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# Chapter 11

## Substance-Related, Addictive, and Impulse-Control Disorders

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## Outline

- Perspectives on Substance-Related and Addictive Disorders
- Substance-Related and Addictive Disorders
  - Depressants
  - Stimulants
  - Opioids
  - Cannabis
  - Hallucinogens
  - Other Drugs of Abuse
- Causes of substance-related disorders
- Treatment of substance-related disorders
- Gambling Disorder
- Other Impulse-control disorders

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## Focus Questions

- *What are the features of substance-related and addictive disorders?*
- *What are the effects of depressants, stimulants, and opioids?*
- *What causes contribute to the development of substance-related disorders?*
- *How are substance-related disorders treated?*
- *What processes lead to gambling disorder?*
- *What is considered an impulse control disorder?*

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## Perspectives on Substance Use Disorders

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- The nature of substance use disorders
  - Abuse of psychoactive substances
  - Wide-ranging physiological, psychological, and behavioral effects
  - Associated with impairment and significant costs

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## Substance-Related Disorders: Terms and Definitions

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- Substance use
  - Taking moderate amounts of a substance in a way that doesn't interfere with functioning
- Substance intoxication
  - Physical reaction to a substance (e.g., being drunk)
- Substance Use Disorder
  - Use in a way that is dangerous or causes substantial impairment (e.g., affecting job or relationships)
- Substance dependence/Addiction
  - At least **two symptoms** in the last year that interfered with his/her life or bother him/her a great deal

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# Substance-Related Disorders: Terms and Definitions, Continued

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- Substance dependence
  - May be defined by tolerance and withdrawal
  - Sometimes defined by drug-seeking behavior (e.g., spending too much money on substance)
- Tolerance
  - Needing more of a substance to get the same effect / reduced effects from the same amount
- Withdrawal
  - Physical response when substance is discontinued after regular use

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## Five Main Categories of Substances

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- Depressants
  - Behavioral sedation (e.g., alcohol, sedative, anxiolytic drugs)
- Stimulants
  - Increase alertness and elevate mood (e.g., cocaine, nicotine)

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## Five Main Categories of Substances, Continued

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- Opiates
  - Produce analgesia and euphoria (e.g., heroin, morphine, codeine)
- Hallucinogens
  - Alter sensory perception (e.g., marijuana, LSD)
- Other drugs of abuse
  - Include inhalants, anabolic steroids, medications

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## Substance Use Disorders in DSM-5

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- Pattern of substance use leading to significant impairment and distress
- Symptoms (need 2+ within a year)
  - Taking more of the substance than intended
  - Desire to cut down use
  - Excessive time spent using/acquiring/recovering
  - Craving for the substance
  - Role disruption (e.g. can't perform at work)
  - Interpersonal problems

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## Substance Use Disorders in DSM-5, Continued

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- Pattern of substance use leading to significant impairment and distress
- Symptoms (need 2+ within a year)
  - Reduction of important activities
  - Use in physically hazardous situations (e.g. driving)
  - Keep using despite causing physical or psychological problems
  - Tolerance
  - Withdrawal

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# Substance Use Disorders in DSM-5, Part

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- DSM-5 now spells out criteria for:
  - Substance intoxication for different types of substances (e.g., alcohol, stimulants)
  - Substance use disorders for different types of substances
  - Withdrawal from different types of substances

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## The Depressants: Alcohol-Related Disorders

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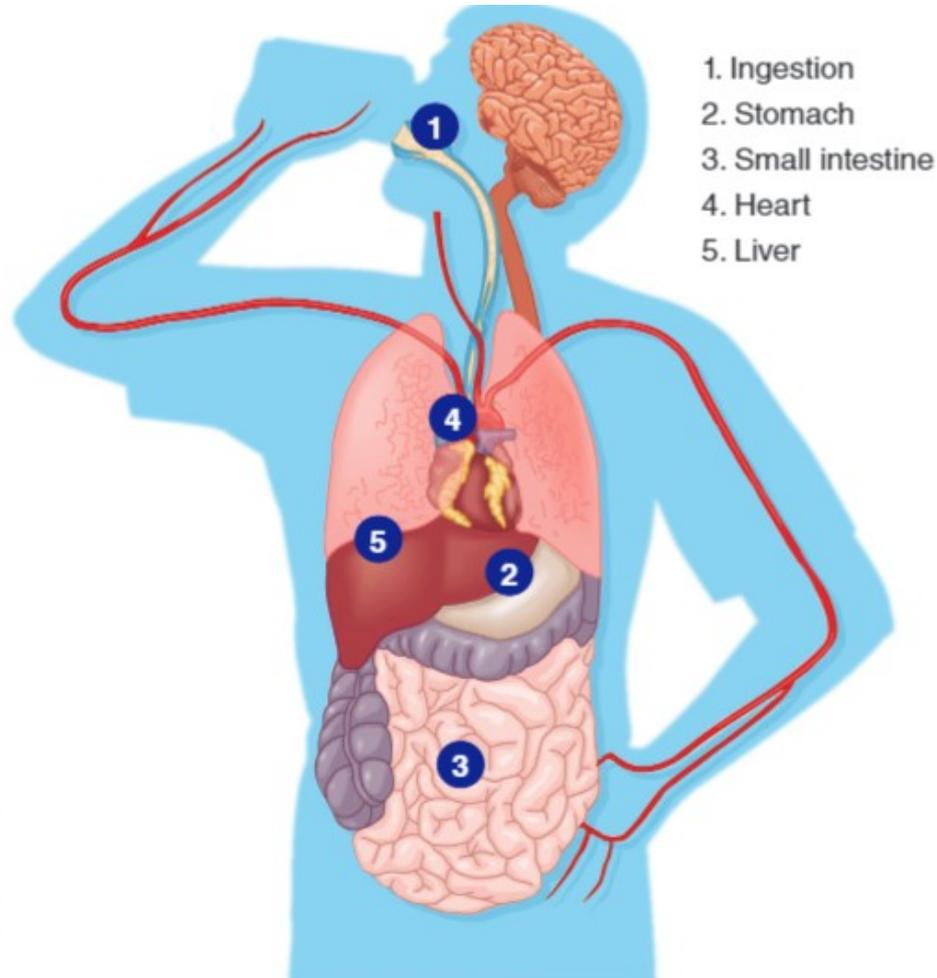
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- Psychological and physiological effects of alcohol
  - Central nervous system depressant
  - Influences several neurotransmitter systems
  - Specific target is GABA
    - Increases inhibitory effects – makes neural cells worse at firing

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## Alcohol's Path through the Body

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# Alcohol-Related Disorders: Chronic Use

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- Effects of chronic alcohol use
  - Intoxication
  - Withdrawal
    - Delirium tremens – hallucinations and tremors brought on by withdrawal from severe alcohol use
  - Fetal alcohol syndrome – problems in fetus from alcohol use during pregnancy
    - Impaired growth, cognitive difficulties, behavioral problems

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# Alcohol-Related Disorders: Long Term Use

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- Long term heavy alcohol use may lead to:
  - Dementia
  - Wernicke-Korsakoff disorder (confusion, lack of coordination, impaired speech)

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## Statistics on Use and Abuse

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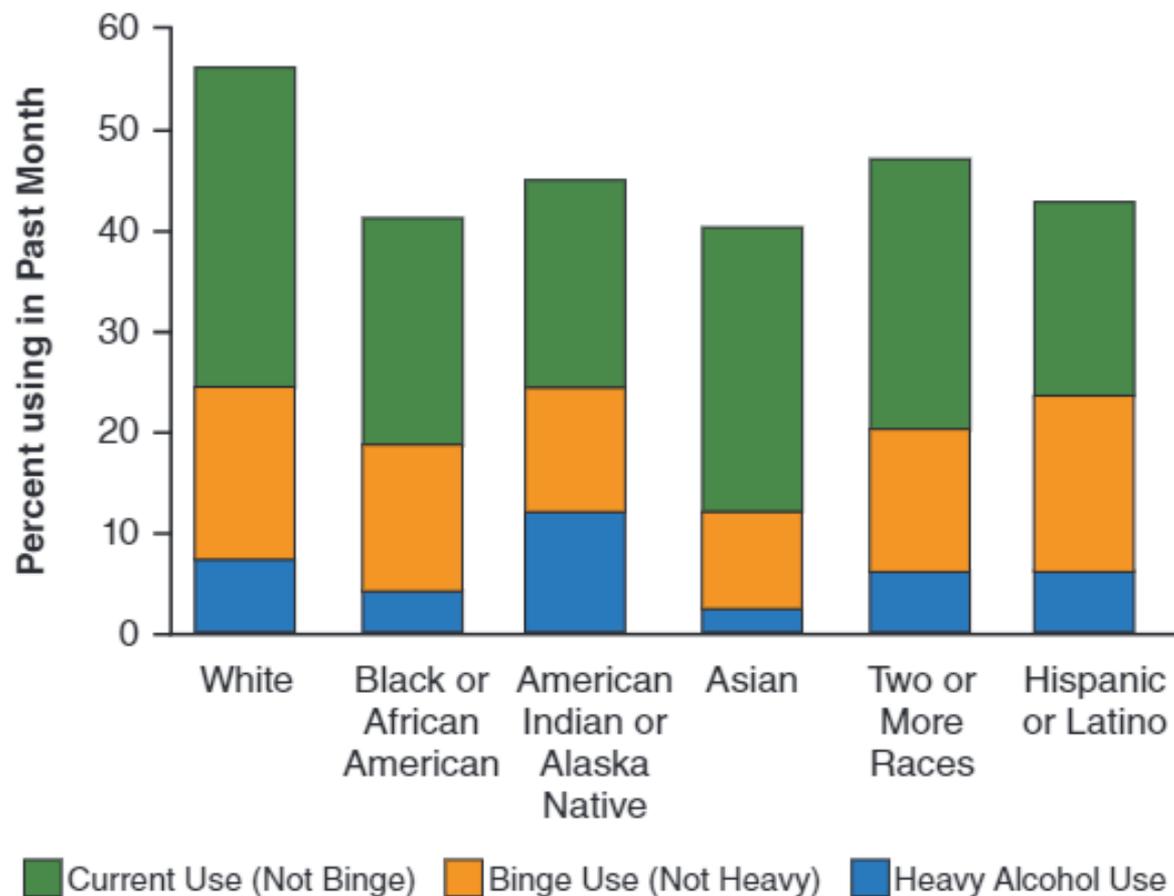
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- Use
  - Most adults: light drinkers or abstainers
  - Current use = ~50% of Americans drink
  - Binge drinking = 24.6% of Americans had 5+ drinks on one occasion in past month
  - 16.6 million adults ages 18 and older meet criteria for an alcohol use disorder and the same is true of 697, 000 adolescents ages 12 to 17

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# Statistics on Use and Abuse by Race



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## Progression of Alcohol Related Disorders

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- 20% are able to stop drinking on their own
- Dependence usually develops over time, but course may be variable
- Those who start drinking at age 11 or earlier are at higher risk for chronic or severe alcohol use disorders
- Alcohol and violence
  - Drinking does not *cause* violence, but may increase the likelihood of impulsive behavior

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## Sedative, Hypnotic, or Anxiolytic-Related Disorders

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- The nature of drugs in this class
  - Sedatives – calming (e.g., barbiturates)
  - Hypnotic – sleep inducing
  - Anxiolytic – anxiety reducing (e.g., benzodiazepines)
- Have generally tranquilizing effects
- Act on GABA receptors in the brain
- Abusers more likely to be female, Caucasian, 35+

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# Sedative, Hypnotic, or Anxiolytic-Related Disorders, Continued

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- Effects are similar to large doses of alcohol
  - Combining such drugs with alcohol is synergistic and dangerous
- DSM-5 criteria for this class of disorders
  - Like other substance use disorders: Use leading to significant interference or distress and accompanied by problems such as reduced activities or tolerance

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# Stimulants: An Overview

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- Most widely consumed drugs in the United States
- Increase alertness and increase energy
- Examples include amphetamines, cocaine, nicotine, and caffeine
- DSM-5 criteria for stimulant intoxication: significant impairment or psychological changes
  - Accompanied by physical changes (e.g., change in HR/BP, dilated pupils, weight loss, vomiting, weakness, chills)

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# Stimulants: Amphetamine Use Disorders

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- Effects of amphetamines
  - Produce elation, vigor, reduce fatigue
  - Such effects are usually followed by extreme fatigue and depression
- Amphetamines stimulate CNS by
  - Enhancing release of norepinephrine and dopamine
  - Reuptake is subsequently blocked

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# Stimulants: Amphetamine Use Disorders, Continued

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- Some ADHD drugs are mild stimulants
  - E.g., Adderall, Ritalin
- Cocaine
- Methamphetamine
- Ecstasy (MDMA)
  - Amphetamine effects, but without the crash
- Crystal meth
  - Purified form of amphetamine
  - May cause aggressive tendencies in addition to high
  - Extreme risk of dependence

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## Stimulants: Cocaine-Related Disorders

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- Effects of cocaine
  - Short-lived sensations of elation, vigor, reduced fatigue
  - Effects result from blocking the reuptake of dopamine
  - Highly addictive, but addiction develops slowly
  - 1.5 million report use in US each year
- Most cycle through patterns of tolerance and withdrawal
  - Withdrawal characterized by apathy and boredom > leads to desire to use again

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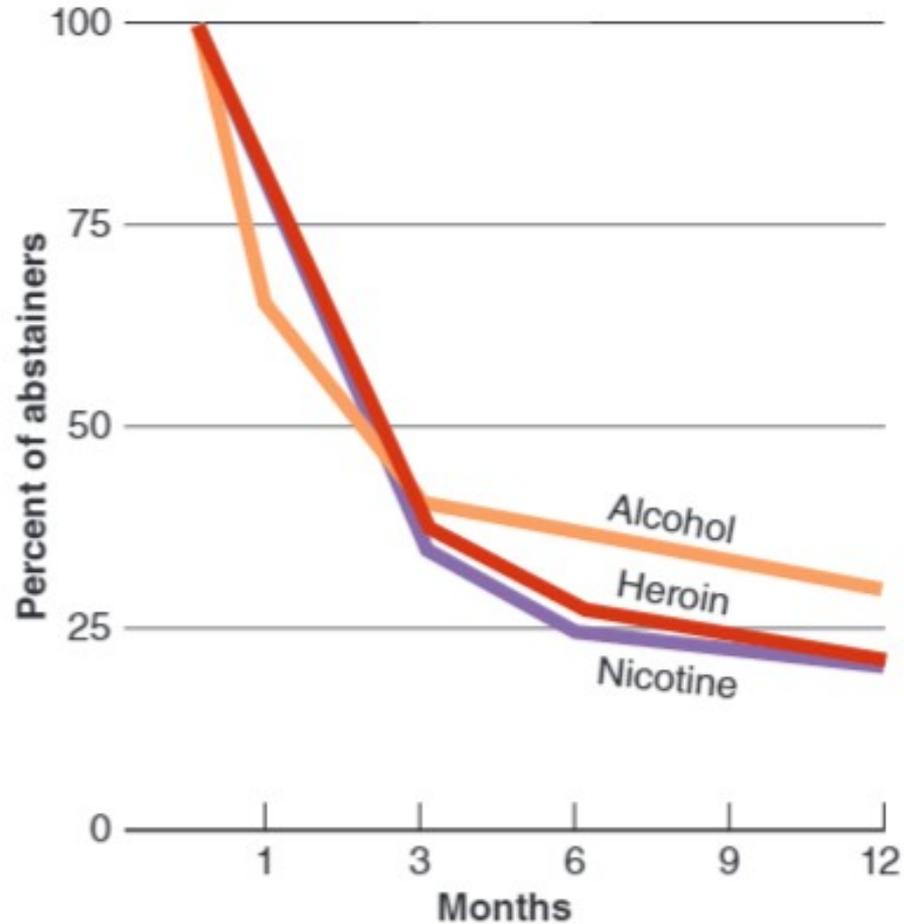
## Cocaine

- Statistics
  - Black individuals account for close to half of admissions to emergency rooms for cocaine-related problems (47%) followed by white individuals (37%) and Hispanic individuals (10%)
  - Men were twice as likely as women to be in the emergency room
  - Approximately 17% of cocaine users have also used crack cocaine

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# Relapse Rates After Quitting



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# Stimulants: Nicotine-Related Disorders

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- Effects of nicotine
  - Stimulates nicotinic acetylcholine receptors in CNS
  - Results in sensations of relaxation, wellness, pleasure
  - Highly addictive
  - Relapse rates equal to those seen with alcohol and heroin

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# Stimulants: Nicotine-Related Disorders, Continued

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- Nicotine users dose themselves to maintain a steady state of nicotine
- Smoking has complex relationship to negative affect
  - Appears to help improve mood in short-term
  - Depression occurs more in those with nicotine dependence

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# DSM-5 Criteria for Tobacco Withdrawal

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- After several weeks of daily use, unpleasant symptoms upon stopping or reducing:
  - Insomnia, increased appetite, restlessness, trouble concentrating, anxiety and depression, irritability
- Symptoms lead to clinically significant distress or impairment

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# Stimulants: Caffeine-Related Disorders

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- Effects of caffeine – the “gentle” stimulant
  - Used by over 85% of Americans
  - Found in tea, coffee, cola drinks, and cocoa products
  - Small doses elevate mood and reduce fatigue
  - Regular use can result in tolerance and dependence
  - Caffeine blocks the reuptake of the neurotransmitter adenosine

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# Stimulants: Caffeine-Related Disorders, Continued

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- DSM-5 Criteria for Caffeine Intoxication
  - Recent caffeine consumption, possibly in excess
  - Associated with physical symptoms including restlessness, anxiety, insomnia, flushed face, diuresis, GI disturbance, muscle twitching, rambling thoughts or speech, elevated or irregular heartbeat, excitement, inexhaustibility, motor agitation
  - Symptoms cause clinically significant distress or impairment

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# Opioids

- The nature of opiates and opioids
  - Opiate – natural chemical in the opium poppy with narcotic effects
  - Opioids – natural and synthetic substances with narcotic effects
  - Heroin—used by almost  $\frac{1}{2}$  M people in US
  - Illicit use of opium-containing prescriptions is rising—4.13 M people over the age of 12 reporting nonmedical abuse
  - Often referred to as analgesics
    - Analgesic = painkiller

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## Opioids, Continued

- Effects of opioids
  - Activate body's enkephalins and endorphins
  - Low doses induce euphoria, drowsiness, and slowed breathing
  - High doses can result in death
  - Withdrawal symptoms can be lasting and severe
- Mortality rates are high for opioid addicts
  - High risk for HIV infection due to shared needles

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## Cannabis-Related Disorders

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- Marijuana
  - Considered a mild hallucinogen
  - Most frequently used illegal drug: 2.2 M people used in last 30 days in US
  - Active ingredient: Tetrahydrocannabinol (THC)
  - Variable, individual reactions
    - May include euphoria, mood swings, paranoia, hallucinations, reduced concentration
  - Dependence and withdrawal are uncommon

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## Hallucinogen-Related Disorders

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- Hallucinations = altered sensory perceptions (e.g., seeing or hearing things that are not present)
- Hallucinogens can also produce delusions, paranoia
- Examples of hallucinogens: LSD (most common), psilocybin, mescaline, PCP
- Tolerance builds quickly, but resets after brief periods of abstinence

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## Other Drugs of Abuse: Inhalants

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- Highest use during early adolescence
- Found in volatile solvents
- Breathed into the lungs directly
  - Rapid absorption
- Examples: spray paint, hair spray, paint thinner, gasoline, nitrous oxide
- Effects similar to alcohol intoxication
- Produce tolerance and prolonged withdrawal symptoms
- Several negative physiological effects (e.g., organ damage)

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## Anabolic-Androgenic Steroids

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- Derived or synthesized from testosterone
- Used medicinally or to increase body mass
- No associated high
- Rather, dependence involves wanting to maintain the effects of the substance (i.e., increased muscle mass)
- May cause long-term mood disturbances

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# Other Drugs of Abuse: Designer Drugs

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- Drugs were originally produced by pharmaceutical companies to target diseases; then others began producing for recreational use
- Cause drowsiness, pain relief and dissociative sensations
  - Ecstasy/Molly
  - BDMPEA (“nexus”)
  - Ketamine (“Special K”)
  - Synthetic Cathinones (“bath salts”)

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# Causes of Substance-Related Disorders: Family and Genetic Influences

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- Results of family, twin, adoption, and other genetic studies
  - Substance abuse has a genetic component
    - Example: certain genes confer risk for heroin abuse in Latino and Black populations

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## Chapter

### Causes of Substance-Related Disorders: Family and Genetic Influences, Continued

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- Much of the focus has been on alcoholism
  - Genetic differences in alcohol metabolism > impact which drugs are most effective for treating alcohol use disorders
- Multiple genes are involved in substance abuse

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# Causes of Substance-Related Disorders: Neurobiological Influences

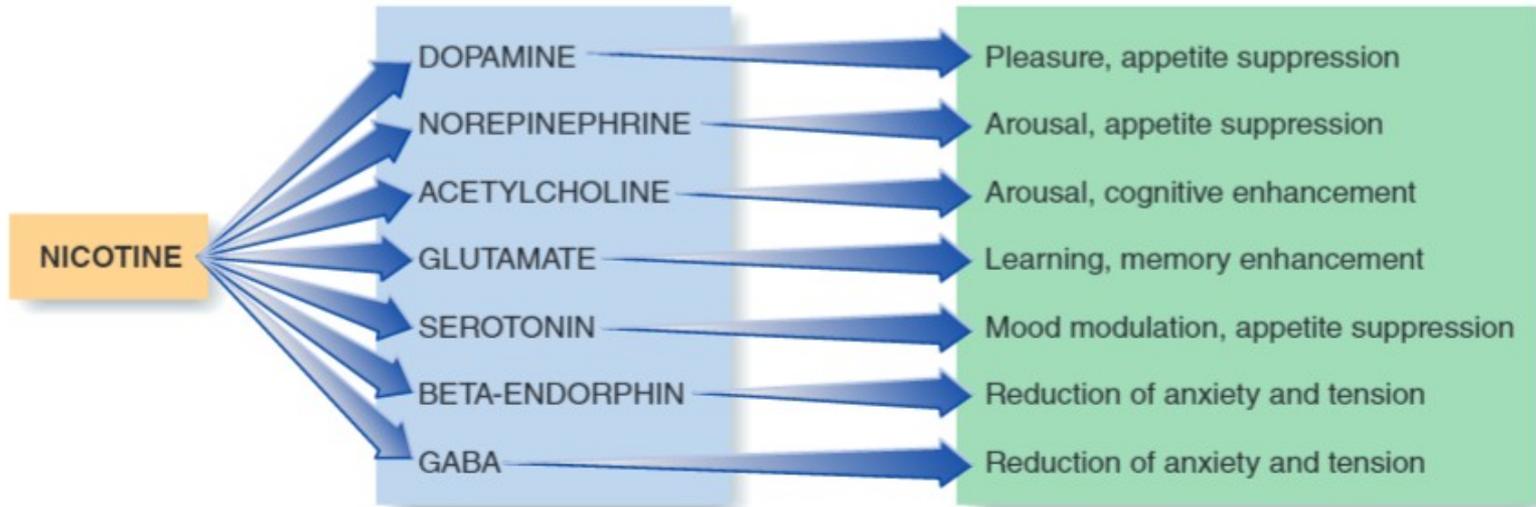
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- Drugs affect the “pleasure pathway” of the brain (i.e., the area that is active when receiving a reward such as food)
  - Believed to include dopaminergic system in areas of the midbrain and frontal cortex
- Drugs may inhibit GABA, which turn off reward-pleasure system
- Drugs inhibit neurotransmitters that produce anxiety/negative affect

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# Example: The Effects of Nicotine



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## Causes of Substance-Related Disorders: Psychological Dimensions, Continued

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- Early on, drug use may be seeking a euphoric high (positive reinforcement)
- Later, drug use will be seeking escape from withdrawal/crash (negative reinforcement)
- Substance abuse as a means to cope with negative affect
  - Self-medication, tension reduction
  - Drugs offer escape from life stressors

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## Causes of Substance-Related Disorders: Psychological Dimensions, Part 3

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- Opponent-process theory
  - Drugs themselves are easiest way to alleviate feelings of withdrawal
- Cognitive factors
  - Role of expectancy effects: People use drugs when they anticipate positive effects
- Cravings
  - Triggered by cues (mood, environment, availability of drug)

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## Causes of Substance-Related Disorders: Social and Cultural Dimensions, Part 4

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- Exposure to drugs is a prerequisite for use of drugs
  - Media, family, peers can influence exposure to drugs
  - Parents and the family appear critical
- Societal views about drug abuse
  - Sign of moral weakness – failure of self-control
  - Sign of a disease – caused by some underlying process

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## Causes of Substance-Related Disorders: Social and Cultural Dimensions, Part 5

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- The role of cultural factors
  - Influence the manifestation of substance abuse
  - Some cultures expect heavy drinking at certain social occasions (e.g., Korea)
  - Cultural expectancies of substances may influence drug-related behavior
    - If drinking is thought to increase aggressiveness, people may act in more aggressive ways after drinking

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## An Integrative Model of Substance-Related Disorders

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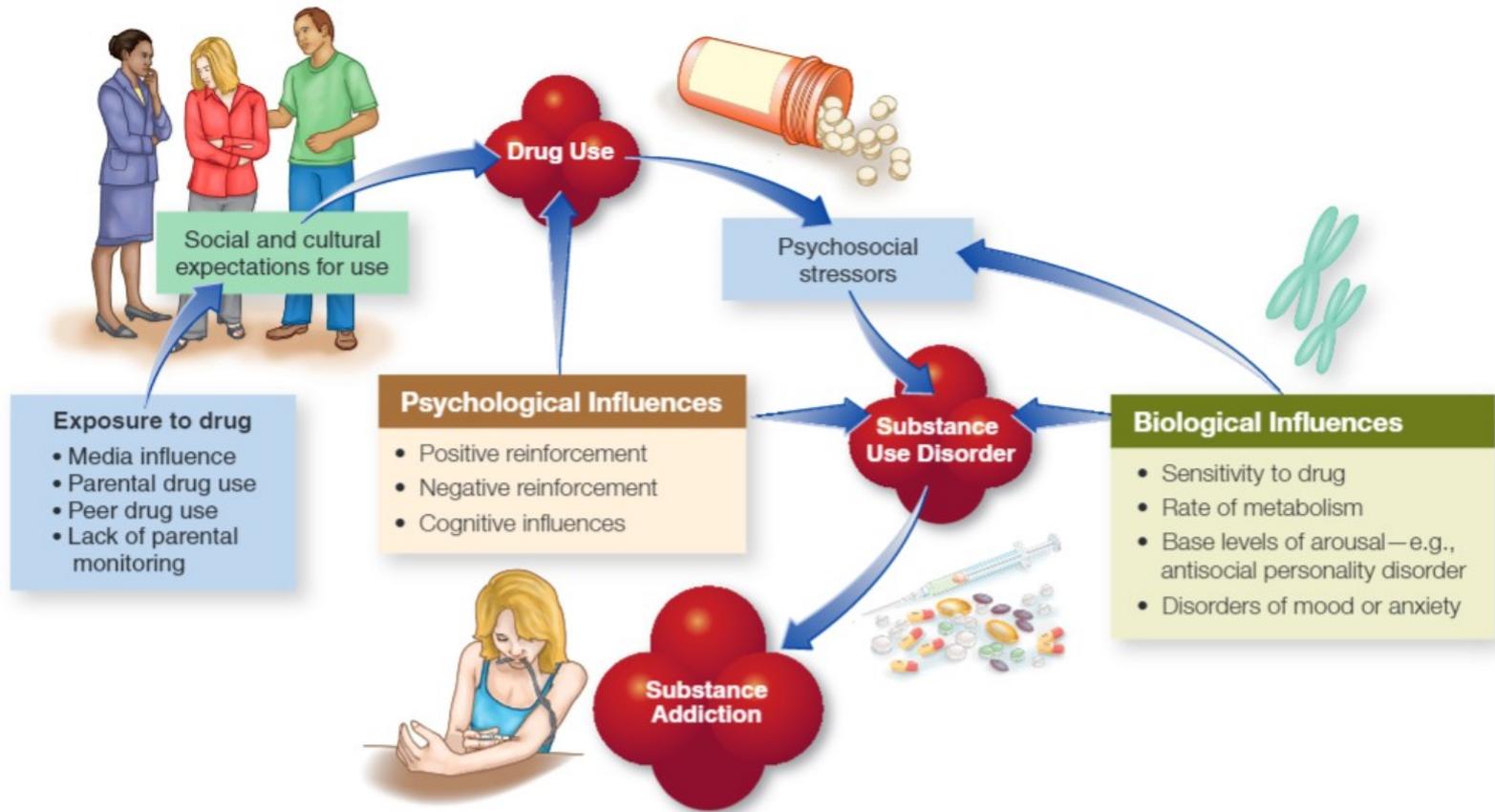
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- Exposure or access to a drug is necessary, but not sufficient
- Drug use depends on:
  - Social and cultural expectations
  - Positive and negative reinforcement
  - Genetic predisposition and biological factors
  - Psychosocial stressors

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## Integrative Model of Substance-Related Disorders



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## Biological Treatment of Substance-Related Disorders

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- Agonist substitution
  - Safe drug with a similar chemical composition as the abused drug
  - Examples include methadone and nicotine gum or patch
- Antagonistic treatment
  - Drugs that block or counteract the positive effects of substances
  - Examples include naltrexone for opiate and alcohol problems

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## Biological Treatment of Substance-Related Disorders, Continued

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- Aversive treatment
  - Drugs that make use of substances extremely unpleasant
  - Examples include antabuse and silver nitrate
- Efficacy of biological treatment
  - Generally ineffective when used alone
  - Used to help with withdrawal symptoms

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## Psychosocial Treatment of Substance-Related Disorders

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- Inpatient vs. outpatient care
  - Little difference in effectiveness
- Community support programs
  - Alcoholics Anonymous (AA) and related groups (e.g., NA) may be helpful; research is mixed
- Balancing treatment goals
  - Controlled use vs. complete abstinence
- Component treatment
  - Incorporate several elements such as psychotherapy and contingency management

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## Psychosocial Treatment of Substance-Related Disorders, Continued

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- Comprehensive treatment and prevention programs
  - Individual and group therapy
  - Aversion therapy and covert sensitization
  - Contingency management
  - Community reinforcement
  - Relapse prevention
- Preventative efforts
  - Recent shift away from education approaches
  - Greater enforcement of anti-drug laws

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## Relapse Prevention for Substance-Related Disorders

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- Cognitive-behavioral approach to learn habits that make relapse less likely
  - Address distorted cognitions
  - Identify negative consequences
  - Increase motivation to change
  - Identify high risk situations
  - Reframe relapse
    - Failure of coping skills, not person

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## Preventing Substance-Related Disorders

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- When done correctly, education can reduce adolescents' use of drugs
- Education-based approaches (such as DARE) have thus far shown limited efficacy
- Comprehensive community-based skills programs have promising results
- Cultural changes may prevent substance use (e.g., social perception of smoking has become less favorable in recent decades)

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## Summary of Substance-Related Disorders

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- DSM-5 substance related disorders cover five classes: Depressants, stimulants, opiates, hallucinogens and other drugs of abuse
- Diagnoses include intoxication, withdrawal, and substance use disorders

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## Summary of Substance-Related Disorders, Continued

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- Most substances activate the dopaminergic pleasure pathway
  - Psychosocial factors interact with biological influences
- Treatment of substance abuse disorders
  - Variable success
  - Highly motivated persons do best
  - Important to use comprehensive approach

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# Gambling Disorder

- New disorder in DSM-5
- Classified under “Addictive Disorders”
- Recurrent gambling leading to clinically significant distress or impairment
- Genetic research shows strong similarities in the biological origins of gambling disorders and substance use disorders

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## Gambling Disorder, Continued

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- Associated with 4+ symptoms within a year:
  - difficulty stopping/reducing gambling
  - restlessness/irritability when trying to cut back
  - need to gamble with increasing amounts of money
  - frequent preoccupation

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## Chapter

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## Gambling Disorder, Part 3

- Associated with 4+ symptoms within a year:
  - gambling when distressed
  - attempting to “win it back” after a loss
  - lying about gambling
  - relying on others for financial support
  - jeopardizing a significant relationship/job/opportunity

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## Gambling Disorder: Treatment

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- Psychosocial treatment similar to substance abuse
- Cognitive-behavioral interventions help reduce the symptoms of gambling disorder
- Brief and full course treatments have both been found to help and both are recommended.
- Motivation to get better is critical; dropout is high
- Research is limited, but multipart CBT interventions are under investigation
  - Scheduling alternative activities, setting financial limits, relapse prevention

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# Impulse-Control Disorders

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- Each is characterized by:
  - Impairment of social and occupational functioning
  - May also involve increased tension/anxiety prior to the act, pleasurable anticipation, or a sense of relief following the act
- Include:
  - Intermittent explosive disorder
  - Kleptomania
  - Pyromania

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## Chapter

# Impulse-Control Disorders, Continued

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- Intermittent explosive disorder
  - Rare condition
  - Characterized by frequent aggressive outbursts
  - Leads to injury and/or destruction of property
  - Few controlled treatment studies

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## Impulse-Control Disorders, Part 3

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- Kleptomania
  - Failure to resist urge to steal unnecessary items
  - Disorder may be more common in women than in men
  - Typically starts in adolescence
  - Highly comorbid with mood disorders
  - Also co-occurs with substance-related problems

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## Impulse-Control Disorders, Part 4

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- Pyromania
  - Involves having an irresistible urge to set fires
  - Diagnosed in just 3% of arsonists
  - Little etiological and treatment research
  - Treatment usually focuses on identifying urges and practicing incompatible behaviors

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## Summary of Non-Substance Disorders Related to Addiction

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- Involve impulsive, self-destructive behaviors
- Include gambling disorder, intermittent explosive disorder, kleptomania, pyromania
- More research is needed