States of Consciousness
Levels of Consciousness

- Conscious Level
- Nonconscious Level
- Preconscious Level
- Subconscious Level
- Unconscious Level
Levels of Consciousness

We know that various levels exists beyond the conscious level.

- Mere-exposure effect
- Priming/Subliminal
- Blind sight
Circadian Rhythm

- 24hr cycle of day & night
- Thinking & memory are most accurate when people are at their peak in circadian arousal.
- Morning/Night person? With age we tend to shift from being owls to larks
Interrupting/Resetting Biological Clocks

- Transcontinental flights & weekends tend to disrupt our circ. Rhythms. (stay up late on weekends, can’t sleep Sunday & are really tired Monday)
Sleep

• Sleep is a state of consciousness.
• We are less aware of our surroundings.
Sleep Cycle

- Use an EEG machine to measure stages of sleep.
- When you are in the onset of sleep (getting ready to fall asleep) you experience alpha waves.
- Produces mild hallucinations, like a feeling of falling.
- **ONE CYCLE LASTS 90 MINUTES!**
Stage 1

• Kind of awake and kind of asleep.
• Only lasts a few minutes, and you usually only experience it once a night.
• Your brain produces Theta Waves.
• May experience hallucinations – feeling of fall or jerking body movements
Stage 2

- Lasts about 20 min
- More Theta Waves that get progressively slower.
- Begin to show sleep spindles...short bursts of rapid brain waves.
- Can be easily woken up
- Sleeptalking (nonsensical/garbled) can occur in this stage or later
Stages 3 and 4

- Slow wave sleep.
- You produce Delta waves.
- If awoken you will be very groggy.
- Vital for restoring body’s growth hormones and good overall health.
- Lasts about 30 min.
- Late stage 4 - bedwetting/sleepwalking
  
  From stage 4, your brain begins to speed up and you go to stage 3, then 2....then ......
REM Sleep

- Rapid Eye Movement
- Often called paradoxical sleep because body is internally aroused and externally calm
- Brain is very active.
- Dreams usually occur in REM.
- Body is essentially paralyzed.
- REM Rebound
REM Sleep

• During the night’s sleep, REM sleep increases and stages 3 & 4 become shorter.
• Sleep cycle repeats itself about every 90 min.
• By morning, 20-25% of night’s sleep has been spent dreaming (about 100 min)
Stages in a Typical Night’s Sleep

Sleep stages

Hours of sleep

Awake

REM
Why do we Sleep? - May have evolved for 2 reasons

- **Protection**
- No Hunting/Gathering @ night
- Travel not safe
- Better off in cave out of harm’s way

- **Restoration**
- Adenosine produced by brain while awake makes us sleepy
- Sleep decreases adenosine concentrations
- Sleeping brains are actively repairing & reorganizing itself, consolidating memories
- May play role in growth process - pit. gland releases growth hormone during sleep
How much sleep do we need?

- Range in humans – 4-10 hours with average of 7.5 hours. Why does it vary?
- Varies with age & from person to person
- Sleep patterns are culturally influenced
- Modern light bulb, shift work, social diversions,
How much sleep do we need?

• Stanley Coren study (1996)
• Found most people will sleep 9+ hrs uninterrupted.
  – Don’t get groggy
  – Awake refreshed, with better moods, perform efficient & accurate work than those with less sleep.

– If longer than 5 nights = sleep debt - you feel tired even after a long sleep
How does sleep loss affect us?

• How long have you gone without sleep? What happens?
• Case Study - Randy Gardner - 11 days
• Effects of Sleep Deprivation
  ▪ fatigue
  ▪ impaired concentration
  ▪ depressed immune system
  ▪ greater vulnerability to accidents

▪ Sleep deprivation activity
Sleep Disorders
Insomnia

• Persistent problems falling asleep or staying asleep
• Affects 10% of the population
Narcolepsy

- Suffer from sleeplessness and may fall asleep at unpredictable or inappropriate times.
- Directly into REM sleep
- 1 in 2000 people.

Skeeter the Narcoleptic Dog
Sleep Apnea

• A person stops breathing during their sleep.
• Wake up momentarily, gasps for air, then falls back asleep.
• Very common, especially in heavy males.
• Can be fatal.
Night Terrors

- Wake up screaming and have no idea why.
- Heart rate & respiration doubles
- Not a nightmare.
- Most common in children (boys) between ages 2-8.
Somnambulism

• Sleep Walking
• Most often occurs during the first few hours of sleeping and in stage 4 (deep sleep).
• If you have had night terrors, you are more likely to sleep walk when older.
Dreams

“What do Tigers dream of
When they take a little tiger snooze?
Do they dream of mauling zebras
or Halle Berry in her Catwoman suit?
Don’t you worry your pretty striped head
we’re gonna get you back to Tyson’
and your cozy tiger bed.” 😊
Freud’s Theory of Dreams

• Dreams are a roadway into our unconscious.

• **Manifest Content** (storyline) days' experiences/preoccupations

• **Latent Content** (underlying meaning) unconscious drives/wishes

• **Interpretation of Dreams** (1900)
Activation-Synthesis Theory

• Our Cerebral Cortex is trying to interpret random electrical activity (neural static) we have while sleeping.
• That is why dreams sometimes make no sense.
• Biological Theory.
To preserve neural pathways

- **Physiological function of dreams:**
  - Provide sleeping brain with periodic stimulation - develops & preserves the brain’s neural pathways
- Developmental Theory
- E.g. infants neural networks are fast developing and they spend a lot of time in REM sleep.
Information-Processing Theory

- Dreams are a way to deal with the stresses of everyday life.
- We tend to dream more when we are more stressed.
Reflect Cognitive Development

- Dreams are part of brain maturation & cognitive development.
- They draw on our concepts of knowledge.
REM Rebound

- All dream theorists agree: we need REM sleep
- After being deprived of REM repeatedly, people sleep like babies with increased REM sleep, called REM Rebound.
Quiz questions

A person who falls asleep in the midst of a heated argument probably suffers from:

a. Sleep apnea.
b. Narcolepsy.
c. Night terrors.
d. Insomnia.
REM sleep is referred to as *paradoxical sleep* because:

A. Studies of people deprived of REM sleep indicate that REM sleep is unnecessary.

B. The body’s muscles remain relaxed while the brain and eyes are active.

C. It is very easy to awaken a person from REM sleep.

D. The body’s muscles are very tense while the brain is in a nearly meditative state.
• Although the eyes are closed, Adele’s brain is generating bursts of electrical activity. It is likely that she is

a. Under the influence of a depressant.
b. Under the influence of an opiate
c. In REM sleep
d. Having a near-death experience
Hypnosis
Hypnosis

- Hypnosis- a state of consciousness resulting from a narrowed focus of attention and characterized by heightened suggestibility
  - During hypnosis, people become highly suggestible to changes in behavior and thought
YOU ARE GETTING SLEEPY...

- Hypnotic trances are very different from sleep
- Participants become highly receptive and responsive to certain stimuli, they can focus on one tiny aspect of reality and ignore all other inputs
- Involves cooperation between participant and hypnotist, not domination; participant can’t be forced against their will

USES OF HYPNOSIS

- Hypnosis is usually seen as an entertainment act; however, it has uses in medical and therapeutic settings
- Posthypnotic suggestion - suggestion made during hypnosis that affects behavior afterward
  - Used to change unwanted behaviors, such as smoking or overeating
- Used to reduce pain — hypnotic analgesia
Hypnotic Theories

Role Theory

• Hypnosis is NOT an altered state of consciousness.
• Different people have various state of hypnotic suggestibility.
• A social phenomenon where people want to believe.
• Work better on people with richer fantasy lives.

State Theory

• Hypnosis is an altered state of consciousness.
• Dramatic health benefits
• It works for pain best.
BIOFEEDBACK

• **Biofeedback** - process of learning to control bodily states with the help of specialized machines
  – Used to teach people to control many physiological responses; brain waves (EEG), heart rate, blood pressure, skin temp, and sweat-gland activity

• Most well documented biofeedback cures involve special training in muscular control (tension headaches)
MEDITATION

• Meditation- focus of attention to clear one’s mind and produce relaxation and “inner peace”
  – 3 major approaches to meditation:
    • Transcendental Meditation
      – eyes closed, engaging in mental repetition for 15 to 20 minutes twice a day, use of *mandala* (below)
      – brought from India to the West in 1959, transcendental meditation was a distinct subculture within the 1960s youth movement
    • Mindfulness Meditation
      – focus on present moment
      – developed from a Buddhist tradition
      – participant may move focus from tips of toes to top of the head, paying attention to pain areas
    • Breath Meditation
      – concentration on one’s respiration, inhaling and exhaling
  – researchers agree that most people benefit from meditation
Drugs
Drugs

• Our brain is protected by a layer of capillaries called the **blood-brain barrier**.

• The drugs that are small enough to pass through are called **psychoactive drugs**.
Psychoactive Drugs

Are chemicals that change perceptions and moods.

If a drug is used often, a **tolerance** is created for the drug.

Thus you need more of the drug to feel the same effect.

If you stop using a drug you can develop **withdrawal symptoms**.
Dependence

• **Physical Dependence** is evident when withdrawal produces physical pain and intense cravings.

• **Psychological Dependence** results when the user believes he/she needs the drug for relief, especially for stress or negative emotions.
Depressants

- Slows down body processes by calming the sympathetic nervous system activity.
- Alcohol
- barbiturates and tranquilizers
- Opiates
Alcohol

More than 86 billion dollars are spent annually on alcoholic beverages.

Alcohol is involved in 60% of ALL crimes.

Alcohol is involved in over 70% of sexually related crimes.

• Is it worth the cost?
Effects of Alcohol on Behavior?

- Promotes aggressive, sexual or helpful urges that normal restraints might inhibit.
- Slows brain activity that controls judgment & inhibitions
- Makes drinker “lively”
Barbituates, Tranquilizers

- Mimic the effects of alcohol.
- Sometimes prescribed to induce sleep or reduce anxiety
Opiates

- Has depressive and hallucinogenic qualities.
- Agonist for endorphins.
- Derived from poppy plant.
- Morphine, heroin, methadone and codeine.
- All these drugs cross the placental barrier...teratogens.
Stimulants

- Speed up body processes.
- More powerful ones (like cocaine) give people feelings of invincibility.
Stimulants
Caffeine, Nicotine, amphetamines (speed), & cocaine

Effects of Stimulants on Body & Behavior:
• HR & Respiration increase, pupils dilate, appetite diminishes, energy & self-confidence rise.
• Drugs wears off: behavior slows; symptoms=tiredness, headaches, irritability, depression
• Cocaine produces its effects by raising dopamine, serotonin & norepinephrine concentrations by binding to receptor sites and blocking reuptake.
Hallucinogens - Psychedelics

- Causes changes in perceptions of reality
- LSD, peyote, PCP, mushrooms and marijuana.
- Blocks reuptake of serotonin
- Pot relaxes, disinhibits, impairs memory, & motor skills
- May depress male sex hormones & hasten loss of brain cells
Influences on Drug Use

- Use increased in 1970s
- Declined sharply due to realistic problems portrayed in the media
- Use has rebounded since the 1990s

Biological Influences:
- Some biologically vulnerable to drug use indicated – heredity influences alcoholic tendencies (Twins/Adoption Studies)
Influences on Drug Use

Psychological Factors Promoting Addiction:
• Feeling your life is meaningless
• Experiencing significant stress or failure
• Depression

Cultural Factors:
(esp. for teenagers)
• Evident across cultural groups
• Peers influence attitudes about drugs, provide drugs, and est. social context for drug use
• If your friends use drugs, chances are you will too!
Near-Death Experiences

• reported after a close brush with death; often similar to drug induced hallucinations

• **Dualists**—believe mind & body are 2 separate entities that interact; interpret experience as evidence of human mortality.

• **Monists**—mind & body are different aspects of the same thing; interpret exp as product of human stress.