

Sleep deprivation and personality - Impact on simple and complex cognitive tasks

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Sleep is important for body regeneration and cognitive performance [1]. On the one hand, total sleep deprivation (SD) has in general a negative impact on cognitive performance [1], on the other hand, there are significant individual differences in the vulnerability to SD [2,3]. Personality factors may partially explain these differences in vulnerability [4-6].

In a study on collaborative operations in control rooms we examine the influence of SD on controlled, artificial cognitive tasks and complex, more realistic cognitive tasks which involve collaboration in teams. For the complex tasks, a computer based simulation of monitoring and decision-making in control centers was used. In this simulation subjects work in teams of three in the control centre of a production plant. Their tasks require visual attention and logical reasoning. Furthermore, they are to make decisions which involve varying risks for themselves or for their teammates. We are interested if and how personality factors influence the impact of SD on cognitive performance. We hope that the findings help to optimize working conditions for shift workers like clinic personnel and air traffic controller.

References

- [1] Alhola, P. and Polo-Kantola, P. 2007. Sleep deprivation: Impact on cognitive performance. *Neuropsychiatric disease and treatment* 3.5: 553.
- [2] van Dongen, H. P. A., Baynard, M. D., Maislin, G. and Dinges, D. F. 2004. Systematic interindividual differences in neurobehavioral impairment from sleep loss: evidence of trait-like differential vulnerability. *Sleep* 27.3: 423–433.
- [3] Wilkinson, R. T. 1961. Interaction of lack of sleep with knowledge of results, repeated testing, and individual differences. *Journal of experimental psychology* 62.3: 263–271.
- [4] Mastin, D. F., Peszka, J., Poling, T., Phillips, R. and Duke, J. 2005. Personality as a predictor of the objective and subjective impact of sleep deprivation. *Personality and Individual Differences* 39.8: 1471–1482.
- [5] Blagrove, M. and Akehurst, L. 2001. Personality and the modulation of effects of sleep loss on mood and cognition. *Personality and Individual Differences* 30.5: 819–828.
- [6] Smith, A. and Maben, A. 1993. Effects of sleep deprivation, lunch, and personality on performance, mood, and cardiovascular function. *Physiology & behavior* 54.5: 967–972.