Author's response to reviews

Title: Overlap of Cognitive Concepts in Chronic Widespread Pain: An Exploratory Study

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Dear Dr. William S Shaw,

We would like to submit the revised version of the manuscript entitled “Overlap of Cognitive Concepts in Chronic Widespread Pain: An Exploratory Study” by de Rooij and coworkers. Changes in the revised version of the manuscript are highlighted. We were very pleased that two reviewers felt the manuscript has sufficiently improved and that we satisfactorily addressed all previous comments. We revised the background section of the manuscript as requested and focused on the usefulness of comparing the theoretical constructs. We think that this modified manuscript does make a contribution to the existing literature in the understanding of overlap and uniqueness of cognitive concepts used in chronic pain. Below we listed our point-by-point response to the comments. We hope the revised manuscript will be suitable for publication in BMC Musculoskeletal Disorders.

Thank you in advance for reconsidering our manuscript.

On behalf of my co-authors,

Yours sincerely,

Aleid de Rooij
Commentary reviewer 1:

Comment: the background section (page 5, paragraphs 2 and 3): These paragraphs state that the various psychological constructs in CWP may not be "theoretically distinct" and that these existing theories are "rather diverse and complex". While the idea of comparing and contrasting constructs from various theoretical perspectives is of potential interest, it seems unnecessary to criticize these existing theories, especially when the authors pose no alternative theory. Although this section does describe similarities among competing theories, no other information is provided that might explain how these existing theories might be faulty or difficult to apply in practice. Moreover, overlap between the constructs of competing psychological theories might be expected, and this is not sufficient reason to discount the theories themselves. A gentler and more defensible rationale would be to simply offer the suggestion that psychological constructs from competing theoretical perspectives have rarely been studied simultaneously in this patient population, hence the need for this study that might show interrelationships and potential overlap between theoretical constructs, especially given the multiple types of pain complaints in this study population. The argument that these psychological theories about pain are simply saying the same thing with different language seems unfounded, and it's unclear how their combination might provide a more useful clinical paradigm. The Background section should be revised to focus on the potential usefulness of comparing theoretical constructs rather than discounting them altogether.

Response: We thank the editor for his suggestion and we agree on the proposed refinement of the background. We rephrased paragraphs 2 and 3 on page 5.

Action: We rephrased paragraph 2 and 3 into: Exploration of overlap of cognitive concepts has been identified as an ongoing challenge and exploration of this overlap is indicated [23, 1]. Mikail (1993) [33], De Gagne (1995) [34] and Davidson (2008) [35] tried to understand the nature of the relationships among concepts and measurements in chronic pain. In this small body of research, a number of factors underlying chronic pain processes were found, including; affective distress, coping, support, pain and disability. In addition, Mounce (2010) [36] explored the interrelationships and overlap between negative emotional concepts relevant to chronic pain. However, little is known about the interrelationships and potential overlap between cognitive concepts derived from existing theories commonly used in chronic pain. Cognitive concepts from competing theoretical perspectives have rarely been studied simultaneously in this patient population. Although these various constructs are considered conceptually separate, they might be interrelated and there might be overlap between these concepts.
Commentary reviewer 3:

**Comment:** I can see from the latest version of this paper that some additions have been made subsequent to our previous review. These additions have improved the paper to some extent, but the new sections contain a number of grammatical errors that should be addressed in order to make the paper more comprehensible. Overall, however, my previous reservations about the paper’s methodology remain unanswered. Namely, this approach seems purely statistical and not grounded in theory, nor is it linked to theory, unlike the measures that the researchers are trying to evaluate. This is a fundamental weakness.

**Response:** We agree that research is in general theory driven. However, little is known about the interrelationships and potential overlap between cognitive concepts derived from existing theories commonly used in chronic pain. As stated in the Discussion, we believe that at the present stage of knowledge, it is as yet too early to reconstruct and reformulate a new and integrative model of cognitive processes in CWP. Rather, exploratory studies are needed; the results will provide the basis for a new theoretical model and confirmatory analyses. As suggested by the editor we modified the background of the manuscript and focussed on the potential usefulness of comparing theoretical constructs. We think this modified manuscript does make a contribution to the existing literature in the understanding of overlap and uniqueness of cognitive concepts used in the various theories in chronic pain.

Specific concerns

**Comment:** 1. It is mentioned on Page 10 that Cronbach alpha values ranged from 0.65 to 0.92. As <0.70 is normally considered poor, I would have expected the researchers to identify the scales with low values and to discuss the implications that arise from these findings.

**Response:** Unlike the other 15 (sub)scales, the internal consistency score of the IPQ-R, subscale emotional representation is just below the cut off point of 0.70. As both the factor analysis and sensitivity analysis result in a well interpretable, robust factor structure we think it is unlikely that the reliability of this subscale has seriously distorted the results. However, it can lead to a higher measurement error and an underestimation of the true relationships. We agree with the reviewer that additional information about the internal consistency scores is desirable.

**Action:** We have rewritten the information about the internal consistency scores and have added information about the internal consistency of the subscale treatment control of the IPQ-R on page 10, line 180-182: ‘Cronbach’s $\alpha$ of (sub)scales of the DGSS, CSQ, TSK and IPQ-R found in the present study, were acceptable and ranged from .72 to .92. The Cronbach’s $\alpha$ for the subscale treatment control of the IPQ-R was found at .65.’ In addition, we have added two sentences to the limitation section of the discussion on page 14-15, line 287-290: ‘Secondly, internal validity of the scales used was acceptable. Only the internal validity of the subscale treatment control of the IPQ-R was just below the recommended cut off: this may have led to a higher measurement error and an underestimation of the true relationships.’

**Comment:** 2. The section on praying and hoping in the discussion could be expressed more simply: ‘The cognitive coping style ‘praying and hoping’ was also part of the first
factor which otherwise mainly comprised negative emotional cognitions. However, praying and hoping do not directly reflect a negative and emotion-based view of chronic illness. Apparently, praying and hoping is strongly correlated to negative emotional cognitions and is therefore part of the first factor.’ The third sentence repeats the first when it could have provided a more insightful explanation.

Response: We prefer to refrain from a potentially more insightful but rather speculative interpretation.

Action: We changed the third sentence (page 13, line 255-256) into: If replicated, further research is required to explain the association between praying and hoping on the one hand and negative emotional cognitions on the other.

Comment: 3. On page 14, this sentence needs to be revised to improve its expression: ‘analyses: patients who believe to have control may expect their condition to last for a shorter period of time.’

Response: We changed this sentence (page 14, line 275-276) into: patients who believe to have control may expect a relatively fast recovery.