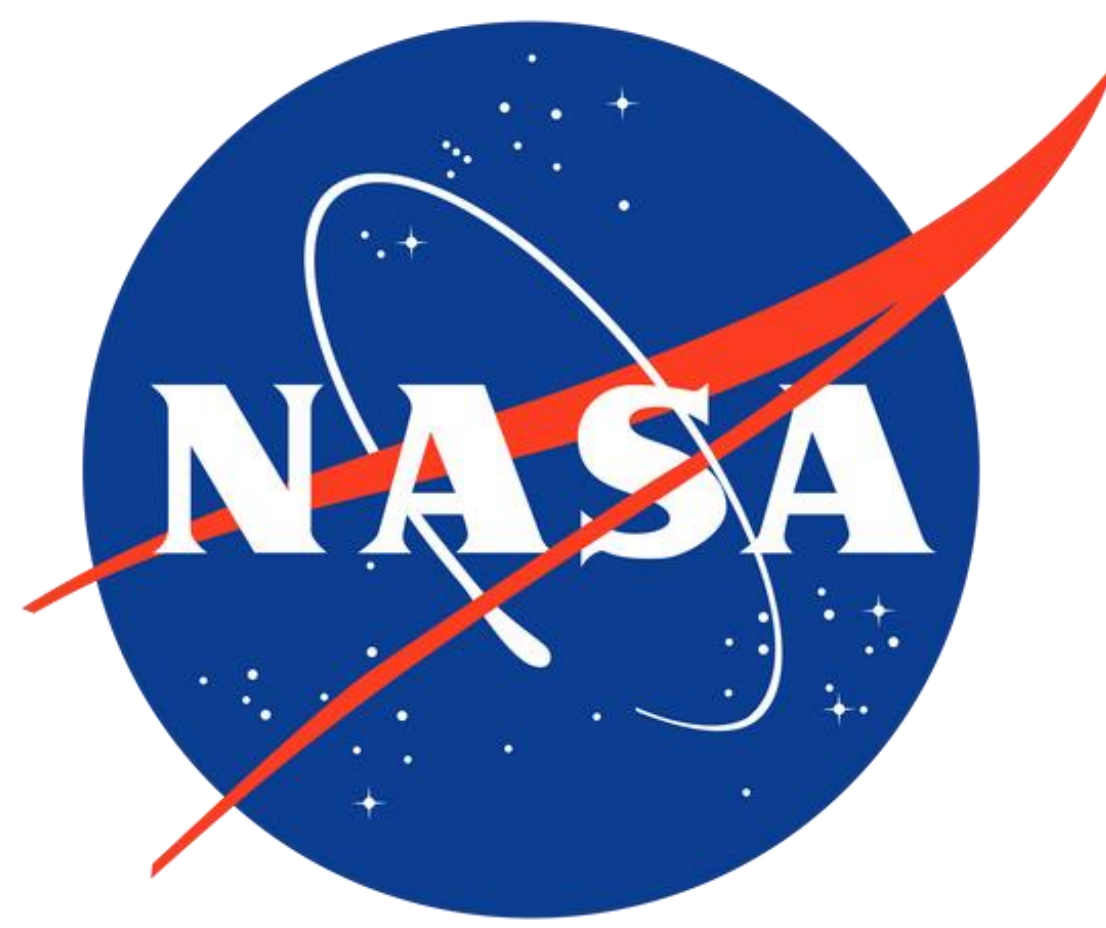




# Self-Rated Performance Immediately Following a 1-Hour Nighttime Nap



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## Introduction

- Sleep inertia is the temporary impairment of performance and alertness experienced after waking.
- Subjective perceptions of performance during this period may not match actual performance, which is problematic in occupational settings where fitness for duty is self-assessed.
- We investigated self-rated performance predictions following a 1-hour nighttime **nap with bright light** compared to a **no-nap with standard light** condition.

## Methods

- $N = 15$  healthy adults (8 male;  $25.9 \text{ years} \pm 6.4$ ).
- Two 26-hour periods in the sleep laboratory, both preceded by a week at home of 8.5 hours' time-in-bed (actigraphy verified).
- Randomized, cross-over design (Fig. 3):
  - **Nap+bright**: 1-h nap followed by blue-enriched light (250 lux);
  - **No-nap+standard**: 1-h semi-recumbent rest followed by standard light (150 lux).
- 1-h nap/rest ended 21 h after morning wake (circadian low).
- Test battery: Pre-performance visual analog scale (Fig. 1) before a 5-minute psychomotor vigilance task (PVT; NASA PVT+ App) at pre-nap (baseline, BL), and 2 (T1), 12 (T2), 22 (T3), and 32 (T4) min post-nap.
- Separate linear mixed-effects models for each condition (**nap+bright**; **no-nap+standard**) evaluated the association between subjective performance estimates and actual PVT performance (speed, 1000/reaction time [ms]) across test bouts, with participant as a random effect.

Compared to your usual performance, please rate **how well you think you will perform on the PVT you are about to complete**.  
Using a pen, place one vertical mark along the line that is most appropriate for your prediction.

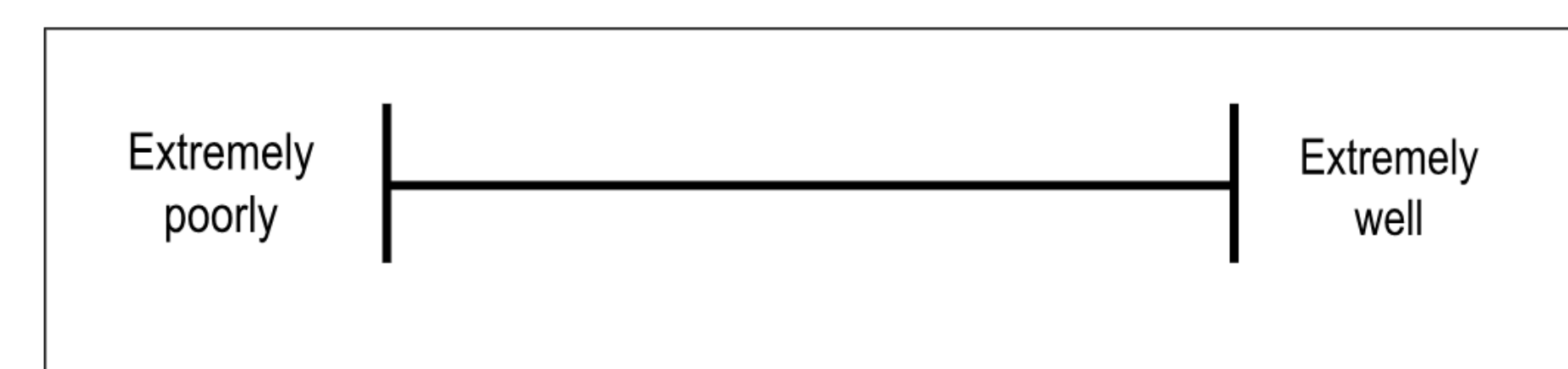


Fig. 1: Pre-performance self-assessment scale

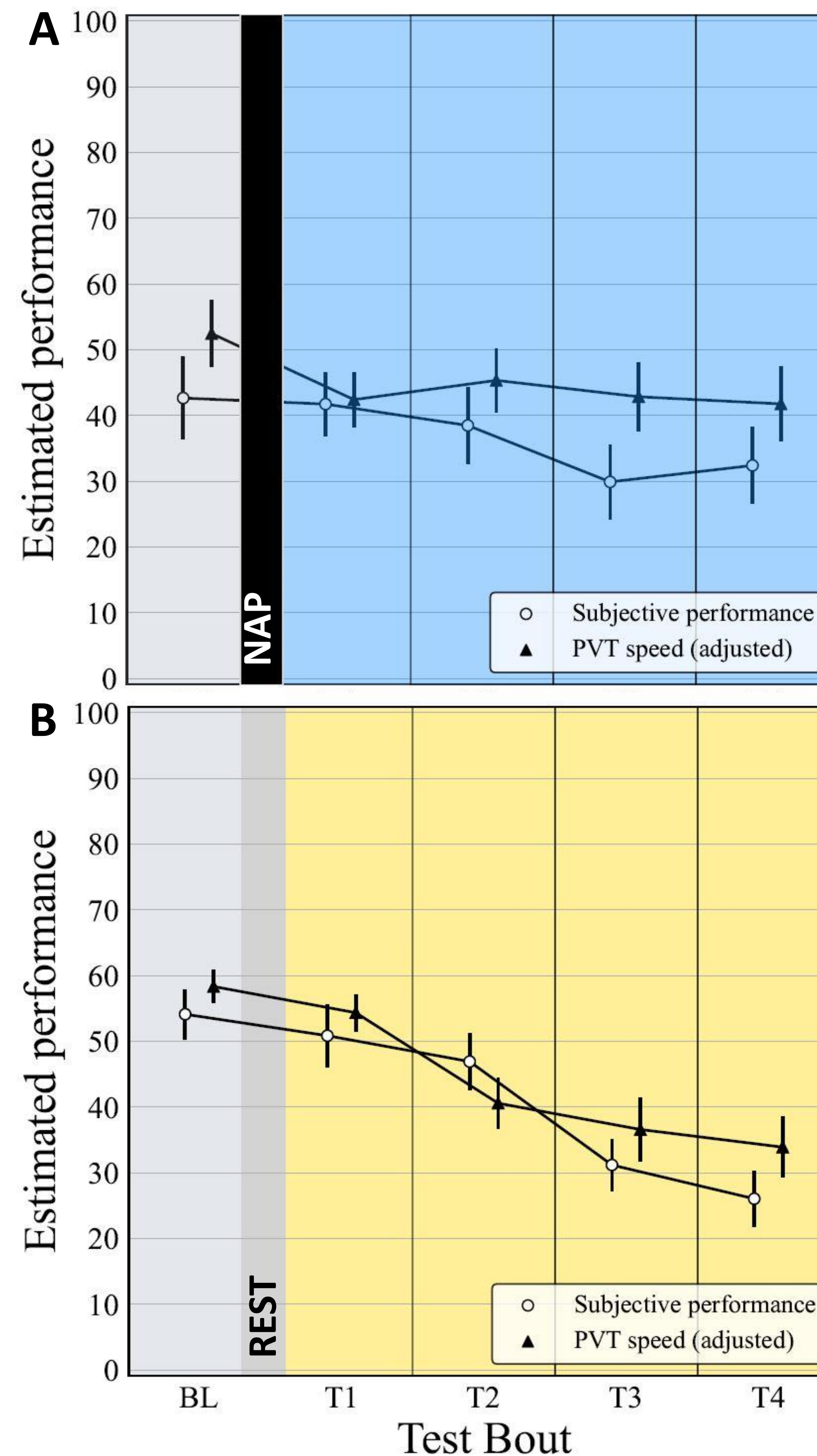


Fig. 2: Relationship between subjective pre-performance rating (open circles) and PVT speed (closed triangles) in the (A) **nap+bright** and (B) **no-nap+standard** condition. Nap/rest indicated by black/dark gray bar, respectively. Means  $\pm$  SEM.

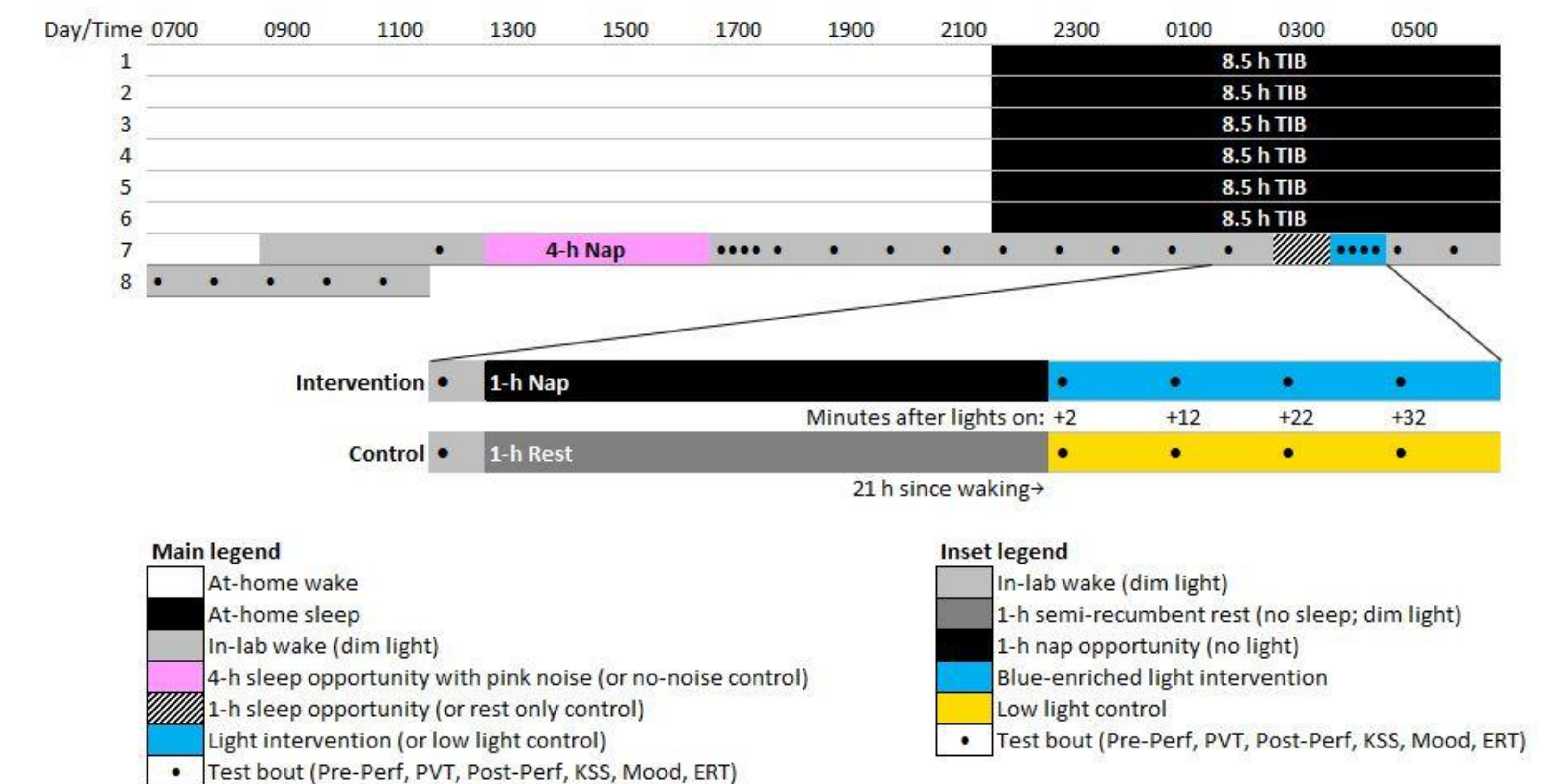


Fig. 3: Study protocol schematic

## Results

- Subjective performance was significantly associated with PVT speed ( $p = .02$ ) in the **nap+bright** condition but there was no effect of test bout (Fig. 2A).
- In the **no-nap+standard** condition, subjective performance was not related to PVT speed but there was a significant effect of test bout ( $p < .001$ ) (Fig. 2B).

## Discussion

- These preliminary findings suggest that participants were better able to predict their performance following a nap in bright, blue-enriched light and less able to do so when kept awake at night in standard light.
- Future analyses will investigate the influence of sleep metrics and different interventions on these results.

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