of the 135 participants should be included (at the very least gender and age). There is a heavy reliance on the 4 validity indicators but little of the reliability (internal consistency) results (save the final sentence).

The Introduction describes the aim of the study as continuing the validation of a "combined success criterion" for multimodal pain therapy to long-term (longitudinal data). This is an important consideration and addition as long-term success of therapy, particularly with respect to chronic pain, is an important goal of any therapy.

The Method section is quite detailed and covers design, sample, instruments, and analyses. However, there is little to no information about the data collection procedure, other than when it occurred. The reader needs to know how the data was collected (online, paper-and-pencil?), where it was collected (at consultation, at home?), and how long participants took to complete the questionnaire set. For the most part, the instruments are adequately described - for Well-being, (p.8), the FW-7 should be first spelt out and referenced (it is referenced 4 lines after initial text mention); The second last sentence of the paragraph in which the FW-7 is described ("The construct has been reported…") requires a reference (who reported that the measure was only moderately correlated with QoL?). Whilst much detail of the instruments is reported, that for "Chronicity of Pain" (p.9) is less so - how many items? Example items? What is the "sum score" a sum score of? Any psychometric properties?

The Statistical Analyses section is quite detailed - it may be better placed in a Supplementary file in order to keep the length of the manuscript down. The criterion of ½ SD was selected for clinical relevance of each of the 5 single criteria. There are a number of other clinically relevant indicators (some are anchor-based and some are distribution-based as is ½ SD). The rationale behind selecting ½ SD should therefore be included. At p.11, reference is made to 3 GLM-based MANOVAs. On further reading in the Results section, it would appear that these are not
MANOVAs but Mixed-Model ANOVAs with Time as a within-subjects factor and Responder as a between-subjects factor. It is not clear why non-parametric correlation analyses (Spearman's - p.10) were selected yet parametric analyses were selected for convergent validity (see p.11). For consistency, one would expect non-parametric throughout if statistical assumptions have been violated (assuming that is the reason for Spearman's).

The Results section is quite long (9+ pages), including 4 of the 5 tables. This section should be shortened. For example, the section reporting Convergent Validity (pp.16-19) could be summarised more succinctly (eg not necessary to have different sub-sections for this). The follow-up analyses to the significant interactions in the MANOVAs (see above as these should be mixed-model ANOVAs) appear to be based on visual inspection of the plots rather than simple effects analyses of Time at different levels of Responder and then of Responder at different levels of Time. The last section of the Results, Objectivity, would be better placed in the Discussion.

The manuscript includes 5 tables and 6 figures. Not all are necessary - for example, Tables 3 and 4 might be combined (or Table 4 deleted as this information could be easily summarised in the text and the table includes information not essential to the reader - eg Levene's test). On the other hand, the data in paragraph 1 of p.15 could be included in Table 3 also with the text providing a summary.

The Discussion begins by restating the aims of the research. Despite this aim concerning validation, the next two paragraphs discuss the "success after multimodal treatment". This discussion should not be about "success" of the treatment but about the psychometric properties of the "success criterion". It is unusual to include data in a Discussion (pp.23-24) - rather it is sufficient to make text comparisons.

The discussion at the top of page 26 appears to be contradictory - on the one hand, "This study was not an efficacy…study of multimodal pain therapy" (line 1); on the other hand, "This study is among a few … showing successful treatment in the long run." (paragraph 2, first sentence). The Discussion appears to end abruptly following the 3 points relating to the use of the algorithm - a concluding paragraph is needed.

Editing:

Abstract (and throughout): The reporting of F-statistics are incorrect. They should follow the form, F(df1, df2) = x, p = .xxx, where df1 = degrees of freedom for the effect and df2 = error term degrees of freedom.

Abstract (and throughout): the T-test is "t-test" - that is, lower case "t".

Abstract: SDs should always be presented with Ms (see Ms for "disability days").
p.8 Stress measure: Last sentence is a direct quote - requires page number associated with quote.

Results section: all variables names should be capitalised (eg Time, Responders) to distinguish from common use.

p.20 first sentence: "validation chapter" - does this manuscript come from a dissertation? There are no "chapters" in a manuscript.

p.22, first paragraph: a paragraph should be longer than a single sentence. The first sentence is the topic sentence of that paragraph and then followed by elaboration on that topic.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
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