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Title: Interindividual Variability in Neurobehavioral Response to Sleep Loss: A Comprehensive Review

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Title: Interindividual Variability in Neurobehavioral Response to Sleep Loss: A Comprehensive Review

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Highlights:

- Interindividual differences in response to sleep loss are ubiquitous and unexplained.
- Phenotypic response is highly stable across repeated exposures to sleep loss.
- Phenotypic vulnerability is task-dependent within individuals..
- Circadian and homeostatic processes both contribute to interindividual variability.
- Dopamine and adenosine may be implicated in phenotypic differences.

Abstract:

Stable trait-like responding is well established for neurobehavioral performance measures across repeated exposures to total sleep deprivation and partial chronic sleep restriction. These observed phenotypes are task-dependent, suggesting that there are distinct cognitive profiles of responding with differential vulnerability to sleep loss within the same individual. Numerous factors have been investigated as potential markers of phenotypic vulnerability to the effects of sleep loss but none fully account for this phenomenon. Observed interindividual differences in performance during extended wakefulness may be driven by underlying deficits in the wake-promoting system resulting in greater performance instability due to failure to counteract increased homeostatic pressure. Further work would benefit from a systems approach to the study of interindividual vulnerability in which behavioral, neurobiological, and genetic data are integrated in a larger framework delineating the relationships between genes, proteins, neurobiology, and behavior.

Abstract

TKACHENKO, O., and D.F. Dinges. Interindividual Variability in Vigilant Attention During Sleep Loss: A Comprehensive Review. NEUROSCIBIOBEHAV REV 83(x) XXX-XXX, 2017.- Stable trait-like responding is well established for neurobehavioral performance measures across repeated exposures to total sleep deprivation and partial chronic sleep restriction. These observed phenotypes are task-dependent, suggesting that there are distinct

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