The Cognitive Boost at the Peak of Circadian Arousal is Not as Robust and General as Previously Thought!

Background

- **Synchrony effect** = Better cognitive performance at the peak of circadian arousal than at off peak
- **Empirical evidence** for this effect is **mixed**.
- Goal: to test for the **robustness** of the **synchrony**

Method

- N = 191 young adults with **morning** or **evening** types who were tested at on- and off -peak times
- Tasks: 4 short-term memory tasks and 4 working-memory tasks

effect using 2 universal psychological constructs –

short-term maintenance and attentional control

(i.e., the ability to avoid being distracted by irrelevant information).

Due to its missing convergent validity, attentional control was modeled as the goal-directed nature of working memory without maintenance.

Results at the latent-variable level

variance remaining short-term memory



Results at the individual-task level

- **Good reliability** estimates, ranging from .77 to .95
- **Good correlations**, ranging from .24 to .73
- A significant but small synchrony effect was detected only in the *numerical updating* task and

Conclusion

- No robust synchrony effect was observed for any of the constructs we measured.
- \Rightarrow The effect of **circadian arousal** on **human** cognition is not as general and robust as

the arrow simple span task (Cohen's $d \le 0.20$ and

 $BFs_{10} \le 3.13$).

For the remaining tasks, no synchrony effect was observed ($ps \ge .13$ and $BFs_{01} \ge 3.93$).

previously thought!

References

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