Serial Diverse Imagining Task: A New Remedy for Excessive Cognitive Pre-sleep Arousal

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I. Somnolent Mentation Theory and the Sleep Onset Control System

The somnolent mentation theory (SMT, Beaudoin, 2013, 2014) aims to explain how the brain's sleep-onset control system (SOCS) licenses and controls the transition from wake to sleep. The SOCS considers homeostatic and higher order (mental) processes. SMT proposes that some mental activity interferes with sleep (i.e., is *insomnolent)*, some is pro-somnolent (conducive to sleep), and some is neutral (*asomnolent*).

Postulate 1 (P1): A decline in situational awareness, or sense making, including active, globally coherent mentation, is not merely a consequence of impending sleep, but is pro-somnolent.
Postulate 2 (P2): Energy and tension are insomnolent.
Postulate 3 (P3): Alarms (primary emotions) are insomnolent
Postulate 4 (P4): States of perturbance (tertiary emotions), in which insistent motivators tend to disrupt and maintain attention, are insomnolent.

From SMT, deliberate mentation strategies to facilitate sleep onset are derived. According to the N1 cognition emulation hypothesis, to deliberately engage in mentation that emulates key properties of N1 will promote sleep onset.

II. New Cognitive Shuffle Insomnia Treatment: Serial Diverse Imagining

Serial diverse imagining (SDI) is a new treatment for insomnia based on SMT. It involves sequentially imagining diverse, unrelated content. A mobile app facilitates SDI by presenting audio recordings of pseudo-randomized concrete words every few seconds (8 by default). The participant's task is to imagine each distinct item.

III. SDI Compared to Structured Problem Solving (Constructive Worry)

154 students were randomly assigned to 1 of 3 intervention groups: 1) The SDI app; 2) Constructive Worry, or 3). Repeated measures ANOVAs indicated improvements from baseline to post-treatment on all measures (pre-sleep arousal, sleep quality, sleep effort) except sleep hygiene, which worsened (as it typically does with the progression of the semester).

IV. References and further information

Beaudoin, L. P. (2013). The possibility of super-somnolent mentation: A new information-processing approach to sleep-onset acceleration and insomnia exemplified by serial diverse imagining. http://summit.sfu.ca/item/12143

Digdon, N. and Koble, A. (2011), Effects of constructive worry, imagery distraction, and gratitude interventions on sleep quality: A pilot trial. *Applied Psychology: Health and Well-Being, 3* (193–206).

Morin, C. M., & Azrin, N. H. (1988). Behavioral and cognitive treatments of geriatric insomnia. *Journal of Consulting and Clinical Psychology, 56*(5), 748–753.

Additional notes at http://www.sfu.ca/~lpb/insomnia/sdi-constructive-worry
Poster, abstract and this handout at http://summit.sfu.ca/item/16196

Disclosure. Luc P. Beaudoin is a director and shareholder of CogSci Apps Corp. which develops mySleepButton® and SomnoTest. He is also the owner of CogZest, which provides training in insomnia and cognitive productivity.