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Sleep duration genes associated with cognition across the adult age-range

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Abstract

Background: Sleep is implicated in cognitive functioning in young adults, while healthy older adults do not always demonstrate clear associations between sleep and cognitive functioning. Age-related changes in sleep include a reduction in total sleep time and a greater incidence of sleep disorders, and are also an integral part of neurodegenerations. In the present study, we aimed to: a) identify common genetic variants that may influence self-reported sleep duration, and b) examine the association between the identified genetic variants and performance in different cognitive domains.

Method: A sample of 197 cognitively healthy participants, aged 20-80 years, were selected from two study cohorts: The Reference Abilities Neural Network and the Cognitive Reserve. Each participant underwent an evaluation of sleep function and assessment of neuropsychological performance on four different domains (memory, speed of processing, fluid reasoning, language), and global cognition. Available imputed genome-wide genotyped data was used to derive a Polygenic Risk Score (PRS) based on 69 genetic variants previously reported as associated with sleep duration. Multivariate linear models were used to test the associations between the PRS and sleep duration and cognitive performance. Age, sex, and education were used as covariates.

Result: Higher PRS was linked to longer sleep duration and then, lower risk of poor performance in global cognition, fluid reasoning, speed of processing, and language, but was not associated with memory.

Conclusion: We replicated the association between PRS and longer sleep duration. We additionally found a significant association between the PRS and cognitive function. Our results suggest that common genetic variants influence the link between sleep duration and cognitive health. Sleep duration may represent a potential causal pathway for cognition, and, thus, improving sleep habits might be as useful as a potential therapeutic target to improve cognitive performance. Funding: National Institute of Health (NIH)/ National Institute of Aging (NIA) [Grant numbers: R01 AG026158 and RF1 AG038465], and the Bodossakis foundation.