Mike was seventeen, soon to be a high school senior—an age when life can be both terrific and terrifying. He looked at me with amazement, telling me by his expression that either the question I was asking him was ridiculous, or the answer was obvious. “Why do kids do drugs?” I had asked.

“It’s cool,” he said. “That’s why. Believe me, it’s important to be cool. Besides, in my life, drugs just make me feel better. Smoking some weed, chilling out with a little Vicodin, spinning with some Addies—it’s a way of getting away from stuff. You know that everybody does it. At least all of my friends do it. And it’s easy to get them. A helluva lot easier than beer.”

The conversation was over. But as he started to leave, Mike seemed to notice the concern on my face. “Don’t worry about me,” he said with a smile, “I can handle it. I can handle it just fine.”
There is no question that we live in a world where drugs are all around us. Thousands of Internet web sites offering information about drug use are just a click away. We are continually bombarded with news about drug-related arrests of major drug traffickers and ordinary citizens, news about popular celebrities and their latest involvement with drugs, news about drugs intercepted and confiscated at our borders and widespread drug use in the major cities and small towns of America.

It also seems impossible to avoid the reality of drugs in our personal lives. One in four adults in the United States, according to one survey, report that drugs have been a cause of trouble in their family. At a time when the economy and related matters dominate our concerns about the present and the future, about two out of three Americans continue to worry about drug use either a fair amount of time or a great deal. In school, you have been taught the risks involved in drug use, and most of you have contended with the social pressure to engage in drug-taking behavior with your friends. You may or may not have been successful in doing so. You also may have noticed your local pharmacy starting to look increasingly like a bank, with the installation of panic alarms, bulletproof glass, and security cameras, as pharmacists turn to protecting themselves from people robbing them for their supplies of oxycodone and other prescription pain medications.1

Making matters more complicated and difficult for us, drug-related problems in our contemporary society extend beyond illegal drugs such as heroin, cocaine, amphetamines, LSD and other hallucinogens, and (except for certain U.S. states) marijuana. In fact, while many of these drugs continue to wreak havoc on lives and communities throughout America, it can be argued that the adverse effects associated with legally sanctioned drugs such as alcohol, nicotine, and certain prescription and nonprescription medications are more far-reaching. The abuse of these drugs affects far greater numbers of people, despite our efforts to regulate their use. Here are some facts about legally sanctioned drugs as we proceed through the second decade of the twenty-first century in America:

- Regular consumption of alcohol often begins in junior high school or earlier, despite the fact that twenty-one is the minimum legal age for purchasing alcoholic beverages. In the United States alone, more than 38 million adults, 1 in 6 in the population, admit to having binged on alcohol at least four times in the last month, with more than 80,000 deaths each year attributed to excessive drinking. One in 10 children and teenagers in the United States (about 7.5 million) live with at least one parent who has an alcohol problem. On college campuses nationwide, binge drinking continues to be a major problem and a significant factor in date-rape assaults and other forms of violent behavior (Chapter 8). We pay a heavy price for problems associated with chronic alcohol abuse and alcoholism on a social and personal level (Chapter 9).

- About one in eleven high school seniors report smoking cigarettes daily, despite the fact that it is illegal for those younger than 18 years old (19 years old in some U.S. states) to purchase tobacco products. While the current prevalence rate is less than half the prevalence rate in 1990s when the figure was about 1 in 5, underage smoking remains a significant public-health issue (Chapter 10)—for good reason. Nearly 80 percent of all adult smokers smoked their first cigarette and became regular smokers before they were 18 years old.2

- Prescription drug abuse, particularly with respect to pain medications such as oxycodone and hydrocodone (Chapter 5), has reached epidemic proportions. In New York State alone, prescriptions for pain medication have risen 82 percent from 2007 to 2010, along with significant increases in hospital admissions and deaths due to nonmedical use of these drugs. Since 2008, unintentional drug poisoning (principally from prescription medications) has...
become the leading cause of injury death among people 25 to 64 years old, exceeding fatalities due to motor vehicle accidents. Nationwide, more than 700 pharmacies in 2012 experienced an armed robbery specifically for prescription drugs, about twice as many as in 2006. It will be important, therefore, to address the issues of drugs that are legally sanctioned in our society as well as drugs that are not.

Whether we like it or not, the decision to use drugs of all types and forms, legally sanctioned or not, has become one of life’s choices in America, as well as in societies around the world. Every segment of society is affected. The availability of drugs and the potential for drug abuse present a challenge for people of all ages, from the young to the elderly. The consequences of drug-taking behavior can be observed in the workplace and retirement communities as well as on street corners, in school yards, and on college campuses. Drug use is going on in the homes of every community, large or small. The social and personal problems associated with drug use extend in one way or another to men and women of all ethnic and racial groups, geographic regions, and socioeconomic levels. No groups and no individuals should believe themselves exempt.

The purpose of this book is to answer your questions and address your concerns about the wide range of drugs and the many forms of drug-taking behavior in our society today. You might even find answers to questions you never thought about.

Social Messages about Drug Use

Unfortunately, we live in a social environment that sends us mixed messages about drug-taking behavior. The images of Joe Camel, the Marlboro Man, and the Virginia Slims Woman in print advertisements for cigarettes are remnants of an increasingly distant past, but at one time they were iconic (and highly effective) symbols in marketing campaigns designed to convey the attractiveness of smoking to the public, particularly to young people. They are gone now as a result of federal regulations over cigarette advertising that were established in 1998. For decades, warning labels on cigarette packs and public service announcements have cautioned us about the serious health hazards of tobacco use, but the fact remains that about one in four adult Americans today are current cigarette smokers, and the prevalence rate has been slow to decline (see Chapter 10).

Beer commercials during telecasts of football games and other athletic events are designed to be entertaining and to associate beer drinking with a lifestyle filled with fun, friendship, sex, and romance, but we are expected to abide by the tagline at the end of the ad to “drink responsibly” or “know when to say when.” The ramifications of the social messages inherent in these commercials are significant. It has been established that the degree of positive expectancies about alcohol (viewing drinking as a way of gaining social acceptance, for example) predicts the onset age of drinking and the tendency to engage in high-risk alcohol use over time (see Chapter 8).

Major political figures, including U.S. presidents and vice presidents, as well as candidates for these offices and a host of public officials on local and national levels, have admitted smoking marijuana earlier in their lives. In recent years, regulatory policy in some U.S. states has changed dramatically, making marijuana legally available either for medical purposes or general use by adults. Yet the U.S. federal government position on marijuana remains unchanged, stipulating that the drug is an illegal substance, officially classified since 1970 as a Schedule I controlled substance, defined as a drug with a high potential for abuse and no accepted medical use—in the same category as heroin (see Chapters 2 and 7).

Anti-drug media campaigns are designed to discourage young people from becoming involved with drugs in general. At the same time, we observe a never-ending stream of sports figures, entertainers, and other high-profile individuals engaging in drug-taking behavior. Even though the careers of these people are frequently jeopardized, and in some instances, lives
are lost (see Chapter 2), powerful pro–drug-use messages continue to influence us. These messages come from the entertainment industry and traditional media sources, as well as from web sites on the Internet. As confusing and often contradictory as these messages are, they represent the present-day drug scene in America.

Two Ways of Looking at Drugs and Behavior

In the chapters ahead, we will look at the subject of drugs and behavior in two basic ways.

First, we will examine the biological, psychological, and sociological effects of consuming certain types of drugs. The focus will be on the study of specific substances that alter our feelings, our thoughts, our perceptions of the world, and our behavior. These substances are referred to as psychoactive drugs because they have the ability to alter the functioning of the brain and hence produce changes in our behavior and experience.

Psychoactive drugs that traditionally receive the greatest amount of attention are referred to as illicit (illegal) drugs. Criminal penalties are imposed in the United States on their possession, manufacture, or sale. The best-known examples are heroin, cocaine, and (except in some U.S. states) marijuana, as well as a wide range of so-called “club drugs,” such as methamphetamine (meth), Ecstasy, LSD, PCP, ketamine, and GHB. Other equally important psychoactive substances, however, are licit (legal) drugs, such as alcohol, nicotine, caffeine, and certain prescription medications. In the cases of alcohol and nicotine, legal access carries a minimum-age requirement.

Second, we will focus on the complex interplay of circumstances in our lives that lead to drug-taking behavior. We will examine the possibility that drug use is, at least in part, a consequence of how we feel about ourselves in relation to our family, friends, and acquaintances, to our life experiences, and to the community in which we live. We will also examine the biological factors that may predispose us to drug-taking behavior. An exploration into the reasons why some individuals engage in drug-taking behavior, whereas others do not, will be a primary topic of discussion.

Understanding the interplay between drug-taking behavior and society is essential when we consider the dangerous potential for drug use to become drug dependence. As many of us know all too well, a vicious circle can develop in which drug-taking behavior fosters more drug-taking behavior, in a spiraling pattern that can be extremely difficult to break. Individuals showing signs of drug dependence display intense cravings for the drug and, in many cases, require increasingly greater quantities to get the same, desired effect. They become preoccupied with their drug-taking behavior, and it becomes evident that their lives have gotten out of control (see Chapter 2).

Ultimately, an understanding of drug dependence requires an examination of biological as well as psychological and sociological factors (see Figure 1.1). On a biological level, the use of psychoactive drugs modifies the functioning of the brain, both during the time when

---

**psychoactive drugs**: Drugs that affect feelings, thoughts, perceptions, or behavior.

**illicit drugs**: Drugs whose manufacture, sale, or possession is illegal.

**licit drugs**: Drugs whose manufacture, sale, or possession is legal.

**drug dependence**: A condition in which an individual feels a compulsive need to continue taking a drug. In the process, the drug assumes an increasingly central role in the individual’s life.

![Figure 1.1](image-url)
the drug is present in the body and later, when the drug-taking behavior stops. Drug dependence, therefore, produces long-lasting brain changes. As Alan Leshner, former director of the National Institute on Drug Abuse (NIDA), has put it, a “switch” in the brain seems to be thrown following prolonged drug use. It starts as a voluntary behavior, but once that switch is thrown, a pattern of drug dependence takes over. On a psychological and sociological level, drug dependence can be viewed as the result of a complex interaction of the individual and his or her environment. We cannot fully understand the problem of drug dependence without being aware of the social context in which drug-taking behavior occurs. As we will see in Chapter 17, the recognition that drug dependence can be defined in terms of biological, psychological, and social components has important implications for designing effective treatment programs.6

Which drugs have the greatest potential for creating drug dependence? How can someone escape drug dependence once it is established? What factors increase or decrease the likelihood of drug-taking behavior in the first place? These are among the questions we will consider next, as we examine the impact of drugs and drug-taking behavior on our lives.

A Matter of Definition: What Is a Drug?

Considering the ease with which we speak of drugs and drug use, it seems that it should be relatively easy to explain what we mean by the word drug. Unfortunately, there are significant problems in arriving at a clear definition.

The standard approach is to characterize a drug as a chemical substance that, when taken into the body, alters the structure or functioning of the body in some way. In doing so, we are accounting for examples such as medications used for the treatment of physical disorders and mental illnesses, as well as for alcohol, nicotine, and the typical street drugs. Unfortunately, however, this broad definition could also refer to ordinary food and water. Because it does not make much sense for nutrients to be considered drugs, we need to refine our definition by adding the phrase excluding those nutrients considered to be related to normal functioning.

But we may still be on slippery ground. We can now effectively eliminate the cheese in your next pizza from being considered a drug, but what about some exotic ingredient in the sauce? Sugar is safely excluded, even though it has significant energizing (and therefore behavioral) effects on us, but what about the cayenne pepper that burns your tongue? Where do we draw the line between a drug and a nondrug? It is not an easy question to answer.

We can learn two major lessons from this seemingly simple task of defining a drug. First, there is probably no perfect definition that would distinguish drugs from nondrugs without leaving a number of cases that fall within some kind of gray area. The best we can do is to set up a definition, as we have, that handles most of the substances we are likely to encounter. However, significant practical difficulties may still arise. As we will see in Chapter 14, the fact that dietary supplements are currently not regulated in the United States has resulted from a governmental decision that these particular substances are not to be considered drugs in the same category as prescription or nonprescription (over-the-counter) medications. Whether or not this distinction is an arbitrary one continues to be a matter of debate.

The second lesson is more subtle. We often draw the distinction between drugs and nondrugs not in terms of their physical characteristics but, rather, in terms of whether the substance in question has been intended to be used primarily as a way of inducing a bodily or psychological change.7 By this reasoning, if the pizza maker intended to put that spice in the pizza to make it taste better, the spice might not be considered a drug; it would simply be another ingredient in the recipe. If the pizza maker intended the spice to intoxicate you or quicken your heart rate, then it might be considered a drug (See Health Line on page 6).

Ultimately, the problem is that we are trying to reach a consensus on a definition that fits our intuitive sense of what constitutes a drug. We may find it difficult to define pornography, but (as has been said in the halls of the U.S. Supreme Court) we know it when we see it. So it may be with drugs. Whether we realize it or not, when we discuss the topic of drugs, we are operating within a context of social and cultural values, a group of shared feelings about what kind of behavior (that is, what kind of drug-taking behavior) is right and what kind is wrong.

The judgments we make about drug-taking behavior even influence the terminology we use when referring to that behavior. When we say “drug misuse” and “drug abuse,” for example, we are implying that something wrong is happening, that a drug is producing some harm to the physical health or psychological well-being of the drug user or to society in general.8

---

**drug:** A chemical substance that, when taken into the body, alters the structure or functioning of the body in some way, excluding those nutrients considered to be related to normal functioning.
An ever-increasing number of reminders about the blurriness of the distinction between drugs and nondrugs come from research on the chemical properties of specific foods we eat on a daily basis. For example, in 2005 it was found that freshly pressed olive oil contains large amounts of oleocanthal, a compound that inhibits the activity of cyclooxygenase enzymes in exactly the same way as ibuprofen, a popular nonsteroidal anti-inflammatory medication (see Chapter 14). Essentially, olive oil reduces inflammation in the body in a drug-like manner. By this definition, olive oil could be classified as a drug.

This discovery provides a biochemical clue to understanding the well-documented but puzzling health benefits of a Mediterranean (olive oil-based) diet, which leads to a lower risk of cancer, heart disease, and other chronic disorders, despite its heavy emphasis on fat and salt. This particular diet may also lower the risk of clinical depression.

Another example is the spice turmeric, used commonly in most commercial curry powders, as well as adding the bright yellow color in many mustards. The active ingredient of turmeric, called curcumin, has been credited with several medicinal benefits. Curcumin apparently has antioxidant, anti-inflammatory, antiviral, antibacterial, and antifungal properties with potential benefits in the treatment of cancer, diabetes, arthritis, Alzheimer’s disease, and other chronic disorders. In 2005 alone, nearly 300 technical and scientific papers cited the drug-like activity of curcumin—three times the number reported in 2000. If the regulatory hurdles established by the U.S. Food and Drug Administration with respect to long-term safety can be overcome, curcumin could provide an inexpensive alternative to several currently available prescription drugs.

Still another example is grapefruit. A common flavonoid called naringenin, found in grapefruit, has a specific inhibitory effect on the secretion of hepatitis C virus from infected liver cells. Nontoxic amounts of naringenin reduced hepatitis C virus secretion by as much as 80 percent. People taking certain prescription medications have to be careful if they are eating grapefruit at the same time. The interaction effects will be covered in Chapter 3.

As we continue to learn more about the therapeutic or drug-interacting effects of common foods and spices, the customary exclusion of nutrients in the definition of drugs becomes increasingly problematic. In the future, we might be hearing people say that they are taking olive oil, curry powder, or a little grapefruit extract for “medicinal reasons.”


But by what criteria do we say that a drug is being misused or abused? We cannot judge on the basis of whether the drug is legal or illegal, since decisions about the legality of a psychoactive drug are more often made as a result of historical and cultural circumstances than on the physical properties of the drug itself. Tobacco, for example, has deeply rooted associations in American history, dating to the earliest colonial days. Although it is objectionable to many individuals and harmful to the health of the smoker and others, tobacco is nonetheless a legal commodity, although its commercial availability is limited to adults. Alcohol is another legal commodity, available within the bounds of the law, even though it can be harmful to individuals who become inebriated and to others who may be affected by the drinker’s drunken behavior. The difficulty of using a criterion based on legality is further complicated by differences in religious attitudes toward these substances in some societies in the world.

**Health Line**

**Defining Drugs: Olive Oil, Curry Powder, and a Little Grapefruit?**

It is useful to base our discussion about drug abuse and misuse by answering a simple but fundamental question: What is the intent or motivation of the drug user with respect to this kind of behavior? In terms of the intent of the individual, drug-taking behavior can be classified as either instrumental or recreational.8

By instrumental use, we mean that a person is taking a drug with a specific socially approved goal in mind. The user may want to stay awake longer, fall asleep more quickly, or recover from an illness. If you are a medical professional on call over a long period of time or a

---

**Instrumental Drug Use/Recreational Drug Use**

**Instrumental use:** Referring to the motivation of a drug user who takes the drug for a specific purpose other than getting “high.”
long-distance truck driver, your taking a drug with the goal of staying alert is considered acceptable by most people. Recovering from an illness and achieving some reduction in pain are goals that are unquestioned. In these cases, drug-taking behavior occurs as a means toward an end that has been defined by our society as legitimate.

The legal status of the drug itself or whether we agree with the reason for the drug-taking behavior is not the issue here. The instrumental use of drugs can involve prescription and nonprescription, or over-the-counter, drugs that are licitly obtained and taken for a particular medical purpose. Examples include an antidepressant prescribed for depression, a cold remedy for a cold, an anticonvulsant drug to control epileptic seizures, and insulin to maintain the health of a person with diabetes. But the instrumental use of drugs can also involve drugs that are illicitly obtained, such as an amphetamine or other stimulant drug that has been procured by illegal means to help a person stay awake and alert after hours without sleep.

In contrast, recreational use means that a person is taking the drug not as a means to a socially approved goal but for the purposes of experiencing the effect of the drug itself. The motivation is to enjoy a pleasurable feeling or positive state of mind. Whatever happens as a consequence of recreational drug-taking behavior is viewed not as a means to an end, but as an end onto itself. Drinking alcohol and smoking tobacco are two examples of licit recreational drug-taking behavior.

Involvement with street drugs, in the sense that the goal is to alter one’s mood or state of consciousness, falls into the category of illicit recreational drug-taking behavior.

Although this four-group classification scheme, as shown in Figure 1.2, can help us in understanding the complex relationship between drugs and behavior, there will be instances in which the category is less than clear. Drinking an alcoholic beverage, for example, is considered recreational drug-taking behavior under most circumstances. If it is recommended by a physician for a specified therapeutic or preventive purpose (see Chapter 8), however, the drinking might be considered instrumental in nature. Thus, whether drug use is judged to be recreational or instrumental is determined in no small part by the circumstances under which the behavior takes place.

**Drug Misuse or Drug Abuse?**

How do the terms drug misuse and drug abuse, fit into this scheme? Drug misuse typically applies to cases in which
a legal prescription or over-the-counter (OTC) medication is used inappropriately. Many instances of drug misuse involve instrumental goals. For example, drug doses may be increased beyond the level of the prescription in the mistaken idea that if a little is good, more is even better. Or doses may be decreased from the level of the prescription to make the drug supply last longer. Drugs may be continued longer than they were intended to be used; they may be combined with some other drug; or a prescription drug may (in violation of instructions) be shared by family members or given to a friend.

Drug misuse can be dangerous and potentially lethal, particularly when alcohol is combined with drugs that depress the nervous system. Drugs that have this particular feature include antihistamines, antianxiety drugs, and sleeping medications. Even when alcohol is not involved, however, drug combinations can still represent serious health risks, particularly for the elderly, who often take a

Drugs . . . in Focus

Drug Abuse and the College Student: An Assessment Tool

In a research study conducted at Rutgers University, a cutoff score of five or more “yes” responses to the following twenty-five questions in the Rutgers Collegiate Substance Abuse Screening Test (RCSAST) was found effective in correctly classifying 94 percent of young adults in a clinical sample as problem users and 89 percent of control individuals as nonproblem users. It is important, however, to remember that the RCSAST does not by itself determine the presence of substance abuse or dependence (see Chapter 2). The RCSAST is designed to be used as one part of a larger assessment battery aimed at identifying which young adults experience problems due to substance use and specifically what types of problems a particular individual is experiencing. Here are the questions:

1. Have you gotten into financial trouble as a result of drinking or other drug use?
2. Is alcohol or other drug use making your college life unhappy?
3. Do you use alcohol or other drugs because you are shy with other people?
4. Has drinking alcohol or using other drugs ever caused conflicts with close friends of the opposite sex?
5. Has drinking alcohol or using other drugs ever caused conflicts with close friends of the same sex?
6. Has drinking alcohol or using other drugs ever damaged other friendships?
7. Has drinking alcohol or using other drugs ever been behind your losing a job (or the direct reason for it)?
8. Do you lose time from school due to drinking and/or other drug use?
9. Has drinking alcohol or using other drugs ever interfered with your preparations for exams?
10. Has your efficiency decreased since drinking and/or using other drugs?
11. Do you drink alcohol or use other drugs to escape from worries or troubles?
12. Is your drinking and/or using other drugs jeopardizing your academic performance?
13. Do you drink or use other drugs to build up your self-confidence?
14. Has your ambition decreased since drinking and/or drug using?
15. Does drinking or using other drugs cause you to have difficulty sleeping?
16. Have you ever felt remorse after drinking and/or using other drugs?
17. Do you drink or use drugs alone?
18. Do you crave a drink or other drug at a definite time daily?
19. Do you want a drink or other drug the next morning?
20. Have you ever had a complete or partial loss of memory as a result of drinking or using other drugs?
21. Is drinking or using other drugs affecting your reputation?
22. Does your drinking and/or using other drugs make you careless of your family’s welfare?
23. Do you seek out drinking/drugging companions and drinking/drugging environments?
24. Has your physician ever treated you for drinking and/or other drug use?
25. Have you ever been to a hospital or institution on account of drinking or other drug use?

large number of separate medications. This population is especially vulnerable to the hazards of drug misuse.

In contrast, drug abuse is typically applied to cases in which a licit or illicit drug is used in ways that produce some form of physical, mental, or social impairment (See Drug in Focus on p. 8). The primary motivation for individuals involved in drug abuse is recreational. Drugs with abuse potential include not only the common street drugs but also legally available psychoactive substances, such as caffeine and nicotine (stimulants), alcohol and inhaled solvents (depressants), and a number of prescription or OTC medications designated for medical purposes but used by some individuals exclusively on a recreational basis. In Chapter 5, we will examine concerns about the abuse of opioid pain medications such as Vicodin, OxyContin, and Percocet, among others. In these particular cases, the distinction between drug misuse and drug abuse is particularly blurry. When there is no intent to make a value judgment about the motivation or consequences of a particular type of drug-taking behavior, we will refer to the behavior simply as drug use.

Before examining the major role that drugs and drug-taking behavior play in our lives today, however, it is important to examine the historical foundations of drug use. We need to understand why drug-taking behavior has been so pervasive over the many centuries of human history, and why drug-taking behavior remains so compelling for us in our contemporary society. We also need to understand the ways in which our society has responded to problems associated with drug use. How have our attitudes toward drugs changed over time? How did people feel about drugs and drug-taking behavior one hundred years ago, fifty years ago, twenty years ago, or even ten years ago? These are questions that we will now address.

Drugs in Early Times

Try to imagine the accidental circumstances under which a psychoactive drug might have been discovered. Thousands of years ago, perhaps a hundred thousand years ago, the process of discovery would have been as natural as eating, and the motivation as basic as simple curiosity. In cool climates, next to a cave dwelling may have grown a profusion of blue morning glories or brightly colored mushrooms, plants that produce hallucinogens similar to LSD. In desert regions, yellow-orange fruits grew on certain cacti, the source of the hallucinogenic drug peyote. Elsewhere, poppy plants, the source of opium, covered acres of open fields. Coca leaves, from which cocaine is made, grew on shrubs along the mountain valleys throughout Central and South America. The hardy cannabis plant, the source of marijuana, grew practically everywhere.

Some of this curiosity may have been sparked by observing the unusual behavior of animals as they fed on these plants. Within their own experience, people made the connection, somewhere along the line, between the chewing of willow bark (the source of modern-day aspirin) and the relief of a headache or between the eating of the senna plant (a natural laxative) and the relief of constipation.9

Of course, some of these plants made people sick, and many of them were poisonous and caused death. However, it is likely that the plants that had the strangest impact on humans were the ones that produced hallucinations. Having a sudden vision of something totally alien to everyday life must have been overwhelming, like a visit to another world. Individuals with prior knowledge about such plants, as well as about plants with therapeutic powers, would eventually acquire great power over others in the community.

The accumulation of knowledge about consciousness-altering substances would mark the beginning of shamanism, a practice among primitive societies, dating back by some estimates more than forty thousand years ago. In a wide range of world cultures throughout history, hallucinogens have been regarded as having deeply spiritual powers. Under the influence of drugs, this modern-day shaman communicates with the spirit world.

shamanism: The philosophy and practice of healing in which diagnosis or treatment is based on trance-like states, on the part of either the healer (shaman) or the patient.
years, in which an individual called a shaman acts as a healer through a combination of trances and plant-based medicines, usually in the context of a local religious rite. Shamans still function today in remote areas of the world, often alongside practitioners of modern medicine. As we will see in Chapter 6, hallucinogenic-producing plants of various kinds play a major role in present-day shamanic healing.

With the development of centralized religions in Egyptian and Babylonian societies, the influence of shamanism gradually declined. The power to heal through one’s knowledge of drugs passed into the hands of the priesthood, which placed greater emphasis on formal rituals and rules than on hallucinations and trances.

The most dramatic testament to the development of priestly healing during this period is a 65-foot-long Egyptian scroll known as the Ebers Papyrus, named after a British Egyptologist who acquired it in 1872. This mammoth document, dating from 1500 B.C., contains more than eight hundred prescriptions for practically every ailment imaginable, including simple wasp stings and crocodile bites, baldness, constipation, headaches, enlarged prostate glands, sweaty feet, arthritis, inflammations of all types, heart disease, and cancer. More than a hundred of the preparations contained castor oil as a natural laxative; some contained “the berry of the poppy,” which we now recognize as the Egyptian reference to opium. Other ingredients were quite bizarre: lizard’s blood, the teeth of swine, the oil of worms, the hoof of an ass, putrid meat with fly specks, and crocodile dung (excrement of all types being highly favored for its ability to frighten off the evil spirits of disease).  

How successful were these strange remedies? It is impossible to know because no records were kept on what happened to the patients. Although some of the ingredients (such as opium and castor oil) had true medicinal value, much of the improvement from these concoctions may have been psychological rather than physiological. In other words, improvements in the patient’s condition resulted from the patient’s belief that he or she would be helped—a phenomenon known as the placebo effect. Psychological factors have played a critical role throughout the history of drugs. The importance of the placebo effect as an explanation of some drug effects will be examined in Chapter 3.

Along with substances that had genuine healing properties, some psychoactive drugs were put to less positive use. In the early Middle Ages, Viking warriors ate the mushroom Amanita muscaria, known as fly agaric, and experienced a tremendous increase in energy, which resulted in wild behavior in battle. They were called Berserkers because of the bear skins they wore, but this is the origin of the word “berserk” as a reference to reckless and violent behavior. At about the same time, witches operating on the periphery of European society created “witch’s brews,” mixtures made of various plants such as mandrake, henbane, and belladonna, creating strange hallucinations and a sensation of flying. The toads that they included in their recipes didn’t hurt either: We know now that the sweat glands of certain toads contain a chemical related to dimethyltryptamine (DMT), a powerful hallucinogenic drug (see Chapter 6).  

Drugs in the Nineteenth Century

By the end of the nineteenth century, the medical profession had made significant strides with respect to medicinal healing. Morphine was identified as the active ingredient in opium, a drug that had been in use for at least three thousand years and had become the physician’s most reliable prescription for the control of pain due to disease and injury. The invention of the syringe made it possible to deliver the morphine directly and speedily into the bloodstream. Cocaine, having been extracted from coca leaves, was used as a stimulant and antidepressant. Sedative powers to calm the mind or induce sleep had been discovered in bromides and chloral hydrate.

There were also new drugs for specific purposes or particular diseases. Anesthetic drugs were discovered that made surgery painless for the first time in history. Some diseases could actually be prevented through the administration of vaccines, such as the vaccine against smallpox introduced by Edward Jenner in 1796 and the vaccine against rabies introduced by Louis Pasteur in 1885. The discovery of new pharmaceutical products marked the modern era in the history of healing.

The social picture of drug-taking behavior during this time, however, was more complicated. By the 1890s, prominent leaders in the medical profession and social reformers had begun to call attention to societal problems resulting from the widespread and uncontrolled access to psychoactive drugs. Remedies called

shaman (SHAH-men): A healer whose diagnosis or treatment of patients is based at least in part on trances. These trances are frequently induced by hallucinogenic drugs.

Ebers Papyrus: An Egyptian document, dated approximately 1500 B.C., containing more than eight hundred prescriptions for common ailments and diseases.

placebo (pla-CEE-bo) effect: Any change in a person’s condition after taking a drug, based solely on that person’s beliefs about the drug rather than on any physical effects of the drug.
patent medicines, sold through advertisements, peddlers, or general stores, contained opium, alcohol, and cocaine and were promoted as answers to virtually all common medical and nonmedical complaints.

Opium itself was cheap, easily available, and completely legal. Most people, from newborn infants to the elderly, in the United States and Europe "took opium" during their lives. The way in which they took it, however, was a critical social factor. The respectable way was to drink it, usually in a liquid form called laudanum. By contrast, the smoking of opium, as introduced by Chinese immigrants imported for manual labor in the American West, was considered degrading and immoral. Laws prohibiting opium smoking began to be enacted in 1875. In light of the tolerant attitude toward opium drinking, the strong emotional opposition to opium smoking may be viewed as more anti-Chinese than anti-opium.13

Like opium, cocaine was in widespread use and was taken quite casually in a variety of forms during this period. The original formula for Coca-Cola, as the name suggests, contained cocaine until 1903 (see Chapter 4), as did Dr. Agnew’s Catarrh Powder, a popular remedy for chest colds. In the mid-1880s, Parke, Davis, and Company (since 2002, merged with Pfizer, Inc.) was selling cocaine and its botanical source, coca, in more than a dozen forms, including coca-leaf cigarettes and cigars, cocaine inhalants, a coca cordial, and an injectable cocaine solution.14

A Viennese doctor named Sigmund Freud, who was later to gain a greater reputation for his psychoanalytic theories than for his ideas concerning psychoactive drugs, promoted cocaine as a “magical drug.” In an influential paper published in 1884, Freud recommended cocaine as a safe and effective treatment for morphine addiction. When a friend and colleague became heavily addicted to cocaine, Freud quickly reversed his position, regretting for the rest of his life that he had been initially so enthusiastic in recommending its use (see Chapter 4).15

Drugs and Behavior in the Twentieth Century

By 1900, the promise of medical advances in the area of drugs was beginning to be matched by concern about the dependence that some of these drugs could produce. For a short while after its introduction in 1898, heroin (a derivative of morphine) was completely legal and considered safe. Physicians were impressed with its effectiveness in the treatment of coughs, chest pains, and the respiratory difficulties associated with pneumonia and tuberculosis. This was an era in which antibiotic drugs were unavailable, and pneumonia and tuberculosis were among the leading causes of death.16

Some physicians even recommended heroin as a treatment for morphine addiction. Its powerful addictive properties, however, soon became evident. The enactment of laws restricting access to heroin and certain other psychoactive drugs, including marijuana, would eventually follow in later years, a topic discussed further in Chapter 2.

At the beginning of the twentieth century, neither the general public nor the government considered alcohol a drug. Nonetheless, the American temperance movement dedicated to the prohibition of alcohol consumption, led by the Women’s Christian Temperance Union and the Anti-Saloon League, was a formidable political force. In 1920, the Eighteenth Amendment to the U.S. Constitution took effect, ushering in the era of national Prohibition, which lasted for thirteen years.

Although successful in substantially reducing the rates of alcohol consumption in the United States, as well as the number of deaths from alcohol-related diseases, Prohibition also succeeded in establishing a nationwide alcohol distribution network dominated by sophisticated criminal organizations.17 Violent gang wars arose in major American cities as one group battled another for control of the liquor trade.

By the early 1930s, whatever desirable health-related effects Prohibition may have brought were perceived to be overshadowed by the undesirable social changes that had come along with it. Since its end in 1933, the social problems associated with the era

**patent medicine:** Historically, a drug or combination of drugs sold through peddlers, shops, or mail-order advertisements.
of Prohibition have often been cited as an argument against the continuing restriction of psychoactive drugs in general.

**Drugs and Behavior from 1945 to 1960**

In the years following World War II, for the first time, physicians were able to control bacteria-borne infectious diseases through the administration of antibiotic drugs. Although penicillin had been discovered in a particular species of mold by Alexander Fleming in 1928, techniques for extracting large amounts from the mold were not perfected until the 1940s. Also during that time, Selman Waksman found that a species of fungus had powerful antibacterial effects; it was later to be the source of the drug streptomycin.

In the field of psychiatry, advances in therapeutic drugs did not occur until the early 1950s, when quite accidentally a group of psychoactive drugs were discovered that relieved schizophrenic symptoms without producing heavy sedation. The first of these, chlorpromazine (brand name: Thorazine), reduced the hallucinations, agitation, and disordered thinking common to schizophrenia. Soon after, there was a torrent of new drugs, forming the basis not only for the treatment of schizophrenia but also the treatment of mental illness in general. It was a revolution in psychiatric care, equivalent to the impact of antibiotics in medical care a decade earlier.

In the recreational drug scene of post–World War II America, a number of features stand out. Smoking was considered romantic and sexy, and smoking was commonplace. In 1955, regular cigarette smoking involved more than half of all male adults and more than one-quarter of all female adults in the United States. It was the era of the two-martini lunch; social drinking was at the height of its popularity and acceptance. Cocktail parties dominated the social scene. There was little or no public awareness that alcohol or tobacco use constituted drug-taking behavior. In contrast, the general perception of certain drugs such as heroin, marijuana, and cocaine was simple and negative: They were considered bad, they were illegal, and “no one you knew” had anything to do with them. Illicit drugs were seen as the province of criminals, the urban poor, and nonwhites. The point is that an entire class of drugs were, during this period, outside the mainstream of American life. Furthermore, an atmosphere of fear and suspicion surrounded people who took such drugs. Nonetheless, for the vast majority of Americans, drugs were not considered an issue in their lives.

**Drugs and Behavior after 1960**

During the 1960s, basic premises of American life—the beliefs that working hard and living a good life would
bring happiness and that society was stable and calm—were being undermined by disturbing events: President John F. Kennedy was assassinated in 1963; Dr. Martin Luther King Jr. and Senator Robert Kennedy were gunned down in 1968. We worried about the continuing Cold War, nuclear annihilation, and Vietnam.

College students, in particular, found it difficult to be as optimistic about the future as their parents had been. To many of them, the reality of the Vietnam War represented all that had gone wrong with the previous generation. At the same time, many young people were searching for new answers to old problems, and their search led to experimentation with drugs that their parents had been taught to fear. The principal symbol of this era of defiance against the established order, and indeed against anyone over thirty years old, was marijuana.

No longer would marijuana be something foreign to middle-class America. Along with other drugs such as LSD, stimulants (“uppers”), and depressants (“downers”), marijuana became part of the lives of sons and daughters in our own families and in our own neighborhoods. Adding to the turbulence of this period was a disturbing increase in heroin abuse across the country. The issues surrounding drug abuse, once a problem associated with minority populations, inner cities, and the poor, were now too close to our personal lives for most of us to ignore.

One of the governmental responses to these events, particularly the increase in heroin dependence, was to finance basic research related to the effects of drugs on the brain. The timing could not have been better because during the 1970s, a new branch of science, called neuroscience, was being established. Its intent was to bring together researchers from formerly separate scientific fields in a new collaborative effort to understand the relationship between brain functioning and human behavior. In the area of drug research, pharmacologists (those who specialize in the study of drugs) were joined by biochemists, psychologists, and psychiatrists, among others. One of the important discoveries that emerged from this era was the identification of receptors in the brain that are tailored specifically for drugs taken into the body. The findings of neuroscience research will be discussed in Chapter 3 and in several of the chapters that follow.

With the decade of the 1980s, however, came significant changes in the mood of the country, dominated by a reaction to the social and political attitudes of earlier decades. The focus of media attention was on the image of the “yuppie,” a young, upwardly mobile professional. The political climate grew more conservative in all age groups. In the area of drugs, concerns about heroin dependence were being overshadowed by a new fixation on cocaine. At first, cocaine took on an aura of glamor, and (because it was so expensive) cocaine became a symbol of material success. The media spotlight shone on a steady stream of celebrities in entertainment and sports who used cocaine. Not long after, however, the very same celebrities who had accepted cocaine into their lives were experiencing the dark consequences; many were in rehabilitation programs, and some had died from cocaine overdoses.

To make matters worse, a smokable and cheap form of cocaine called crack succeeded in extending the problems of cocaine dependence to the inner cities of the United States, to segments of American society.

**Quick Concept Check 1.1**

**Understanding the History of Drugs and Behavior**

Check your understanding of the changes in drug-taking behavior over history by matching the statement (on the left) with the appropriate historical period (on the right).

1. Opium and castor oil are first documented as therapeutic drugs.
2. Marijuana use symbolizes a generation’s defiance of establishment values.
3. Waksman discovers the antibacterial effects of streptomycin.
4. Opium use extends to all levels of Western society.
5. Cocaine use is at its peak as a symbol of glamor and material success.
6. Heroin is first introduced as a treatment for morphine addiction.
7. Widespread use of antischizophrenic drugs in mental hospitals begins.
8. Vaccines against smallpox and rabies are introduced.

**Answers:**

- 1. a
- 2. f
- 3. d
- 4. b
- 5. g
- 6. c
- 7. e
- 8. b

**neuroscience:** The scientific study of the nervous system, undertaken as a collaborative effort among researchers from many scientific disciplines.
that did not have the financial resources to afford cocaine itself. In the glare of intense media attention, crack dependence soon took on all the aspects of a national nightmare. Fortunately, by the end of the 1990s, the extent of crack abuse had greatly diminished, and the urban violence and social upheaval associated with it had declined. Nonetheless, the legacy of this era continues to be felt to the present day.\(^{20}\)

**Present-Day Attitudes Toward Drugs**

Attitudes toward drug-taking behavior in the twenty-first century are quite different from those that prevailed at an earlier time. First, there is a far greater awareness today that a wide range of psychoactive drugs, whether they are licit or illicit, qualify as substances with varying levels of potential for misuse and abuse. The “war on drugs,” in America, declared officially in 1971 and still ongoing today, is no longer a war on a particular drug, such as heroin in the 1970s or cocaine in the 1980s. We are now fully aware of the widespread personal and social difficulties created by the abuse of alcohol, steroids, inhalants, and nicotine, as well as the misuse of prescription pain medications, prescription stimulants, and over-the-counter medications of all kinds. In short, the battles being waged today are against a wide range of drug misuse and abuse, involving licit as well as illicit substances.

A second difference in attitudes toward drug-taking behavior is related to the history of such behavior in our society since the late 1960s. It is important to recognize that in 1980, about two-thirds of high school seniors had reported illicit drug use (principally marijuana smoking) at some time in their lives. They were born toward the end of the “baby boom” generation (technically defined as those born between 1946 and 1964) and were the first group to have grown up during the explosion of drug experimentation. Now, as the parents of teenagers in the twenty-first century, they face the challenge of dealing with the present-day drug-taking behavior of their children.

What has been the effect, if any, on drug-taking behavior among children of parents who were involved in drug use at an earlier time? With respect to marijuana use, studies have resulted in two major conclusions. First, parents of this particular generation have a more accepting attitude of drug use than an older generation and are more resigned to the idea that their own children would engage in illicit drug-taking behavior. Second, there is no evidence that the prior use of marijuana by parents is related to the extent of present marijuana use by their children. Indeed, the far stronger association lies between adolescent marijuana use and the adolescent’s own personal attitude toward the lack of harm involved.\(^{21}\)

**Patterns of Drug Use in the United States**

How is it possible to obtain information that would give us a statistical picture of drug-taking behavior today? Assuming that we cannot conduct large-scale random drug testing, the only alternative we have is simply to ask people about their drug-taking behavior through self-reports. We encourage honesty and arrange the data-collection procedure so as to convince the respondents that their answers are confidential, but the fact remains that any questionnaire is inherently imperfect because there is no way to verify the truthfulness of what people say about themselves. Nevertheless, questionnaires are all we have, and the statistics on drug use are based on such survey measures.

One of the best-known surveys, referred to as the Monitoring the Future study, has been conducted by the University of Michigan every year since 1975. Typically, nearly fifty thousand American students in the eighth, tenth, and twelfth grades participate in a nationally representative sampling each year, as well as more than seven thousand American college students and adults between nineteen and fifty years old.

The advantage of repeating the survey with a new sample year after year is that it enables us to examine trends in drug-taking behavior over time and compare the use of one drug relative to another over the years. We can assume that the degree of overreporting and underreporting stays relatively constant over the years and does not affect interpretation of the general trends.

Survey questions concerning drug use have been phrased in four basic ways:

- Whether an individual has ever used a certain drug in his or her lifetime. The percentage of those saying “yes” is referred to as the lifetime prevalence rate.
- Whether an individual has used a certain drug over the past year. The percentage of those saying “yes” is referred to as the annual prevalence rate.
- Whether an individual has used a certain drug within the past thirty days. The percentage of those saying “yes” is referred to as the past-month prevalence rate.
- Whether an individual has used a certain drug on a daily basis during the previous thirty days. The percentage of those saying “yes” is referred to as the daily prevalence rate.

---

\(^{20}\)Present-Day Attitudes Toward Drugs

\(^{21}\)Patterns of Drug Use in the United States

---

**Part One Drugs in Society/Drugs in Our Lives**
You can see that these questions distinguish three important degrees of involvement with a given drug. The first question focuses on the extent of experimentation, including individuals who may have taken a drug only once or twice in their lives but may have stayed away from it ever since. The second and third questions focus on the extent of current but moderate drug use, and the fourth question focuses on the extent of heavy drug use. What do the numbers tell us?

**Illicit Drug Use among High School Seniors**

Understanding the present-day drug-taking behavior among U.S. high school seniors is not an easy task. In order to see the total picture, we have to look to the past as well as the present, and make some educated guesses as to the future based on current trends.

As seen in Figure 1.3, it has been something of a roller-coaster ride since the Michigan survey began in 1975. The early statistics were indeed scary. By the end of the 1970s, prevalence rates for illicit drug use had reached historically high levels. About one-half of high school seniors reported smoking marijuana or using an illicit drug of some kind in the past year. At that time and continuing into the mid-1980s, 12 percent (one in eight seniors) reported using cocaine or crack cocaine in the past year. Fortunately, annual prevalence rates for illicit drug use among high school seniors showed a steep decline through the 1980s, ending at a historically low level (27 percent) around 1992. But at that point, a dramatic reversal occurred. Prevalence rates took a sharp upward turn during the decade of the 1990s. From 2000 to most recent figures in 2011, rates have been fairly steady at around 38 to 40 percent. The bottom line is that, in terms of illicit drug use in this demographic group, the present is somewhere between the worst (in 1979) and the best (in 1992).

Looking at the numbers more closely, however, we can see the current pattern of drug use among high school seniors in a somewhat different light. If we examine the annual prevalence rates for the use of illicit drugs other than marijuana, the trend is down from about 20 percent in 2000 to about 18 percent in 2011.

This good news, however, is counterbalanced by a more complicated trend with respect to using marijuana.
Illicit Drug Use among Eighth Graders and Tenth Graders

Since 1991, the Michigan survey has collected extensive information about illicit drug use among students as early as the eighth grade. As Figure 1.3 shows, the upward trend in the percentages of annual drug use among eighth and tenth graders in the years from 1991 to 1996 parallels a similar trend among high school seniors. At the time, the data from these two groups reflected a level of drug involvement that was quite alarming. Drug-abuse professionals were left to speculate about the negative effect on still younger children, as they observed the drug-taking behavior of their older brothers and sisters. In general, as you would expect, changes in the trend of prevalence rates among high school seniors have been preceded, four years or so earlier, by the shifting prevalence rates among eighth graders.23

TABLE 1.1
Percentage of five types of drug use among college students, aged 19–22

<table>
<thead>
<tr>
<th></th>
<th>EVER IN LIFETIME</th>
<th>IN PAST TWELVE MONTHS</th>
<th>IN PAST THIRTY DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana</td>
<td>46.6</td>
<td>33.2</td>
<td>19.4</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>6.9</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Cocaine</td>
<td>5.5</td>
<td>3.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Prescription pain medication*</td>
<td>12.4</td>
<td>6.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Prescription stimulant medication**</td>
<td>13.4</td>
<td>9.3</td>
<td>4.5</td>
</tr>
</tbody>
</table>

* Nonmedical use of prescription pain medications include Vicodin, OxyContin, and Percocet.
** Nonmedical use of prescription stimulant medications include Adderall and Ritalin.

Note: For current information, consult the web site for the Monitoring the Future study: www.monitoringthefuture.org.


Alcohol Use among High School and College Students

Not surprisingly, the prevalence percentages related to the use of alcohol are much higher than for illicit drugs. Whereas about 25 percent of high school seniors in 2011 reported use of illicit drugs in the past month, 40 percent drank an alcoholic beverage in the past month, and 22 percent reported an instance of binge drinking, defined as having five or more drinks in a row at least once in the past two weeks. These figures are at historic lows, down substantially from those found in surveys conducted in 1980, when 72 percent of high school seniors reported that they had consumed alcohol in the past month, and 41 percent reported binge drinking.25
The general decline in alcohol use and heavy drinking among adolescents from 1980 to 2011, particularly since the mid-1990s, stems from a number of factors. National campaigns to reduce drunk driving, the encouragement of nondrinking designated drivers, as well as a general personal disapproval of binge drinking, have all played a role. An additional factor is the reduced accessibility to alcohol for this age group; all U.S. states have now adopted a twenty-one-years-or-older requirement. While efforts to reduce underage drinking by enforcing restrictions of alcohol sales to minors have been credited with reducing adolescent alcohol use, however, the statistics show that more work needs to be done. In 2011, 59 percent of eighth graders found it “fairly easy” or “very easy” to obtain alcoholic beverages, down from 71 percent in 2000.26 About 89 percent of seniors reported the same, down from 95 percent in 2000. The drinking habits of college students, however, have shown relatively little change since the mid-1990s. In 2011, 64 percent of college students surveyed drank at least once in the previous month, and 36 percent reported an instance of binge drinking.27

**Tobacco Use among High School and College Students**

Roughly 10 percent of high school seniors in 2011 had established a regular habit of nicotine intake by smoking at least one cigarette every day. In fact, nicotine remains the drug most frequently used on a daily basis by high school students, although present-day rates are substantially lower than those observed when the Michigan survey began in 1975. More than twice as many high school seniors (27 percent) smoked cigarettes at that time. From the mid-1990s, there has been a steady decline in smoking rates in eighth and tenth graders as well as seniors, owing to the national attention directed toward cigarette smoking among young people. Nonetheless, in 2011, about 4 percent of seniors and 2 percent of tenth graders reported smoking at least half a pack of cigarettes per day—a strikingly high level for these age groups, considering the legal obstacles they face when attempting to obtain cigarettes.28

It is true that somewhat fewer college students smoke cigarettes than high school seniors, but the reason is not a matter of a change in smoking behavior from high school to college. It is a reflection of differences between the two populations. Non–college-bound seniors are about three times more likely than college-bound seniors to smoke at least a half pack of cigarettes per day. Therefore, the difference in smoking rates between seniors and college students is chiefly a result of excluding the heavier smokers in the survey as students progress from secondary to postsecondary education. In 2011, about 7 percent of college students smoked cigarettes on a daily basis, with about 3 percent smoking more than half a pack per day.29

**Drug Use and Drug Perceptions**

The decision to engage in a specific form of drug-taking behavior is intermeshed with individual perceptions about the drug in question. How risky would it be to use a particular drug? How dangerous would it be? These questions have been asked of high school seniors in the Michigan survey since 1975, and the relationship is clear. Figure 1.4 shows an almost exact “mirror-image” in the trends over more than 35 years between the perceived risk of harm in regular marijuana smoking and the 30-day prevalence rate.30 In the 1990s, there was a steady decline in the percentages of high school students, college students, and young adults who regarded regular drug use (regular marijuana use in particular) as potentially dangerous. These responses contrasted with reports beginning in 1978 that had shown a steady increase in such percentages. At the time, Lloyd Johnston, chief researcher for the Michigan survey, offered one possible reason for this reversal:

*This most recent crop of youngsters [in 1996] grew up in a period in which drug use rates were down substantially from what they had been 10 to 15 years earlier. This gave youngsters less opportunity to learn from others’ mistakes and resulted in what I call “generational forgetting” of the hazards of drugs.*31

Also troubling during much of the 1990s were changes in the way our society dealt with the potential risks of drug use. Drug abuse prevention programs in schools were scaled back or eliminated because of a lack of federal funding, parents were communicating less with their children about drug use, anti-drug public service messages were less prominent in the media than they were in the 1980s, and media coverage in this area declined. At the same time, the cultural influences of the music and entertainment industry were, at best, ambivalent on the question of drug-taking behavior, particularly with respect to marijuana smoking (see Chapter 7). All these elements can be seen as having contributed to the upward trend in drug use during this period.

Another question has been asked in the Michigan survey: Would you experience disapproval if you used a particular drug? Not surprisingly, the likelihood of using
a drug is inversely related to how much disapproval might be experienced. This is particularly the case in the life of an adolescent, when peer approval is such an important element in guiding his or her behavior.

The two types of drug perception, the perception of possible risk or danger and the perception of disapproval, are useful indices in predicting future trends in drug use, since shifts in perception often precede in time the observed changes in behavior. A lower level of disapproval of marijuana smoking, for example, may reflect a lower perception of riskiness, which might in turn be reflected later in an increased prevalence rate.32

Illicit Drug Use among Adults Aged Twenty-Six and Older

A comprehensive report of the prevalence rates of illicit drug use among Americans in several age groups across the life span is made possible by the National Survey on Drug Use and Health (formerly the National Household Survey on Drug Abuse). Table 1.2 shows the estimated number of illicit drug users aged twenty-six or older in the United States in 2011. About 11 percent of this population (more than 21 million people) reported using an illicit drug over the past twelve months, about 8 percent (more than 15 million people) used marijuana or hashish, and about 4 percent (more than 8 million people) engaged in the nonmedical (recreational) use of a prescription-type pain reliever, tranquilizer, stimulant, or sedative. As with the results of the Michigan survey, however, there are some limitations on the interpretation of these estimates. Neither patients institutionalized for medical or psychiatric treatment nor homeless people are included in the collection of sample data.33

FIGURE 1.4

Trends in perceived availability of marijuana, perceived risk of marijuana use, and prevalence of marijuana use in the past month for high school seniors.

Note: There were no significant changes in 2012 with respect to any of these measures. For current information, consult the web site for the Monitoring the Future study: www.monitoringthefuture.org.

TABLE 1.2
Illicit drug use during the past year among persons in the United States aged 26 or older in 2011

<table>
<thead>
<tr>
<th></th>
<th>ESTIMATED NUMBERS OF USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any illicit drug</td>
<td>21,484,000</td>
</tr>
<tr>
<td>Marijuana and hashish</td>
<td>15,632,000</td>
</tr>
<tr>
<td>Cocaine</td>
<td>2,064,000</td>
</tr>
<tr>
<td>Crack</td>
<td>490,000</td>
</tr>
<tr>
<td>Heroin</td>
<td>335,000</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>1,098,000</td>
</tr>
<tr>
<td>LSD</td>
<td>135,000</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>590,000</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>703,000</td>
</tr>
<tr>
<td>Inhalants</td>
<td>540,000</td>
</tr>
<tr>
<td>Nonmedical use of any psychotherapeutic medication (not including over-the-counter drugs)</td>
<td>8,542,000</td>
</tr>
<tr>
<td>Pain relievers</td>
<td>6,306,000</td>
</tr>
<tr>
<td>OxyContin</td>
<td>776,000</td>
</tr>
<tr>
<td>Antianxiety medications</td>
<td>3,080,000</td>
</tr>
<tr>
<td>Sedatives</td>
<td>314,000</td>
</tr>
<tr>
<td>Any illicit drug other than marijuana</td>
<td>10,422,000</td>
</tr>
</tbody>
</table>

Source: Substance Abuse and Mental Health Services Administration (2012). Results from the 2011 National Survey on Drug use and Health: Detailed tables. Rockville, MD: Substance Abuse and Mental Health Services Administration, Tables 1.7A and 1.8A.

Making the Decision to Use Drugs

Why do young people turn to drugs in the first place? What factors influence the drug-taking behavior that we see in all these statistics?

When high school seniors reported their personal reasons for taking drugs, the most frequently occurring responses among the classes of 1983 and 1984 were “to have a good time with my friends” (65 percent), “to experiment or see what it’s like” (54 percent), “to feel good or get high” (49 percent), and “to relax or relieve tension” (41 percent). These responses were similar to reasons given by the class of 1976 in earlier surveys, and there is no reason to suspect significant differences today.34

Is there any way of predicting which individuals may be inclined to take drugs and which individuals are likely to stay drug-free? One way of thinking about predicting drug use is to consider any given person as having a certain degree of vulnerability to drug-taking behavior. This vulnerability seems to be shaped by two separate groups of factors in a person’s life. The first are risk factors, which make it more likely that a person might be involved with drugs; the second are protective factors, which make it less likely that a person might be involved with drugs.

Together, risk factors and protective factors combine to give us some idea about the likelihood that drug-taking behavior will occur. The emphasis, however, should be on the phrase “some idea.” We still would not know for certain which individuals would use drugs and which would not. An understanding of risk factors and protective factors in general and knowledge about which factors apply to a given individual are useful pieces of information in the development of effective drug abuse prevention programs (see Chapter 16).

Specific Risk Factors

Certain factors that may appear to be strong risk factors for drug-taking behavior in general (socioeconomic...
Peer influence is a major factor in predicting the extent of drug-taking behavior during adolescence. It can represent either a risk factor or a protective factor for drug abuse.

<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>REPRESENTATIVE QUESTION</th>
<th>ODDS RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial behavior</td>
<td>“How many times have you gotten a serious into fight at school or at work?”</td>
<td>7.10</td>
</tr>
<tr>
<td>Friends’ marijuana use</td>
<td>“How many friends would you say use marijuana?”</td>
<td>6.25</td>
</tr>
<tr>
<td>Perceived prevalence of marijuana</td>
<td>“How many of the students in your grade in school would you say use marijuana?”</td>
<td>4.78</td>
</tr>
<tr>
<td>use in school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual attitudes toward marijuana use</td>
<td>“How would you feel [positively] about someone your age trying marijuana?”</td>
<td>4.47</td>
</tr>
<tr>
<td>Friends’ attitudes toward marijuana</td>
<td>“How do you think your close friends would feel [positively] about your trying marijuana?”</td>
<td>4.37</td>
</tr>
</tbody>
</table>

Note: By definition, risk factors have odds ratios greater than 1. Behavior is more likely to occur if a risk factor is present, through a multiplier designated by the odds ratio. The higher the odds ratio above one, the stronger the risk factor. By definition, protective factors have odds ratios less than 1. Behavior is less likely to occur if a protective factor is present, through a multiplier designated by the odds ratio. The lower the odds ratio below one, the stronger the protective factor.

<table>
<thead>
<tr>
<th>PROTECTIVE FACTOR</th>
<th>REPRESENTATIVE QUESTION</th>
<th>ODDS RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanctions against substance use in school</td>
<td>“How much trouble do you think a student in your grade would be in if he or she got caught using an illegal drug?”</td>
<td>0.28</td>
</tr>
<tr>
<td>Parents as sources of social support</td>
<td>“Would you select your mother or father as a source of social support?”</td>
<td>0.40</td>
</tr>
<tr>
<td>Commitment to school</td>
<td>“Do you like going to school?”</td>
<td>0.45</td>
</tr>
<tr>
<td>Religiosity</td>
<td>“How many times did you attend religious services?”</td>
<td>0.47</td>
</tr>
<tr>
<td>Extracurricular activities</td>
<td>“Have you participated in at least two extracurricular activities in or out of school?”</td>
<td>0.52</td>
</tr>
</tbody>
</table>

however, that in the case of marijuana use, we are speaking of an increased probability that it will occur, not necessarily a cause-and-effect relationship.

As shown in Table 1.3, other leading risk factors for marijuana use include the perceived prevalence of marijuana use by friends in and out of school and one’s own attitude and the attitude of friends toward marijuana smoking. By contrast, economic deprivation, as measured by a household income under $20,000, fails to be a risk factor for marijuana use.36

Specific Protective Factors

Protective factors provide the basis for someone to have stronger resistance against the temptations of drugs, to have a degree of resilience against engaging in a drug-taking life-style, despite the presence of risk factors in that person’s life.37 It is important that we not see these protective factors as simply the inverted image, or the negation, of opposing risk factors. Rather, each group of factors operates independently of the other. One way of thinking about protective factors is to view them as a kind of insurance policy against the occurrence of some future event that you hope to avoid.38 For example, the third protective factor listed in Table 1.3 shows an odds ratio of 0.45, indicating that youths aged twelve to seventeen who answer “yes” to the question “Do you like going to school?” are about one-half (0.45, to be precise) as likely to have tried or used marijuana during the past year as youths who answer “no.”

Protective factors can serve as a buffering element among even high-risk adolescents, giving them a greater degree of resilience against drug-taking behavior and a higher resistance to drug use than they would have had otherwise. Leading protective factors include a commitment to conventionality in one form or another and a degree of social support from one’s family.

Obviously the more protective factors in our lives, the better our chances of resilience with respect to drug-related problems. In one study, protective factors were examined in one thousand high-risk male and female adolescents in the seventh and eighth grades, and information was collected on their drug use later in high school. As the number of protective factors increased, the resistance of these students to drug use increased as well. With six or more such factors in their lives, as many as 56 percent of the high-risk adolescents showed a resistance to drug use three years later. In contrast, only 20 percent of the youths with three or fewer protective factors were drug-free.39

Present-Day Concerns

What does the future hold with respect to psychoactive drugs and drug-taking behavior? One certainty is that specific drugs will continue to come into and fall out of favor. New drugs will appear on the scene, and others may reappear like ghosts from the past, sometimes in new forms and involving new faces in the drug underground.40

Club Drugs

A serious concern in today’s drug scene has been the popularity of so-called “club drugs,” a term that originally referred to substances ingested at all-night dance parties (“raves”), dance clubs, and bars. Today, the term designates a loosely defined category of recreational psychoactive drugs that are used by young people, primarily in a social setting. Examples of club drugs include MDMA (Ecstasy), GHB, ketamine, Rohypnol, methamphetamine, and LSD. When used in combination with alcohol, as they often are, these drugs carry considerably increased health risks, beyond their own individual toxicities. Because many club drugs are colorless, tasteless, and odorless, they can be slipped unobtrusively into drinks by individuals who want to intoxicate or sedate others. The potential danger of sexual assault, therefore, is a major problem.41 Drugs in Focus examines the major features of these six club drugs. A more detailed discussion will follow in Chapter 4 (methamphetamine), Chapter 6 (LSD, MDMA, and ketamine), and Chapter 13 (GHB and Rohypnol).

Nonmedical Use of Prescription Pain Relievers

Although present-day prevalence rates among adolescents and young adults for several categories of illicit drugs are much lower than rates observed in earlier years (see Figure 1.2), the incidence of nonmedical (recreational) use of prescription pain relievers has risen to alarmingly high levels and has become a major social problem. In 2011, about 3.4 million young adults, aged eighteen to twenty-five years, in the United States used prescription pain relievers
**Drugs . . . in Focus**

### Facts about Club Drugs

**MDMA (methylenedioxymethamphetamine)**
- Street names: Ecstasy, XTC, X, E, Adam, Clarity, Lover’s Speed, Hug Drug, Euphoria, M&M
- Variations: MDA (methyleneoxymethamphetamine), MDEA (methylenedioxymethylamphetamine)
- Forms: Tablet or capsule
- Behavioral effects: Appetite suppression, excitation, perceptual distortions
- Physiological effects: Increased heart rate and blood pressure, dehydration
- Length of effect: 3 to 6 hours
- Toxicity: Marked increase in body temperature; possible heart attack, stroke, or seizure (see Chapter 6)

**GHB (gamma-hydroxybutyrate)**
- Street names: Grievous Bodily Harm, G, Liquid X, Liquid Ecstasy, Georgia Home Boy, Goop Soup
- Variations: Gamma-butyrolactone (GBL)
- Forms: Clear liquid, tablet, capsule, or white powder
- Behavioral effects: Intoxication, euphoria, sedation, anxiety reduction
- Physiological effects: Central nervous system depressant, stimulation of growth-hormone release
- Length of effect: Up to 4 hours
- Toxicity: Overdoses produce drowsiness, loss of consciousness, impaired breathing, coma, potential death. GHB greatly potentiates the sedative action of alcohol (see Chapter 13).

**Ketamine**
- Street names: K, Special K, Vitamin K, Ket
- Variations: None
- Forms: Liquid, white powder snorted or smoked with marijuana or tobacco, intramuscular injection
- Behavioral effects: Dreamlike state of consciousness, hallucinations
- Physiological effects: Increased blood pressure, potential seizures, and coma
- Length of effect: 1 hour
- Toxicity: Impaired attention and memory, impaired motor coordination, disorientation (see Chapter 6)

**Rohypnol (flunitrazepam)**
- Street names: Roofies, Rophies, Roche, Rope, Forget-me pill
- Variations: None
- Forms: Tablet dissolvable in beverages
- Behavioral effects: Sedation
- Physiological effects: Decreased blood pressure, visual disturbances, gastrointestinal disturbances
- Length of effect: 8 to 12 hours
- Toxicity: Anterograde amnesia (loss of memory for events experienced under its influence). Rohypnol effects are greatly potentiated by alcohol (see Chapter 13).

**Methamphetamine**
- Street names: Speed, Ice, Meth, Crystal, Crystal Meth, Crank, Fire, Glass, Ice, Rock Candy
- Variations: Amphetamines, with varying degrees of similarity
- Forms: Many forms; methamphetamine can be smoked, snorted, injected, or orally ingested.
- Behavioral effects: Increased alertness and energy
- Physiological effects: Increased heart rate and blood pressure, decreased appetite
- Length of effect: Several hours
- Toxicity: Possible heart attack or cardiovascular collapse, seizures, cerebral hemorrhage, and coma (see Chapter 4)

**LSD (lysergic acid diethylamide)**
- Street names: Acid, Boomers, Yellow Sunshines, Bars, Blotters, Cubes, Domes, Lids, Wedges
- Variations: Hallucinogens, with varying degrees of similarity
- Forms: Crystalline material soluble in water
- Behavioral effects: Distortions of visual perceptions, distortions of time and space
- Physiological effects: Increased heart rate and blood pressure, sweating, tremors
- Length of effect: 30 to 90 minutes, though effects might last several hours
- Toxicity: Numbness, nausea (see Chapter 6)

recreationally in the past year; about 1.2 million used them on a recreational basis during the previous month.\textsuperscript{42} Hydrocodone (brand name: Vicodin), oxycodone (brand names: Percodan, Percocet), and controlled-release oxycodone (brand name: OxyContin) have been the principal drugs involved (see Chapter 5).

**Nonmedical Use of Prescription Stimulant Medications**

For decades, individuals with attention deficit disorder (ADD) have been successfully treated with a number of prescription stimulant medications, principally methylphenidate (brand name: Ritalin) and a combination of dextroamphetamine and levoamphetamine (brand name: Adderall). Concern has grown, however, about two principal forms of drug misuse. The first is the practice of taking these drugs at higher doses than prescribed or combining them with alcohol. The second is the practice of diverting these drugs (that is, transferring the medication of one patient for whom it is prescribed to another individual for whom it is not prescribed), either by selling them or giving them away to friends. Nonmedical use of Adderall is of special interest because of the high prevalence rates among college students (see Chapter 4). In 2011, approximately four million (one in nine) young adults, 18 to 25 years old, reported nonmedical use of Adderall at least once in their lifetime.\textsuperscript{43}

In these cases, the drug-taking behavior has been either recreational (to achieve a state of euphoria) or instrumental (to be able to study late into the night).

**Nonmedical Use of Over-the-Counter Cough-and-Cold Medications**

In 2011, approximately 5 percent of high school seniors reported taking OTC cough-and-cold medications, such as Coricidin HBP Cough and Cold Tablets, Robitussin products, and NyQuil, containing the cough suppressant dextromethorphan (abbreviated DXM or DM) in the past year for the purpose of getting high, a practice commonly referred to as “robo-tripping” or “skittling.” The alcohol content (up to 10 percent) in many of these products compounds the health-related problems. The easy availability of dextromethorphan for people of all ages and the increased risk of brain damage, seizure, and death associated with high doses of dextromethorphan are matters of great concern in today’s drug scene.\textsuperscript{44}

**Why Drugs?**

If the history of drug-taking behavior teaches us anything, it is that there will always be an attractiveness about the drug experience, an enticement to enter into a totally different state of consciousness. For a time, they can make us feel euphoric, light-headed, relaxed, or powerful, and there is little doubt that all this feels good. There may be nonpharmacological ways of arriving at these states of mind, but drugs are easy and quick. Some drugs give us the feeling that we are seeing or hearing things in a more intense way. No matter whether we are young or old, rich or poor, drugs enable us to retreat from a state of stress. Some drugs permit us to feel no pain.

Unfortunately, in every generation there will be young people who seek some form of temporary release from an unhappy existence, seeking some form of rebellion against traditional values as a validation of their personal journey in life. And there will be those who will use drugs to have a good time with their friends. There will be young people who are simply willing to try anything new, including drugs. Their curiosity to find out “what it’s like” brings us full circle to the earliest times in human history, when we nibbled on the plants in the field just to find out how they tasted. In the modern era, drug experimentation is neither a new nor a singular phenomenon; it can involve an alcoholic drink, an inhaled solvent from some household product, a cigarette, or an illicit drug.

As we will see in Chapter 3, drug experimentation has everything to do with neural circuitry deep in our brains and the release of a neurotransmitter called dopamine, a neurochemical that is at the heart of our feelings of pleasure and reward. Release of dopamine at crucial moments is like a bold-face signal that “this event is worth remembering.” Natural rewards affect dopamine activity in the same way, but psychoactive drugs can do it more powerfully. In doing so, these drugs can “hijack” a natural process in our brains.\textsuperscript{45}

The personal and social problems associated with drug-taking behavior are examined in the Chapter 2.
From Oxy to Heroin: The Life and Death of Erik

Erik lived in a suburban Long Island, New York, community, and heroin killed him in 2008 at the age of 19. His mother, Linda D., never imagined what she was up against. “You worry,” she has said, “about them smoking pot. You worry about them driving recklessly. You worry about them not using their seat belt. You worry about that phone call in the middle of the night. You don’t worry about heroin. Because it didn’t exist in my mindset.”

In the last few years, the reality of heroin in the suburbs and small towns of America, previously considered to be immune from its deadly reach, has hit home with a sudden and unexpected vengeance. As a director of a local drug counseling center has expressed it, “They’re starting younger, they’re starting with more substances, they have better access, everything is cheaper, and they have more money.” You would call that a perfect storm.

Heroin arrests have doubled; rehabilitation-facility admissions of those 21 and under for prescription pain reliever dependence have tripled or quadrupled in many cases.

In the case of Erik, it began after an emergency appendectomy with a prescription for Vicodin. Erik gradually entered into a shadowy world of drug-taking behavior. Finding new supplies of Vicodin, then shifting to OxyContin, was easy. “It sounded grimy and sleazy,” a teenager would say in reference to her own dependence on prescription pain relievers, “but at the time it was just what I did. Everyone knows someone who can get them for you.”

At some point in early 2008, according to Linda, “The oxys dried up.” Erik turned from pills to heroin. “It started at a party,” she has said. “Someone said to him, ‘Oh, try this.’” By May, Linda and her husband realized Erik was using heroin. In the weeks that followed, they tried to convince him to get help. The family’s insurance covered Erik’s first trip to a rehabilitation facility in upstate New York, but when Erik left after three days, the insurance company told the family that he had used up their “once in a lifetime” rehabilitation coverage. They tried to convince public hospitals to admit Erik, but he was denied. In the meantime, Erik’s parents were finding injection needles around the house and discarded rubber tubing. They desperately tried to cobble together funds to pay for rehabilitation, but they didn’t succeed in time. Erik died in July.


Summary

Social Messages about Drug Use

- Unfortunately, we live in a social environment that sends us mixed messages with respect to drug use. Cigarette smoking is still often portrayed in a positive light in movies and other forms of entertainment media, despite persistent reminders of health hazards related to tobacco use. Beer commercials on television constitute popular forms of entertainment as well as effective marketing tools, despite the fact that alcohol abuse and alcoholism continue to present serious personal and societal problems. Prominent political figures admit to experiences with marijuana earlier in their lives, while marijuana remains officially classified by the U.S. government as a drug with a high potential for abuse and no accepted medical use.
- Anti-drug campaigns in the media compete with pro–drug-use messages arising from the entertainment industry as well as Internet web sites.

Two Ways of Looking at Drugs and Behavior

- Psychoactive drugs are those drugs that affect our feelings, perceptions, and behavior. Depending on the intent of the individual, drug use can be considered either instrumental or recreational.
- Drug misuse refers to cases in which a prescription or over-the-counter drug is used inappropriately. Drug abuse refers to cases in which a licit or illicit drug is used in ways that produce some form of impairment.

Drugs in Early Times

- Probably the earliest experiences with psychoactive drugs came from tasting naturally growing plants. Individuals with knowledge about such plants were able to attain great power within their cultures.
- Ancient Egyptians and Babylonians in particular had extensive knowledge of both psychoactive and non-psychoactive drugs. Some of these drugs had genuine beneficial effects.
Drugs in the Nineteenth Century

- Medical advances in the 1800s succeeded in the isolation of active ingredients within many psychoactive substances. For example, morphine was identified as the major active ingredient in opium.
- Psychoactive drugs were in widespread use, principally in the form of patent medicines. Only by the end of the century were the risks of drug dependence beginning to be recognized.

Drugs and Behavior in the Twentieth Century

- Increased concern about the social effects of drug dependence led to restrictive legislation regarding the use of morphine, heroin, cocaine, and marijuana.
- Social pressure from the temperance movement resulted in the national prohibition of alcohol consumption in the United States from 1920 to 1933.
- After 1945, important strides were made in the development of antibiotics and psychiatric drugs.
- By the 1940s and 1950s, illicit drugs such as heroin, cocaine, and marijuana were outside the mainstream of American life.
- In the 1960s and 1970s, the use of marijuana and hallucinogenic drugs spread across the nation, along with an increase in problems related to heroin.
- A decline in heroin abuse in the 1980s was matched by an increase in cocaine abuse and the emergence of crack as a cheap, smokable form of cocaine.

Present-Day Attitudes Toward Drugs

- It is now recognized that a wide range of psychoactive drugs, licit or illicit, qualify as potential sources of misuse and abuse.
- Individuals born toward the end of the “baby boom” generation were the first group to have grown up during the explosion of drug experimentation in the 1960s and 1970s. Now, as the parents of teenagers at the beginning of the twenty-first century, they face the difficult challenge of dealing with the present-day drug-taking behavior of their children. Interestingly, there appears to be no relationship between prior marijuana use among parents and marijuana use by their children.

Patterns of Drug Use in the United States

- In 2011, approximately one out of three high school seniors used marijuana over the past year and one out of sixteen seniors used marijuana on a daily basis. Marijuana smoking represents the overwhelming proportion of illicit drug use in this population.
- The prevalence rate in 2011 for alcohol use in the past month among high school seniors was 40 percent and among college students was 64 percent. Roughly 10 percent of high school seniors and 7 percent of college students smoked at least one cigarette every day in 2011.
- In 2011, more than 21 million Americans aged twenty-six or older had used an illicit drug of some kind during the past twelve months. More than 15 million Americans used marijuana or hashish, and more than 8 million Americans engaged in the recreational use of a prescription pain reliever during this time period.

Making the Decision to Use Drugs

- Risk factors for drug-taking behavior in adolescence include a tendency toward nonconformity within society and the influence of drug-using peers.
- Protective factors for drug-taking behavior include an intact home environment, a positive educational experience, and conventional peer relationships.

Present-Day Concerns

- Predictions regarding future drugs and drug-taking behaviors are largely founded on patterns from the past. New drugs will undoubtedly come on the scene; old drugs that are out of favor might regain popularity.
- A serious concern in recent years has been the emergence of a group of drugs referred to as club drugs. They include MDMA (Ecstasy), GHB, ketamine, Rohypnol, methamphetamine, and LSD.
- Relatively high prevalence rates for recreational use of prescription drugs and over-the-counter drugs among young people have raised serious concerns. Examples of abused drugs in these categories include prescription pain medications such as Percocet, Vicodin, and OxyContin; prescription stimulant medications such as Ritalin and Adderall; and dextromethorphan in popular over-the-counter cough-and-cold remedies.

Key Terms

- chlorpromazine, p. 13
- drug, p. 5
- drug abuse, p. 7
- drug dependence, p. 4
- drug misuse, p. 7
- Ebers Papyrus, p. 10
- illicit drugs, p. 4
- instrumental use, p. 6
- licit drugs, p. 4
- neuroscience, p. 13
- patent medicine, p. 11
- placebo effect, p. 10
- protective factors, p. 19
- psychoactive drugs, p. 4
- recreational use, p. 7
- risk factors, p. 19
- shaman, p. 10
- shamanism, p. 9
and empirical findings.
162, 169–175. Snyder, L. B.; and Nadorff, P. G. (2010). Content
music.
analysis of tobacco, alcohol, and other drugs in popular
York Times
New
Internet.
black adults.
The NSDUH Report


24. Ibid, Tables 2-1, 2-2, and 2-3.

25. Ibid, Tables 2-4 and 2-5.


27. Ibid, Tables 9-9 and 9-10.


29. Ibid, Tables 2-1, 2-2, and 2-3.


33. Substance Abuse and Mental Health Services Administration. (2012). Results from the 2011 National Survey on Drug Use and Health: Detailed tables. Rockville, MD: Substance Abuse and Mental Health Services Administration, Tables 1.22A, 1.22B, 1.27A, 1.27B, 1.52A, and 1.52B.


35. Goode, Drugs, pp. 73–75.


38. Wright and Pemberton, Risk and protective factors, Chapter 3 and Appendix A.


42. Substance Abuse and Mental Health Services Administration (2008, June 19). Nonmedical use of pain relievers in substate regions: 2004 to 2006. The NSDUH Report, pp. 1–4. Substance Abuse and Mental Health Services Administration, Results from the 2011 National Survey on Drug Use and Health: Detailed tables, Table 1.56A.

43. Substance Abuse and Mental Health Services Administration, Results from the 2011 National Survey on Drug Use and Health: Detailed tables, Tables 7-23A and 7-23B.
