Reviewer's report

Title: Exploring the relationships between International Classification of Functioning, Disability and Health (ICF) constructs of Impairment, Activity Limitation and Participation Restriction in people with osteoarthritis prior to joint replacement.

Version: 4 Date: 1 March 2011

Reviewer: Elizabeth Badley

Reviewer's report:

Minor essential revisions

This manuscript is much improved following revision. My major issue now lies with terminology, specifically the terms ‘independent’ and ‘uncontaminated’ in connection with the measures. I fully understand the sentiment behind this. However, I wonder if theoretical and statistical concepts are being confused here. As I understand it the three measures come from a theoretical understanding related to ICF concepts (as captured in the Aberdeen measure) refined through a process of confirmatory factor analysis (CFA) and other measurement techniques. This analysis showed that a three factor solution provided the best fit for the data. The appendix which described this is titled ‘Deriving statistically independent .... measures’, and the measures’ ‘statistical independence’ is referred to in the main text. However the I, A and P measures derived from the CFA are correlated with each other. How then can they be statistically independent? The factor analysis cannot give insights into whether the measures are ‘contaminated’ or not. That is in the eye of the beholder (i.e. theoretical concepts related to the ICF). Factor analysis can only point to groups of variables which are inter-related. I wonder here if the authors are confusing theoretically derived and statistically obtained concepts. Perhaps a more neutral terminology would be to use refer simply to the measures of I, A and P without qualification, or if an adjective is required perhaps ‘separate’ or ‘discrete’ would be more appropriate. (Issues of ‘contamination’ could still be discussed – it’s the labelling of the measures as ‘uncontaminated’ that concerns me).

The aim of the study as stated could be more precise. The aim surely is to explore the basic ICF pathways using structural equation modelling not unspecified multivariate techniques as currently stated.

I note the response options for the I, A and P questions in the Aberdeen measures are different for each of the three dimensions. For example, the I dimension has frequency-based response options, whereas the A and P have severity based response options. Might this have affected the CFA? If so, this should be noted as a limitation.

Re: terminology in the discussion the authors refer to pathways FROM I to A or
FROM A to P. Given this is cross-sectional data would it be more appropriate to talk about pathways between I and A and A and P?

Note: the PDF version of the final paper was difficult to read for minor problems with paragraphing, punctuation, or wording given the extent of the changes. In particular I think that the introduction might benefit from a review for editing purposes with the track changes removed.

Impairment, activity limitation and participation restriction does not need to be capitalized except where it is part of the name of the Aberdeen measure.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

No