A design-based approach to sleep-onset and insomnia

Super-somnolent mentation, the cognitive shuffle and serial diverse imagining

Luc P. Beaudoin
CogZest,
CogSci Apps Corp.,
Simon Fraser University
Relevance to this workshop

- Insomnia as a psychological failure/ailment
- Transient and clinical insomnia: huge %
- **Perturbance** (Tertiary emotion): a putative source of primary insomnia
- Design-based /information processing approach to SO
- Classify old, design new treatments
Limitations of conscious control

- Memory
- Sleep-onset
- Deliberation scheduling, thinking strategies
- Perturbation (Tertiary emotion)
“Deliberate mentation” strategies for SO

- Meditation (multiple types)
- Progressive relaxation, body scan
- Imagery distraction (Morin, 1988)
- (Topic-Based) Cognitive refocusing (Gellis, 2013)
- Room for improvement (Harvey, Tang & Browning, 2003)
“Deliberate mentation” strategies for SO

• Meditation (multiple types)
• Progressive relaxation, body scan
• Imagery distraction (Morin, 1988)
• (Topic-Based) Cognitive refocusing (Gellis, 2013)
• Room for improvement (Harvey, Tang & Browning, 2003)
  • E.g., not sufficiently engaging
• The cognitive shuffle / serial diverse imagining (new)
Sleep State Switching System

Cf: Saper et al, 2010

Saper et al, 2010

“Allostatic factors”…
Sleep State Switching System

No influence *from* the cortex & thalamus?

Contrast Cognitive-Emotional Brain (Pessoa)

Saper et al, 2010

“Allostatic factors”…
Type of mentation

- Asomnolent*
- Insomnolent*
- Somnolent

*: Neologism
Type of mentation

- Asomnolent*
- Insomnolent*
- Somnolent
- Counter-insomnolent*
3 type of mentation

- Asomnolent*
- Insomnolent*
- Somnolent
- Counter-insomnolent*

} Super-somnolent*
3 type of mentation

- Asomnolent*
- Insomnolent
- Somnolent*
- Counter-insomnolent*

}  Super-somnolent*

What features, pattern?
What does the state machine look like?
Why had this question not been addressed?
Motivators:
- intensity,
- insistence,
- urgency,
- importance,
- decisions

Meta-management (reflective)
processes

Deliberative (management)
processes
(Planning, deciding, scheduling,
evaluating, imagining, etc.)

Interrupt filters/censors

Reactive (autonomous) mechanisms

The environment
Motivators: intensity, insistence, urgency, importance, decisions

Perturbation (Tertiary emotions)

H-CogAff

The environment

Luc P. Beaudoin
lucb@cogzest.com

Working Memory (WM)
- Short-Term WM
- Long-Term WM

External Perception

Long-Term Memory

Internal Motivators (Generation, Activation)
- Alarms

Interrupt filters/censors

 META-MANAGEMENT (reflective) processes

Deliberative (management) processes
(Planning, deciding, scheduling, evaluating, imagining, etc.)

Reactive (autonomous) mechanisms
Hypotheses

A Extended SO mentation-emulation (res. methodology)

B Suspension of sense-making at SO

1. Temporally disintegrated mentation is somnolent
2. Active perturbation is insomnolent
3. Primary emotion is insomnolent
Serial diverse imagining

• A type of cognitive shuffle, deliberate mentation: Shuffle images

• Example: Close your eyes, imagine 1 by 1
  – A baby
  – Greeting a loved one at the airport
  – A canoe
  – Playing golf
  – Holding a paper cup
  – Arriving at a beach-side hotel
  – a man and woman jogging together
SDI: Tool for clinicians and researchers

• “DIY” SDI (phonetic cuing)
SDI: Tool for clinicians and researchers

• “DIY” SDI (phonetic cuing)
• Technology assisted SDI (mySleepButton™ by CogSci Apps. [Disclosure])
Serial diverse imagining

• Active,

• Hypothesis 1: Incompatible with situational sense-making. (Somnolent?)

• Hypothesis 2: Engaging: Suppresses perturbance. (Counter-insomnolent)
Future Research

• Specification and testing of putative in/somnolent /counter-insomnolent mentation
  – Compare forms of cognitive shuffle / SDI w other established techniques using mySleepButton
  – Mentation content vs process (imagery, recall, deliberation, etc.)
  – Integration by SOCS

• “Engaging”: Concept and design analysis

• Re-examine prior literature from the broad design stance; cf. — Perturbance (3any emotion)
A design-based approach to sleep-onset and insomnia

Super-somnolent mentation, the cognitive shuffle and serial diverse imagining

Luc P. Beaudoin
CogZest, CogSci Apps Corp., Simon Fraser University