Reviewer's report

Title: Post Traumatic Stress Symptom Variation Associated with Sleep Characteristics

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Reviewer: Nicole Short

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Post Traumatic Stress Symptom Variation Associated with Sleep Characteristics (BPSY-D-19-00855)

The current manuscript discusses results of an ecological momentary assessment (EMA) study of 61 individuals with PTSD who reported on their sleep and PTSD symptoms four times per day over 15 days. Mixed models were used to examine associations between previous night's sleep and next-day PTSD symptoms. Results indicated that sleep duration, quality, sleep onset latency, and difficulties maintaining sleep each predicted increased PTSD symptoms. Considering all characteristics, sleep duration and difficulties initiating and maintaining sleep remained significant predictors of next-day PTSD symptoms. This is a well-designed and analyzed study that adds to an increasing literature examining daily variations in sleep and associations with PTSD symptoms. The following comments are offered to provoke further critical thought on this interesting topic.

Major Comments

None

Minor Comments

1. The authors acknowledge lack of a clinical interview to determine PTSD as a limitation. However, I am also curious about if or how they determined participants met criteria for a Criterion A stressor. If they did, this should be explained; if not, this would be a limitation for the study, not only because they may not be trauma-exposed, but then also because they may be responding to the DD in a manner consistent with PTSD symptoms (e.g., intrusive memories may not be of an "index event").
   a. Please describe the instructions participants received for completing the EMAs in more detail (Page 8) - this may address whether participants understood they should respond to items in reference to their index trauma.

2. Why was the PCL altered to a 0-10 scale?
3. Appreciate including the measure and discussion of CFAs. Please discuss why CFA (vs. EFA) was done for this new measure and references supported the four theorized factors. Although they make logical sense, I'm not aware of a sleep measure with similar factors.

4. Including the multivariate models of sleep disturbance predicting PTSD symptoms is a strength of the study, but the authors may be overemphasizing the finding that sleep quality was no longer a significant predictor of PTSD symptoms after covarying for sleep duration, as well as difficulties initiating and maintaining sleep. Further, although the authors discuss these results in the context of other prior EMA studies, they do not review other methodologies in as much detail and these studies have often found that sleep quality but not duration is associated with increased PTSD symptoms (e.g., Babson et al., 2012).

5. The authors mention that sleep disturbances may impact some symptom clusters more than others (page 19) but I wonder why they did not examine this in their study since it seems they have the opportunity to do so.

6. Also on page 19, the authors mention that future research should examine mechanisms of the sleep-PTSD relationship but fail to cite any previous researching, including that the Short et al. (2017) study also found negative affectivity to be a mediator of the association between sleep and next-day PTSD symptoms.

7. Another limitation is lack of objective assessment of sleep.

8. I was surprised the authors did not report on results of nightmares/disturbing dreams and next day PTSD symptoms, or the other sleep factors they mentioned. I would be interested to see the nightmare analyses certainly, but the others are of interest as well, or the authors should explain why they are not included.

9. In this particular sample, it would have been beneficial to have some measure of sleep apnea as a predictor or covariate of daytime PTSD.

10. Were any of the covariates included associated with sleep difficulties?

11. It is not clear to me how the groupings were chosen for Figure 1 (e.g., Figure 1a has a line for Person mean of 3 hours, 5 hours, and 7 hours - why are these numbers chosen/represented?).

12. Another potential difference between the current study and others examining EMA associations between sleep and PTSD symptoms is that the current sample recruited for individuals with more generalized PTSS (i.e., measures of depression and anxiety were included as potential eligibility criteria). This may influence results as there may be fewer participants with PTSD per se vs. other psychological disorders, so this should be discussed. Do the results change if the participants who failed to meet criteria for the PCL are included?
13. Please be more clear about the sample flow - how many were screened for eligibility, met initial diagnostic eligibility, then the final sample based on PCL-5 diagnostics. Numbers are in the supplement but should be mentioned in the manuscript.

14. Including participants based on the probable PTSD diagnosis on the PCL-5 instead of using a cut-off score should be explained. Either way it is likely that using a self-report measure will result in an overestimate of how many participants meet criteria for PTSD, particularly in a military sample.

15. Were participants compensated for their participation? Or did they receive some kind of compensation for completing above a certain amount of assessments?


**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**

If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**

If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**

If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**

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