STATES OF CONSCIOUSNESS

1. Describe Consciousness and differentiate conscious v. unconscious processing.
2. Identify the stages of sleep and describe the characteristics of each stage.
3. Discuss the content and potential functions of daydreams and fantasies.
4. Describe the cyclical nature and possible functions of sleep.

Waking Consciousness

- Consciousness
  - our awareness of ourselves and our environments
  - Studied by mentalists until behaviorist mvt took over
  - Came back in 60s w/ cog rev

Waking Consciousness

- when we are learning a new skill our consciousness focuses on learning the steps
- however, once the skill is mastered we don't have to concentrate so intently
- ex. learning to drive a car
- at first you concentrate on every detail
- now I get to work and I have no idea how I got there
- can process subconscious info & react to stimuli that we do not consciously perceive
- Subconscious processing is parallel, Conscious is serial
- Cons = nature's way of keeping us from thinking & doing everything at once (ex rt foot centerckws, 3 w/ lt hand)

Waking Consciousness

- daydreams are breaks from consciousness
- About 4% of the population have what we call fantasy-prone personalities
- these people spend considerable time fantasizing – also have trouble distinguishing b/w what is real and what is fantasy
- Daydreaming as adaptive/ subs for impulsive behav
- Int facts: 95% of m&w report sex fant (men rep more often)
<<however>> most daydreaming involves familiar details of our lives & alt app to tasks

Biorhythms

- as humans we have biological rhythms – periodic physiological fluctuations
- annual cycles—seasonal fluctuations in appetite, sleep length, + mood
- ex. seasonal affective disorder, hibernation, migration
- 28 day cycles—menstrual cycle
- 90 minute cycles—stages of sleep
- 24 hour cycle—wakefulness/alertness, body temp., growth hormone secretion...also called:
  - circadian rhythm- biological clock
  - regular rhythms that occur on a 24 hour cycle
  - jet lag is caused by circadian rhythms
  - exposure to light helps us get over this
Biorhythms

**circadian rhythm** (cont’d)

- Biological clock - affected by light
- Light activates retinal proteins which trigger signals to “suprachiasmatic nucleus” of hypothalamus which tells the pineal gland to decrease production of melatonin (mel-horm induces sleep) (lowered serotonin level also)
- Artificial light delays sleep – thank Thomas Edison for shifting our day to 25 hrs (light shifts our circad rhythm 1 time zone west - we stay up too late to get 8 hrs sleep)

PMS – real or imagined?

<table>
<thead>
<tr>
<th>Premenstrual</th>
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<th>Intermenstrual</th>
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</table>

Recalled mood is worse than earlier reported

89 McFarland Study
P274

“availability heuristic” and “confirmation bias” at work

Presence of placebo eff in C.G.

Sleep Stages

- **Stage 1** – char. by slowed breathing and irregular brain waves (~5:00), may experience hallucinations or hypnic myoclonia/ hypnic jerks, hypnagogic sensations (falling or floating)
- **Stage 2** – bursts of rapid, rhythmic brain wave activity <<sleep spindles>>
  - sleeptalking may begin here but can occur in any stage
- **Stage 3** – transitional period (to deep sleep)—brain waves become slower
- **Stage 4** – deep (slow wave) sleep char by Delta Waves
  - bed wetting, sleepwalking (somnambulism)
  - brain still processes certain stimuli (subconscious processing)- name called, baby crying, edge of bed, etc.

Sleep and Dreams

- **REM (Rapid Eye Movement) Sleep**
  - 1952-Disc by Eugene Aserinsky
  - recurring sleep stage
  - vivid dreams
  - “paradoxical sleep”
    - muscles are generally relaxed, but other body systems are active
    - > pet shows vis & motor areas of brain active but the Pons (bulge on brainstem) blocks brains messages to limbs
    - Genital arousal (25 yr old-1/2 the night)

Sleep and Dreams

- Measuring sleep activity

  - EOG-electro-oculogram
  - Left eye movements
  - Right eye movements
  - EMG (muscle tension)
  - (Electromyogram)
  - EEG (brain waves)

Brain Waves and Sleep Stages

- **Alpha Waves**
  - slow waves of a relaxed, awake brain
- **Delta Waves**
  - large, slow waves of deep sleep
- **Hallucinations**
  - false sensory experiences
  - Perception w/o Sensation
Stages in a Typical Night’s Sleep

![Graph showing stages of sleep]

Sleep Deprivation

- greater vulnerability to accidents
- 1996 Stanley Coren Study (p277)

Sleep Deprivation – Coren 96 Study

- Spring time change (hour sleep loss)
- More sleep, fewer accidents
- Less sleep, more accidents
- Net 14% diff

Sleep Across the Lifespan

- Why do we sleep? (1/3 of life)
- evidence for genetic inf in sleep patterns
- twin studies (only id twin show similarity)

FUNCTIONS OF SLEEP:

1. Protection (EVOL PERI) - travel unsafe at night, keeps us out of harm’s way
2. Recuperation - sleep pumps up the immune system, fight inf
   - sleep dep age more quickly, more susceptible to obesity and high blood pressure
   - dep - memory loss, irritability, impaired creativity and concentration
3. Growth - growth hormone also secreted during sleep (by what gland?)

Purposes of Sleep
STATES OF CONSCIOUSNESS

Objectives

6. Identify the major sleep disorders.
7. Discuss the content and possible functions of dreams.

Sleep Disorders

**Insomnia** - persistent problems in falling asleep
- 10-15% of adults complain of insomnia
- sleeping pills/alc are not a good fix (dep of REM)
- should relax before bedtime
- avoid caffeine in the evening
- drink milk
- sleep on a regular sched (body rem slp dbt for 2 wks)
- exercise regularly, but not late in the evening
- remember lighting effects (pineal gland)

**Narcolepsy** - uncontrollable sleep attacks
- usually lasts less than 5 minutes
- can occur at bad times
  - ex. Driving, taking test, etc.
- really bad cases person enters straight into REM sleep
- Why is this bad??
- Because you also lose muscle control
- pretty rare 1 in 2000
- Modafinil is a new drug that may help narcoleptics

**Sleep Apnea**
- a sleep disorder where someone stops breathing during sleep
- after a moment w/o air the person will wake up and gasp for air and go right back to sleep
- may happen up to 400 times per night
- deprives people of slow wave sleep
- affects 1 in 20 people
- mostly overweight men

Night Terrors
- sleep disorder characterized by high arousal and an appearance of being terrified
- effects mostly children
- person may sleepwalk, scream gibberish, and thrash about
- don’t remember it the next day
- occur within 2 or 3 hours of falling asleep, usually during stage 4 sleep
- nightmares occur during REM sleep

Scientific term = **SOMNAMBULISM**
- hereditary links, usually harmless
- typically return to bed on their own
- diminishes as we get older—cause stage 4 sleep get shorter
- Sleepwalking – 4, sleep talking - any
Dreams

- Dreams are best remembered during REM or 3 minutes after
- Spend 6 yrs of our life dreaming
- 8 in 10 have neg. themes in them
- women dream of men and women equally
- men dream of men most often

Dreams Theories: Freud

- Freud's Theory of Dreams (Wish Fulfillment Theory/ Psychanalytic Perspective)
- 2 types of content to dreams
  - **The manifest content** - the actual remembered story line of a dream <<GUN>>
  - *often incorporate that day's events, 1st dream of night
    - WHY DO WE DREAM??
      - (sidebar) - 1900- Freud wrote a book - interpretation of dreams - in the book, said that the manifest content is the censored version of dream
    - The latent content of the dream is the underlying meaning of the dream <<PENIS>>
      - represents unconscious drives and wishes that would be threatening if expressed directly.

Dream Theories Cont’d

- Information Processing Theory (Cognitive Perspective)
  - helps facilitate memories
  - Exp: exp grp dep of rem sleep, control grp dep of another stage, exp grp studies on mem test
- Activation Synthesis Theory (Hobson & McCarley)— (Biological Perspective)
  - dreams result from brain’s attempt to make sense of random neural activity in the visual cortex; this helps develop and preserve neural pathways (refutes Freud-- squirrels and fetuses dream)
  - <<don’t forget the PONS – dual role in slp>>
- REM Rebound
  - REM sleep increases following REM sleep deprivation

STATES OF CONSCIOUSNESS

Objectives:

1. Differentiate theories of hypnosis.
2. Discuss the controversy over whether hypnosis is an altered state of consciousness.

Hypnosis

- Hypnosis
  - a social interaction in which one person (the hypnotist) suggests to another (the subject) that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur
  - **Important: power of hypnosis is NOT in hypnotist but in subject’s openness to suggestion**
- Posthypnotic Amnesia
  - supposed inability to recall what one experienced during hypnosis
  - induced by the hypnotist’s suggestion

Hypnosis

- 18th c. Austrian Anton Mesmer – “animal magnetism” (origin of mesmerize)
- 1843 – Scot James Braid coined term hypnosis (Greek for sleep) and popularized it
- However, just as hypnosis grew, chemical anesthetics came into popularity and interest dwindled in it
- Since then, it has had a curious existence and is used as a clinical tool by doctors, dentists, and psychologists
Hypnosis-Susceptibility

- 10% of population not susceptible
- 10% of population extremely susceptible
- Rest in b/w
- Responsiveness to hypnosis can be measured with the SHSS (Stanford Hypnotic Susceptibility Scale)
  > eg. Suggest/Measure postural sway
  > If they respond to suggestion w/o hypnosis, they will respond to hypnosis.

Hypnotic Phenomena

- 1. Anesthesia
- 2. Sensory Distortions and Hallucinations
- 3. Disinhibition (disinhibition effect may occur b/c people feel they can’t be held accountable)
- 4. Posthypnotic Suggestions and Amnesia
  > Posthypnotic Suggestion
    suggestion to be carried out after the subject is no longer hypnotized
    used by some clinicians to control undesired symptoms and behaviors

Brain Changes

- 1. EEG patterns of hypnotized subjects the same as if subject is awake
- 2. PET scans reveal that hypnosis reduces brain activity in a region involved in attending to painful stimuli, but not in the sensory cortex that receives the raw sensory input

  >>hypnosis doesn’t block sensory input but blocks attention to it—stimuli does register in sensory cortex; patients do show parasympathetic responses to pain even if they don’t report it

  >>hypnosis dissociates pain sensation from conscious awareness

Theories of Hypnosis

- Role Theory (Martin Orne) – age regression studies; also created control group for nitric acid throwing study <<social influence theory>>
- Can one be hyp to act against will? No but hyp can be socipt.
  > Evidence supporting & refuting role theory.....
- State Theory (altered state of consciousness)
- Could they really be acting when in surg? Why do they continue to act when alone?
- Dissociation/ Divided Consciousness Theory (Ernest Hilgard) –
  dissociate pain sensation part of consciousness from emotional suffering part of consciousness
  One stream of consc is in comm w/ hypnotist, other is the difficult to detect hidden observer

FYI: <<2005 AP ESSAY #2- Compare 2 th of hypnosis>>

Hypnosis

- Dissociation
  > a split in consciousness
  > allows some thoughts and behaviors to occur simultaneously with others
- Hidden Observer
  > Hilgard’s term describing a hypnotized subject’s awareness of experiences, such as pain, that go unreported during hypnosis

Hypnosis successes
stress related skin disorders
  asthma
  headaches
  warts
<<however, positive suggestions give same results>>
  obesity
Hypnosis questionable w/ success on:
  drug, alco abuse, smoking, nail biting <<self-control issues>>
Explaining Hypnosis

Divided-consciousness theory: hypnosis has caused a split in awareness
Social influence theory: the subject is so caught up in the hypnotized role that she ignores the odor.

Attention is diverted from an aversive odor. How?

Drugs and Consciousness

7-3 Today's Objectives:
- 10. Discuss the nature of drug dependence and identify some common misconceptions about addiction.
- 11. Differentiate the physiological and psychological effects of depressants, stimulants, and hallucinogens.
- 13. Describe the near-death experience and the controversy over whether it provides evidence for a mind-body dualism.

Drugs and Consciousness

- Psychoactive Drug
  - a chemical substance that alters perceptions and mood

Drugs and Consciousness

Psychoactive Drug

A chemical substance that alters perceptions and mood

Dependence and Addiction

- Tolerance
  - diminishing effect with regular use; larger amt of drug needed to provide same effect (ie alcohol)
- Withdrawal
  - discomfort and distress that follow discontinued use
  - nausea-diarrhea-chills-vomiting-tremors-cramps

Dependence and Addiction

- The opponent-process model generated by Richard Solomon states that for every psychological event A will be followed by its opposite psychological event B. For example, the pleasure one experiences from heroin is followed by an opponent process of withdrawal. This model is related to the opponent process color theory. If you look at the color red then quickly look at a gray area you will see green. Opponent/ Opposing processes is a theme in Psychology.
- *seen on AP essays
Drugs and Consciousness - Dependence

- 2 types of dependence

1. Physiological Dependence (Physical/Biological)
   - a physiological need for a drug characterized by WITHDRAWAL symptoms in the absence of the drug

2. Psychological dependence
   - psychological need to use a drug, such as to relieve neg. emotions

MISCONCEPTIONS ABOUT ADDICTION

1) Medical drugs (ie. pain pills given to discharged surgery patients) are powerfully addictive

2) Addictions cannot be overcome voluntarily but only through treatment <<US soldiers kicking heroin when back home>>

Psychoactive Drugs - Categories

- At least 3 categories of psychoactive drugs

1. **Depressants** - calm neural activity + slow body functions

2. **Stimulants** - excite neural activity + arouse body functions

3. **Hallucinogens** - distort perception and evoke sensory images in the absence of sensory input

Psychoactive Drugs - Depressants - Alcohol

- Alcohol-slow brain activity that controls judgment and inhibitions (LFL)

- drunk people are more aggressive when provoked

- “the urges you feel when sober are the ones you are more likely to act upon when intoxicated”

- low doses of alcohol relax-slow activity of the sympathetic nervous system

- Heavy drinking can impede memory, disrupts processing of STM... LTM (dep REM sleep and REM is involved in mem-

Psychoactive Drugs - Depressants - Alcohol cont’d

- alcohol reduces self-awareness

- why people who have low self-esteem often drink a lot

- alcohol focuses our attention on the immediate situation and away from future consequences

  - 50% of rapists intoxicated on first rape

- effects not only from its alteration of brain chem, but also from expectations

- More recently, it has been found to exert an effect on specific excitatory neurotransmitter receptors:
  - Acts and an antagonist for **acetylcholine** within the CNS, affecting affecting cognition.
  - Acts as an agonist for inhibitory neurotransmitter GABA within the brain stem, causing some of its depressing effects. Alcohol binds to a different site on the GABA receptor than the barbiturates and benzodiazepines.
  - This effect upon GABA also indirectly causes an increase in the release of dopamine within the limbic system, which is the mechanism for its reinforcing and psychologically addicting aspects.
  - Acts as an antagonist for the excitatory neurotransmitter glutamate through its NMDA receptors, causing an impairment of learning.
Psychoactive Drugs-
Barbiturates
- Barbiturates (tranquilizers)
- depress the CNS, reducing anxiety but impairing memory and judgment (dep REM)
- ex. Seconal - prescribed to induce sleep or reduce anxiety
- mixing alcohol and barbiturates can be deadly
- barbiturates often drug of choice for someone attempting suicide
- Other example: Rophynol, Nembutal

Psychoactive Drugs-
Opiates
- Opiates
  - opium and its derivatives (morphine and heroin)
  - opiates depress neural activity, temporarily lessening pain and anxiety
  - if taken, breathing slows, pupils constrict, and user becomes lethargic
  - brain stops producing endorphins when it is repeatedly flooded with opiates <<endorphin agonist>>
  - Remember Pert & Snyder (Ch 2)

Psychoactive Drugs-
Opiates Cont’d
- if the drugs use is discontinued the brain doesn’t have any of its natural painkiller withdrawal results

Psychoactive Drugs-
Stimulants
- most widely used are caffeine and nicotine
- Cocaine, ecstasy and amphetamines are much more powerful types
  - (Amphetamines- >>drugs that stimulate neural activity, causing speeded-up body functions and associated energy and mood changes)
- stimulants speed up activity of the nervous system
- increase heart and breathing rates, dilate pupils, diminish appetite and raise the level of energy and confidence

Psychoactive Drugs-
Stimulants Cont’d
- when the drug wears off fatigue, headaches, irritability, and depression are all common symptoms of crashing
  Cocaine
  - In a 1999 survey 3% of high school seniors tried cocaine in the last year
  - much lower number than in the early 1990s
  - most common ways to use cocaine are to sniff(snort), inject intravenously, or smoke(free-base)

Psychoactive Drugs-
Stimulants Cont’d
Cocaine cont’d
- the high only lasts about 15 to 30 minutes-depletes the brains supply of dopamine, serotonin, and norepinephrine
- why the drug causes depression as it wears off
- cocaine works by blocking dopamine reuptake in the brain <<dopamine agonist>>
- leaves excess dopamine in the synapse leading to an intense high
- regular cocaine use is addictive
- monkeys – press lever 12,000 times to receive inj
- leads to aggressive behavior <rats more agg when coc paired w/ foot shock than w/ just foot shock>
Psychoactive Drugs -
Stimulants Cont’d

Cocaine cont’d
-users may experience emotional disturbances, paranoia, convulsions, cardiac arrest, or respiratory failure

Psychoactive Drugs -
Hallucinogens

Hallucinogens
- drugs that distort perceptions + evoke hallucinations
- also called psychedelics
LSD (Lsyrergic acid diethylamide)
- discovered accidentally in 1943 by Albert Hoffman
- accidentally ingested some of the chemical he was playing around with
- reported seeing fantastic pictures, shapes and colors
- LSD is chemically similar to serotonin-blocks its action (antagonist for serotonin) <<sero is believed to have inhibit qual, inhib exces vis & aud firing>>
- reactions vary from euphoria to detachment to panic

Psychoactive Drugs –
Hallucinogens- Marijuana

-active ingredient is THC (delta – 9- tetrahydrocannabinol)
- mild hallucinogen
- can be smoked or eaten
- smoking gets it into your brain in about 7 seconds, eating takes longer
- similar to alcohol in that it causes relaxation, loosens inhibitions, and may produce a euphoric high
- also amplifies sensitivity to colors, sounds, tastes, and smells
- counterintuitive info: stays in body 30+days, therefore regular user needs less to exp effects

Psychoactive Drugs –
Hallucinogens- Marijuana

-some argue for medical/therapeutic uses of marijuana for aids and cancer patients
- counterproductive if smoked because that causes cancer, lung damage, + pregnancy complications
- therefore, THC capsules, patches, may be a better choice to deliver relief
- impairs motor coordination, perceptual skills, and reaction time
Factors Contributing to Drug Use

- Biggest predictor: Peer Group

Drug Education: (just say no???)
Situational training – role plays and pre-rehearsed responses/decisions.

Psychoactive Drugs

<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</td>
<td>Depression, memory loss, organ damage, impaired</td>
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<tr>
<td></td>
<td></td>
<td>distraction</td>
<td>functioning</td>
</tr>
<tr>
<td>Heroin</td>
<td>Depressant</td>
<td>Rush of euphoria, relief from pain</td>
<td>Depression physiology, agonizing withdrawal</td>
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<tr>
<td>Coffee</td>
<td>Stimulant</td>
<td>Increased alertness and wakefulness</td>
<td>Anxiety, restlessness, insomnia in high doses,</td>
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<td></td>
<td></td>
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<td>uncomfortable withdrawal</td>
</tr>
<tr>
<td>Methaqualone (Quaalude, Coban)</td>
<td>Stimulant</td>
<td>Euphoria, drowsiness, energy</td>
<td>Irritability, insomni, hyperactivity, seizures</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>Stimulant</td>
<td>Rush of euphoria, confidence, energy</td>
<td>Cardiovascular stress, euphoria, depression</td>
</tr>
<tr>
<td>Barbiturate</td>
<td>Stimulant</td>
<td>Amnesia and relaxation, sense of well-being</td>
<td>Heart disease, cancer (rare)</td>
</tr>
<tr>
<td>Ecstasy (MDMA)</td>
<td>Stimulant, mild hallucinogens</td>
<td>Emotional elevation, disinhibition</td>
<td>Delirium, anxiety, depressed mood and cognitive functioning</td>
</tr>
<tr>
<td>Marijuana</td>
<td>Hallucinogen</td>
<td>Enhanced sensory, relief of pain, distortion of time, relaxation</td>
<td>Disrupted memory, long term damage from smoke</td>
</tr>
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Trends in Drug Use

<table>
<thead>
<tr>
<th>Year</th>
<th>Alcohol</th>
<th>Marijuana/hashish</th>
<th>Cocaine</th>
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<td>'75</td>
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Perceived Marijuana Risk

- Perceived “great risk of harm” in marijuana use
- Used marijuana

Near-Death Experiences

- Near-Death Experience
  - an altered state of consciousness reported after a close brush with death
  - often similar to drug-induced hallucinations
  - Could be a lack of O2 which causes hallucinations

- Dualism
  - the presumption that mind and body are two distinct entities that interact <<dualists argue that near death exp are evd of dism>>

- Monism
  - the presumption that mind and body are different aspects of the same thing <<bio exp of near death support>>