UCSD Laboratory of Sleep and Behavioral Neuroscience

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Introduction

The UCSD Laboratory of Sleep and Behavioral Neuroscience studies the effects of sleep and sleep deprivation on various cognitive abilities.

As interns under the supervision of Dr. Sara C. Mednick and Elizabeth E. Harrison, the focus of our studies centered around napping in particular. The scientific study of napping is a relatively new field within the realm of sleep science and is one that is quickly gaining momentum. The importance of napping research becomes apparent as our society moves toward a culture of hyper productivity and increased sleep deprivation.

Specifically, our internship studies investigated:

1. The effect of different wavelengths of light on nap duration, sleep efficiency and sleep architecture.

2. The effect of napping and sleep architecture on learning in an implicit visual learning task.

Methods and Results

As our internships commenced, we were required to familiarize ourselves with the following various aspects involved with our studies and become proficient with specific testing equipment.

Screening and Consenting process- before accepting a subject into the study, past and present medical (both physiological and psychological) data were collected via a questionnaire and interview process in order to determine eligibility. If accepted as a subject, a consenting process was then required and the specifics of the study were explained in detail.

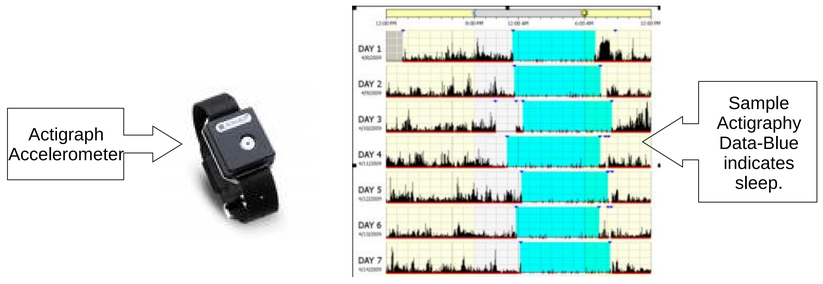
Experimental Design:
Subjects kept a diary, which they filled out daily for one week prior to their nap test day.

Cognitive testing was administered in the morning and in the evening with the nap/no nap condition occurring between the two testing sessions.

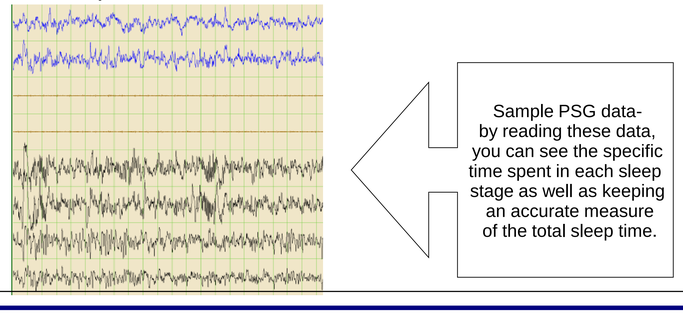
Subjects with no medical or mental illness and a regular sleep/wake schedule were administered a Karolinska Sleepiness Scale (KSS).

Naps with Polysomnography (0, 60, or 90 minutes to allow variance in sleep structure). A post nap questionnaire was given.

ActiGraph Accelerometer: this is a device reminiscent of a common watch used to study the measure of physical activity. As research assistants, we acquired the ability to activate, download and analyze antigraph watch data.



Polysomnography (PSG): preparation for each nap included PSG hook ups which required the precise process of applying electrodes to specific locations on the head and face in order to accurately chart brain, eye and chin activity. We faced the challenging yet rewarding experience of learning to read and interpret PSG recordings in an effort to determine the quantity and quality of each nap.



Computer tasks: various perceptional and motor memory processes were tested using computer based tasks. These included:

- ROT Task used to measure motor memory.
- Contextual Cueing Task used to measure implicit learning.
- Remote Association Task (RAT) used to measure creativity.

Conclusion

Through our internship with the UCSD Sleep and Behavioral Science Lab, we have become proficient in all stages of research, from initial subject screening to post experiment data analyzing. Also, weekly lab meetings in which we read and presented previously published papers relevant to our field of interest, allowed us to hone our presentation and discussion skills, as well as further our knowledge of sleep related research.

Our mentors proved to be skillful teachers as well as adept guides throughout the entire research process, both furthering our research knowledge and peaking our academic curiosity.

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