

DUAL PROCESSING, SLEEP, AND DREAMS

Module 6

WHAT IS CONSCIOUSNESS?

- Our awareness of ourselves & our environment
- People who study consciousness: Cognitive Neuroscientists
- Sometimes we experience different states of consciousness – see Fig. 6.1 pg. 82

WHAT IS DUAL PROCESSING?

- Idea that information is processed on 2 levels simultaneously
- Example:
 - Conscious level: "Hey, there's Bob."
 - Subconscious level: "Bob is approaching me. He may want to say hello. He's about 9 feet from me..."

DUAL PROCESSING

- Your brain can take conscious level knowledge and move it to the subconscious level
 - Like the difference between when you learned to ride a bike and had to think consciously about what you were doing, versus hopping on a bike today.
 - This skill has now become part of your subconscious knowledge base, and you don't think about it much more than you think about walking.

CLICK LINK

- <http://www.youtube.com/watch?v=u7Pmke-XLUU&feature=related>

SELECTIVE ATTENTION

- Here's something that will annoy you...
 - You can always see your nose. Always. But you have chosen to deselect seeing it. Unfortunately, now that I've mentioned it, you probably see it, right?

SELECTIVE ATTENTION

- Think of your attention as a flashlight beam
- You take in an estimated 11,000,000 bits of info per second, yet only process about 40 at any one time

SELECTIVE ATTENTION

- Cocktail party effect – in a noisy environment, you can only attend to one voice among many
- But if your name is mentioned you automatically shift your attention to that speaker
 - Tune out unwanted/unneeded noise
 - Sometimes I do this with my children ;)

SELECTIVE ATTENTION

- This is why texting and driving is so dangerous
- Multitasking costs brain resources
- Even chatting with a passenger or on the phone while driving is dangerous

CLICK ME

- <http://www.youtube.com/watch?v=oSQJP40PcGI>

SLEEP AND DREAMS

- Complete the surveys on sleep and dreams
- Review your results with your teacher and discuss as a group

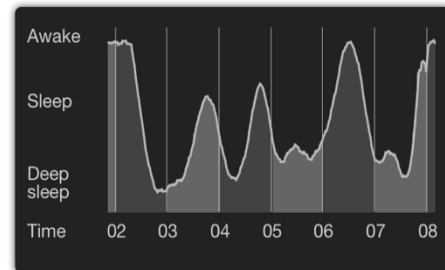
SLEEP AND DREAMS

- Circadian rhythm - your biological rhythm clock
- Even if there were no clocks, no light or dark, your body would still start feeling tired around the same time every day, and require the same amount of sleep as usual

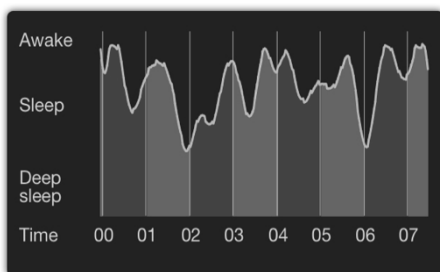
REM SLEEP

- Non-REM stage 1 sleep
 - Hallucinations/"Jerking in your sleep"
- Non-REM stage 2 sleep (20 min.)
 - Fully asleep
 - "Sleep spindles": bursts of rapid brain activity
- Non-REM stage 3 sleep (30 min.)
 - Deep sleep/hard to wake
 - Brain activity slows
- REM sleep (10 min.)
 - Almost paralyzed
 - Active brain

A TYPICAL NIGHT'S SLEEP



A NIGHT OF SLEEP INFLUENCED BY ALCOHOL



WHY DO WE SLEEP?

- Theory 1:
 - It protects us from the night dangers
 - Evolutionary survival behavior

WHY DO WE SLEEP?

- Theory 2: Physically recuperate
 - Repair tissue
 - Give body a rest
 - Neurons repair themselves

WHY DO WE SLEEP?

- Theory 3: Helps us work through our memories
 - Locks in traces of memory from the day

WHY DO WE SLEEP?

- Theory 4: Feeds creative thinking
 - Sleep promotes thinking, so can inspire creative ideas

WHY DO WE SLEEP?

- Theory 5: Supports growth
 - Not just for children
 - Also muscle development due to hormones released by the pituitary gland during sleep

EFFECT OF SLEEP DEPRIVATION

- Less sleep shows increased incidence of depression
- See fig. 6.13 pg. 95

SLEEP DISORDERS

- Narcolepsy – a sudden intrusion of REM sleep into wakeful time; assoc. w/a lack of hypocretin in the hypothalamus; usually triggered by high emotion
- Cataplexy – triggered by emotion; losing all muscle tone while experiencing narcolepsy; staying conscious inside their brain (so they can hear & feel what's happening, and if their eyes are open, they can see, but they can't respond or get up)
- <https://www.youtube.com/watch?v=3MBCeKn0Oeo>

SLEEP DISORDERS

- Sleep Apnea – stop breathing during sleep; causes sufferer to gasp or snort for air; more common among males and overweight people
- Night Terrors – different than nightmares; happen at different time of the sleep cycle;

DREAMS

- What were Sigmund Freud's theories on why we dream and what the content means?
- What are some other theories of dreams?
 - Note: There are 5 theories of why we dream?