## Chapter 12

Substance-Related Disorders

### Topic Overview

#### Depressants
- Alcohol
- Sedative-Hypnotic Drugs
- Opioids

#### Stimulants
- Cocaine
- Amphetamines
- Caffeine

#### Hallucinogens

#### Cannabis

#### Combinations of Substances

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### Putting It Together: New Wrinkles to a Familiar Story
I. **SUBSTANCE-RELATED DISORDERS**
   A. **What is a drug?**
      1. Any substance other than food that affects our bodies or minds
         a. Need not be a medicine or be illegal
   B. Current language uses the term *substance* rather than *drug* to overtly include alcohol, tobacco, and caffeine
   C. Substances may cause temporary changes in behavior, emotion, or thought
      1. May result in substance intoxication (literally, “poisoning”), a temporary state of poor judgment, mood changes, irritability, slurred speech, and poor coordination
      2. Some substances such as LSD may produce a particular form of intoxication, sometimes called *hallucinosis*, which consists of perceptual distortion and hallucinations
   D. Some substances also can produce long-term problems:
      1. Substance abuse: A pattern of behavior where a person relies on a drug excessively and chronically, damaging relationships, affecting work functioning, and/or putting self or others in danger
      2. Substance dependence: A more advanced pattern of use where a person abuses a drug and centers his or her life around it
         a. Also called *addiction*
         b. May include *tolerance* (need increasing doses to get an effect) and *withdrawal* (unpleasant and dangerous symptoms when substance use is stopped or cut down)
   E. About 10 percent of all teens and adults in the United States display substance abuse or dependence
      1. The highest rates of substance abuse or dependence in the United States is found among Native Americans (19 percent), while the lowest is among Asian Americans (4.3 percent)
      2. White Americans, Hispanic Americans, and African Americans display rates between 9 and 10 percent
      3. Only 26 percent receive treatment
   F. Many drugs are available in our society
      1. Some are naturally occurring; others are produced in a laboratory
      2. Some require a physician’s prescription for legal use; others, like alcohol and nicotine, are legally available to adults
      3. Still others, like heroin, are illegal under all circumstances
   G. Recent statistics suggest that drug use is a significant social problem
      1. 28 million people in the United States have used an illegal substance within the past year
      2. 20.4 million are using one of them currently
      3. Almost 22 percent of all high school seniors have used an illegal drug within the past month
   H. There are several categories of substances under use and study:
      1. Depressants
      2. Stimulants
      3. Hallucinogens
      4. Cannabis
      5. Polydrug use

II. **DEPRESSANTS**
   A. Depressants slow the activity of the central nervous system (CNS)
      1. Reduce tension and inhibitions
      2. May interface with judgment, motor activity, and concentration
   B. Three most widely used:
Substance-Related Disorders

1. Alcohol
2. Sedative-hypnotic drugs
3. Opioids

C. Alcohol

1. The World Health Organization estimates that 2 billion people worldwide consume alcohol.
2. In the United States, more than half of all residents drink alcoholic beverages from time to time.
3. When people consume five or more drinks in a single occasion, it is called a binge-drinking episode.
   a. 23 percent of all people in the United States over age 11 binge drink each month.
   b. Men account for 81 percent of binge-drinking episodes.
4. Nearly 7 percent of people over age 11 are heavy drinkers, having five drinks on at least five occasions per month.
   a. Among heavy drinkers, the ratio of men to women = 4:1 (around 8 percent to 4 percent).
5. All alcoholic beverages contain ethyl alcohol.
   a. It is absorbed into the blood through stomach lining and takes effect in the bloodstream and CNS.
      (a) Short-term, alcohol blocks messages between neurons—alcohol helps GABA (an inhibitory messenger) shut down neurons and “relax” the drinker.
      (b) First brain area affected is that which controls judgment and inhibition.
      (c) Next affected are additional areas in the central nervous system, leaving the drinker even less able to make sound judgments, speak clearly, and remember well.
      (d) Motor difficulties increase as drinking continues, and reaction times slow.

4. The extent of the effect of ethyl alcohol is determined by its concentration (proportion) in the blood.
   a. A given amount of alcohol will have less effect on a large person than on a small one.
   b. Sex also affects blood alcohol concentration.
      (a) Women have less alcohol dehydrogenase, an enzyme in the stomach, which metabolizes alcohol before it enters the blood.
      (b) Women become more intoxicated than men on equal doses of alcohol.
   c. Levels of impairment are closely tied to the concentration of ethyl alcohol in the blood:
      (a) BAC = 0.06: Relaxation and comfort.
      (b) BAC = 0.09: Intoxication.
      (c) BAC > 0.55: Death.
      (i) Most people lose consciousness before they can drink this much.

5. The effects of alcohol subside only after alcohol is metabolized by the liver.
   a. The average rate of this metabolism is 25 percent of an ounce per hour.
      (a) You can’t increase the speed of this process!

6. Alcohol abuse and dependence.
   a. Though legal, alcohol is one of the most dangerous recreational drugs.
      (a) Its effects can extend across the life span.
      (b) Alcohol use is a major problem in high school, college, and adulthood.
      (c) In any given year, 6.6 percent of the world’s population fall into a long-term pattern of abuse or dependence.
      (i) 13.2 percent experience one of the patterns sometime during their life.
      (d) 7.6 percent of all adults in the United States (almost 19 million people) display an alcohol use disorder.
      (i) In their lifetime, between 9 and 18 percent of adults in the United States will display one of those patterns, with men outnumbering women 2:1.
(e) The prevalence of alcoholism in a given year is about the same (7 to 19 percent) for White Americans, African Americans, and Hispanic Americans

(i) The men in these groups show strikingly different age patterns

(f) Generally, Asians have lower rates of alcohol disorders than do people from other cultures

(i) As many as one-half of these individuals have a deficiency of alcohol dehydrogenase, causing a negative reaction to even modest alcohol use

7. Alcohol abuse
   a. In general, people who abuse alcohol drink large amounts regularly and rely on it to enable them to do things that would otherwise make them anxious
      (a) Eventually the drinking interferes with work and social functioning
   b. Individuals patterns of alcohol abuse vary

8. Alcohol dependence
   a. For many people, the pattern of alcohol misuse includes dependence
      (a) They build up a physiological tolerance and need to drink greater amounts to feel its effect
      (b) They may experience withdrawal when they stop drinking, including nausea and vomiting
      (c) A small percentage of alcohol dependent people experience a dramatic and dangerous withdrawal syndrome known as delirium tremens (“the DTs”), which can be fatal!

9. What is the personal and social impact of alcoholism?
   a. Alcoholism destroys families, social relationships, and careers
      (a) Losses to society total many billions of dollars annually
      (b) Alcohol plays a role in suicides, homicides, assaults, rapes, and accidents
      (c) Has serious effects on the children (some 30 million) of alcoholic parents

10. Long-term excessive drinking also can seriously damage physical health
    a. Especially damaged is the liver (cirrhosis)
    b. Long-term excessive drinking also can cause major nutritional problems
       (a) Example: Korsakoff’s syndrome

11. Women who drink alcohol during pregnancy place their fetuses at risk from fetal alcohol syndrome (FAS)

D. Sedative-hypnotic drugs
1. Sedative-hypnotic (anxiolytic) drugs produce feelings of relaxation and drowsiness
   a. At low doses, they have a calming or sedative effect
   b. At high doses, they function as sleep inducers or hypnotics
   c. The sedative-hypnotic drugs include barbiturates and benzodiazepines

2. Barbiturates
   a. First discovered in the late 19th century, barbiturates were widely prescribed in the first half of the 20th century to fight anxiety and to help people sleep
      (a) Although still prescribed, they have been largely replaced by benzodiazepines
      (b) They can cause many problems, not the least of which are abuse, dependence, and overdose
   b. Barbiturates usually are taken in pill or capsule form
      (a) At low doses, they reduce anxiety in a manner similar to alcohol, by attaching to the GABA receptors and helping GABA operate
      (b) Also similar to alcohol, barbiturates are metabolized by the liver
   c. At high doses, barbiturates affect the reticular formation in the brain (the “awake” center), causing people to get sleepy
      (a) At too high a level, they can halt breathing, lower blood pressure, and can lead to coma and death
   d. Repeated use of barbiturates can quickly result in a pattern of abuse and/or dependence
e. A great danger of barbiturate dependence is that the lethal dose of the drug remains the same, even while the body is building a tolerance for the sedative effects.

f. Barbiturate withdrawal is particularly dangerous because it can lead to convulsions.

3. Benzodiazepines
   a. Benzodiazepines often are prescribed to relieve anxiety
      (a) They are the popular sedative-hypnotics available
      (b) The class includes Xanax, Ativan, and Valium
   b. These drugs have a depressant effect on the central nervous system by binding to GABA receptors and increasing GABA activity.
   c. Unlike barbiturates and alcohol, however, benzodiazepines relieve anxiety without causing related drowsiness
      (a) As a result, they are less likely to slow breathing and lead to death by overdose.
   d. Once thought to be a safe alternative to other sedative-hypnotic drugs, benzodiazepine use can cause intoxication and lead to abuse and dependence
      (a) As many as 1 percent of U.S. adults abuse or become physically dependent on benzodiazepines at some point in their lives.

E. Opioids
1. This class of drug includes both natural (opium, heroin, morphine, codeine) and synthetic (methadone) compounds and is known collectively as “narcotics.”
2. Narcotics are smoked, inhaled, injected by needle just under the skin (“skin popped”), or injected directly into the bloodstream (“mainlined”)
   a. Injection seems to be the most common method of use, although other techniques have been increasing in recent years.
   b. An injection quickly brings on a “rush,” a spasm of warmth and ecstasy that sometimes is compared with orgasm.
   c. This spasm is followed by several hours of pleasurable feelings (called a “high” or “nod”).
3. Opioids bind to the receptors in the brain ordinarily receiving endorphins (neurotransmitters that naturally help relieve pain and decrease emotional tension).
   a. When these sites receive opioids, they produce pleasurable and calming feelings just as endorphins do.
   b. In addition to reduction tension, opioids can cause nausea, narrowing of the pupils, and constipation.
4. Heroin abuse and dependence
   a. Heroin use exemplifies the problems posed by opioids:
      (a) After just a few weeks, users may become caught in a pattern of abuse (and often dependence).
      (b) Users quickly build a tolerance for the drug and experience withdrawal when they stop taking it.
      (c) Early withdrawal symptoms include anxiety and restlessness; later symptoms include twitching, aches, fever, vomiting, diarrhea, and weight loss from dehydration.
      (d) People who are dependent on heroin soon need the drug to avoid experiencing withdrawal, and they must continually increase their doses in order to achieve even that relief.
      (e) Many users must turn to criminal activity to support their “habit” and avoid withdrawal symptoms.
   b. Surveys suggest that close to 1 percent of adults in the United States become addicted to heroin or other opioids at some point in their lives.
   c. What are the dangers of heroin abuse?
      (a) The most immediate danger is overdose.
      (b) The drug closes down the respiratory center in the brain, paralyzing breathing and causing death.
(i) Death is particularly likely during sleep
(c) Ignorance of tolerance also is a problem
(d) About 2 percent of folks dependent on heroin and other opioids die under
the influence of the drug per year
(e) Users run the risk of getting impure drug
(f) Opioids often are “cut” with noxious chemicals
(g) Dirty needles and other equipment can spread infection

III. STIMULANTS
A. Stimulants are substances that increase the activity of the central nervous system (CNS)
   1. They cause an increase in blood pressure, heart rate, and alertness
   2. They cause rapid behavior and thinking
   3. The four most common stimulants are cocaine, amphetamines, caffeine, and nicotine
B. Cocaine
   1. Derived from the leaves of the coca plant, cocaine is the most powerful natural stim-
   ulant known
      a. 28 million people in the United States have tried cocaine
         (a) 2.4 million people are using it currently
   2. Cocaine produces a euphoric rush of well-being and confidence
      a. It stimulates the central nervous system and decreases appetite
         (a) It also appears to increase norepinephrine and serotonin
      b. The drug seems to work by increasing dopamine at key receptors in the brain
         by preventing the neurons that release it from reabsorbing it
         (a) Some people also experience hallucinations and/or delusions, a condition
         known as cocaine intoxication
      c. High doses of cocaine can produce mania, paranoia, and impaired judgment,
         known as cocaine-induced psychotic disorder
         (a) This is often accompanied by hallucinations and/or delusions, a condition
         known as cocaine-induced psychotic disorder
      d. As the stimulant effects of the drug subside, the user experiences a depression-
         like letdown, popularly called “crashing”
   3. Cocaine abuse and dependence
      a. Regular use may lead to a pattern of abuse in which the person remains under
         it effects much of the day each day and functions poorly in life domains
      b. Dependence on the drug also may develop
         (a) Currently, close to 1 percent of all people in the United States manifest co-
         caine abuse or dependence
      c. Cocaine use historically was limited by the drug’s cost:
         (a) Since 1984, cheaper versions of the drug have become available, includ-
         ing:
            (i) A “freebase” form where the drug is heated and inhaled with a pipe
            (ii) “Crack,” a powerful form of freebase that has been boiled down for
                smoking in a pipe
   4. What are the dangers of cocaine?
      a. Aside from its behavioral effects, cocaine poses significant physical danger
         (a) Pregnant women who use cocaine have an increased likelihood of mis-
         carriage and of having children with abnormalities
      b. The greatest danger of use is the risk of overdose
         (a) Excessive doses depress the respiratory center of the brain and stop
             breathing
         (b) Cocaine use also can cause heart failure
C. Amphetamines
   1. Amphetamines are stimulant drugs that are manufactured in the laboratory
      a. Methamphetamine, in particular, has had a surge in popularity in recent years
      b. Most often taken in pill or capsule form
      c. Can be injected or taken in “ice” and “crank” form, counterparts of free-base
         cocaine and crack
   2. Like cocaine, amphetamines:
3. Also like cocaine, amphetamines stimulate the CNS by increasing dopamine, norepinephrine, and serotonin
4. Tolerance develops quickly so users are at great risk of becoming dependent
5. When people dependent on the drug stop taking it, serious depression and extended sleep follow
   a. Approximately 1.5 to 2 percent of Americans become dependent on amphetamines at some point in their lives

D. Caffeine
1. Caffeine is the world’s most widely used stimulant
   a. Around 80 percent of the world’s population consumes it daily
      (a) Most is in the form of coffee; the rest is in the form of tea, cola, energy drinks, chocolate, and over-the-counter medications
   b. Around 99 percent of ingested caffeine is absorbed by the body and reaches its peak concentration within an hour
      (a) It acts as a stimulant in the CNS, producing a release of dopamine, serotonin, and norepinephrine in the brain
   c. More than 2 to 3 cups of brewed coffee can lead to caffeine intoxication
      (a) Seizures and respiratory failure can occur at doses greater than 10 grams of caffeine (about 100 cups of coffee)
2. Most people who suddenly stop or cut back their usual intake experience withdrawal symptoms, including headaches, depression, anxiety, and fatigue
   a. High doses of caffeine during pregnancy increase the risk of miscarriage

IV. HALLUCINOGENS, CANNABIS, AND COMBINATIONS OF SUBSTANCES
A. Other kinds of substances can cause problems for users and for society:
   1. Hallucinogens
      a. Produce delusions, hallucinations, and other sensory changes
   2. Cannabis substances
      a. Produces sensory changes, but has both depressant and stimulant effects
   3. Combinations of substances = Polysubstance use

B. Hallucinogens
1. Hallucinogens, also known as psychedelics, produce powerful changes in sensory perceptions (sometimes called “trips”)
   a. Include both natural hallucinogens:
      (a) Mescaline
      (b) Psilocybin
   b. And synthetic hallucinogens:
      (a) Lysergic acid diethylamide (LSD)
      (b) MDMA (Ecstasy)
2. LSD is one of the most famous and powerful hallucinogens
   a. Within two hours of being ingested, LSD brings on a state of hallucinogen intoxication (hallucinosis)
      (a) Increased and altered sensory perception
          (i) Hallucinations may occur
          (ii) The drug may cause different senses to cross, an effect called synesthesia
      (b) May produce extremely strong emotions
      (c) May have some physical effects
      (d) Effects wear off in about six hours
3. Hallucinogens appear to produce these symptoms by binding to serotonin receptors
   a. These receptors control visual information and emotions, thereby explaining the various effects of the drug on the user
4. More than 14 percent of Americans have used hallucinogens at some point in their lives
5. Tolerance and withdrawal are rare, but the drugs do pose physical dangers:
   a. Users may experience a “bad trip”—the experience of enormous perceptual, emotional, and behavioral reactions
   b. Another danger is the risk of “flashbacks”
      (a) Can occur a year or more after last drug use

C. Cannabis
1. The drugs produced from varieties of the hemp plant are, as a group, called *cannabis*
   a. They include:
      (a) Hashish, the solidified resin of the cannabis plant
      (b) Marijuana, a mixture of buds, crushed leaves, and flowering tops
2. The major active ingredient in cannabis is tetrahydrocannabinol or THC
   a. The greater the THC content, the more powerful the drug
3. When smoked, cannabis produces a mixture of hallucinogenic, depressant, and stimulant effects
   a. At low doses, the user feels joy and relaxation
      (a) May become anxious, suspicious, or irritated
      (b) This overall “high” is technically called *cannabis intoxication*
   b. At high doses, cannabis produces odd visual experiences, changes in body image, and hallucinations
   c. Most of the effects of cannabis last three to six hours
      (a) Mood changes may continue longer
4. Marijuana abuse and dependence
   a. Once believed not to cause abuse or dependence, today many users are caught in a pattern of abuse
   b. Some users develop tolerance and withdrawal, experiencing flulike symptoms, restlessness, and irritability when drug use is stopped
      (a) About 2 percent of people in the United States displayed marijuana abuse or dependence in the past year
      (b) Around 5 percent will fall into these patterns at some point in their lives
   c. One theory to explain the increase in abuse and dependence is the change in the drug itself
      (a) The marijuana available today is much more potent (by as many as four times) than the drug used in the early 1970s
5. Is marijuana dangerous?
   a. As the strength and use of the drug has increased, so have the risks of using it
      (a) Similar to hallucinosis, marijuana users may panic as a result of marijuana intoxication
      (b) Because of its sensorimotor affects, marijuana has been implicated in accidents
      (c) Marijuana use has been linked to poor concentration and impaired memory
   b. Long-term use poses additional dangers:
      (a) May cause respiratory problems and lung cancer
      (b) May affect reproduction:
         (i) In males, it suppresses hormones, shrinks testes, and inhibits sperm production
         (ii) In women, ovulation may be blocked and birth defects are seen in animals
6. Cannabis and Society: A rocky relationship
   a. For centuries, cannabis played a respected role in medicine but its use fell out of favor and was criminalized
   b. In the late 1980s, several interest groups campaigned for the medical legalization of marijuana
   c. The U.S. federal government has continued to fight and punish the production and distribution of marijuana for medical purposes
      (a) Both the Netherlands and Canada permit its use
D. Combinations of substances
1. People often take more than one drug at a time, a pattern called *polysubstance use*
2. Researchers have examined the ways in which drugs interact with one another, focusing on cross-tolerance and synergistic effects
   a. Cross-tolerance
      (a) Sometimes, two or more drugs are so similar in their actions on the brain and body that as people build a tolerance for one drug, they are simultaneously developing a tolerance for the other (even if they have never taken it)
      (b) Users displaying this cross-tolerance can reduce the symptoms of withdrawal from one drug by taking the other
         (i) Examples: alcohol and benzodiazepines
   b. Synergistic effects
      (a) When different drugs are in the body at the same time, they may multiply or potentiate each other’s effects
      (b) This combined impact is called a synergistic effect and is often greater than the sum of the effects of each drug taken alone
      (c) One kind of synergistic effect occurs when two or more drugs have similar actions
         (i) Examples: alcohol, barbiturates, benzodiazepines, and opioids
            1. All depressants, they may severely depress the CNS when mixed, leading to death
      (d) A different kind of synergistic effect results when drugs have opposite (antagonistic) actions
         (i) Examples: stimulants or cocaine with barbiturates or alcohol
            1. May build up lethal levels of the drugs because of metabolic issues (stimulants impede the liver’s processing of barbiturates and alcohol)
   c. Each year tens of thousands of people are admitted to hospitals because of poly-substance use
      (a) May be accidental or intentional
      (b) As many as 90 percent of people who use one illegal drug also are using another to some extent

V. WHAT CAUSES SUBSTANCE-RELATED DISORDERS?
A. Clinical theorists have developed sociocultural, psychological, and biological explanations for substance abuse and dependence
   1. No single explanation has gained broad support
   2. Best explanation is a combination of factors
B. The sociocultural view
   1. A number of theorists propose that people are more likely to develop patterns of substance abuse or dependence when living in stressful socioeconomic conditions
      a. Example: Higher rates of unemployment correlate with higher rates of alcohol use
      b. Example: People of lower SES have higher rates of substance use in general
   2. Other theorists propose that substance abuse and dependence are more likely to appear in families and social environments where substance use is valued or accepted
      a. Example: Rates of alcohol use vary among cultures
C. The psychodynamic view
   1. Psychodynamic theorists believe that people who abuse substances have powerful dependency needs that can be traced to their early years
      a. Caused by a lack of parental nurturing
      b. Some people may develop a “substance abuse personality” as a result
   2. Limited research does link early impulsivity to later substance use, but it is confounded, and researchers cannot presently conclude that any one personality trait or group of traits stands out in substance-related disorders
D. The cognitive-behavioral views
   1. According to behaviorists, operant conditioning may play a key role in the development and maintenance of substance abuse
a. They argue that the temporary reduction of tension produced by a drug has a rewarding effect, thus increasing the likelihood that the user will seek this reaction again.
b. Similarly, the rewarding effects also may lead users to try higher doses or more powerful methods of ingestion.

2. Cognitive theorists further argue that such rewards eventually produce an expectancy that substances will be rewarding, and this expectation is sufficient to motivate individuals to increase drug use at times of tension.

3. In support of these views, studies have found that many subjects do in fact drink more alcohol or seek heroin when they feel tense.
   a. In a manner of speaking, this model is arguing a “self-medication” hypothesis.
   b. If true, one would expect higher rates of substance use among people with psychological symptoms.
      (a) In fact, more than 22 percent of all adults who suffer from psychological disorders have been dependent on or abused alcohol or other substances within the past year.

4. Not all drug users find drugs pleasurable or reinforcing when they first take them—So why do users keep taking drugs?
   a. Some theorists cite Solomon’s opponent-process theory:
      (a) The brain is structured such that pleasurable emotions inevitably lead to opponent processes—negative aftereffects—that leave the person feeling worse than usual.
      (b) The opponent-processes eventually dominate, and avoidance of the negative aftereffects places pursuit of pleasure as the primary factor in drug-taking.
      (c) Although a highly regarded theory, the opponent-process explanation has not received systematic research support.
   b. Other behaviorists have proposed that classical conditioning may play a role in drug abuse, dependence, and withdrawal.
      (a) Objects presented at the time drugs are taken may act as classically conditioned stimuli and come to produce some of the pleasure brought on by the drugs themselves.
      (b) Although classical conditioning may be at work, it has not received widespread research support as the key factor in such patterns.

E. The biological view
1. In recent years, researchers have come to suspect that drug misuse may have biological causes.
2. Studies on genetic predisposition and specific biochemical processes have provided some support for this model.
   a. Genetic predisposition
      (a) Research with “alcohol-preferring” animals has demonstrated that offspring have similar alcohol preferences.
      (b) Similarly, research with human twins has suggested that people may inherit a predisposition to abuse substances.
         (i) Concordance rates in identical (MZ) twins = 54 percent.
         (ii) Concordance rates in fraternal (DZ) twins = 28 percent.
      (c) Stronger support for a genetic model may come from adoption studies.
         (i) Studies compared adoptees whose biological parents were dependent on alcohol with adoptees whose biological parents were not dependent.
         (ii) By adulthood, those whose biological parents were dependent showed higher rates of alcohol use themselves.
      (d) Genetic linkage strategies and molecular biology techniques also have provided direct evidence in support of this hypothesis.
         (i) An abnormal form of the dopamine-2 (D2) receptor gene was found in the majority of subjects with alcohol dependence but in less than 20 percent of nondependent subjects.
Biochemical factors
(a) Over the past few decades, investigators have pieced together a general biological understanding of drug tolerance and withdrawal, based on neurotransmitter functioning in the brain
   (i) The specific neurotransmitter(s) affected depends on which drug is used
(b) Recent brain imaging studies have suggested that many (perhaps all) drugs eventually activate a single “reward center” or “pleasure pathway” in the brain
   (i) The reward center apparently extends from the brain area called the ventral tegmental area to the nucleus accumbens and on to the frontal cortex
      1. The key NT appears to be dopamine
      2. When dopamine is activated at this center, a person experiences pleasure
   (ii) Certain drugs stimulate the reward center directly
      1. Examples: cocaine, amphetamines, caffeine
   (iii) Other drugs stimulate the reward center in roundabout ways
      1. Examples: alcohol, opioids, and marijuana
(c) Theorists suspect that people who abuse substances suffer from a reward-deficiency syndrome
   (i) Their reward center is not readily activated by “normal” life events so they turn to drugs to stimulate this pleasure pathway, particularly in times of stress
   (ii) Defects in D2 receptors have been cited as a possible cause

VI. HOW ARE SUBSTANCE-RELATED DISORDERS TREATED?
A. Many approaches have been used to treat substance-related disorders, including psychodynamic, behavioral, cognitive-behavioral, and biological, along with several sociocultural therapies
   1. Although these treatments sometimes meet with great success, more often they are only moderately helpful
   2. Today treatments are typically used in combination on both an inpatient and outpatient basis
B. Psychodynamic therapies
   1. Psychodynamic therapists try to help those with substance-related disorders become aware of and correct underlying psychological needs and conflicts
   2. Research has not found this model to be very effective
   3. The model tends to be of greater help when combined with other approaches in a multidimensional treatment program
C. Behavioral therapies
   1. A widely used behavioral treatment is aversion therapy, an approach based on classical conditioning principles
      a. Individuals repeatedly are presented with an unpleasant stimulus at the very moment they are taking a drug
      b. After repeated pairings, they are expected to react negatively to the substance itself and to lose their craving for it
      c. Aversion therapy is applied most commonly to alcohol abuse/dependence
   2. Covert sensitization is another version of this approach which requires people with alcoholism to imagine extremely upsetting, repulsive, or frightening scenes while they are drinking
      a. The pairing is expected to produce negative responses to liquor itself
   3. A behavioral approach successful in the short-term treatment of people who abuse cocaine and some other drugs is contingency management
      a. This procedure makes incentives contingent on the submission of drug-free urine specimens
   4. Behavioral interventions are of limited success when used alone
a. They are best when used in combination with either biological or cognitive approaches

D. Cognitive-behavioral therapies

1. Two popular combined approaches, both applied particularly to alcohol use:
   a. Behavioral self-control training (BSCT)
      (a) Clients keep track of their own use and triggers
      (b) Learn coping strategies for such events
      (c) Learn to set limits on drinking
      (d) Learn skills (relaxation, coping, problem-solving)
   b. Relapse-prevention training
      (a) Clients are taught to plan ahead for drinking situations
      (b) Applied particularly to alcohol use but also used with cocaine and marijuana

E. Biological treatments

1. Biological treatments may be used to help people withdraw from substances, abstain from them, or simply maintain their level of use without further increases
   a. These approaches are of limited success long-term when used alone but can be helpful when combined with other approaches

2. Detoxification
   a. Systematic and medically supervised withdrawal from a drug
      (a) Can be outpatient or inpatient
   b. Two strategies:
      (a) Gradual withdrawal by tapering doses of the substance
      (b) Induce withdrawal but give additional medication to block symptoms
   c. Detoxification programs seem to help motivated people withdraw from drugs
      (a) For people who fail to receive psychotherapy after withdrawal, however, relapse rates tend to be high

3. Antagonist drugs
   a. An aid to resist falling back into a pattern of substance abuse or dependence, antagonist drugs block or change the effects of the addictive substance
      (a) Example: disulfiram for alcohol
      (b) Example: naltrexone for narcotics, alcohol

4. Drug maintenance therapy
   a. A drug-related lifestyle may be a greater problem than the drug’s direct effects
      (a) Example: heroin addiction
   b. Thus, methadone maintenance programs are designed to provide a safe substitute for heroin
   c. Methadone is a laboratory opioid with a long half-life, taken orally once a day
   d. Roundly criticized as “substituting addictions” but regaining in popularity since the spread of HIV/AIDS

F. Sociocultural therapies

1. Three main sociocultural approaches to substance-related disorders:
   a. Self-help and residential treatment programs
      (a) Most common: Alcoholics Anonymous (AA)
      (i) Offers peer support along with moral and spiritual guidelines to help people overcome alcoholism
      (b) Many self-help programs have expanded into residential treatment centers or therapeutic communities
      (c) People formerly dependent on drugs live, work, and socialize in a drug-free environment while undergoing individual, group, and family therapies
   b. Culture- and gender-sensitive programs
      (a) A growing number of treatment programs try to be sensitive to the special sociocultural pressures and problems faced by drug abusers who are poor, homeless, or members of ethnic minority groups
      (b) Similarly, therapists have begun to focus on the unique issues facing female substance users
c. Community prevention programs
   (a) Perhaps the most effective approach to substance-related disorders is to prevent them
   (b) Some prevention programs argue for total abstinence from drugs, while others teach responsible use
   (c) Prevention programs may focus on the individual, the family, the peer group, the school, or the community at large
   (d) The most effective of these prevention efforts focus on multiple areas to provide a consistent message about drug use in all areas of life

**LEARNING OBJECTIVES**

1. Distinguish among substance intoxication, substance abuse, and substance dependence.
2. Explain the terms *tolerance* and *withdrawal symptoms* and give examples.
3. Name some commonly used depressants, including alcohol, and explain their effects on the central nervous system.
4. Distinguish between two major sedative-hypnotic drugs—antianxiety drugs and barbiturates—and explain why barbiturate abuse is especially dangerous.
5. Know which drugs are opioids and be able to explain the effects of these drugs, including heroin.
6. Describe the typical effects of cocaine and contrast these with the effects of the other major stimulant, amphetamines.
7. Describe the general effects of the hallucinogen LSD.
8. Describe the current short-term and long-term effects of cannabis use.
9. Describe, compare, and contrast the psychodynamic, behavioral, cognitive, biological, and sociocultural explanations of substance abuse, then discuss the therapies of each view.

**KEY TERMS**

- addiction
- alcohol
- alcohol dehydrogenase
- Alcoholics Anonymous (AA)
- alcoholism
- amphetamine
- antagonist drugs
- aversion therapy
- barbiturate
- behavioral self-control training (BSCT)
- benzodiazepines
- caffeine
- cannabis drugs
- cirrhosis
- classical conditioning
- cocaine
- community prevention program
- covert sensitization
- crack
- crashing
- cross-tolerance
- culture-sensitive program
- delirium tremens (DTs)
- depressant
- detoxification
- disulfiram (Antabuse)
- dopamine
- dopamine-2 (D2) receptor gene
- drug
- endorphins
- ethyl alcohol
- fetal alcohol syndrome
- flashback
- free-base
- GABA
- hallucinogen
- hallucinosis
- hashish
- heroin
- intoxication
- Korsakoff’s syndrome
- LSD (lysergic acid diethylamide)
- marijuana
- methadone
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PowerPoint Slides

Available at the Instructor’s site on the companion Web site are comprehensive PowerPoint slide presentations and supplemental student handouts for Chapter 12. The slide files reflect the main points of the chapter in significant detail. Student handouts were created using the instructor slides as a base, with key points replaced as “fill-in” items. Answer keys and suggestions for use also are provided.

DSM-IV-TR Masters

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Internet Sites

Please see Appendix A for full and comprehensive references. Sites relevant to Chapter 12 material are:
Substance-Related Disorders

http://www.stopdrugs.org/
Information on methamphetamine, links, research, prevention, treatment, and enforcement information.

Mainstream Films
Films relevant to Chapter 12 material are listed and summarized below.

Key to Film Listings:
P = psychopathology focus
T = treatment focus
E = ethical issues raised

Please note that some of the films suggested may have graphic sexual or violent content due to the nature of certain subject matter.

Arthur
This 1981 classic stars Dudley Moore as an alcoholic millionaire with no ambition or pretense. P, comedy

Barfly
In this 1987 film, Mickey Rourke plays Henry Chinaski, a poet and alcoholic. P, comedy/drama

Bird
Directed by Clint Eastwood, this 1988 film portrays the story of jazz great Charlie Parker, including his drug use and compulsive eating. P, serious film

The Boost
From 1989, this intense film stars James Woods as an investment broker addicted to cocaine. P, serious film

Clean and Sober
From 1988, this film stars Michael Keaton as an alcoholic executive realizing he’s “hit bottom” and entering a drug rehabilitation center. P, T, serious film

Crazy/Beautiful
This 2001 film stars Kirsten Dunst as a troubled, rebellious rich girl who abuses drugs and alcohol and is medicated for depression. Her romance with a boy from the wrong side of the tracks helps her put her life back together. P, serious film

Days of Wine & Roses
This 1962 film stars Jack Lemmon and Lee Remick as a middle-class family dealing with alcohol dependence. P, serious film

The Doors
This 1991 film stars Val Kilmer as Jim Morrison, a drug-addled rock star of the 1960s. P, serious film

Drugstore Cowboy
Starring Matt Dillon and set in the 1960s, this troubling film from 1989 details the actions of a gang of drug users. P, T serious film

The Fisher King
This 1991 film follows Jack Lucas (Jeff Bridges), an irreverent radio talk show host who sinks into alcoholism after a tragedy. He is rescued by a delusional, homeless man (Robin Williams) on a quest for the Holy Grail. P, serious film

Lady Sings the Blues
Starring Diana Ross, this 1972 film depicts the story of Billie Holiday, a jazz singer whose career was cut short by drug addiction. P, serious biopic

Leaving Las Vegas
This 1995 film stars Nicolas Cage as a Hollywood screenwriter who has become an alcoholic. After being fired, he takes his severance pay to Las Vegas, where he plans to drink himself to death. P, serious film

Less than Zero
This disturbing 1987 film portrays the drug use among a postcollege crowd in Los Angeles. P, serious film

Metallica: Some Kind of Monster
From 2004, this documentary follows the band as they record their St. Anger album and see an on-call psychiatrist to help with the growing tensions between band members. P, T, documentary

Permanent Midnight
From 1998, this fact-based film details the story of Jerry Stahl, a television writer suffering from drug addiction. P, serious film

Pollock
This film, from 2000, provides a fascinating look at the life of abstract expressionist (and substance-abuser) Jackson Pollock (1912–1956). P, serious film

Postcards from the Edge
Starring Meryl Streep and Shirley MacLaine, this 1990 film tells the story of Susanne Vale, a struggling Hollywood actress suffering from substance abuse problems. She moves from a stint in rehab to life with an alcoholic mother. P, comedy/drama

Requiem for a Dream
From 2000, this film addresses the multiple addictions of a boy, his girlfriend, his buddy, and his mother (including food and diet pills). P, serious film

The Rose
This film from 1979 stars Bette Midler as Mary Rose Foster, a character she based on the 1960s singer Janis Joplin who died of a drug overdose. P, serious film
Sid & Nancy
This 1986 film is a moving portrayal of the addicted lives and tragic deaths of Sex Pistols bassist, Sid Vicious, and his girlfriend/groupie Nancy Spungen. **P, serious film**

Sideways
This Oscar-winning film from 2004 follows Paul Giamatti and Thomas Haden Church on an alcohol-fueled tour through wine country. **P, serious/comedic film**

A Star Is Born
This 1954 remake stars Judy Garland as a starlet whose husband (and manager) is devastated by alcohol abuse. **P, musical/serious film**

Trainspotting
This haunting 1996 film details the heroin culture in a group of Scottish youth. **P, serious film**

Walk the Line
This Academy award-winning film from 2005 stars Joaquin Phoenix as Johnny Cash and Reese Witherspoon as June Carter Cash in a chronicle of the country music singer’s life.

When a Man Loves a Woman
This 1994 film stars Meg Ryan as a woman suffering from alcoholism and Andy Garcia as her husband. **P, serious film**

Other Films:
*Lost Weekend* (1945) alcohol dependence. **P, serious film**
*The Man with the Golden Arm* (1955) substance dependence. **P, T, serious film**
*Naked Lunch* (1991) substance-related disorders. **P, hallucinogenic-type film, cult-classic**

Comer Video Segments
Available as a supplement, this revised set of videotapes contains short clips depicting various topics related to abnormal psychology. Please see the accompanying Video Guide for specific clips linked to Chapter 12.

**Recommendations for Purchase or Rental**
The Comer Video Segments include excerpts from many superb clinical documentaries. While the segments alone are ideal for use in lectures, it often is useful to assign the entire documentary for special class screenings or library use by students. The following videos and other media are available for purchase or rental and appropriate for use in class or for assignment outside of class.

*Binge Drinking: The Right to Party?*
Films for the Humanities & Sciences
Box 2053, Princeton, NJ 08543-2053
1-800-257-5126

*DUI: Unlicensed to Kill*
Films for the Humanities & Sciences
Box 2053, Princeton, NJ 08543-2053
1-800-257-5126

*Eat, Drink, and Be Wary: Women and the Dangers of Alcohol*
Films for the Humanities & Sciences
Box 2053, Princeton, NJ 08543-2053
1-800-257-5126

*Getting Help: Drugs: Profiles of Addiction and Recovery*
Films for the Humanities & Sciences
Box 2053, Princeton, NJ 08543-2053
1-800-257-5126

*Influences: Innocence Betrayed*
Pyramid Film and Video
2801 Colorado Ave.
Santa Monica, CA 90404
1-213-828-7577

*My Friend Jenny: Portrait of an Addict*
Filmmakers Library
124 East 40th Street
New York, NY 10016
1-212-808-4980

*Women: Coming Out of the Shadows*
Fanlight Productions
47 Halifax Street
Boston, MA 02130
1-617-524-0980
CLASS DEMONSTRATIONS AND ACTIVITIES

Case Study
Present a case study to the class.

Panel Discussion
Have students volunteer (or assign them) to portray mental health “workers” from different theoretical perspectives in a panel discussion. Each student should present the main explanation and treatment for the substance-related disorders from his or her theoretical perspective. Students in the audience can ask questions of the panelists. Additionally, other students can role-play patients suffering from abuse of or dependence on particular substances. [NOTE: A brief reminder about sensitivity and professionalism is worthwhile here.] Have the panelists attempt to diagnose, based on their theoretical orientation.

“It’s Debatable: The Appropriate Role of Cannabis in Society” (see Preface instructions for conducting this activity)
Have students volunteer (or assign them) in teams to opposite sides of the debate topic. Have students present their cases in class, following standard debate guidelines.

Group Work: Drug Searches and Drug Testing
Present yourself as a school district superintendent who must decide whether to allow random drug searches and mandatory drug testing in your schools. Arkansas has used blood tests, Breathalyzer tests, and polygraph tests on high school students. New Jersey conducts spot searches of lockers, gym bags, and purses, even though the Fourth Amendment outlaws “searches and seizures” without a warrant issued upon “probable cause.” You are seeking the informed opinion of experts. One side is for such activities, the other is against it. Divide students into groups, then assign each group one of these two positions. Tell students to prepare their arguments.

Group Work: Pregnancy and Drugs
Either lead the class in a discussion or assign groups to discuss whether pregnant women who use drugs should face criminal prosecution. Do students think facing charges would cut down on a pregnant woman’s drug abuse, or would it keep such women away from professionals who provide prenatal care because they might get arrested? Is fetal abuse the equivalent of child abuse? Can you think of alternatives to criminal charges? Because parents who smoke increase their young children’s risk of asthma, should smokers also be liable? Because a man’s sperm count can remain low for more than two years after he stops using cocaine, should a wife who is unable to become pregnant be able to sue her husband if he had used cocaine? This is not just an abstract discussion, as several states have enacted laws that punish the mother for endangering the fetus.

Abuse versus Dependence
The difference between these diagnoses can be confusing to students. Display the criteria for each side by side, and point out the differences. Abuse involves maladaptive behavior, whereas dependence involves not just maladaptive behavior but also physical symptoms and apparent lack of control. Of course, the former is the precursor of the latter.

Media and Drug Use
Use an overhead transparency to develop a list of the drug behaviors that are currently portrayed in the media, particularly the movies. Ask students for examples from the most current movies. Ask if drug-related behaviors are changing in the movies. If yes, in what manner? Are drugs becoming more accepted in our society?

Presume You Are an Expert . . .
Tell the students that you received a phone call from your senator last night at home. He or she recognized that you are doing a fine job instructing students on the issue of substance abuse. Your senator wants you and several students to come to Washington, D.C., to testify before a Senate subcommittee on a proposed change in drug enforcement laws. Ask students to prepare a five-minute presentation outlining the most important aspects of illegal drug usage. Remind them that their testimony will influence law. Also remind them that their testimony is “expert” and that the validity of their statements may be challenged.
CHAPTER 12

**SUGGESTED TOPICS FOR DISCUSSION**

**Open Discussion: Cannabis and Society**
Ask students to discuss the role of cannabis in society. Should it be legalized? Is medical use appropriate? What are the risks and benefits of such social change?

**Open Discussion: College Binge Drinking**
Using Psych Watch (p. 378 in the text) as a platform, have students discuss binge drinking on your campus. Is it a problem? What efforts have been made to address it?

**Open Discussion: Alcohol Use or Abuse?**
Ask students where they draw the line between the use and abuse of alcohol. Do their answers focus more on the amount or type of alcohol used? Ask for examples of friends’ behavior that are clearly abuse.

**Open Discussion: Does DARE Work?**
Discuss the effectiveness of drug education today. How effective have current efforts, such as DARE (Drug Abuse Resistance and Education), been in preventing children from becoming drug abusers? Recent data indicate that this program is less successful than originally hoped. Ask your students to discuss what they would do to improve the DARE program.

**Open Discussion: Alcohol versus Drugs**
Drug use and interdiction is a major focus of activity of the U.S. government, but its effects pale in comparison to the negative effects of alcohol. Ask students which is more of a problem for the country, alcohol or drugs? (Alcohol accounts for 20 percent of all national expenditures on health care, costs the United States $90 billion or more annually, is a factor in one-third to one-half of all suicides, homicides, assaults, rapes, and accidental deaths, accounts for 40 percent of all fatal car accidents, 50 percent of deaths from falls, 52 percent of deaths from fires, and 38 percent of deaths by drowning.) Lead a discussion of why the country focuses on drugs and generally ignores alcohol.

**Open Discussion: BAC Awareness**
It is important for those who choose to drink to understand the relationships between amount of consumption, sex, weight, and BAC/BAL. Using the chart on p. 376 in the text or any of a number of free internet resources, lead students in a discussion of good decision-making around alcohol consumption.

**ASSIGNMENTS/EXTRA CREDIT SUGGESTIONS**

**“Write a Pamphlet”**
With the use of a software program like Microsoft Publisher or simply paper and markers, students can create a pamphlet on one or all of the substance-related disorders, specific classifications of substances, or specific treatment models. Students should be encouraged to be as accurate and up-to-date as possible and also to present all sides of the issue (e.g., alternate treatment approaches or theories).

**Keep a Journal**
In addition to helping students synthesize material, this activity is helpful in developing writing skills. Have students keep a journal of their thoughts on course material through the semester. This can be done in the first or last five minutes of class or as an out-of-class assignment. Faculty generally should have students submit their journals for review on an on-going basis, since students can tend to delay writing until the end of the semester. Some suggestions for journal topics include: reactions to the case examples; strengths and weaknesses of prevailing theoretical explanations; hypothetical conversations with sufferers of specific disorders, etc.

**Abnormal Psychology Student Tool Kit**

**Video Questions**
As a homework assignment, have students watch a video clip and answer the accompanying questions. Students can answer the questions directly into the online assessment feature. The results of these quizzes report to the site’s built-in grade book.
Web Site Quiz
For homework or extra credit, have students complete the quiz for Chapter 12 located on the companion Web site. Students can complete an on-line test of the key chapter material (using questions NOT from the test bank) and have their scores e-mailed directly to the course instructor.

Essay Topics
For homework or extra credit, have students write an essay addressing one (or more) of the following topics:

(1) Discuss your experience with binge drinking on campus. Is it a problem? What do you think the administration should do (if anything) to combat it? Do you think students over- or under-report their drinking?

(2) Discuss the mechanism and risk associated with heroin overdose.

(3) What are the perceptions of substance use on campus (see Psych Watch on p. 378 in the text)? What drugs are seen as particularly problematic? What drug use is “overlooked?”

(4) Explain the mechanism of action for antagonist therapy for substance dependence.

(5) Discuss the growing use of club drugs (see Psych Watch on p. 392 in the text) and energy drinks (see p. 412 in the text) among college students. Is there a connection? Should anything be done (and, if so, what?) to combat this trend?

Research Topics
For homework or extra credit, have students write a research report addressing one (or more) of the following topics:

(1) Research music lyrics and band names that glamorize, glorify, or seem to combat substance use and abuse.

(2) Conduct a “Psych Info” search and write an annotated bibliography on treatment outcome studies for various substances. What model is being investigated?

(3) Research and review the literature on Project MATCH, a multisite clinical trial supported by the National Institute of Alcohol Abuse and Alcoholism.

(4) Research and review the literature on methadone maintenance therapy for opiate dependence.

(5) Research and review the literature on narcotic antagonist therapy for alcohol dependence.

Case Study Evaluations
To complement the Comer and Gorenstein supplemental case study text, case study evaluations have been created. Students can be assigned the appropriate case study and evaluation as homework or for class discussion. While case-study evaluation questions are listed in their entirety on the companion Web site at www.worthpublishers.com/comer, relevant case studies follow.

Case Study 10: Alcohol Dependence and Marital Distress

Web-Based Case Studies
Nine Web-based case studies have been created and posted on the companion Web site. These cases describe the individual’s history and symptoms and are accompanied by a series of guided questions which point to the precise DSM-IV-TR criteria for each disorder. Students can both identify the disorder and suggest a course of treatment. Students can be assigned the appropriate case study and questions as homework or for class discussion. The case relevant to Chapter 12 is referenced below.

The Case of Jerry: Alcohol Dependence

Crossword Puzzles
As a homework assignment or for extra credit, have students complete and submit Crossword Puzzle #12.

Word Searches
As a homework assignment or for extra credit, have students complete and submit Word Search #12.