

Sleep deprivation selectively impairs attentional networks.Riontino L^{1,2,3}, Cavallero C³

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Research on the effects of sleep deprivation on attention has repeatedly shown a consistently negative impact. Based on the hypothesis that attention system is divided into three functional components, alerting, orienting and executive control, recent studies have investigated whether the attentional deficit observed after sleep loss could be due to a global or a selective impairment. These studies have produced inconsistent evidence indicating either a negative or a null impact of sleep loss on the attentional networks. The orienting [1] and the executive control network [2,1] were impaired following sleep deprivation, but not the alerting network. The aim of the present study is to highlight the effects of sleep deprivation on the efficiency of the attentional components. Forty-four healthy young adults were selected to perform the Attentional Network Test – Revised (ANT-R)[3,4] an experimental task that provides measures of the three components efficiency, at 9 a.m. following two sleep conditions: Baseline (a normal night of sleep) and Deprivation (24 hrs of wakefulness). Results showed an overall slowing down in reaction times after sleep deprivation. Executive control and orienting components significantly decreased after sleep loss (18.18 and -16.56 msec respectively), but alerting efficacy showed no differences in the two sleep conditions (8.58 msec). Results are consistent with the hypothesis that sleep deprivation selectively affects the three attentional components. However, further investigations are required to clarify the inconsistency between studies regarding the orienting network.

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