

A HARD DAY'S NIGHT: DOES THE TIMING OF YOUR DAYTIME SLEEP AFFECT HOW YOU PERFORM ON 12-H NIGHT SHIFTS?

Anastasi Kosmadopoulos^{1,2}, Gregory D Roach¹, Xuan Zhou¹, David Darwent¹ and Charli Sargent¹

¹Appleton Institute for Behavioural Science, Central Queensland University, Adelaide, South Australia

²Bushfire Cooperative Research Centre, East Melbourne, Victoria

Objectives:

- The timing of daytime sleep may influence performance at night by altering the accrual of sleep pressure.
- However, it is not clear that 12-h night shifts would benefit from strategic sleep placement, given the limited number of sleep placement options available in the breaks between consecutive shifts.
- The aim of this study was to compare neurobehavioural performance on a 12-h simulated night shift following daytime sleep opportunities scheduled at different times.

Methods:

- 12 healthy young males ($M \pm SD$; aged 22.9 ± 5.2 years) participated in a repeated-measures study with three counterbalanced conditions.
- Each condition only differed in the timing of daytime sleep opportunities (total duration 7h) scheduled between two consecutive night shifts (see Fig. 1).
- Psychomotor vigilance tasks (PVT) were conducted during the night shifts to assess response times.

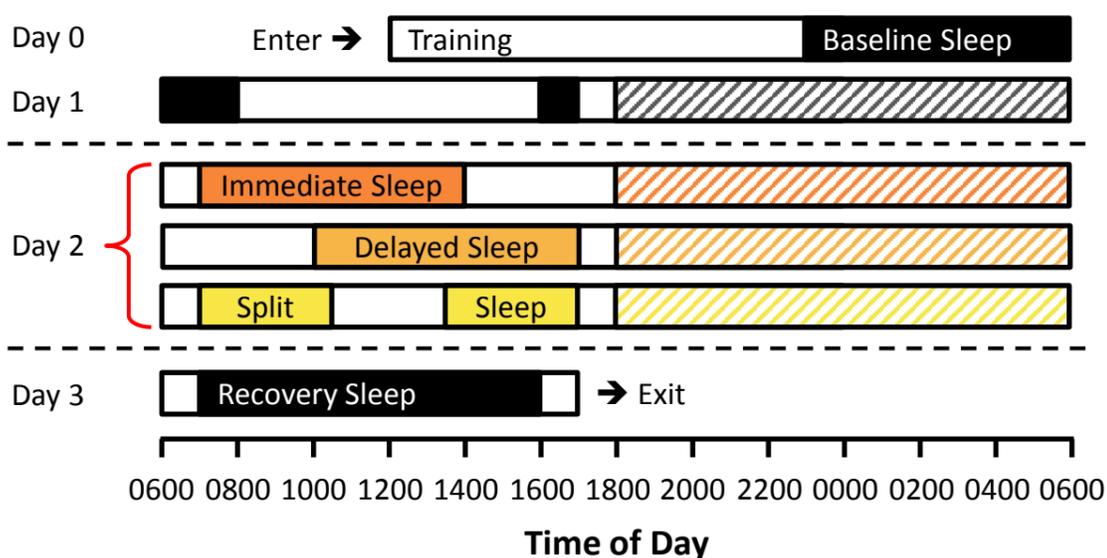


Figure 1. Protocol Diagram. Participants attended the laboratory for on 3 separate occasions to complete a different daytime sleep condition. X-axis represents time of day, y-axis represents each study day. Filled rectangles indicate scheduled time in bed, and shaded rectangles indicate simulated night shifts.

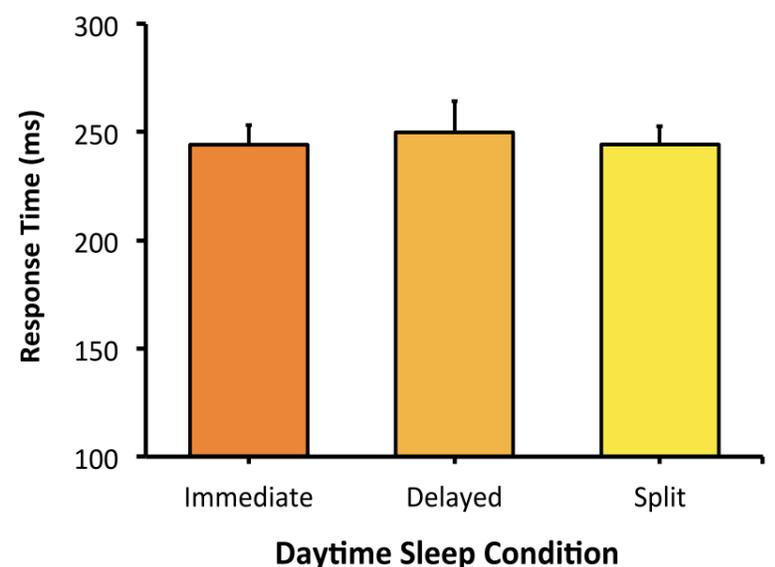


Figure 2. Mean response time ($\pm SD$) during the post-daytime sleep night shift. Conditions did not significantly differ.

Results:

A repeated measures ANOVA revealed that the timing of daytime sleep opportunities did not significantly affect response times on the post-day sleep shift [$F(1.28, 12.81) = 0.19, p = .73$] (see Fig. 2).

Conclusion:

- Employees working two consecutive 12-h night shifts may be able to obtain their daytime sleep at a time of their choosing with no effect on performance.
- The arrangement of daytime sleep may still be important where (i) there are more than two consecutive night shifts, and/or (ii) the breaks between consecutive night shifts are longer, allowing more time for sleep pressure to accumulate prior to work.