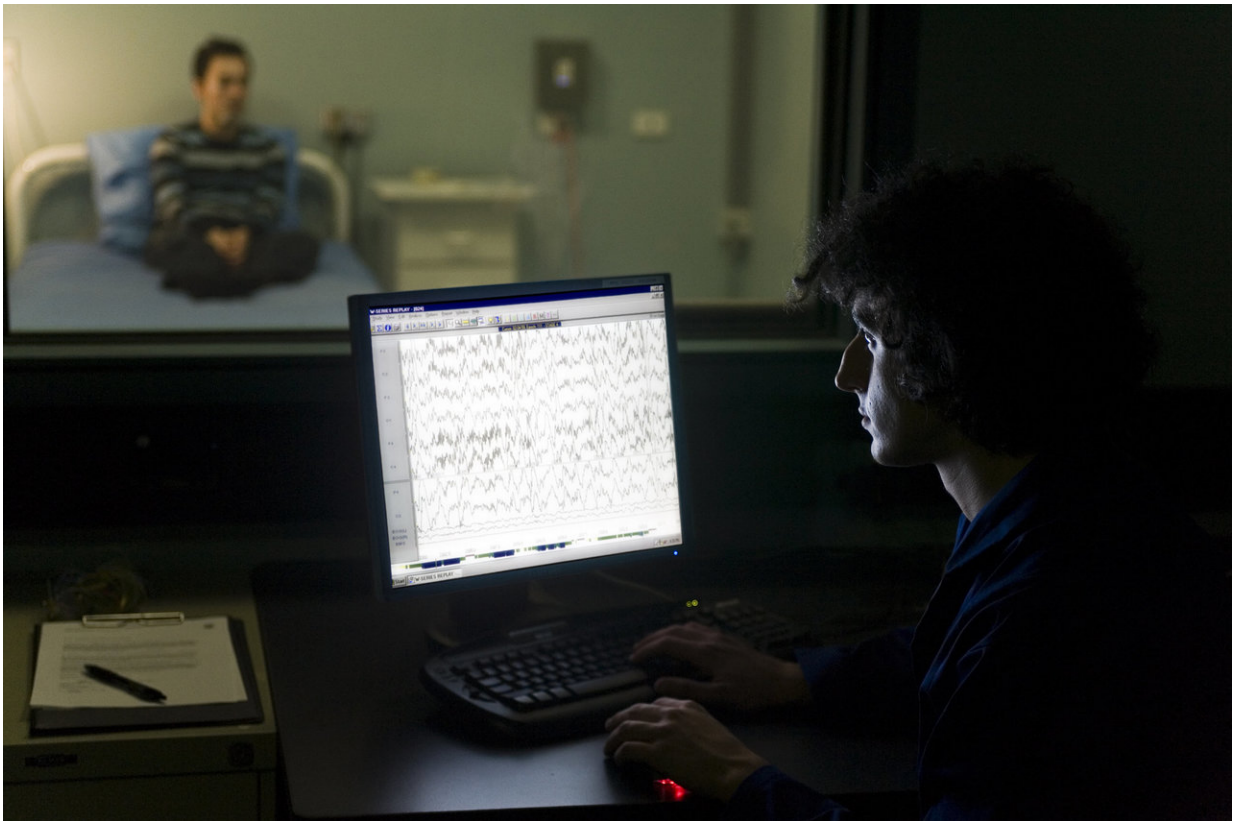


Battle rhythm: Navy looking at sleep, decision-making links

March 22 2018, by Warren Duffie Jr.



Eyeing Shut Eye: The impacts of sleep deprivation are many -- and even the toughest Sailors and Marines can feel the effects. The Office of Naval Research Global is sponsoring new research by Professor Sean Drummond at the Monash Institute of Cognitive and Clinical Neurosciences (MICCN) in Australia to study the impact of fatigue and circadian rhythm disruption on people's decision-making capabilities -- a critical concern for warfighters who must make fast decisions in unique, often-challenging, circumstances. Credit: Monash Institute of Cognitive and Clinical Neurosciences

In the military, operational tempo is fast paced and the mission takes top priority—day or night. Such dedication, however, can cause sleep to become a lower priority and fatigue a dangerous reality.

Loss of shut-eye is more than just an inconvenience. It disrupts human circadian (24-hour) rhythms, erodes physical and mental performance and dulls decision-making abilities.

To address this, the Office of Naval Research (ONR) Global is sponsoring new research by Professor Sean Drummond at the Monash Institute of Cognitive and Clinical Neurosciences (MICCN) in Australia. MICCN is dedicated to understanding the brain and mind, including attention, memory and sleep.

While there have been many studies of sleep loss on individual test subjects, Drummond will be the first to evaluate how such deprivation affects people's decision-making capabilities within social and group settings.

"From high op-tempo Navy special warfare missions, to Sailors on extended watch on ships, to long-duration flights or Marines in theater, the issue of [sleep loss](#) is critical to the performance and well-being of our warfighters," said ONR Global Commanding Officer Capt. Kevin Quarderer. "Professor Drummond's research will play a key role in understanding and enhancing their endurance and combat effectiveness."

Throughout the waking hours of participants' sleep schedules, they will wear eye-tracking devices to measure attention as they perform various tasks—such as ignoring distractions while focusing their gaze on moving images on a computer screen. Participants also will wear EEG (electroencephalogram) headsets to measure brain activity from the

cerebral cortex, which is crucial to memory, attention and perception.

"Professor Drummond's team is taking a systematic approach to studying fatigue and circadian rhythm disruption, and how it impacts decision-making in complex tasks," said Dr. Jason Wong, ONR Global science director. "This research will provide insight that can be applied by our Sailors and Marines, who often have to work long hours in less-than-optimal sleep environments, and we expect it will improve their cognitive and physical health."

During the last night of participants' sleep schedules, they will awaken and perform collective exercises analyzing how effectively and quickly they decide things. These include reaching a consensus after reviewing several vital pieces of information and outlining the reasoning process behind such decisions.

"Such experiments will allow us to compare decision-making abilities after a well-rested state and after sleep disruption and circadian misalignment," said Drummond. "This is important because, during military engagements, you must make fast decisions—deploying resources, reacting to the enemy—at all hours of the day, while processing information from many sources."

Provided by Office of Naval Research

Citation: Battle rhythm: Navy looking at sleep, decision-making links (2018, March 22) retrieved 10 May 2024 from <https://medicalxpress.com/news/2018-03-rhythm-navy-decision-making-links.html>

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