

STATES OF CONSCIOUSNESS

Biology of sleep

Biological rhythms

- Circadian rhythm (25 hr cycle)
 - Light (superchiasmatic nucleus)
 - Pineal gland (near thalamus)
 - Melatonin
 - Adenosine (sleep-inducing)

Sleep stages

- Prior to stage 1 (alpha waves)
- Stage 1 (theta waves) 5 min.
 - Hypnagogic sensations
- Stage 2 (K-complexes, sleep spindles)
 - Approx. 20 minutes
- Stage 3 (<50% delta waves)
- Stage 4 (>50% delta waves)
 - Stage 3 & 4—slow wave sleep

Order of stages

- 1, 2, 3, 4, 3, 2, REM, 2, 3, 4, 3, 2, REM

REM—paradoxical sleep

- Active brain, paralyzed body

Benefits

- Memory consolidation
- Concentration
- Mood
- Moderates hunger/reduces obesity
- Improves immune response

Disorders

- Insomnia (10-15% of adults)
- Narcolepsy
- Sleep apnea
- Night terrors (stage 4)
- Sleepwalking (stage 4)

Dreaming

Freud's analysis

- Manifest content vs. Latent content

Information-processing theory

- Filing experience
- Synthesizing memory
- Pruning connections

Build neural pathways

Activation-synthesis theory

- Pons generates neural firing

Lucid dreams

- Conscious awareness of dream state

Hypnosis

Mesmer (18th century)

Susceptibility

- Creativity, desire influences

Therapeutic capacity

- Posthypnotic suggestions
- Pain alleviation
- Selective attention?

Theories:

Social influence theory

- Emphasizes desire of subjects to do well

Divided consciousness theory

- Emphasizes dissociation
- Hilgard's "hidden observer"

Psychoactive drugs

Tolerance/withdrawal

- Involves neuroadaptation

Addiction

Depressants

Alcohol

- Reduces inhibitions
- Impairs activity of frontal lobe
- Disrupts formation of LTM

Barbiturates (tranquilizers)

- Reduce anxiety, mimic alcohol

Opiates (endorphin agonists)

- Morphine, heroin, oxycontin

Stimulants

Amphetamines/meth

Cocaine—rush/crash

Ecstasy—also a hallucinogen

- Stimulates serotonin

Interferes w/sleep, impairs

- memory, reduces immune response

Hallucinogens

LSD—serotonin agonist

Marijuana—cannabinoid agonist

- Disrupts memory formation

- Reverse tolerance