Reviewer's report

Title: Associations between work-related stress in late midlife, socioeconomic position, and serious health problems in old age: A longitudinal study with over 20 years of follow-up

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Reviewer: Christophe Vanroelen

Reviewer's report:

I want to congratulate the authors for this well-improved second version of the manuscript. I think they overall addressed my comments in an appropriate way. I welcome their clarifications - and particularly the simplification of the SEP indicator seems to be a good choice. Moreover, I do see that these data have some limitations that cannot be dealt with by the authors. Having said that, I also see the high relevance of publishing this kind of research based on these valuable data. The most important message for the authors then is that they should go on with this work, while being constantly aware of these limitations and with an general attitude towards making them explicit in their manuscript and framing their results within the context of these limitations.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

(1)

p.2. Maybe also the socioeconomic distribution of “job strain” could be discussed – Is this pattern more like the control or more like the demand pattern?

(2)

p.7. The ethical approval details could be included in a footnote. In the manuscript it could then be summarized in one sentence.

(3)

p.8. Job strain refers to the particular combination of high demands and low control. The entire concept of 4 combinations is usually referred to as the “job quadrants”. This could be changed to increase consistency with other papers on this issue. (Karasek, 1998).

(4)

p.9. line 23 and further. There is a problem with the sentence “A cut off for serious...”.

(5)

p.10. line 7: 2 times “only”.
- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

p.12; line 4: add “obtain”?

p.6. (and further). In the objective statement (III) it should be stated “measured with education at baseline” (or at the age of the sample xx-xx at baseline). Moreover, the authors should be aware that – although educational attainment is relatively stable over the life course – people’s SEP may change. In order to be accurate it is therefore advisable to consistently refer to “education” instead of “SEP” from the results section onwards.

It may be more accurate to narrow the title down to “educational attainment” instead of “SEP”.

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

p.19 – line 18-20: also the lack of exposure measures at different time points should be addressed as a limitation.

Regarding the conceptual scheme of SEP. As the authors are now presenting the role of SEP, it is a common cause of both an adverse work environment (differential exposure) and adverse health. Moreover, they rightly assume (see also their interactive effects) that SEP acts as an effect modifier (differential vulnerability). This role of SEP however does not mean that the relationship between work environment and health is "spurious". Statistically speaking this may be true, but from a theoretical sociological point of view it is not. I would like to ask the authors to reflect on this in their introduction, since it is essential for a correct understanding of the relationship between SEP and job characteristics. Moreover, in my opinion, also the interpretation and discussion (see for example discussion, p.15; 17-18) of results of controlling for SEP should be framed in that kind of conceptual reasoning. Old, but still very useful in this regard are the concepts of proximal and fundamental causes of disease of Link and Phelan (Link & Phelan, 1995; Phelan, Link, Diez-Roux, Kawachi, & Levin, 2005). I would present it as SEP acting as a fundamental social determinant of health which "enacts" itself in the work environment. That is: via a complex set of formal and informal mechanisms, people with lower SEP have a higher probability to get allocated to less beneficial jobs in terms of health. So, the relationship between these jobs and health is not spurious in the sense that the real health effect comes from SEP. SEP in its own right is not to be expected to have any health effect whatsoever. SEP can be assumed neutral for health in this context, but it does act as an allocation mechanism putting people with a higher probability in
does situations that are harmful for health (or beneficial).

(10)

With their results, the authors are at least implicitly sending a strong message to the world: “in men (moderately) high job demands are protective for health in later life”. This message should be considered in a context of a consistent rise in quantitative job demands in Europe throughout the 1990’s and the 2000’s – see for example: (Greenan, Kalugina, & Walkowiak, 2013) – and as you stated yourself in the article. I recognise that the authors do their maximum in terms of controlling health at onset and they make the best out of older data with clear limitations. Moreover, these limitations may not be a reason not to use these valuable dataset. Nevertheless, it cannot be ruled out that numerous other effects are at play here. Among these, I keep insisting that subtle selection effects of the most vulnerable workers into the lowest demanding jobs are a very plausible explanation as well. Keep in mind that the “low demand category” is the smallest one (33%), so the one where the “special cases” are in the majority. I agree that such selection effects are impossible to capture in the models with only two measuring points in time. They can also be very complex: minor health and cognitive problems, addictions, complex family situations, etc. My point is that this issue should be addressed in detail in the discussion in order to prevent un-nuanced recuperation of the findings of this article in the policy field. Reference to this issue at p.19 and 20 should be extended.

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

**Quality of written English:** Acceptable

**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