Week 11 - Day 3 (Ch 5 pt 1 Sleep)

Apr 1, 2016

Quizlet on terms from this lecture

Audio 0:02:10 Announcements

Finishing up stress

Coping Examples:

- Anti-Stress Video Game
- Exercise
- Meditation
- …what else?

Meditation

- Focus attention on external object or sense of awareness
- Develop deep sense of tranquility
- Goal: Quiet internal “voices”
- Two general kinds:
  - Concentrative meditation: Focus on one thing (breathing, mental image, mantra)
  - Mindfulness meditation: Thoughts and emotions flow freely, paying attention to them, but not reacting to or judging them + Audio 0:05:33 + Don’t allow yourself to become to become emotionally involved in your thoughts
- Possible benefits of meditation:
  - Lower blood pressure
  - Improved blood lipids
  - Improved insulin resistance
  - Buffered against sadness
  - Preserved cognitive functioning in aging
  - Attention benefits
    - (Covered the above vocab in last notes)

Coping with Stress: Individual Differences

- People differ in their perceptions of the amount of stress associated with various life events

- Stress resistant (“hardy”) people capable of adapting to life changes by viewing events constructively
  - “Hardiness” has three components:
    - Commitment, Challenge, and Control
- Stress-resilient people greater emotional flexibility and recover from threats more quickly than do those low in resilience
- Some researchers believe that people can learn to become more resilient
  - Understanding when emotions are adaptive, learning to regulate emotions, and working on relationships with others
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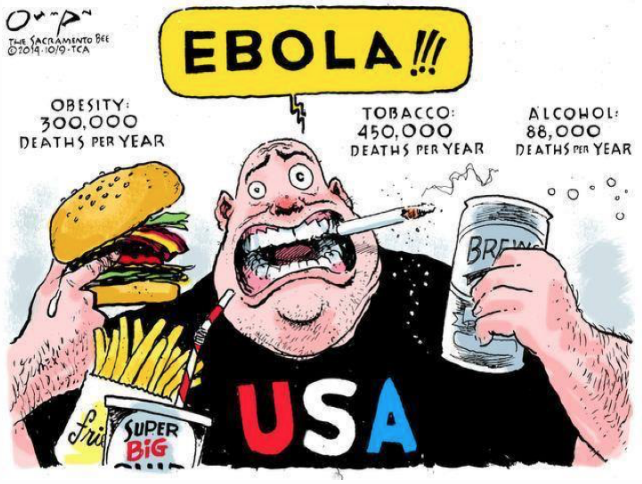
- 

Sleep

Body Rhythms

- Biological rhythms
  - Periodic, more or less regular fluctuations in a biological system
  - May or may not have psychological implications
  - Come from different sources
    - External stimuli (e.g., daylight, temperature)

        - Endogenous: generated from within rather by external cues
- Examples
    - Bears – hibernation
    - Bird – migration
        - Seasonal motive to fly south
    - Humans – testosterone peaks in the fall and dips in the spring

Audio 0:12:50

Circadian Rhythms

- Biological rhythms within a period of about 24 hours
    - From peak to peak, from trough to trough
    - Related to changes in light, air pressure, and temperature
    - Affects hormone levels, urine levels, blood pressure, etc.
- Controlled by the suprachiasmatic nucleus (SCN)
    - Receptors in the back of the eye SCN tells brain and body how to adapt
    - Feedback loop between SCN and hormones/neurotransmitters
        - SCN as controller
        - Example: melatonin (sleep-inducing hormone)
            - Audio 0:15:45

Synchronization

- Sometimes fall out of sync
    - Internal desynchronization: a state in which biological rhythms are not in phase with one another
    - Examples:
        - Traveling across multiple time zones (i.e., jet lag)
        - Staying up all night
    - Sleep and wake patterns adjust quickly; temperature and hormone cycles may take several days to normalize
        - Audio 0:18:00

Long-term Rhythms

- Some body rhythms may take place over longer periods of time
    - Seasonal affective disorder (SAD)
        - Sadness, lethargy, and drowsiness related to low light in winter months
        - Often treated with phototherapy (sitting in front of fluorescent light for brief intervals)
    - Menstrual cycle
        - On average, 28-day cycle
        - Hormone changes related to possible conception

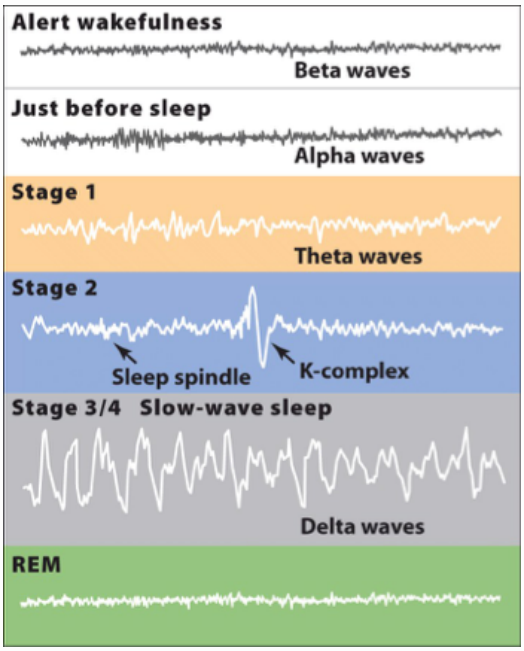
        - Changes in hormone could be relative to mood
        - Audio 0:20:30

Sleep

What is Sleep?

- State of consciousness in which awareness of the outside world is mostly turned off
    - The brain may not be aware of its surroundings, but it does not “shut down”
- Sleep is a part of the normal rhythm of life
    - Circadian rhythms
    - The secretion of melatonin, which helps people fall asleep, is linked to light-dark cycles
    - Sleep habits vary widely
        - Some adults report needing 7 – 9 hours a night
            - Audio 0:22:00
            - Sleeping too much can actually make you develop psychological problems
        - Some adults only need 1 – 2

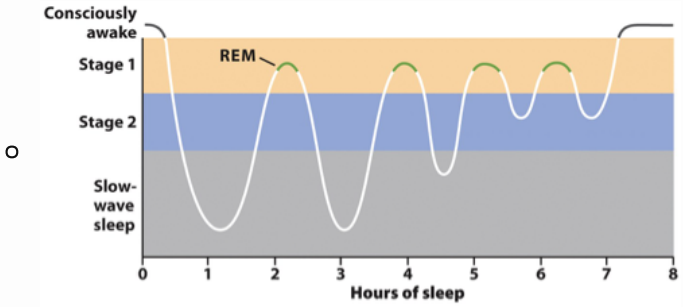
Stages of sleep



- alpha waves just before sleep
    - stage 1
        - you could wake up from this and not ever know you were asleep
            - might feel like you’re falling
            - might seel interesting colors or shapes
    - stage 2
        - become more resiliant to external stimuli
        - still atuned to alarm clock, baby crying, etc

        - sleep spindles
            - sudden bursts of activity in the brain
                - we think it's the brain actively trying to keep you asleep
                    - we think this because they tend to happen after loud noises
        - stage 3/4 (slow-wave sleep)
            - deep sleep
            - someone might have to shake you awake
            - Audio 0:28:00
        - REM
            - dreaming
            - Audio 0:34:30

REM Sleep

- The sleep cycle reverses after about 90 minutes
- Enter REM (paradoxical) stage
    - Instead of waking up from sleep, you go into REM
- Important because most dreaming occurs in REM sleep
- Amount of time spent in REM increases
    - 

        - You spend less and less time in the other stages

Sleep Disorders

- **Insomnia**: Difficulty falling or staying asleep
- **Obstructive Sleep Apnea**: Breathing may stop hundreds of times per night
- **Narcolepsy**: Sufferers unexpectedly fall asleep
    - Audio 0:37:30
- **REM Behavior Disorder**: Sufferers act out their dreams
- **Somnambulism**: Sleep walking
    - Happens a lot more with children
    - Interestingly happens more often in slow-wave sleep

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Why Do We Sleep?

- It's adaptive, of course!
  - This might seem counterintuitive
- Sleep serves important biological purposes:
  - Restoration
  - Circadian rhythms
  - Facilitation of learning/Consolidation

Restoration

- **Restorative Theory**: Sleep allows the body to rest and repair itself
- The evidence:
  - Sleep increases after strenuous physical activity
    - Audio 0:40:30
  - Growth hormones secreted in sleep
  - Replenishes the brain's energy stores
  - Strengthens the immune system
    - immune system tries to repair itself
- **Effects of sleep deprivation**:
  - Mood problems (e.g., irritability)
  - Problems with cognitive performance (e.g., attention and short-term memory lapses)
  - May compromise the immune system
  - Falling asleep for a few seconds to a minute (microsleeps) can impair ability to perform critical tasks (e.g., driving)

Circadian Rhythms

- **Circadian rhythm theory**:

- Many creatures are quiet and inactive during the night because darkness is the time when danger is highest
- Sleeping reduces risk of exposure to predators
  - 
  - Audio 0:44:25

Facilitation of Learning

- **Sleep** strengthens neural connections needed for learning to occur
  - Research shows memory in participants who slept was greater than those who didn't
  - REM and slow-wave (stages 3 & 4) important for learning to take place
  - Sleep may assist in problem-solving
    - Volunteers trained on a math procedure that they would on an exam later
    - They were not told about a hidden shortcut that would greatly reduce their work
    - Those that slept for eight hours at night were 3 times more likely to discover the shortcut
      - Audio 0:48:13
  - Students spend more time in REM during exam periods

Vocab

Term	**Def**
Stress-resilient people	people with greater emotional flexibility who recover from threats quickly
biological rhythms	periodic, regular fuctuations in a biological system (sleep, digestion, etc)
endogenous	generated from within by external cues (urine volume, blood pressure, etc)
Circadian rhythms	biological rhythms within a period of about 24 hours (related to changes in light, air pressure, and temperature)
SCN	Controls the circadian rhythm (ex: melatonin induces sleep by

(Suprachiasmatic nucleus)	communicating with SCN)
Internal desynchronization	state in which biological rhythms are not in phase with one another (ex: jet lag)
Long-term rhythms	body rhythms witch take place over longer periods of time (include Seasonal affective disorder (SAD) and menstrual cycle
Sleep	State of consciousness in which awareness of the outside world is mostly turned off
Insomnia	Difficulty falling asleep
Obstructive sleep apnea	breathing may stop hundreds of times per night
REM Behavior Disorder	People with this disorder act out their dreams
Somnambulism	Sleep walking
Restorative Theory	Theory that says that sleep allows the body to rest and repair itself
microsleeps	falling asleep for a few seconds to a minute (can impair ability to do critical tasks like driving)
Circadian Rhythms	Many creatures are quiet and inactive during the night because that is the most dangerous time

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Website for notes and other study materials from University of Alabama's Pyschology 101 section 012 Spring 2016