

## Chapter 6: The Aware Mind- Elements of Consciousness

- The brain makes a commitment to a choice as much as 10 seconds before we become aware of the decision

### **What Does It Mean to Be Conscious?**

- Conscious- a state of awareness
- Self-awareness- the special understanding of the self as distinct from other stimuli
- “Stream of consciousness”- William James; seemingly unbroken flow of conscious awareness
- “Consciousness”- Sigmund Freud; aspects of the mind that could be retrieved voluntarily, in contrast to the unconscious parts of the mind that remain hidden to voluntary searches for information

### **The Evolution of Consciousness**

- “consciousness grows the more complex and intense the higher we rise in the animal kingdom” -william james
- The self-awareness aspect of consciousness- as exemplified in “I” statements- might be the rarest of all among living things

### **Consciousness as Variations in Alertness**

- Varying states of awareness help repair bodies and conserve energy
  - Food requirements would be higher if we didn't sleep
  - Maximizes safety
    - Sleeping during your worse seeing cycle

### **Consciousness as an Awareness of Ongoing Sensations**

- Choose responses rather than respond instinctively
- The flexibility of choosing increases an animal's chance of survival

### **Consciousness as Self-Awareness**

- Understanding that you're alive is correlated with a heightened meaningfulness of death
- Rouge test- a dot of rouge is placed on a child's forehead and the child is allowed an opportunity to look in a mirror
  - Prior to 18 months, children do not show indication that they see themselves in the mirror
  - After that, they will rub at the spot and turn their bodies to get a better look; demonstrating self-awareness
- Animals showing social self-awareness
  - Dolphins have special whistles that they seem to use for individuals like names
  - Chimps and elephants show grief when someone dies

### **Searching for Consciousness in the Brain**

- Brain
  - Houses mind
  - Maintains homeostasis
- Mind
  - Houses consciousness
  - Manages unconscious functions such as long term memory
- Consciousness is the complex interactions between areas of the cerebral cortex and the thalamus
  - “enable” consciousness but do not produce content
- Lesions of thalamus result in profound unconsciousness typically associated with brain death
- Reticular formation of brainstem, raise and lower thresholds of conscious awareness
- “Blinding Problem”- how the brain forms a unified whole out of large quantities of information
- Sensory information combines with an individual’s past experience to produce expectations for managing a current situation
  - Part of “stream of consciousness”
  - Frontal lobes provide space for integration
  - Explains consciousness in a developing child
  - As child gains more experience, consciousness improves

#### **What happens to consciousness during wakefulness and sleep?**

- Sleep- a normal state of consciousness characterized by reduced awareness of external stimuli
- Wakefulness- a normal state of consciousness characterized by alertness and awareness of external stimuli
- Circadian rhythms- a daily biological rhythm

#### **Circadian Rhythms**

- Biological clock- an internal mechanism that provides an approximate schedule for a wide variety of physical processes
  - Controlled by hypothalamus
  - Interact with external stimuli, known as zeitgebers
    - Light- natural zeitgeber
    - Eating patterns
- Totally blind people experience longer than normal circadian cycles due to their lack of exposure to natural light

#### **Modern Challenges for Circadian Rhythms**

- Invention of artificial light has shaped our contemporary sleep-waking patterns into something different
- Between 40 and 80% of graveyard shifters experience “shift maladaptation syndrome”
  - Make more errors and have more accidents

- Jet lag
  - Fatigue, irritability, and sleepiness
  - Flight attendants-have reduced reaction time and make 9% more mistakes on memory tasks
- Daylight savings
- When less light is available for setting the body's internal clocks, 4 to 6% of pop will experience a type of depression Seasonal Affective Disorder SAD
- Seasonal Affective Disorder- a mood disorder in which depression occurs regularly at the same time each year, usually during the winter months
  - Treated by exposure to bright lights
- Artificial light affects sleep by breaking down melatonin
  - Changes in melatonin release have been implicated in a long list of human diseases like cancer and heart disease
  - Obesity and tobacco have a bad effect on melatonin

### **Individual Variations in Circadian Rhythms**

- Different circadian rhythm patterns may result from different versions of the genes responsible for the activity of our internal clocks

### **Wakefulness**

- Varying states of awareness can be described using electroencephalogram (EEG) recordings which provide a general measure of overall brain activity
- During wakefulness we alter between two patterns of activity
  - Beta wave- a waveform recorded by EEG that usually indicates alert wakefulness
    - Rapid, irregular, low-amplitude waves
    - 15-20 cycles per second
  - Alpha wave- a waveform recorded by EEG that usually indicates relaxed wakefulness
    - Slower, larger, and more regular
    - 9-12 cycles per second
    - Just have to close your eyes
- Daydreaming/mind wandering- spontaneous, subjective experiences in a no-task, no-stimulus, no-response situation
- Certain parts of the brain become more active during times when we are not faced with particular demands for our attention
  - Form a default network- medial prefrontal cortex, posterior cingulate cortex, and cortex located at the junction of the temporal and parietal lobes
- When we work on a difficult task requiring our undivided attention, we engage in "executive network"
  - Includes anterior cingulate cortex and dorsolateral prefrontal cortex

### **Sleep**

- 1/3 of our lives