Sleep and Dreaming

Sleep Deprivation Trivia

Examples of Biological Rhythms
- Seasonal migrations
- Mating seasons
- Menstruation
- Circadian rhythms:
  - Daily rhythms
  - “Circa” means around, “dia” means day
- Ultradian rhythms:
  - Cycles that occur several times per day

Zeitgebers: External Cues Help Set Circadian Rhythms
- “Zeit” means time in German.
- “Gebers” means givers.
- Internal clocks interact with zeitgebers.
- Light is an important human zeitgeber.
- Human “free-running” cycle is about 25 hours.
- Blind individuals and sailors serving on submarines may experience sleep problems.

Individual Variations

Shift Work and Jet Lag
- More errors occur on evening and night shifts.
- Shift workers average 1.5 hours less sleep, and are more prone to sleep-related illnesses and psychological disorders.
- Adjustment to jet lag requires about 1 day per time zone crossed.
- Airline crews traveling across time zones are subject to cognitive defects.

Adjustments to Phase Delays Are Easier than Phase Advances

Daylight Savings Requires Adjustment, Too
- April shift is a phase advance.
  - analogous to eastward travel
  - 7% increase in traffic accidents
- October shift is a phase delay.
  - analogous to westward travel
  - 7% decrease in traffic accidents

The Suprachiasmatic Nucleus is the Body’s Master Internal Clock

SCN Activity and Light/Dark Cycles
How do We Study Sleep and Wakefulness?

Stages of Waking and Sleeping

EEG During Wakefulness and Sleep

Sleep Patterns in a Typical Night

Sleep Patterns Across the Lifespan

Dreaming

- Dreams occur during both Slow-wave sleep and REM.
- REM dreaming is more vivid, less logical, story-like and longer.
- Sleep researchers have found that we usually dream about familiar places and routine activities, but unfamiliar people.

Nightmares vs. Night Terrors

Some Theories About Why We Dream:

- Dreams incorporate ongoing functions (e.g. vestibular activity) and/or environmental events (e.g. your alarm clock).
- Dreaming is a way to forget irrelevant information.
- Animals integrate memories and experience while dreaming.

Why Do We Sleep?

Functions of SWS

- Rest, repair body.
- Human growth hormone (HGH) is released during Stages 3 and 4 SWS.
- Deprivation produces joint and muscle pain.

Functions of REM

What Parts of the Brain Manage Sleep Phenomena?

Sleep Disorders

- *Dyssomnias* involve difficulties with the initiation, maintenance, timing and quality of sleep.
- *Parasomnias* involve unusual behaviors that intrude on normal sleep.

Dyssomnias

Dyssomnias

Narcoleptic Dogs Show Cataplexy

So Do People

Parasomnias (unusual behaviors that intrude on normal sleep)