

LETTER OF INFORMATION AND CONSENT FORM FOR DATA COLLECTION AND PROTECTION

Principal Investigator: Hans C. Dringenberg, Ph.D.
Co-Investigator: Mohammad Dastgheib

Study Title: The role of napping, meditation, and relaxation on memory consolidation in humans

I, _____, have agreed to participate in the above-mentioned study, which aims to investigate the role of different behavioural states and activities (waking, napping, meditation, yoga) in memory consolidation. I am aware that, at any time, I am encouraged to ask for further information about the study and the specific, experimental procedures that will be performed during my participation.

Study Overview:

I am aware of and agree to participate in the following aspects of the study.

1. I will complete a questionnaire to collect the following, personal information: name; age; gender; handedness; employment status; confirmation of the absence of a diagnosis of neurological, psychiatry, and sleep disorders; confirmation that I currently do not use prescription medication that is known to affect sleep quality. I will complete the *Freiburg Mindfulness Inventory* questionnaire to characterize my experience of mindfulness.
2. On the day of the experiment, I will arrive in the lab during afternoon (2:30 to 3:00 pm), where I will complete the *Epworth Sleepiness Scale* to assess my level of wakefulness.
3. Subsequently, electroencephalogram (EEG), electromyogram (EMG), and electrooculogram (EOG) electrodes are attached to measure brain activity, muscle activity, and eye movements, respectively. I agree to have the principal investigator or co-investigator connect electrodes to the skin of my head and face to monitor EEG, EMG, and EOG activity for about 60 minutes, while I will either watch a movie, nap, meditate, and do yoga. I realize that the procedure to connect the electrodes involves some level of physical contact between the experimenter and me. Also, I am aware that

this procedure requires the application of conductive pastes and medical tape to my skin.

4. I agree to complete a number of behavioural learning tasks over a period of about 45 minutes, which will include:

- study paired associates (list of two nouns presented as pairs, e.g., “milk streetcar”)
- visual-motor skill (subjects play a game where they navigate a marble through a wooden maze)

5. Next, I will enter a secure, quiet lab room (adjacent to the main lab room, where the investigators will be present throughout the entire duration of the experiment) by myself, where I will either watch a movie, nap, meditate, or do yoga. EEG, EMG, and EOC activity are monitored during this time period (45 - 60 minutes; all personal belongings can be brought with me into the room during this period).

6. Subsequently, I will return to the main lab and all electrodes are removed. I will again complete the *Epworth Sleepiness Scale* to assess if the different activities changed my level sleepiness.

7. Finally, I will be tested on the same tasks again to assess memory for the information learned during earlier task exposure.

8. I will be given the choice of receiving an immediate payment of \$25, or being entered into a draw for a \$250 gift card (Tim Horton’s; Starbuck’s). Participants recruited from the Departmental Subject Pool will receive credit toward PSYC 100 and an immediate payment of \$10, consistent with Departmental policies; they are offered the choice of payment or entry into the draw.

Withdrawal for Study: I understand that I may withdraw from the study at any time during the two visits to the laboratory, or refuse to participate in specific aspects of the study without explanation and without incurring a penalty. If I decide to withdraw, all data collected up to this time point will be immediately destroyed unless I give permission that the experimenter keep my partial data on file for further analysis and possible inclusion (in aggregate form) in future publications resulting from the research.

Potential risks of participation: Physical risk: some participants may experience skin irritation by the medical tape or conductive paste required to attach the electrodes to the skin, even though such reactions are extremely rare. Immediately inform the experimenter if you experience discomfort or irritation of the skin; the experimenter will immediately remove all electrodes and clean the affected skin area with warm, soapy water (this is also performed at the end of all recording procedures).

Benefits of participation: Participants have an opportunity to experience research first-hand and learn about the role of sleep and other behavioral states in memory formation and optimal cognitive functioning.

Confidentiality of information and data: Each participant is assigned a unique code and data collected during the experiment are only linked to this code. All information and data are kept in a secure space at Queen's University (locked office and lab space; password-protected computers) and are only accessible to the principal and co-investigator(s). For the purposes of any written theses, conference presentations, and scientific publications, only aggregate data are presented. Data are kept for five years following the publication of the study results in a scientific journal. Subsequently, all data and other files are deleted (from computers) or shredded.

Ethics clearance: This study has been granted clearance by the Queen's University General Research Ethics Board, according to the recommended principles of Canadian ethics guidelines, and Queen's policies.

Questions or concerns regarding this project: Questions regarding this lab can be addressed to:

Dr. Hans C. Dringenberg
Principal Investigator
Phone: 613-533-6215
E-mail: dringenb@queensu.ca

Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at:

E-mail: Chair.GREB@queensu.ca
Phone: 613-533-2988, ext. 32988

I understand that my consent to participate in this study does not waive any of my legal rights as an individual residing in Canada.

Signature: _____

Date: _____