Author's response to reviews

Title: Validity of the Stages of Change in Steps instrument (SoC-Step) for achieving the physical activity goal of 10,000 steps per day

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Author's response to reviews: see over
November 12, 2015

Dear Editor,

My coauthors and I request that you consider our revised manuscript, titled “Validity of the Stages of Change in Steps instrument (SoC-Step) for achieving the physical activity goal of 10,000 steps per day” for publication in BMC Public Health. We have considered the reviewer comments and made appropriate changes to improve the manuscript.

Sincerely,

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Reviewer comments & author response

1. Please ensure that the Abstract and Discussion are amended to accurately reflect the change in emphasis from steps to intentions as the primary outcome.

   • Thank you, we have complied with this suggestion for both the abstract and the discussion.

2. The validity of the accelerometer to capture steps has not been included in the manuscript. It would be good to point out as a limitation that there is very little evidence of validity in the age group that this study has targeted. It should also be pointed out that the lower sensitivity to steps at lower speeds might lead to an under-estimation of steps in pre-contemplators if they walk at slower speeds compared with purposeful walking in active people.

     o *NB: Although the title indicates validity for the Actical accelerometer, this study simultaneously assessed Actical and Actigraph monitors in relation to direct observation criterion measure in adults aged 18-59y.

   • Although we agree that there is likely to be lower sensitivity to steps at lower speeds for all participants (as per Esliger et al 2007 above), we unfortunately do not have data on “purposeful walking in active people.” Further, we note that step counts for those in Precontemplation were not different from those in contemplation*, preparation*, action, or even maintenance.
     o *They were actually numerically, but not statistically, higher than contemplation or preparation, as per Table 2.

3. With an emphasis on Intentions as an outcome, there is the possibility/likelihood that self-reporting biases are introduced due to common method variance, particularly the consistency motif and social desirability. This will be exacerbated by the presentation of the benefits of physical activity that are detailed in the preamble to the questionnaire. This should be identified as a limitation.

   • We agree, and have added the following to the limitation section: “Our reliance on self-report instruments for both Stages of Change and intention may result in bias associated with common method variance, although undertaking measurement of participant intention without reliance on self-report would likely present alternate forms of bias.”
4. It would be good to have details of the items used to capture self-efficacy and intention.

- The following details have been added within the methods section:
  - "Self-efficacy items required participants to rate their degree of confidence for a set of incremental physical activity behavioral targets (2,000 steps per day; 6,000 steps per day; 10,000 steps per day; 14,000 steps per day) by recording a number from 0 (cannot do at all) to 100 (highly certain can do)."
  - "Intention items rated on a 5-point scale were, “I intend to be physically active at a level of taking 10,000 steps on most days, if not all days of the week, for the next month” and “I will try to be physically active at a level of taking 10,000 steps on most days, if not all days of the week, for the next month.”"

5. Waist circumference was described in the Methods, but results weren't presented. Did this vary across stages?

- These results can be found in Table 2. There was, in fact, variation across stages, as indicated in Table 2.

6. The sample is still described as 'large' and 'diverse'. While there seems to be a good spread on demographic variables such as education, the sample is still predominantly female, of relatively high overweight/obese, narrow age range, from two regions, and mostly representing 2 stages of change.

- We have updated this section of the discussion:
  - "Last, our sample was delimited to middle-aged Australians from two regions participating in an intervention (predominantly female, mostly overweight and obese, of a narrow age range, and mostly categorized in contemplation and preparation stages), so our findings may not apply to demographically different populations.”

7. The responses by the pre-contemplators are invalid by definition, as they have enrolled in an intervention study. This should be highlighted as a limitation.

- We appreciate the comment and have added the following section to the limitations:
  - “Although it may appear incongruous that participants recruited into a physical activity promotion study could classified in the Precontemplation stage, there are two issues to consider: 1) Stages of
Change is specific to a target behavior [12], and while our behavioral target was 10,000 steps daily (at any intensity) for categorizing participants, they were originally included in the intervention if they "were currently engaging in less than a half an hour (30 minutes) of moderate-to-vigorous (e.g., walking, running or playing sport) physical activity on five or more days of the week;” 2) Stages of Change suggests that participants frequently regress into earlier stages [12], and that could have been a factor in the present study.

- If the questionnaire is to be used in future studies, there is a typo in the first line of the Introductory page.
- We appreciate this catch, and have corrected the questionnaire accordingly.

References:
