Title: Regular napping and episodic memory performance in healthy older adults: a one-year intervention study

Authors: Marine Dourte, Gregory Hammad, Stella de Haan, Mathilde Reyt, Michele Deantoni, Marion Baillet, Philippe Peigneux, Christina Schmidt

Introduction

Aging goes along with increased rest-activity cycle fragmentation, reflected by increased daytime-rest (DTR) habits. Moreover, regular DTR has been associated with cognitive impairment in aging, and its frequency was previously shown to be negatively associated with episodic memory (EM) performance. We thus hypothesise that reducing DTR habits will slow the age-related decline in EM, whereas continued DTR will lead to a steeper decline in older adults.

Methods

90 participants (69+5,18 y.o.) were recruited according to their DTR habits (non-nap, n=30; nap, n=60). The nap-group was split to create an intervention-group (n=30), which was requested to stop napping for one year. All participants wore an actigraph during this period to estimate the evolution of DTR frequency (mean number of DTR bouts per day) and duration (overall mean duration of DTR bouts). At baseline (T0) and one year later (T1), participants completed thorough neuropsychological assessments, including the Free-Cued-Recall-Semantic-Test (FCRST). The later allows the differienciation between immediate and delayed free-, cued-, and total recall of words. Linear regression models were applied to assess the impact of group and time on DTR-frequency, DTR-duration, and all FCRST indices. Age, education and sex were added as covariates for cognitive analysis.

Results

DTR-frequency (p=XXX) and duration (p=XXX) were significantely reduced at T1 in the intervention-group, while the others kept a stable frequency (non-nap, p=XXX; nap, p=XXX) and duration (non-nap, p=XXX; nap, p=XXX) from T0 to T1.

We found a significant decline in free recalls for the nap-group (p=.0427), coupled with a significant increase of cued recalls (p=.018), compared to non-nappers. The total words recalled did not differ (p=.79). The intervention-group displayed no differences from the non-nappers (ps>.30). Neither free nor cued delayed recalls displayed group or time effects (ps>.05).

Conclusions

Our results show that the nap-group relies more on cues to reach the same total performance at T1, compared to T0 and non-nappers. This suggests that they have developed a difficulty in implementing an effective retrieval strategy. Additionally, the fact that the intervention-group kept their ability to spontaneously retrieve encoded memory traces could be indicative that a reduction in DTR habits for 1 year is linked to a slowed decline in EM performance, as we hypothesised.

Based on the evolution of DTR frequency and duration in each group, we are currently computing an Expected Behaviour Score accross the 12 months of follow-up to quantify the compliance of each participant to the expected behaviour from their group. It will then be used in our analysis as a covariate.