Reviewer's report

Title: Work ability assessment in a workers' population, comparison of Work Ability Index and Work Ability score

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Reviewer: Marin Been

Reviewer's report:

In general I think this is an interesting paper, the authors have access to a very extensive database and pose interesting research questions. However to answer these questions adequately and really add novelty to this field, I feel that the paper should be rewritten and restructured, more specific research questions should be posed and additional analyses are in order. I would advise Major Compulsory Revisions on all aspects of the paper, see below for more detailed comments.

1. Is the question posed original, important and well defined?

Research question 1 considers the variables that are associated with WAI, this is a very relevant question, with regards to the aging of the work population and increasing pension age. It would be very beneficial to be able to predict the personal and professional factors that coincide with low WAI index, in order to promote work ability also later in life. This question could be posed a bit more specific. What type of associations are expected and why? Which variables are hypothesized to predictive for low WAI scores? This is also important in order to add novelty, as many studies already have been published on this topic.

Research question 2 is considers the concept of work ability assessment using only a single item of the WAI, the work ability score. The title of the article suggests that this is the main research question of the article. I would suggest to change the order of the research questions and to make this the first research question, as this is the main question and most interesting feature of the article.

Also the advantages of such a work ability score are defined as: ‘Assessing work ability from this single question appears seducing on the grounds that it does not involve calculations and is accessible with regards to the persons surveyed’ This sentence is a little unclear and a bit to brief, this statement should be clarified and elaborated upon.

2. Are the data sound and well controlled?

Yes, this seems to be the case, the authors have access to a very elaborate and interesting database.

3. Is the interpretation (discussion and conclusion) well balanced and supported by the data?
Not all results that are shown in table 2 and 3 are fully discussed. For example the pattern of significance of different levels of smoking behavior, is not discussed. Also the discussion is mostly focused on the variables that coincide with low WAI, what would be more interesting is the predictive validity of individual variables on WAI scores, so that specific policy/interventions could be designed. Also there should be more focus on the difference in predictive validity of the WAI versus the work ability score (first item of WAI) as this is, at the moment, the main goal of the article. To adequately answer this research question I feel that a more direct comparison of the WAI and WAS is called for. A possible approach for this can be found in the article of Mark S. Nagy, Journal of Occupational and Organizational Psychology (2002); 75:77-86, where they try to make a similar comparison for an instrument measuring job satisfaction, comparing the full scale with a single item of the scale. Additionally, more attention should be directed at different types of validity (convergent, discriminant etc) with regard to the WAI versus the WAS. For examples see: Van Saane et al. Occupational Medicine (2003); 53:191-200.

4. Are the methods appropriate and well described, and are sufficient details provided to allow others to evaluate and/or replicate the work?

The method section should be more structured in my opinion. After the general description of the database, there should be a clear description of the sample size (this is currently the start of the results section), and why this sample was selected.

After the description of the involved variables (on what bases were these selected?), it would be preferable that per research question the statistical analyses is clearly specified. Now it is unclear, which exact analyses were performed, how they were performed and how they relate to the research questions. More specific information and argumentation is needed, for example an explanation of why the authors chose to pool WAI indexes. This would allow better evaluation and/or replication of the work. In table 2 it is unclear to me why the authors chose BMI underweight as a baseline.

Also I miss the same structure in the results section, where it is unclear what the relevancy is of the described results with regards to the specific research questions. I think that the readability of the paper on the whole would benefit from a clearer structure, where research questions are discussed in a more consistent and explicit way, and always in the same order.

5. What are the strengths and weaknesses of the methods?

One of the weaknesses of the database used in the current paper is the gender distribution that is asymmetric. I think this deserves some extra consideration in the discussion, especially when it comes to being able to generalize these results to a bigger population, and to make clear what the paper contributes with respect to existing publications. Other limitations were well described.

6. Can the writing, organization, tables and figures be improved?
The method section (but also other sections) should be more structured (see point 3).

With regards to the research questions, I would suggest a more specific definition, and using the same order in all the sections of the paper, as to improve overall readability.

Table one and two would benefit from a caption that describes how the tables should be read and interpreted. Now it seems that bold font indicates statistical significance, however the use of the bold font is not consistent.

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

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

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

**Declaration of competing interests:**

I declare that I have no competing interests.