

Title: Chronic napping alters cognitive performance in healthy older adults

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Introduction: The occurrence of napping increases with advancing age. Previous studies demonstrated that napping affect cognitive performance. However, whether this association depends on the cognitive domain and what are the underlying cerebral correlates remains to be explored. We assessed episodic memory, executive functions and attentional performance, as well as working memory, in healthy older adults with and without chronic napping habits.

Methods: Sixty-three individuals (69.2±5.4 years (mean±SD), 22 women) were prospectively recruited with respect to their self-reported napping habits (no-nap (n=32) and chronic nap (n=31) group). Chronic napping was defined as a nap duration of at least 45 minutes per day, for at least 3 times a week, since at least one year. All participants completed a cognitive test battery, encompassing episodic memory, executive functions and attentional performance. A composite performance score was computed for each cognitive domain and t-tests were used to compare cognitive performance between groups. Participants also performed a Sternberg task in a 3T MRI scanner, during which working memory load was modulated through the number of items to be encoded (from 2 (low load) to 7 (high load)). Linear mixed-effect models were computed to assess whether task performance (outcome) was related to working memory load between groups (predictor).

Results: Chronic nappers showed significantly worse performance in episodic memory (t=2.20, p<0.05) and executive functions (t=2.37, p<0.05) than no-nappers,

but no significant difference was observed for attentional performance ($p=0.59$). As expected, working memory performance at higher load (6 ($\beta=-0.038$, $p<0.01$) and 7 items ($\beta=-0.096$, $p<0.001$)) significantly decreased compared to the lowest load for the entire group. Interestingly, chronic nappers had lower performance ($\beta=-0.043$, $p<0.05$) at the highest working memory load compared to no-nappers.

Conclusion: Our results go in line with previous findings by suggesting that chronic napping is associated with reduced executive functions, working memory, as well as episodic memory performance in healthy older adults. As napping is increasingly used as health indicator in ageing, a better understanding of the underlying mechanisms is relevant. Future analyses will explore differential recruitment of neuronal resources according to nap phenotype by using functional magnetic resonance imaging during the working memory paradigm.

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