

2. Subjects' average self-reported habitual caffeine consumption, calculated using publicly available norms for caffeine dose by type of caffeinated drink or chocolate [17], was  $114 \pm 98$  mg (mean  $\pm$  SD) per day. They were free of traces of alcohol, tobacco, and drugs (except for oral contraceptives) as assessed by blood analysis, urine cotinine test, urine drug test, history, and questionnaires. The study was reviewed and approved by the Institutional Review Board (IRB) of Washington State University, and conformed with the Code of Ethics of the World Medical Association (Declaration of Helsinki). Subjects had no history of a moderate to severe brain injury, learning disability, or psychiatric illnesses, as assessed by history and questionnaires. For the week prior to the laboratory experiment, subjects were also instructed to refrain from caffeine and alcohol consumption, and to avoid drugs including tobacco. Subjects had no sleep disorders, as verified by history, questionnaires, actigraphy, and baseline polysomnography. During the week prior to the laboratory experiment, subjects were instructed to maintain their habitual sleep schedules and to avoid napping. Compliance was verified with wrist actigraphy (Actiwatch-2; Respironics, Bend, OR). Methods 2.1.