

ARE YOU VULNERABLE TO SLEEP LOSS? ASSOCIATION BETWEEN A PRIORI SELF-ASSESSED SENSITIVITY TO SLEEP DEPRIVATION AND WAKING EEG DYNAMICS

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1. Objectives: Sleep deprivation leads to EEG power increases especially in lower frequency bands. Inter-individual differences exist in neurocognitive consequences of sleep loss. We aimed at developing a questionnaire that identifies individuals who are vulnerable to sleep loss. Here we investigated whether a priori self-assessed sensitivity to sleep loss is related to the changes in waking EEG power between a sleep deprived and a well-rested state.

2. Methods: 17 healthy men (M = 27 years) were sleep deprived for 58 h. In the beginning of the study, participants rated their sensitivity to sleep deprivation. Every 6 h during wakefulness participants performed a test battery (waking EEG, Karolinska Sleepiness Scale (KSS) and cognitive tests). EEG power density after 50 h was expressed as a percentage of power after 2 h of wakefulness following 14 h of recovery sleep, and correlated with the results from the sensitivity questionnaire and the KSS (2-50 h).

3. Results: Self-assessed sensitivity to sleep deprivation correlated with the change in theta power ($r_s(15) = -.52, p = .046$) and delta power ($r_s(15) = -.57, p = .026$). The KSS did not correlate with theta or delta power.

4. Conclusions: Individuals with lower sensitivity to sleep deprivation showed a greater decline in waking EEG theta and delta power between sleep deprivation and recovery, suggesting that they recover faster than individuals with high sensitivity. Individuals might be able to predict their vulnerability to sleep loss based on their recovery experience.