Meditation Activity

“The quieter you become the more you can hear.”
I. Understanding Consciousness and Hypnosis

- **Consciousness**: our awareness of ourselves and our environment.
- **Unconsciousness**: outside of our awareness.

- History of Psychology:
  - 1887- “the description and explanation of states of consciousness”
  - Early 1900s- difficulty studying consciousness led to a shift: behaviorism
  - 1960s- psychology nearly lost consciousness turning to… “the science of behavior”
  - After 1960s- thanks to advances in neuroscience and the importance in cognition… “psychology regained consciousness”
Conscious awareness is one part of the *dual processing* going on in our two-track minds.

**Dual Processing:** the principle that information is often simultaneously processed on separate conscious and unconscious tracks.

Selective attention directs the spotlight of our awareness.

Information processing: most of it is conscious, much of it is unconscious and automatic.

Automatic point and shoot camera, but with a manual (conscious) override.
A. Views of Consciousness

- William James - Views consciousness as a stream of ideas that are continuous and ever changing. “stream of consciousness”

- Sigmund Freud - Consciousness is like the tip of an iceberg.
Freud’s Levels of Consciousness

1. Conscious level: Information about yourself and your environment you are currently aware of.

2. Nonconscious level: Bodily processes controlled by your mind that we are not aware of.

3. Preconscious level: Information about yourself and your environment that you are not currently thinking about, but you could be.

4. Unconscious level: Some events and feelings are unacceptable to our conscious mind and are repressed into the conscious mind.
B. States of Consciousness

- Can range from deep sleep to alert wakefulness.
- Can be affected by drugs and other influences.
- Some states are active while some are passive.
- Altered states of consciousness involve distinct changes in mental processing – Observable to the subject or others.
C. Hypnosis

- **Hypnosis**: a social interaction in which one person (the subject) responds to another person’s (the hypnotist’s) suggestions that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur.

- **Terms** used with hypnosis- heightened suggestibility, posthypnotic suggestion, posthypnotic amnesia, hypnotherapists, hypnotic induction.

- **Use of hypnosis**: parties, nightclubs, but used as an anesthetic in dentistry, childbirth, and surgery. Also used to treat phobias, pain, weight loss, and smoking.
Example

• Close your eyes and imagine ....

• what happens?
• FAQ about Hypnosis:
  • Can anyone experience hypnosis?
  • Can hypnosis enhance recall of forgotten events?
  • Can hypnosis force people to act against their will?
  • Can hypnosis be therapeutic?
  • Can hypnosis relieve pain?
D. Theories of Hypnosis

a. **Social Influence Theory** (Role theory): much like good actors, hypnotized people buy into their roles. They begin to feel and behave in ways appropriate.

b. **Dissociation Theory:** part of the consciousness responds to the suggestion of the hypnotist, while another part or level retains awareness in reality often known as a hidden observer.

- dissociation (divided consciousness): a split in consciousness, which allows some thoughts and behaviors to occur simultaneously with others.

- Ernest Hilgard: tested hypnotized people by placing arm in ice bath where they exhibited no pain.

- Stroop Effect task: [https://faculty.washington.edu/chudler/java/ready.html](https://faculty.washington.edu/chudler/java/ready.html)
E. Meditation

Practice of turning your attention to a single point of reference. Turning your attention away from distracting thoughts and focusing on the present moment.

Purposes:

- Produces frontal lobe changes that are associated with positive emotions.
- Beneficial changes in blood pressure and stress hormones. Reduces anxiety.

“Nothing happens next. This is it.”
II. Sleep Patterns and Sleep Theories

• True or False?

• Older adults sleep more than young adults.

• You should never wake up a someone who is sleepwalking.

• Sleep experts recommend treating insomnia with sleeping pills.

• Some people dream every night; others seldom dream.

• Boredom makes you feel sleepy, even if you’ve had enough sleep.
A. Biological Rhythms and Sleep

How do our biological rhythms influence our daily functioning?

1. Biological Rhythms: Our mind and bodies fluctuations over varying periods. (24-hour biological clock, 90-minute sleep cycle)

• **Circadian Rhythms:**
  
  • Physiological patterns that repeat approximately every 24 hrs. (One cycle would be the sleep-wake cycle)
  
  • Biological clock controls functions such as metabolism, heart rate, body temperature, and hormonal activity.

  • Light is an external cue that can set the circadian rhythm.

  • When there are no time cues, most people settle into a circadian rhythm of 25 hrs.

  • Jet lag and work schedules throw off biological clock. Results in fatigue, sleepiness, and cognitive deficits.
Light in the morning affects retinal proteins that trigger signals to the brain’s suprachiasmatic nucleus (SCN)—the SCN causes the pineal gland to decrease *melatonin* (i.e. a sleep inducing hormone).
2. Sleep:

- Mystery until 1952 (Eugene Aserinsky) recorded his son’s brain waves on an EEG.

- **REM sleep** - *(Paradoxical Sleep)* eyes rapidly move beneath closed eyelids.
  
  - Vivid dreams occur.
  
  - Sleep paralysis happens meaning voluntary muscles stop moving.

  - Brain’s motor cortex remains active, but brainstem blocks messages, leaving you relaxed.

- **NREM sleep** - the interim periods without REM.

  - Encompasses all sleep stages except for REM sleep.

  - Either no mental activity occurs or brief descriptions of ordinary events.
left NREM, bottom left and right is in REM.
3. Sleep Cycle:

- About every 90 minutes humans cycle through FOUR distinct sleep stages.

- Four Stages: NREM-1, NREM-2, NREM-3, REM
EEG Recordings of Brain Waves

- **Alpha waves** are generally produced directly prior to entering sleep.
- **Alpha waves**: the relatively slow brain waves of a relaxed, awake state.
- **Delta waves** occur at the deepest level of sleep
- **Delta waves**: the large, slow brain waves associated with deep sleep
Sleep Stages 1-3

NREM-1 (Stage one)

- Breathing begins to slow. Not even aware we are sleeping.
- During *NREM-1* sleep one may experience fantastic images, resembling hallucinations.
- Body suddenly jerks or may feel like floating.

NREM-2 (Stage two)— After NREM-1 one begins about 20 minutes of *NREM-2* sleep.

- One can be easily awakened but one is clearly asleep.
- EEG is punctuated by *sleep spindles*- short burst of fast electrical activity that reliably signals the end of stage one.

NREM-3 (Stage three)- In *NREM-3*, one’s body enters into a deep sleep (lasting about 30 minutes).

- About a half hour after sleep onset.
- One is hard to awaken.
- Heart rate and breathing slow down. The deepest point in the sleep cycle occurs
- Delta Waves
Entering REM sleep

- As **NREM-3** ends (about an hour after you fall asleep), the electrical activity of the brain increases, and the sleeper climbs back up through the stages in reverse order.

- As the sleeper approaches NREM-1 again, fast beta waves recorded by the EEG reappear.

- Sleeper will enter their FIRST *REM stage of the night*.

- After about ten minutes in REM, the entire cycle starts to repeat itself.
The sleep cycle repeats itself about every 90 minutes.
- Most people pass through the four sleep cycles four to five times in one night.

- Differences in the amount of sleep one needs can depend on age and culture.
Recap! Most important features of sleep:

Sleep cycle is 90 minutes long. Occurrence of deep sleep happens at the beginning of the night. Increase in REM duration as sleep progresses.
4. Functions of Sleep

Sleep Theories:

a. *Sleep protects (evolutionary)* - psychologists say it was a way to conserve energy and to keep people safe.

b. *Sleep helps us recuperate (restoration)* - restores and repairs damaged neurons. This theory also applies to dreams.

c. *Sleep encourages growth* - the pituitary gland secretes a growth hormone during *deep sleep*.

d. *Sleep helps restore and rebuild our fading memories of the day’s experiences* - sleep consolidates memories; strengthen and stabilizes neural memory traces.

e. *Sleep feeds creative thinking* - dreams have inspired people to do great things. Allows us to better think and learn the following day.
III. Sleep Deprivation, Sleep Disorders, and Dreams

- Randy Gardner was a high school student who in 1969 attempted to stay awake for as long as possible. Gardner eventually stayed awake for 11 days, but he experienced frightening symptoms as a result of his sleep loss. He developed a heart murmur, slurred his speech, and couldn’t attend to a conversation for more than a few moments. He hallucinated that street signs were people, and he believed himself to be an African American football star, even though he was not African American and did not play football. When people confronted him with the truth, he called them racist. Once Gardner began sleeping again, his symptoms disappeared. He was back to his regular sleep pattern within 3-4 days of ending his marathon of wakefulness or “wrecklessness.”
III. Sleep Deprivation, Sleep Disorders, and Dreams

1. Why are we so tired?

   a. Not enough REM

   b. Next night, REM rebound occurs- a condition of increased REM sleep caused by REM sleep deprivation.

   c. Function of sleep is to satisfy a basis biological need for REM.
2. Need For Sleep:

a. 8 hrs. recommended

b. Less than that creates a sleep debt- a deficiency caused by not getting enough sleep.

c. Sleep deprivation:

  • can make you fatter (increases ghrelin, a hunger-arousing hormone and decreases its hunger-suppressing partner, leptin)

  • slows reactions and increases errors on visual attention tasks.

  • can suppress immune cells that fight off viral infections and cancer.

  
  “So shut your eyes
  Kiss me goodbye
  And sleep
  Just sleep.”
  -My Chemical Romance
3. Sleep Disturbances:

a. **Insomnia** - inability to get enough sleep
   
   • Sleeping pills are inefficient because they block REM sleep.

b. **Night Terrors** - scary dreams that happen primarily to little children during NREM sleep.
   
   • Difficult to awaken
   
   • Child has no recollection of event.
   
   • Like sleepwalking and sleep talking, night terrors occur during NREM-3 sleep.
c. **Sleep Apnea** - patient stops breathing intermittently while asleep.

   - Last as long as one minute, occurs several hundred times a night. Occurs during deep sleep, therefore no memory of event.
   - Signs are daytime sleepiness and excessive snoring.
   - Results from collapse of the airway when the sleeper’s muscle tone relaxes.
   - Machine used for treatment that pumps extra air into the lungs.

d. **Sleepwalking** - formally known as somnambulism.

   - Occurs in NREM sleep during Stages 3 and 4
e. Narcolepsy

- Cataplexy - loss of muscle tone.
- Strong emotions usually trigger the attack.
- Individual goes right into REM sleep.
- Disorder shows genetic problem affecting the sleep-control circuitry in the brain stem.
- **(Skeeter the narcoleptic dog)**
- Video of narcoleptic man
Quick Write: Would you suppose that people dream if blind from birth?
4. Theories of Dreaming:

a. Psychoanalytic view:

- **Wish-Fulfillment Theory** - (Sigmund Freud) dreams represent the royal road to the unconscious. Dreams have two main functions to guard sleep (by disguising disruptive thoughts with symbols) and to serve as sources of wish fulfillment.

- Manifest Content - the dreams story line.

- Latent Content - the supposed symbolic meaning of the dream.

“I do not believe that I am dreaming, but I cannot prove that I am not.” - Philosopher Bertrand Russell.
b. Biological View:

• *Activation-Synthesis Theory* - dreams begin with random electrical activation coming from the brain stem (Pons) and it’s the brain’s job to make sense of it.

  • to develop and preserve neural pathways in brain.

  • provides the brain with periodic stimulation

c. Cognitive View:

• *Information-Processing Theory* - dreams help to sift and sort the events of the day, allowing us to fix them into a memory.

  • May give us insight and help us to solve problems.
IV. Psychoactive Drugs

1. How Drugs Work

   - a. Agonist vs. Antagonist- drugs that mimic neurotransmitters are agonists, drugs that block neurotransmitters are antagonists.

   “You don’t take drugs. Drugs take you- and your brain.”
2. Psychoactive Drugs:

a. Psychoactive drugs:

- A chemical substance that alters perceptions and mood (effects consciousness).

- Stimulate reward circuits in the brain.

- Continued use of a psychoactive drug produces *tolerance*.
b. Withdrawal and Dependence:

- **Withdrawal**: Upon stopping use of a drug (after addiction), users may experience the undesirable effects of withdrawal.

- **Dependence**: Absence of a drug may lead to a feeling of physical pain, intense cravings (physical dependence), and negative emotions (psychological dependence).
c. 3 Groups of Psychoactive Drugs:

1. **Hallucinogens** - produce changes in consciousness by altering perceptions, and creating hallucinations. They also produce relaxation, euphoria, and sometimes panic.

   - **LSD**: (lysergic acid diethylamide) powerful hallucinogenic drug (ergot fungus) that is also known as *acid*.
   
   - **THC** (delta-9-tetrahydrocannabinol): is the major active ingredient in marijuana (hemp plant) that triggers a variety of effects, including mild hallucinations

   - In Marijuana, the chemical THC mimics the neurotransmitter dopamine. Cannabis can be helpful in pain relief but can be detrimental as it reduces motor coordination, short-term memory loss, and learning.
Module 25

2. **Stimulants** - drugs that excite neural activity, arouse the central nervous system, and speed up body functions.

1. Caffeine
2. Nicotine
3. Cocaine
4. Ecstasy
5. Amphetamines
6. Methamphetamines
They provide a boost in both mental and physical activity.

They are popular because they stimulate the brain’s reward systems.

However, side effects include dehydration, convulsions, high addiction rates, and decreased memory.
Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

The sending neuron normally reabsorbs excess neurotransmitter molecules, a process called reuptake.

By binding to the sites that normally reabsorb neurotransmitter molecules, cocaine blocks reuptake of dopamine, norepinephrine, and serotonin (Ray & Ksir, 1990). The extra neurotransmitter molecules therefore remain in the synapse, intensifying their normal mood-altering effects and producing a euphoric rush. When the cocaine level drops, the absence of these neurotransmitters produces a crash.
3. **Depressants** - drugs that slow down or depress the central nervous system.

1. Alcohol
2. Barbiturates
3. Opiates
• Examples include: Barbiturates (sleeping pills), Benzodiazepines (Valium and Xanax), Alcohol, Rohypnol “date rape drug”, and Opiates.

• **Alcohol** affects motor skills, judgment, and memory. Increases aggressiveness while reducing self awareness. Slows neural processing and leads to expectancy effects.

• **Barbiturates:** Drugs that depress the activity of the central nervous system, reducing anxiety but impairing memory and judgment.

• **Opiates:** derived from the opium poppy, opiates act as agonists for endorphins and thus are powerful painkillers and mood elevators. Temporarily lessening pain and anxiety. Highly addictive.

• The pupils constrict, breathing slows, and the user becomes lethargic. They can also fall under the category of depressants.

• Examples of opiates include: Morphine, Heroin, Codeine.
### Drug Chart:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Type</th>
<th>Pleasurable Effects</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Depressant</td>
<td>Initial high followed by relaxation and disinhibition</td>
<td>Depression, memory loss, organ damage, impaired reactions</td>
</tr>
<tr>
<td>Heroin</td>
<td>Depressant</td>
<td>Rush of euphoria, relief from pain</td>
<td>Depressed physiology, agonizing withdrawal</td>
</tr>
<tr>
<td>Caffeine</td>
<td>Stimulant</td>
<td>Increased alertness and wakefulness</td>
<td>Anxiety, restlessness, and insomnia in high doses; uncomfortable withdrawal</td>
</tr>
<tr>
<td>Methamphetamine (“speed,” “ice”)</td>
<td>Stimulant</td>
<td>Euphoria, alertness, energy</td>
<td>Irritability, insomnia, hypertension, seizures</td>
</tr>
<tr>
<td>Cocaine</td>
<td>Stimulant</td>
<td>Rush of euphoria, confidence, energy</td>
<td>Cardiovascular stress, suspiciousness, depressive crash</td>
</tr>
<tr>
<td>Nicotine</td>
<td>Stimulant</td>
<td>Arousal and relaxation, sense of well-being</td>
<td>Heart disease, cancer (from tars)</td>
</tr>
<tr>
<td>Ecstasy (MDMA)</td>
<td>Stimulant; mild hallucinogen</td>
<td>Emotional elevation, disinhibition</td>
<td>Dehydration, overheating, and depressed mood, cognitive, and immune functioning</td>
</tr>
<tr>
<td>Marijuana</td>
<td>Mild hallucinogen</td>
<td>Enhanced sensation, relief of pain, distortion of time, relaxation</td>
<td>Impaired learning and memory, increased risk of psychological disorders, lung damage from smoke</td>
</tr>
</tbody>
</table>