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Drugs in American Society

Erich Goode
Stony Brook University

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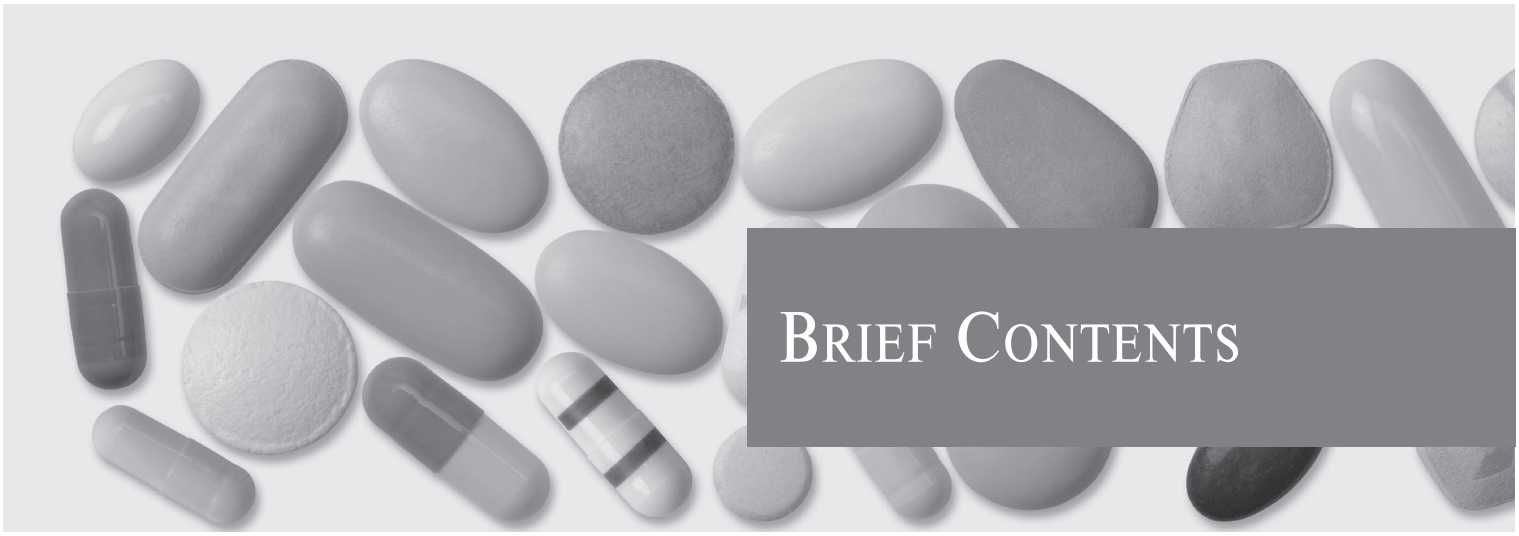
Erich Goode is Sociology Professor Emeritus at Stony Brook University. He received his Ph.D. in sociology from Columbia and a master's in nonfiction writing at Johns Hopkins. Goode has taught at Stony Brook University, New York University, the University of North Carolina at Chapel Hill, and the University of Maryland at College Park. He's the author of a dozen books, mainly on drug use and deviant behavior, including *The Marijuana Smokers* (Basic Books, 1970), *Between Politics and Reason: The Drug Legalization Debate* (St. Martin's Press, 1997), *Justifiable Conduct: Self-Vindication in Memoir* (Temple University Press, 2013), *Deviant Behavior* (Routledge, 13th edition, 2022), and *The Taming of New York's Washington Square Park: A Wild Civility* (NYU Press, 2018). He lives in New York City with his wife, Barbara Weinstein, a historian who teaches at New York University.



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Preface and Acknowledgments

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A student in one of my drug courses asked me where I obtained the drug-related stories, accounts, and anecdotes that I narrate in my lectures. I told him that I seek out and talk to a lot of drug users and ask them if they'd allow me to interview them about their experiences with psychoactive drugs—or if they'd be willing to write a personal, first-hand account of their experiences. He asked me if I fabricated anything—if any of the accounts were fictional or "made up." I probably looked at him in horror, but managed to tell him that, as a sociologist, making anything up—inventing it, fabricating it—is an absolute taboo; for us, it's the equivalent of stealing. As with all other social scientists, indeed, all academics, I'm bound to a pact to tell the truth about my research. Then he asked if I thought any of the people I interviewed "made stuff up" about their drug experiences. I thought about the question for a couple of seconds and said that I couldn't know that for sure, but after talking to a lot of people for a long time about their drug use, I've developed a sense for what kinds of statements make sense and what ones don't, but I could be wrong. The specific details, the particulars, well, who knows? They could be mistaken about whether their accounts happened in this way or that. But I do have faith in the veracity of the broad outlines of these accounts. I agreed that it comes down to the fact that drug researchers are forced to rely on their informants to tell the truth. I continue to keep my eyes and ears open for fresh, recent accounts to enliven the principles and generalizations that provide the foundation of this volume—but, I added, I'm only interested in factually *true* accounts.

The first edition of this *Drugs in American Society* was published a half-century ago, when systematic, reliable, nationally-representative data on drug use were not available; the information that social scientists used back then to draw conclusions about the consumption of mood-altering drugs was patchy, incomplete, and in all likelihood, skewed. Today, if anything, there is virtually a churning sea of informative data about the subject of this book, and the task is sifting through it all. (In fact, fairly frequently, different sources promulgate slightly different statistics, a glitch no acute observer of the drug scene should be distressed by.) Much of this information is produced by ongoing data-gathering enterprises, mainly government sponsored, that conduct surveys, often regularly, so that it is possible for the interested student, scholar, researcher, and nonprofessional to produce an up-to-date picture of the drug situation in the United States. It seems almost redundant to mention this and, when relevant, I shall make the point more forcefully: The COVID-19 pandemic has impacted on virtually all aspects of our lives, beginning, in the United States, early in 2020. Here's a good example: Since most Americans ventured from their homes significantly less during 2020, they took to the nation's roadways less often, in fact, about 15 percent less. That means that not only did we drive fewer miles, but also had fewer roadway accidents—and

specifically, fewer alcohol-related highway accidents. This had nothing to do with driving more safely, it had to do with driving less. It is also possible that staying at home tamped the crime rate down a bit, but it's possible that crimes such as domestic assault rose as well. Hence, when perusing the relevant trend statistics that include 2020, we should keep this qualification in mind.

I've followed several widely-used conventions that the reader ought by now to have become aware of. As of early 2020, a substantial number of newspapers, such as *The New York Times*, and magazines (*The New Yorker*) began capitalizing the first letter of the word "Black" as it refers to a racial category of humanity; I follow that convention. *The Washington Post* stands virtually alone in also capitalizing the word "White" as it refers to the racial category. I don't follow this convention of capitalizing the "W" in "white," again, as it pertains to race, because the constituent ethnicities among whites—Irish American, Italian American, Jewish, and so on—are already capitalized. (The word "Indigenous" should also be capitalized, as well as the term, "Native American.") In contrast, "Black" is considered a racial/ethnic category unto itself, as are "Hispanic" and "Latino." These conventions will eventually attain universal usage. It's also important to note that numerous Black folks living in the United States do not have an American heritage, that is, they or their ancestors came to the U.S. directly from Africa and so they have no history of enslavement, and thus, they do not identify as Americans as such; consequently, the term, "African American," is inappropriate for them, and "Black" seems to fit better. In addition, Black Caribbeans or Blacks emigrating from Brazil, who live in the U.S. are not likely to identify as "African Americans"; they too prefer to the term, "Black."

With respect to commercially manufactured and distributed drugs, I use the lower-case for the first letter of a generic drug name and capitalize the specific or brand name. Thus, the generic narcotic "oxycodone" begins with a lower-case "o," while its brand name, "OxyContin," is capitalized. The same practice applies to fentanyl/Duragesic, hydromorphone/Dilaudid, diazepam/Valium, methadone/Dolophine, secobarbital/Seconal, dextroamphetamine/Dexedrine, and so on. It's also important to note that a single chemical or generic drug may be the basic ingredient in multiple specific or brand-name drugs. Moreover, these different brands may be sold in different forms, each of which requires a different method of administration—in the form of a pill, nasal spray, dermal patch, in injectable liquid form, and so on. In addition, some brand names may contain a combination of substances in addition to the main ingredient. And some of the brand name drugs are mixed with other substances, while others contain only the generic.

Here's another convention we all have to contend with in in our increasingly electronic age and which the reader should aware of: With each succeeding edition, I rely increasingly on Internet materials rather than paper documents. One result of this tendency is that, given that many electronic publications lack pagination, I do not refer to the pages on which a given quote appears. Related to that point is the fact that some sources capitalize the first letter of the word, "Internet," while others don't; I do. At this point, it's optional.

As I said in the previous edition, the two most impactful recent changes that have taken place in the world of drug use are virtually exact opposites: the mainstreaming or *de*-deviantization, or growing respectability of marijuana use and the growing nasty, gloomy side of opiate and opioid abuse. Marijuana will never become fully respectable everywhere, but, as a *New York Times* reporter said less than a half-dozen years ago, we are living in an era in which cannabis is "quietly condoned," even "tacitly approved" (Hoffman, 2017). Moreover, the once-respectable, fashionable, chic, and supposedly sublime world of cigarette smoking (Klein, 1994) is, year-by-year, falling further out of favor, especially among the well-educated—a quality shared by all of the readers of this book. Consider this startling statistic: In 2019, more than *four times* as many high school seniors smoked marijuana during the 30 days prior to the survey than smoked one or more tobacco cigarettes. Taking the name of the study that produced this statistic—Monitoring the

Future—this obviously spells eventual doom for the cigarette industry, since, the reasoning goes, today's students are tomorrow's adults, and they will carry many of their practices into the future. But anyone with a modicum of prescience knew this back in the sixties, when the Surgeon General's report, *Smoking and Health*, was published, indicating that smoking takes a catastrophic toll on the smoker's health, and shortens life by as much as a decade. The health of everyone in the smoker's ambit, smoker and non-smoker alike, likewise suffers.

I owe a debt of gratitude to everyone who has assisted me in putting this book together. In the previous edition, I thanked dozens of editors, friends, students, scholars, experts, researchers, informants, respondents, and interviewees who were instrumental by providing me with needed information, advice, and narratives; I do so here again. My wife, Barbara Weinstein, helped me in multiple ways to stay emotionally afloat to complete the revision of this volume. All the others are too numerous to mention; as I said, I thanked them in this book's previous edition. They include the editorial staff at McGraw Hill, with whom I have enjoyed a productive and amicable relationship for decades, casting changes not with standing.

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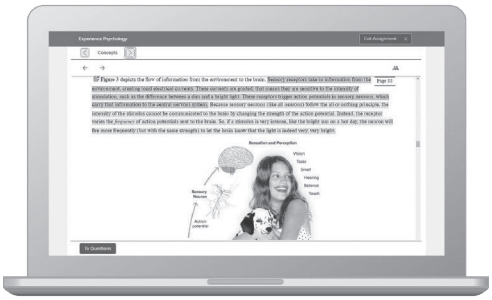

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CHAPTER 1

An Introduction to Drug Use

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What do you think humanity's two dozen or so most transformative achievements are—those that have made every-day life for many of us substantially different from the way it was earlier, without it? Most of us, I'd guess, would immediately recite the most obvious and oft-cited roster of inventions and innovations: fire, agriculture, language, the wheel, the domestication of animals, the printing press, sanitation, medication, anesthesia, central heating, electric lighting, the car, the airplane, the computer. And, chances are, we'd also come up with humankind's most outstanding artistic, intellectual, scientific, and social-organizational

innovations as well: music, literature, the representational arts, mathematics, cities, laws, human rights, a reasonably democratic political system, a more or less accountable and fair criminal just system, currency monetization, empirical science, a universal and compulsory formal education, and a merciful and empathetic, justice-oriented religion. All good, all positive, all righteous and beneficial.

But very few of us are likely to come up with the central subject of this book: the discovery of the alteration of our consciousness by ingesting a psychoactive substance. Of course, most medicine is made up of substances we'd call "drugs," and drug as medication does constitute a major blessing to humanity. But that's the body, not the mind. *Getting high* shouldn't be part of the package, many of us feel; that's widely considered a drawback, even a curse—not an asset. In a TED talk delivered in 2014, Ethan Nadelman, an advocate for the legalization of marijuana, declared that humanity's desire for consciousness-alteration is as "fundamental" as the desire for food, sex, and human companionship. In contrast to the positive achievements enumerated above, most of us think of recreational drug use as a social problem in need of a remedy, with lots more negatives than positives. True, most adults drink alcohol, and typically consume it in fairly moderate quantities that only rarely, for most drinkers, if ever, bring us to a state of drunkenness. "I drink to relax," we'd say; "I never get drunk." Well, hardly ever. But isn't relaxation an altered state of consciousness? Most of us don't consider it so. In our minds, alcohol doesn't count as a consciousness-transforming substance. And it does have a lot of drawbacks in addition to its convivial side. But even more so than alcohol, admittedly with more plusses than minuses, a minority of the population takes one or more of the illicit drugs to achieve a decidedly altered state, and that's where the trouble comes in. Most of us feel that recreational drugs weigh in more heavily on the negative column. Still, most of these recreational users of illicit enjoy getting high, and for them, that's a plus.

Many people also think also that drug-taking is a distinctly recent phenomenon. This is far from true. Our paleolithic ancestors foraged for food. Nature is abundant in plants that harbor chemicals that, when ingested, have *effects*; more specifically to our interests here, one of the effects that a substantial number of these plants have is that they influence the way the brain works. When brain chemistry is altered, we think, feel, and do many things that are significantly and substantially different from our quotidian, every day, habitual thoughts, feelings, and behavior. At extremely high levels of ingestion, these effects can even be toxic—some of them sicken and even kill us—and, so, prehistoric humans learned to avoid such substances. A lot of substances put us in a psychic state we experience as pleasurable; they make us more voluptuous, sensuous, or contemplative, or capable of appreciating dimensions of reality that stretch beyond the ordinary ways of thinking and feeling. Many ancient peoples came to use such substances for spiritual purposes.

We've been ingesting drugs for millennia, so putting a precise date on the first human ingestion of psychoactive plants is sheer conjecture, because nearly all physical traces of this remarkable event has long ago vanished into the mists of primaeval obscurity. But paleontologists and archaeologists have discovered evidence of psychoactive drug use in materials that represent, at the very least, if not *the* most ancient drug-taking episodes, at least they stretch back thousands of years.

There are two over-riding themes of this book, two transitions that mark transformations that the chronicler must incorporate into the historical narrative. The first is, as

I indicated above, the introduction of drug use to humankind: At some point, in the very distant past, we discovered what they do *to* us, as well as what we can do *with* such substances. The theme of this transformation is the transition *from non-use to use*—a truly momentous event in human history. It constitutes the attainment of a distinctly different level of consciousness—a new way of thinking and feeling, with both benefits and risks.

The theme of the *second* transformation is *social* rather than perceptual and intellectual. Humanity's next step as regards some drugs was the *domestication* of the use of psychoactive substances. How is the transformation of the human mind that drugs induce *handled* in such a way that it becomes a civil, non-disruptive, non-toxic experience? Has this stage already been accomplished? If so, when did it take place? And with *which* drugs? I document this transformation for alcohol in Chapter 7. There is probably a level at which even cigarette smoking can be "tamed," that is, where no harm comes to the smoker's health as a result of use, although that's likely to be accomplished at extremely low levels—a couple of cigarettes a day, one cigar a week. But smoking's *social* taming is now accomplished by means of *banishing* the smoker from public places. The number of public locales in which smoking would be wild, untamed, violative, and disruptive—professional meetings, restaurants, libraries, most parties, movie theaters, and so on—are so great that, by its very nature, public smoking has become a furtive, sneaky affair. Each drug has its own history as regards domestication or taming, which I discuss, each in turn, in Chapters 7 through 10. Heroin can't be tamed or domesticated, nor can crack or methamphetamine; getting high on them discourages sociability, and can't be woven into every-day life. (To be more specific, sociability among heavy users is unrecognizable as sociability to the conventional person.) Most alcohol consumption is domesticated, but some of it, at the higher end of the use spectrum, among a minority (but substantial number) of imbibers, drinking is out-of-control, harmful, even catastrophic. Meanwhile, marijuana is in the process of becoming domesticated: legalized in some places, even sold in pot shops, cooked into food, used as medication—and hence, conventionalized, tamed, and brought under control. Common sense dictates that cocaine can't be tamed—it's a "wild" stimulant, like meth (Goldstein, 1994, Chapter 11)—but a criminologist and a drug researcher (Decorte, 2000; Decorte and Slock, 2005) have produced two fat volumes arguing that such a state of affairs has already been accomplished for coke.

Elisa Guerra-Doce (2015), a Spanish archaeologist, has conducted research on the use of psychoactive substances in prehistoric Eurasia; she has examined fossilized cactus and mescal beans, alcohol residue in shards of pottery, poppy seed capsules, fragments of coca (a leaf containing cocaine) in mummy hair and human dental remains, and nicotine, even opium, in pipes. Some of these remains date back 8,000 or more years, some only hundreds, but the most ancient of them tell the same story: Humans began *intentionally* self-inducing an intoxicated state longer ago than we first devised writing, as long ago as when we built our first settled communities. Most paleontologists date the dawn of alcohol consumption at the Paleolithic Era, roughly 12,000 years ago. Ernest Abel dates the first consumption of cannabis at 10,000 B.C.E. (1980). Iain Gately places the earliest human puff on a tobacco pipe at roughly 6,000 years ago (2001). Paintings on murals 10,000 years old suggest that ancient dwellers of the Sahara region used magic mushrooms, or psilocybin. Documents from 3400 B.C.E. indicate that the early Sumerians smoked opium (Knox, 2016). The message of the drug-related artifacts that homo sapiens

have left behind seems clear: There's *something* in the human central nervous system (CNS) that motivates humans to *seek* the altered states of consciousness.

Not all of us seek this altered state, but all of us have the neurological wiring to achieve it. Of course, we can attain transformations of our every-day consciousness in many different ways. Prayer and meditation introduce us to the spiritual dimension; fasting or abstaining from eating food causes light-headedness; spinning around induces dizziness. Sex, daydreaming, listening to music, sleep—multiple common experiences give rise to mental states that cause us to transcend our routine, run-of-the-mill mentality. Some experts have argued that seeking such states is hard-wired into us; it is a drive much like an instinct (Weil, 1973, 2004). Whether or not we agree with this claim, our DNA undeniably *enables* us to alter our sense of awareness, our perceptions, our very consciousness by means of drug-taking. That capacity is laid down in our genes, encoded in our neurological wiring, and, as a consequence, *some* members of *nearly all* societies seek one or another psychoactive state—that is, getting high. It is, to emphasize the point, very close to a cultural and societal universal. And taking drugs is a *dependable* method of attaining this out-of-the-ordinary psychoactive state. Moreover, drug-taking may also be among the most *transformative* of such methods, that is, among many ways of seeking such states, altering our consciences by taking a chemical substance reliably induces the most immediate, untutored, and dramatic changes in the way we think and feel in our ordinary, every-day lives.

But, to reiterate a point work repeating: This transformation is a mixed blessing, and the domestication of psychoactive substances is accomplished only after decades, even centuries, of stumbles and countless victims along the way. One need only gaze at William Hogarth's print, "Gin Lane" (1751), to comprehend the catastrophic impact of the wild or undomesticated use of distilled spirits. It depicts a baby, falling out of its drunken mother's arms, possibly to its death; a starving, skeletal man too stupefied with drink to feed himself; a street brawl; a woman in rags selling essential kitchen implements to a pawn broker, presumably to obtain enough money to purchase a bottle of gin; two men tossing a naked woman's body into a coffin; a man hanging himself; and a building collapsing due to poor construction. This urban scene is chaotic, lawless, unruly, and dangerous, and the cause is simple: uncontrolled drinking. We're all familiar to the assault on civility that heavy, untamed drinking inflicts. Still, today, *typically,* drinking is civil, polite, restrained; for the most part, tippling has become *domesticated*.

Given the effects that they cause, is domestication even possible with the currently illicit drugs?

Terry approaches the superintendent of his building, who, he knows, occasionally snorts heroin, hands him $20, and asks him to cop a bag from his dealer so that he could try this alluring but dangerous drug. "You want *heroin?*" the super asks him incredulously. "Are you *sure?*" Alone one afternoon, Terry sniffs up the contents of the tiny bag the super bought for him, feels woozy, and falls asleep until six in the morning. He didn't even get high from the experience he explains to me. "I wonder what was in that bag," he says. "Maybe my super ripped me off."

At a party, in spite of his warning, Sam's girlfriend, Susan, consumes a dozen strong mixed drinks, begins shouting, singing, and, while attempting a solo dance, stumbles and falls. "Time to go," Sam tells her, helping Susan to her feet. Leaving the party together, they only get as far as the bushes outside when she burbles, "I gotta, I gotta. . . ," drops

to her knees and vomits. A couple of years later, after they had broken up, a mutual friend tells Sam that Susan overdosed on a mixture of a quart of vodka and a handful of hydrocodone tablets. There is no funeral.

Jason's physician diagnoses him with liver cancer; he checks into a local hospital and undergoes an operation in which half his liver is removed. Lying in the recovery room, his oncologist administers a combination of morphine and fentanyl to diminish the post-operative pain. While under the influence of the drug cocktail, Jason begins having a series of frightening and bizarre hallucinations, so scary that, after the effects have worn off, he begs his doctor to take him off the narcotics and put him on aspirin and acetaminophen. "I can deal with the pain," he tells her. After his release, a biopsy reveals that Jason's liver is negative for cancer, and the operation was all for nothing.

Walking to a friend's apartment, Mark meets and picks up a young woman, Sally, who seems interested in taking some of the cocaine he says he had stashed with his friend, Mike. Later, she squats on the floor of Mike's apartment, pulls a syringe kit out of her jacket, takes out a tiny spoon, taps half the coke out of the envelope Mike gives her into the spoon, liquefies the coke, draws the liquid into a syringe, and injects it into her bare right arm. When she collapses onto the floor, Mike immediately calls EMS. "The girl spent a month in the hospital in a coma," he tells me.

Three lessons emerge from these anecdotes. The first is that drugs are *psychoactive*; taking them not only produces effects, it produces profound effects specifically on the human *mind* as well as the body. The second lesson is that, for the most part, humans *like* to take drugs; they take them *because* of the psychoactive effects that drugs have, because users enjoy these effects. And the third lesson that these true stories convey is that, in addition to their mind-altering effects, drugs also have *side effects,* some of which are unpleasant, potentially harmful—and even, in some cases, lethal. These three "lessons" constitute a great deal of the subject matter of this book. What causes unpleasant, potentially harmful and dreadful drug effects? After all, millions of people ingest these substances, risking arrest as well as medical harm; what's the point of taking something that can make you sick or even kill you? Sometimes the user takes too large a dose, or the dose is mixed with a harmful ingredient, or the user suffers an allergic reaction, or takes the substance in a setting, or while engaging in activities, in which consumption is inappropriate, or the user may be accompanied by people with whom he or she feels uncomfortable.

To emphasize the point, obvious as it might seem, users take drugs in order to get high, whereas most drinkers don't drink to get drunk. Puffing on a marijuana joint, snorting a line of cocaine intranasally, chewing a wad of peyote cactus, injecting a solution of heroin IV, all enable us to attain a psychic state that many of us experience as gratifying, enjoyable, exhilarating, intoxicating, mind-bending. But psychoactivity is a coat of many colors; the mind can be bent in different directions; some of them are pleasing to most of us, while many have psychic effects that some of us find unsettling, disturbing, even unpleasant—and all of this, taken together, is the story that drives this volume. While it is true that most drinkers don't necessarily imbibe to get drunk, they do drink to achieve a pleasant state of mind, whether we call it relaxation, peacefulness, tranquility, or being laid-back. And yes, achieving it is an alteration of the every-day, ordinary state of consciousness.

Drug taking is a cultural universal; it is an activity in which a *substantial* number of the members of *all* societies partake. It is extremely widespread, both in American society and globally. Getting high is as primordial and virtually as ubiquitous as humankind itself. The enticement of drug-taking includes the pleasurable experiences users anticipate and which most users feel most of the time when they engage in it, and it also includes the risk of the likelihood of disagreeable or harmful side-effects.

Knowing that ingesting psychoactive substances influences the workings of the human mind should clue us in to another important fact: When sociologists think about drug use, we also investigate how their ingestion influences human behavior. Users usually not only *like* the feelings that drugs induce, but they are also aware that they *do* some things that are different while they are under the influence from what they do normally. Illicit drugs are taken *recreationally*, not only for the high or "intoxication," but also for the activities the high accompanies; some drugs accentuate sociability, while others induce users to become more withdrawn. What do users *do* when they are high? For the most part, with marijuana, they engage in fun things: hanging out with friends, socializing, talking, partying, dancing, flirting, eating, watching movies, making love. Users consider smoking marijuana, like drinking alcohol, an *enhancer* of these activities; they are synergistic. Smoking and socializing are more enjoyable than either is, separately. In contrast, with some other drugs, the high *is* the drug experience; shooting heroin, experiencing a rush or flash of pleasure, then nodding out, is what heroin users, especially addicts, enjoy most. Often, there's no true socializing to be had with the high.

Drugs do not directly *cause* behavior; they do not have standard, uniform effects on everyone. In fact, in the quantities most people take, there's quite a great deal of variability in effects from one individual to another. Yes, in larger doses, some drugs do cause discoordination, and in still larger ones, they can even cause death. Still, most drugs, taken in low-to-moderate doses, will make certain types of behavior *more likely*—but not certain. For instance, certain levels of blood-alcohol concentration (BAC) diminish human coordination in the performance of mechanical activities, such as driving. It doesn't matter that Melissa's coordination is diminished less than Scott's at a certain dose—the fact is, for people in general, alcohol tends to diminish human coordination.

Every social scientist looks for generalizations; they are the coin of the realm in the systematic study of everything we would want to know about. Anecdotes such as the ones we encountered above capture our attention, draw us into the material, but the prize in every discipline is making valid and true statements that have a broad scope, universal applicability, that apply to most people in most places during major swathes of human history. But we also want, in these generalizations, to encounter the specifics as well—the human-interest stories, variability, the human panoply of diversity and individuality.

To us, as students, researchers, or instructors of drug use, what makes psychoactive drugs interesting and distinctive is their capacity to influence mood, emotion, and intellectual processes. This is the case because, as I said, it is specifically the psychoactivity of certain chemical substances that gives them their popular appeal, that impels substantial numbers of the members of societies everywhere to experiment with and use them. And it is precisely this appeal that initiates the chain of events that leads to their scrutiny by physicians, pharmacologists, neurologists, psychiatrists, psychologists, epidemiologists, and social scientists. But it is also their "side effects"—those toxic consequences of ingesting the wrong drug, by the wrong person, or too much of the drug, or under the wrong

circumstances—which bring medical and psychiatric specialists into the picture. Psychoactive drugs are interesting for a variety of reasons, including their potential impact on human behavior and society's attempt to control them. The psychoactive appeal of drugs leads to their potential for widespread use, which, in turn, leads to the possibility of widespread harm or problematic behavior, which further result in some form of social control, that is, legal restrictions on their distribution and use. Hence, societies raise the question, Is this drug harmful to users? When the answer seems to be in the affirmative, the next question becomes, "How can we limit and control the use of this drug?"

Drugs accrete a tradition, a *lore*: People take drugs and tell their friends about their experiences. Try it, you'll like it, it's fun. Or: Avoid it, it'll make you sick. People who take a drug *typically* experience positive psychic effects, enjoy the experience, and tell others about what they feel under the influence. But some drugs have more complicated effects; they are unsettling and disturbing. At substantial doses, certain substances will run you over like an onrushing truck. Drug-naïve individuals—persons who have never ingested a given psychoactive substance—hear descriptions of a drug's effects from friends and acquaintances who have used it. These descriptions are inspired by a drug's pharmacological action: how its chemical structure interacts with the CNS. It is the psychic effects that users enjoy that prompts their initial use. Drug *effects* are absolutely central to drug use. And these effects, whether observed or narrated, influence policy. The fact that marijuana possession and sale are being decriminalized and legalized suggests that the drug's effects may not be as harmful as the authorities once claimed.

Another reason why it's important to understand the psychopharmacology of drugs—the study of the impact of drugs on the mind—is that the action of some drugs conduces users to engage in certain actions. (*Conduce* means to "lead or contribute" to something.) For instance, to the sociologist and the criminologist, one extremely interesting (but disturbing) effect of certain drugs is that they make violent or criminal actions more likely. If taking a drug lowers our inhibitions, certain behaviors that would normally be unthinkable to users become acceptable under the influence. Alcohol, a drug that is strongly intertwined with violent and criminal behavior, plays precisely such a disinhibiting role. And if a drug is physically addicting or dependency-producing, *and it is illegal—and hence, relatively expensive*—it may not be possible to pay for a steady supply without resorting to a life of crime. To the sociologist, whether and to what extent drugs influence the enactment of unacceptable and/or criminal behavior is interesting and worth investigating.

By itself, the pharmacology of drugs does not *cause* the drug laws to materialize out of thin air. Nor is pharmacology the only factor in drug-related behavior. What people do under the influence, again, is partly a consequence of a society's cultural and legal structure—the social and legal norms spelling out and sanctioning appropriate and inappropriate behavior. Still, what a drug does to the neurochemistry of the human brain—and hence, the body—is relevant to the social scientist's interests. Thus, we need to begin by discussing drugs as psychopharmacological substances.

WHAT IS A DRUG?

Ask a dozen people for their definition of the word *drug*. I've done it and some of the answers I get are far too broad to be useful ("a chemical"), while others are too narrow—not to mention wrong ("an addicting substance"). In addition, some of these answers

dwell exclusively on the effects of substances ("drugs get you high"), while others focus on their social or legal status ("drugs are against the law"). The question, "What is a drug?" cannot be answered strictly objectively (from a substance's pharmacological properties alone) or strictly subjectively (the way a substance is seen, thought of, reacted to, and defined in societies around the world). Each of these types of properties is necessary to define "drugness"—that is, what a drug *is*.

Drugs is a concept that is defined both *materially*, with respect to drugs' essential or physically real properties, and *socially*, a construct that is both in our minds—in the way we picture or represent the world—and in institutions we have built to deal with certain substances. Drugs can be defined by what they *are* and what they *do*—in a real-world biochemical and pharmacological sense—as well as what they are *thought* to do, including how the law defines them and the way they are depicted in the media, how they are socially constructed and conceptualized. The first definition delineates the "objective," or *essentialist*, reality of drugs, while the second definition delineates the "subjective," or *constructionist* reality of drugs. Every phenomenon that has ever existed—including drugs—can be looked at through the lens of these two different definitions or perspectives.

Definitions may be more—or less—useful according to a specific setting or context. For drugs, three relevant drug contexts come to mind: medical utility, illegality, and, as we saw, psychoactivity. The "medical utility" definition regards a drug any substance used by physicians to treat the body or mind; the "illegality" definition regards as a drug any substance whose possession and sale are against the law; and the "psychoactivity" definition regards a drug any substance that influences the workings of the brain or mind, that has an impact on cognitive and emotional processes. If we use one definition, certain implications unfold that may—or may not—be fruitful in a different setting. But if we use another definition, different implications appear that could be useful or counterproductive, again, depending on what we wish to achieve. Even though both are tools, we don't use a hammer to saw wood or a saw to hammer a nail. Definitions, like tools, are useful only according to their context—what we want to use them for.

Medical Utility

One definition of what a drug is, is that it is *a substance that is used to treat or heal the body or mind*. According to this definition, physicians administer drugs to persons who are sick, disordered, or abnormal to return them to a state of normalcy or "ordinariness," to *remove* that which is pathological, abnormal, unnatural—the disease or medical condition—or "out of the ordinary." Can we define a drug by the criterion of medical utility? For instance, given that heroin is not approved for medical use in the United States, does our medical definition exclude heroin? Does it mean that heroin is *not* a drug? Well, if we were to follow that definition alone, yes, it does dictate that, in the United States, we may not regard heroin as a drug. And is penicillin a drug? Yes, if we were to adopt a strictly medical criterion as defining what a drug is, *of course* penicillin is a drug; it is used to treat bacterial infection. But is penicillin used illegally on the street? No, because it does not produce a "high" or intoxication. In the context of illicit use, penicillin is *not* a drug.

The medical definition contains both an objective (or essentialist) and a subjective (or constructionist) element. For a drug to be used medically, we assume that it *does*

something to the body—it acts as a healing agent. This is its objective reality. But in addition, a drug has to be *recognized* as therapeutically useful by physicians, and physicians in a given society may not adopt it as medicine even if it works as a therapeutic agent. Controversy may exist with respect to whether some drugs are medically useful. For instance, as of this writing, marijuana is recognized and legitimated as medicine in 33 states, plus the District of Columbia, but not in the other 17 states, and it is not so recognized by the federal government. Heroin maintenance programs are legal in much of Western Europe—Switzerland, the Netherlands, Denmark, and Germany—but not in the United States. Same substance, objective speaking; different legal and social construction. This is the subjective reality—the "socially constructed" side of the medical definition, or how drugs are defined, how the medical profession regards or *defines* substances.

This means that the same substance can be defined *as* a drug and *not* as a drug—depending on the context or the setting. Within the context of medical therapy, the definition of a drug as medicine is useful. *Outside* that context, it is less useful. However, it's also true, as we'll see, that a medical definition may *determine* a substance's legal status; if it is *not* recognized as medicine by the government, this often induces members of a society to criminalize its possession and sale. Since most of the drug use we'll be looking at in this book is recreational—users engage in it for the purpose of getting high, for the effects themselves—the medical definition of drugs is not as useful to us in our quest to understand the causes, consequences, and implications of drug use. It's also interesting that Keith Stroup, who founded NORML, an organization that lobbies for the legalization of cannabis, found that when marijuana began to be legalized *as medicine*, state by state, his efforts to legalize and decriminalize the drug were facilitated because that gave it a more harmless and benign public image. (See Keith's Q & A at the end of Chapter 13.)

Illegality

How a drug is defined is also determined by a substance's *legal* status—whether the possession and sale of a given substance are legal or illegal. According to this definition, the law and law enforcement define what a drug is. If the possession and sale of a substance are against the law and likely to generate criminal punishment, then that substance, according to the dimension of illegality, is a drug. The legal status of drugs is a *socially constructed* definition: When a drug law is enacted, a category of illegal substances is created. Societies vary with respect to their drug laws. The same substance may be legal in one jurisdiction and illegal in another. Same substance, different status with respect to "drug-ness." In addition, drug laws change over time; substances move from being legal to illegal, and vice versa. Presumably, the possession and sale of certain drugs result from their physical or material properties: They are *considered* harmful and thus, are prohibited by law. Though the legal definition of what drugs are is a social construct, it is hypothetically based on their physical (or essentialist) properties.

But here, as in the medical world, controversy is the rule. For instance, some marijuana users proclaim, "Marijuana's not a drug—it's a gentle, natural herb! How can you outlaw nature?" But, as we have discussed, the possession of marijuana (or cannabis) is *legal* in some states, decriminalized for small-quantity possession in others, legal only *as medicine* in still others, *both* decriminalized *and* approved as medicine in other states,

and completely illegal in still others. The social and legal construction of cannabis is topsy-turvy both respect to historical time and jurisdiction or geography, and it continues to evolve. "It's a matter of definition" seems to be the watchword of marijuana. And to top it all off, the possession and sale of cannabis remains strictly illegal with respect to *federal* law.

In contrast, according to the definition based on a substance's legal status, alcohol is not a drug, because its sale is authorized and controlled by the state, and nearly anyone above the age of 21 may possess it. (Its sale to someone under 21 years old is, of course, by the law's very definition, illegal.) Hence, if someone who uses a definition based on a substance's criminal status refers to the drug problem, alcohol is *not* part of the drug problem, since its possession and sale are not illegal to adults. The definition based on illegality uses a kind of double standard when it comes to psychoactivity: Certain substances that influence the mind are included, while others are excluded. To the federal government, the "drug problem" includes *only* the recreational use and abuse of illicit substances—not alcohol—or the unauthorized (and therefore illegal) use of prescription pills.

A definition of a drug based on criminality is woefully inadequate if we wish to examine the full range of the use of psychoactive substances—why they are used and with what consequences. Why is this so? Because the "illegality" definition, based on a drug's legal status, excludes alcohol, a psychoactive substance with an extremely *strong* connection with both the use of illicit drugs and behaviors that illicit drugs cause or are correlated with. Alcohol consumption can never be neatly separated from the use of illegal drugs, because the same people who engage in the latter activity also engage in the former. It is not enough to say, well, yes, but they also drink milk, because consumers of alcohol are *much more* likely to use and abuse illegal drugs than persons who do *not* use alcohol. Alcohol tends to be used in addition to, not instead of, illegal drugs. *And* people who commit crimes are *much more* likely to drink than people who do not engage in criminal behavior, but these two categories don't consume milk at substantially different rates.

The criminalization of certain substances is a central topic when thinking about the issue of drug use. The fact that a given substance is illegal—regardless of its effects—determines the sorts of lives users and sellers lead. A consumer of alcohol may be using a psychoactive substance, but that fact alone does not make the adult user a potential target of law enforcement. The same cannot be said for the consumers of illicit substances.

Psychoactivity

Pharmacology is the study of the effect of drugs on biological organisms; the scientists who study the effects of drugs are called "pharmacologists," and psychoparmacology is the study of the effect of drugs specifically on the brain, that is, on the mind. As we saw, a third way of defining a drug is *any substance that is psychoactive, that has a significant effect on the mind*. To the psychopharmacologist, psychoactivity is the most crucial and important property of a chemical substance. A psychoactive substance is one that affects the workings of the CNS (the brain and the spinal column) and thus influences thinking, mood, feeling, sensation, perception, emotion, and, as a consequence, behavior as well. The psychopharmacological definition—what a drug does to the brain, and therefore the mind—is a definition that is based *entirely* on the materially real or

essential properties of substances. According to this definition, some substances (such as LSD) are drugs because they influence mood, emotion, and cognitive processes. In contrast, other substances (such as penicillin) are *not* drugs because they are *not* psychoactive. By the definition of psychoactivity, which opens the door to *recreational* use, a drug serves exactly the opposite purpose as that focused on in the medical definition. Medically, drugs are used to return the body or mind to a state of normalcy, ordinariness, or *stasis*. In contrast, from the perspective of psychoactivity, it's just the opposite, drugs are used to take the mind *out of* a state of normalcy, or ordinariness, into a state that the ancient Greeks referred to as *extasis*—ecstasy. This condition may be very mild (such as puffing on a cigarette or sipping a cup of coffee) or very powerful (swallowing a tab of LSD or smoking crack cocaine). But in principle, the functions of medical and recreational drugs, as implied by their respective definitions, are very different—very much the opposite of one another.

Different types of drugs have different sorts of effects, and we'll be looking at some of these effects in later chapters. But whenever a substance influences how the brain works, as I've said, pharmacologists refer to it as psychoactive. In addition, to any social scientist, including the criminologist, psychoactive drugs are interesting because they influence human behavior, including drug-taking behavior. Why do people take drugs? Because drugs make users feel good. Why are they illegal? Because all drug-taking entails a measure of risk; the good judgment of users may be impaired, they may like the effects too much and become drug dependent and do all sorts of terrible and illegal things to obtain the substance, and they may take so much that medical consequences ensue—even death. As a consequence of their effects, societies all over the world have decided that the possession and sale of certain substances should be illegal. This will be a central theme that runs throughout this book.

According to the psychoactivity definition, any substance, regardless of its legal or medical status, that significantly and pharmacologically alters the workings of the brain, is a drug. Any substance that does not is not a drug.

All substances that are taken recreationally are psychoactive. This is the reason *why* they are taken—so that the user can get high, *because* of their effect on his or her mind. Users seek the effects that constitute the psychoactivity of certain chemical substances. For most users, the effects of particular drugs are felt as pleasurable, and it is this pleasure state that they wish to achieve when taking the drug. Drug researchers refer to drugs that are taken primarily for their effects—for the purpose of getting "high"—as *recreational drugs*. But with all drugs, pleasure is a "package deal," and some of the contents of the package may be undesirable to all concerned, user and nonuser alike.

To repeat: Is alcohol a drug? According to the definition of "psychoactivity," *of course* alcohol is a drug! Alcohol is psychoactive. It has effects on the brain; it influences mood, emotion, feeling, and cognitive processes. In addition, it influences human behavior. Coordination diminishes under the influence; human speech is impaired at low-to- moderate doses of alcohol; inhibitions are lowered, and behavior that is unlikely to be attempted under most circumstances is all too often seized upon with great enthusiasm. Yes, most emphatically, pharmacologically, alcohol *is* a drug! Pharmacologically speaking, alcohol is a drug *in exactly the same way* as illicit substances such as cocaine and marijuana are. *Objectively*, it is no different from the controlled substances that can get the possessor and seller arrested.

Defining Drugs: A Summary

For the purposes of the discussion in this book, two definitions, based on entirely different criteria, define what drugs are: psychoactivity and illegality. The first is based entirely on an essentialist or (presumably) materially real property, while the second is partly a socially constructed property and partly based on the effects of certain substances. To the sociologist and the criminologist interested in real-life or "street" behavior, a third definition of what a drug is, the *medical* definition, is far less useful. The fact that penicillin is used as a medicine is not interesting or relevant to the work of the criminologist or the sociologist studying recreational drug use. Some substances are defined as drugs according to one of our two relevant definitions (psychoactivity and illegality) but not the other; many substances are drugs according to both of these criteria. And a few medications, such as morphine, that are drugs are according to *all three* of our definitions; they are psychoactive; they are illegal if used for recreational purposes; and they are used by physicians as medications, in the case of morphine, to treat pain.

Several Basic Pharmacological Concepts

In this section, we'll look at three basic, crucial pharmacological concepts everyone should understand to have a good idea of how drugs work. The acute-chronic distinction, the ED/LD ratio (effective dose/lethal dose), and drug tolerance.

The Acute-Chronic Distinction

"Acute" effects are the short-term effects of a drug, those that take place within the period of its administration and during the immediate aftermath of a single episode of use. Motor discoordination is an acute effect of downing four mixed drinks, each containing an ounce of an alcoholic beverage. Getting high after smoking crack or snorting four lines of cocaine, likewise, would be acute effects of using these substances. So is dying of an overdose after an intravenous (IV) injection of a massive dose of heroin. These are effects that occur *during* or *immediately after* taking one or more drugs; they are "acute" effects.

In contrast, "chronic" effects are *long-term* effects, those that occur after the continued use of one or more drugs. Developing cirrhosis of the liver after 30 years of compulsive, heavy, drinking, lung cancer after decades of two-pack-a-day cigarette smoking, or brain damage after a period of methamphetamine dependence are all chronic effects from which users can suffer. Some chronic effects are a direct consequence of the long-term action of the drug itself. Heavy, frequent use of alcohol damages the drinker's liver as well as most other organs of his or her body; the heavy, frequent use of nicotine damages the lungs as well as most other organs of the body. These are *direct* effects of the *chronic* use of certain drugs.

Then there are the *indirect effects* of taking a drug. These effects are caused not by the action of the drug itself but by the circumstances of use—for instance, using contaminated needles or leading an unhealthful lifestyle. By itself, heroin does not cause AIDS, but using shared needles that are contaminated by HIV, a common practice among addicts, does cause AIDS. Distinguishing between direct effects and indirect consequences of drug taking is crucial because that has extremely important policy implications, as we'll see in Chapters 13 and 14.

The ED/LD Ratio

ED stands for "effective dose." Also known as "active dose," this designation refers to the dose of a given drug that is required to produce a given effect. More specifically, since all organisms vary in their receptivity to the effects of drugs, ED is represented with respect to the *percentage* of a given population (including humans, as well as animals such as mice, rats, and beagles) among which the dose in question produces the specific effect. ED50 indicates that the drug in question produces a given effect for 50 percent of a designated population; ED100 refers to the same effect for 100 percent of the population.

For instance, if we stipulate the ED50 for morphine in humans for a reduction in pain among a population of postoperative patients, we are spelling out the dose of morphine that is required to achieve a pain-killing effect for half the patients tested. We can do this for any drug, any specific effect, any percentage, in any population. Obviously, for different effects or functions, as well as for different individuals, the ED will differ. For instance, alcohol will slow down reaction time in humans at lower doses (at a lower ED50) than the dose at which it produces motor discoordination or ataxia. And obviously, larger organisms require larger doses to produce a given effect—humans versus mice, for instance. Doses are often expressed per kilogram of body weight.

LD stands for "lethal dose," the quantity of a given drug that is required to kill a stipulated population. LD also refers to a drug's toxicity—how much of the substance can kill a particular organism. More specifically, the ED/LD ratio measures its toxicity—its danger to life and limb. The ED/LD ratio—the *size* of the difference or the gap between ED and LD—is its *safety margin* or *therapeutic margin*.

The larger the ratio between a dose that has a given effect and a dose that is lethal, the safer the drug; the smaller the ratio, the more dangerous it is. For a drug to be considered safe, its ED/LD ratio should be *much* higher than 1:1. The closer a drug's ED/LD is to 1:1, the more dangerous it is. If a drug were to have an ED/LD ratio of exactly 1:1, this would mean that to achieve a given effect (for instance, getting high), everyone who ingests it would end up dead—an extremely *dangerous* drug indeed! But if the ratio is on the order of 1:1 million, it is an extremely *safe* drug. Most drugs are somewhere in-between 1:1 (the most dangerous conceivable drug) and 1:1 million (an extremely safe and nearly totally non-toxic drug).

Realistically, a drug that has a safety or therapeutic margin of 1:10 or so is an extremely unsafe drug. If the quantity that can kill a user is only 10 times greater than the quantity that causes the desired effect, a very substantial number of users who take it will end up dead. On the other hand, a drug with an ED/LD ratio or safety margin on the order of 1:1,000 is extremely safe; that is, it will be very difficult for a user to die of an overdose of this drug.

Drugs vary enormously with respect to their safety or therapeutic margin. Heroin is a remarkably unsafe drug; the dose that causes death in a substantial proportion of users is only 10–15 times higher than the dose at which a substantial proportion of humans achieve a given effect—and obviously, here, getting high is the effect in which we are interested. Because illicit heroin is highly variable in purity and potency, it is not terribly difficult to die of a heroin overdose. During the late twenty-teens, that is, between 2015 and the end of 2019, tens of thousands of users of the narcotics, including heroin addicts as well as users of the opioids, died of overdoses of their drug of choice. As we'll see,

considering the relatively small number of heroin users, heroin makes a remarkably substantial contribution to the nation's overdose statistics.

One reason for this is the affinity of the receptor sites in the brain that control breathing and heartbeat rate for the chemical structure of morphine, which is the substance heroin breaks down into after entering the body. In contrast, as we have seen, marijuana has a remarkably high safety margin. It is extremely difficult, if not virtually impossible, to die of an overdose of marijuana, because its ED/LD ratio is so enormous. As Arthur McBay, a research toxicologist, former professor of pharmacy at the University of North Carolina at Chapel Hill, and former Chief Medical Examiner of the state of North Carolina, told me, he once testified in a court case before the Supreme Court of Nevada that "a person would have to consume 1,500 pounds of marijuana in 15 minutes to get a lethal dose." Of course, drugs have effects other than their capacity to kill in an acute episode of use. No one dies of a nicotine overdose (although if the quantity of nicotine in one cigar were injected IV, it would be lethal), but the *chronic* effects of tobacco are often devastating.

Drug Tolerance

Tolerance means that the repeated administration of a drug produces diminishing effects. Over time, the body requires a larger dose to achieve the same effect.

Pharmacological tolerance refers to the fact that the neurons become increasingly insensitive to a given drug, and so that drug becomes decreasingly effective. For instance, as a general rule, drug users must increase the dose of their drug of choice to get high. The flip side of this is the fact that as habituation rises along with tolerance, the lethal quantity of a given drug rises as well. It requires much more of a given drug to kill a habituated or long-term user than it does a neophyte or inexperienced user.

Cross-tolerance refers to the fact that the same principle of diminishing effects that takes place for a given drug also applies to another drug within the same type. For example, tolerance to LSD will also produce tolerance to psilocybin, a related psychedelic substance. Similarly, tolerance to heroin will also produce tolerance to morphine, another narcotic.

Behavioral tolerance reflects how an experienced user learns to compensate for the effects of a given drug, and, hence, a given dose of the drug has a decreasing impact on his or her behavior. For instance, experienced drinkers claim that they can drive as well under the influence as normally. This is false, but what *is* true is that they can drive better under the influence than an inexperienced drinker can. Over time, as a result of trial and error, they have inadvertently trained themselves to "handle" or compensate for the effects of alcohol in such a way that these effects are not nearly as discoordinating as they are to the novice drinker. Still, at a certain level of intoxication, alcohol is discoordinating to *all* drinkers.

FACTORS THAT INFLUENCE DRUG ACTION

To exert a mind-altering or psychoactive effect, drugs must enter and act on the CNS–the brain and the spinal column. As I have said, most substances we call drugs are *not* psychoactive, and even psychoactive drugs exert many actions in addition to psychoactivity. To exert an action on the brain, a drug must enter the bloodstream and cross the blood-brain

barrier. The body's entire volume of blood circulates roughly once a minute. Hence, when a drug enters the body, it circulates rapidly and evenly. At least four major factors influence the action of drugs: route of administration, dose, potency and purity, and drug mixing.

Route of Administration

Drugs may be ingested in a variety of ways. Pharmacologists refer to a method of taking a drug as a route of administration. Some routes of administration introduce drugs into the body in an extremely rapid and efficient manner. Injecting directly into the vein a liquid solution into which a drug has been mixed is called intravenous or IV administration. Obviously, only a drug that actually dissolves in water can be injected in this way. IV administration is one of the most effective means of administering drugs. Injecting a drug under the skin—subcutaneously—or directly into a muscle—intramuscularly—is a much slower and more inefficient route of administration than injection into a vein. Oral administration, such as drinking a liquid (like alcohol) or swallowing a pill, is a much slower and more inefficient method of ingestion. This is because if taken orally, a drug must pass through the stomach and be absorbed from there or even further down, through the small intestine, all of which takes a long time. Drugs can also be administered via a dermal patch, through a rectal or vaginal suppository, or placed directly on mucous membranes such as the eye, the gums, or under the tongue or elsewhere inside the mouth.

Smoking is the most rapid and efficient route of administering a psychoactive drug, the one which will enable a substance to produce the quickest, strongest reaction. This is the case because the air sacs of the lungs are densely surrounded by capillaries; as a result, drugs move rapidly from the lungs into the bloodstream and from there they "swamp" the brain.

The difference between IV administration and smoking is that when a drug that is injected into a vein enters the heart, the blood that carries it to the heart is diluted with blood that does not contain the drug. In contrast, blood that travels from the lungs through the capillaries to the brain is completely undiluted and enters the brain at full strength (Goldstein, 2001, p. 19). Hence, if heroin or crack cocaine is injected IV, the high, felt as a "rush" or "flash," will take hold in 12–14 seconds. If these drugs are smoked, the rush will take place in 6–8 seconds.

The route of administration is a crucial factor because a focus on it, and it alone, may confuse observers into thinking that drugs taken in different ways are actually different drugs. For instance, federal law mandates much harsher criminal penalties for crack cocaine than for powder cocaine possession: A five-year prison sentence was once mandated for the possession of 5 grams of crack and 500 grams of powder cocaine. (In 2010, then-President Obama signed the Fair Sentencing Law into effect, which recalibrated the weight to reflect a more moderate 18:1 ratio.) The justification for a discrepancy is that crack is a more dangerous and addicting drug than powder cocaine. In fact, crack and powder cocaine are very nearly the same drug, taken via different routes of administration. Crack is more dangerous and addicting; it has different "effects" from powder cocaine specifically because it is taken in a more efficient, effective, and reinforcing fashion. Because powder cocaine combusts at a higher temperature than crack, it is more difficult to smoke, but in theory, smoking it would produce a similar effect as crack cocaine. As a result of the way it is used, practically speaking, crack cocaine *is* more reinforcing and

hence, more dependency-producing than powder cocaine. Consequently, the legal distinction is not *totally* absurd.

To summarize, crack both *is* and *is not* a different drug from powder cocaine. It is different in that, when taken via the usual route of administration, it is extremely pleasurable and therefore, very likely to result in abuse and dependence. But it is *not* different in the sense that the active ingredient in crack and power cocaine are chemically identical, and both break down into the same chemical in the body. The world of drugs is not a simple either-or, black-or-white phenomenon.

The route of administration influences the effects a drug has. The same drug will have different effects according to the manner in which it is taken. In addition, because of their physical form, some drugs cannot be taken by certain methods.

For example, marijuana is not soluble in water and so cannot be injected intravenously into the bloodstream. In some societies, marijuana is brewed in tea; its effects are much milder, more muted, and less intense than if it is smoked. In the United States, it is mainly smoked. The fact that a small proportion of marijuana users become dependent on it indicates that the drug has an extremely low *potential* for dependence, because the method by which most users take it is highly reinforcing. As for alcohol, because it is only used orally, its effects tend to be considerably less powerful and less instantaneous than if it were taken in more reinforcing ways. As a result, *most* people who drink do not become dependent on alcohol. The leaves of the coca plant contain roughly 1 percent cocaine, but the effects of chewing coca leaves are very different from the effects of snorting powder cocaine, which, in turn, are very different from those of smoking crack. Some gasses (amyl nitrite, for instance) are too volatile and too unstable to be taken in any manner other than by inhalation. Cocaine and heroin are smoked, administered intravenously, and sniffed or snorted intranasally. Each means of taking these drugs will produce a different set of effects—although they are recognizably "cocaine" or "heroin" effects.

Dose

A discussion of drug effects is meaningless without considering the factor of dose. At minuscule dosage levels, a normally potent drug would exert no discernible effects whatsoever. And massive doses of a normally weak or safe drug will have overwhelming, even fatal, effects. Heroin, a drug that can shut down the body's heartbeat and breathing mechanisms, can be extremely safe if taken in a dose as minuscule as several micrograms, which will exert no recognizable effect at all. Aspirin, a safe drug taken by millions of people every day with no harmful effects whatsoever, can cause death if taken in a sufficiently large dose. As we know, it is almost impossible to die of a marijuana overdose, yet if several kilograms of the drug were forcibly shoved down someone's throat, the dose could conceivably be fatal. In sum, the issue of dose is inevitably intertwined with drug effects.

The issue of the customary dose at which a drug is taken by users is crucial here. Drug effects are most meaningful at the dosage levels users customarily take. And doses on the street are more meaningful than doses in the laboratory. For each drug, traditions that dictate the appropriate dose for users to take have evolved and vary from one society to another. In addition, the availability of drugs influences what

doses users take. During a period of abundance, when an illicit drug is not only readily available but inexpensive as well, users will take it at higher doses; during a "drought," when the drug is expensive and difficult to obtain, users will tend to take lower doses. It is possible that when a drug is studied in the laboratory, the doses administered are not realistic in that the drug may not be used at those dosage levels in real life.

Drugs generally exhibit what pharmacologists refer to as a dose-response curve. Each drug exhibits a characteristic dose-response curve *for each effect*. As a general rule, the higher the dose, the greater or more extreme the effect. For all drugs, there are doses at which a given effect does not occur at all. Plotted on a graph, the lower end (at low doses) of the dose-response curve will be almost flat, rising very slowly. As the dose increases and the drug's effects begin to kick in, there will be a kind of "takeoff" point, where the dose-response curve rises very rapidly. Then, for most drugs and for most effects, at even higher doses, the dose-response curve will flatten out again, after which a higher dosage does not produce more extreme effects. With alcohol, for instance, the range of doses between one drop and roughly half an ounce will produce no discernible effect in most adults. This is the nearly flat part of the dose-response curve. Then, for most adults, after a half-ounce, the effects of the drug start to kick in, and the imbiber begins to feel intoxicated. Most effects begin to flatten out at a certain point, although with alcohol, death by overdose occurs at extremely high doses. To know a drug's effect, it is absolutely necessary to consider the dosage taken.

Potency and Purity

Potency is defined as the quantity of a drug that it takes to produce a given action or effect; the lower the amount that produces a given effect, the greater the potency of the drug. Drugs vary in potency between and among themselves. LSD is vastly more potent than psilocybin, a related psychedelic. In addition, the same drug will be variable in potency from one batch to another. For instance, "ditch weed" marijuana, which grows by the side of the road, will usually have an extremely low potency, containing less than 1 percent THC (trans-delta-9-tetrahydrocannabinol), the drug's active ingredient. Other batches of marijuana that are cultivated to achieve maximum effect will contain 10 or more percent THC. Alcoholic beverages, likewise, are variable in potency: Beer is about 4–5 percent alcohol; table wines are roughly 13 percent; and distilled spirits such as gin, vodka, tequila, and whiskey are 40–50 percent alcohol. (Technically speaking, the alcohol itself is not variable in potency, it is the alcoholic *beverages* that vary with respect to the alcohol they contain.) Hence, consuming the same quantity of any one of a number of alcoholic drinks will produce different effects because of the variable of potency.

Drug Mixing

Drug mixing is also a crucial factor in considering the effects of drugs because it is extremely common in the world of use, and it plays a major role in the variability of what drugs do to the mind and bodies of users. Many users who take one drug also take one or more other drugs simultaneously. Roughly two-thirds of all persons who die of a drug overdose are found with more than one drug in their bodies. A street drug called

a "speedball" contains cocaine and heroin, or methamphetamine and heroin. Alcohol is frequently imbibed at the same time as marijuana is smoked; people who take "downers," such as barbiturates and methaqualone, or tranquilizers, will drink as well.

It is extremely important to consider drug mixing because drugs can *interact* in important ways when they are taken together. Some drugs have antagonistic effects with one another, meaning the effect of one drug nullifies or cancels out the effect of another. For instance, Antabuse not only blocks the effects of alcohol, but makes the drinker violently ill when alcohol is ingested. For antagonistic drugs, one plus one equals zero.

Other drug combinations produce additive effects. For example, one aspirin plus one Tylenol will have the same effect as two aspirin, or two Tylenol, taken separately. Additive effects can be depicted by the formula one plus one equals two.

Some drugs have synergistic effects when taken in combination. *Synergy* refers to the multiplier effect, whereby the effects of one drug plus the effects of another equal more than twice as much of either, taken alone. We can represent synergy by the formula one plus one equals four. For example, alcohol and barbiturates are synergistic with one another. If you were to ingest a half-quart of vodka plus ten 10 milligram capsules of the barbiturate Seconal, you would be much more likely to die of an overdose than if you ingested a full quart of vodka *or* twenty 10 milligram capsules of Seconal. This is because alcohol and barbiturates interact with one another to produce a more powerful synergistic, or multiplier effect in combination than they produce by themselves. Synergy is especially important because drugs are more likely to be mixed today than was true in the past, and synergy produces not only more powerful but more dangerous effects, such as death by overdose.

A Classification of Drugs and Their Effects

Our two paramount interests in this book are, one, the relationship between the use of psychoactive substances and human behavior, especially criminal behavior, and two, the *culture* of drugs and drug use, that is, what people *say* and *do* in relation to drugs, most notably, criminalization. Does crime inevitably follow use—and if so, why? Many of the drugs that are interesting to the psychiatrist (for instance, antidepressants or antipsychotics) are not of concern to criminologists; they do not produce a pleasurable intoxication and so, are not taken to get high, and there's relatively little lore or mythology about these substances. Here, we're mainly interested in *psychoactive*, *recreational* drugs—those that are taken for pleasure, for the purpose of getting high. Do certain kinds of problematic drug-induced behaviors cause societies to define psychoactive substances *as* social problems in need of a solution, specifically, criminalization in order to shut down their distribution and eliminate their use? And at what point along the use continuum does moderate, recreational use that harms no one become harmful, dangerous, and toxic to the user, practically everyone the user comes into contact with, and to the society at large?

The late 2010s witnessed several novel developments in drug use that are worth mentioning. One is vaping. "Vaping" isn't so much a new drug as an old way of using certain drugs—a route of administration—in a way they haven't customarily been used.

The MTF (Monitoring the Future) study of drug use among 8th, 10th, and 12th graders found that vaping increased dramatically during the one-year 2018–2019 period. "Vaping involves the use of battery-powered devices to heat a liquid or plant material that releases chemicals in an inhalable aerosol" (Miech et al., 2020, p. 128). Users have discovered that a variety of substances can be vaped: e-cigarettes, such as JUUL, which contain nicotine, marijuana, and various kinds of flavored materials, some in the form of a liquid. MTF states that hundreds of flavorings are available which are especially desirable to teens, such as bubble gum and milk chocolate cream. Another late-teen development is the appearance of smoking of the dried leaves or chewing the fresh leaves of a tropical plant, called *kraktom*. Some users boil the leaves into a kind of tea, or put the substance into a capsule and swallow it. Used in Southeast Asia for centuries, the drug acts as a mild stimulant and a mild analgesic and, at higher doses, as a depressant. The Food and Drug Administration (FDA) investigated kratom in 2018 and concluded that continued use may trigger withdrawal symptoms; some deaths have been reported, and the agency issued a public health advisory about the drug's health risk. MTF did not include the drug on its already-overloaded roster list of substances it asked its respondents about, but in 2019, the first year of its appearance in the *National Survey on Drug Use and Health* (NSDUH), only 0.3 percent said that they had used it during the past month. A big fuss over a substance hardly anyone has taken? Possibly, we'll know, perhaps, within a year or two.

Stimulants

The drugs that excite, activate, or fire up the CNS are called *stimulants*. Stimulants produce alertness, an elevation in mood, even excitation. They also inhibit fatigue and lethargy and stimulate physical activity. For our purposes, cocaine and amphetamine (along with methamphetamine) are the most important stimulants.

Pharmacologist Avram Goldstein refers to the use of cocaine and the amphetamines as "the wild addictions" (1994, p. 155). The immediate subjective effects of these two stimulants are euphoria and a sense of self-confidence and well-being. As we just saw, administering cocaine and the amphetamines is extremely reinforcing; as we saw, they possess what pharmacologists call "immediate sensuous appeal" (Grinspoon and Bakalar, 1976, pp. 191–194). Taking them generates the impulse to use regularly. In popular or lay terms, they are pleasurable.

It should come as no surprise that these two drugs are widely used for recreational purposes, that is, for the purpose of getting high. Most experimenters and even episodic users can overcome the impulse to become dependent on cocaine and amphetamines; they have other things to do with their lives than to devote all their time to self-indulgence. But the seductive pleasure principle is always present, always exerting an effect, and a minority of experimenters—perhaps one in ten—will escalate to more serious use and many of them, eventually to abuse.

Stimulants speed up signals passing through the CNS. They activate organs and functions of the body, heighten arousal, increase overall behavioral activity, and suppress fatigue. In low doses, stimulants can heighten the body's sensitivity to stimuli and increase concentration and focus and improve mental and physical performance. At higher doses, however, many of these functions seem to go haywire. Behavior

becomes unfocused, hypersensitivity translates into paranoia, and mental and intellectual performance becomes uncontrollable, ineffective, counterproductive, and compulsively repetitive.

Because the stimulants are highly pleasurable, they often lead to compulsive use and abuse which, in turn, not infrequently cause medical complications, including death. Hence, we would expect that societies everywhere have instituted legal controls on the distribution and use of the stimulants. These legal controls cause stimulants to become expensive, hence, profitable to sell, which means enormous criminal enterprises are based on the sale of cocaine and amphetamines. In addition, since both drugs activate bodily processes, we are led to ask what their role is in influencing or causing violent, problematic, "deviant," and criminal behavior. Cocaine and amphetamines interpenetrate with crime in important ways.

Sedative/Hypnotics

General depressants or sedative/hypnotics have effects that are more or less the opposite from those of the stimulants. They inhibit and slow down signals passing through the CNS, affecting a wide range of bodily functions. At low-to-moderate doses, they diminish anxiety and induce a feeling of relaxation and ease. At substantially higher doses, they produce (or potentiate) drowsiness, and eventually sleep. Alcohol (known to pharmacologists as ethyl alcohol or *ethanol*) is a general depressant or sedative, as are methaqualone (once sold commercially as Quāālude); barbiturates, such as Seconal, GHB (gamma-hydroxybutyrate), a once-semipopular "club drug"; and anti-anxiety agents (mostly benzodiazepines), including Valium, Halcion, Xanax, clonazepam, Dalmane, Rohypnol, and lorazepam. At a sufficiently high dosage, all general depressants or sedative/hypnotics produce a high or intoxication, all produce a physical addiction or dependency, and all can cause death by overdose. PCP, once sold under the trade name of Sernyl as an animal anesthetic and tranquilizer, has complex and contradictory effects because it produces "disassociation" (a feeling of being detached from reality) and, sometimes, hallucinations. It is frequently (but, in my opinion, erroneously) classified as a hallucinogen. Ketamine ("special K") is closely related to PCP but with a somewhat weaker disassociative effect.

All general depressants, alcohol included, slow down, retard, or *obtund* many functions of the body, especially the CNS; organs become more sluggish, slower to respond to stimuli. If the dose is too high, the body's organs will shut down altogether, and death will result. The depressants also disorganize and impair the brain's ability to process and use information, and so they impair many perceptual, cognitive, and motor skills needed for coordination and decision making.

At a sufficiently high dose, all the sedatives produce mental clouding and motor discoordination, an extremely important and potentially dangerous effect. This is especially relevant for alcohol, the most widely used of the sedatives. According to the National Highway Safety Administration, in the United States in 2019, fewer than 10,500 people died as a result of alcohol-related highway accidents (roughly 30% of all highway fatalities were alcohol-related), a substantial decline since 1982, when 26,000 died in alcohol-related roadway accidents, and roughly 60% of all deaths on the road were alcohol-related. These declines came about in spite of the fact that Americans drive twice

as many miles as they did three decades ago. At low doses, users of the sedatives feel a mild euphoria, a diminution of anxiety, fear, and tension, a corresponding increase in self-confidence and, usually, what is called a "release of inhibitions." Fear of engaging in risky activities generally diminishes, an effect that can be observed in laboratory animals as well as in humans. Ingestion of higher doses of a number of the sedative, including alcohol and the barbiturates, often results in paranoia, distrust, heightened anxiety, belligerence—even hostility.

Of all drugs, worldwide, alcohol is by far the one that is most likely to be implicated in violent crimes. The empirical evidence linking alcohol to violent behavior is overwhelming. More individuals who commit violent offenses are under the influence of alcohol than is true for any other single drug. For this reason, any examination of drugs and crime cannot possibly omit the role of alcohol in potentiating, influencing, or facilitating criminal, especially violent, behavior.

The role of sedatives, especially alcohol, is crucial to any investigation of human behavior, including—and perhaps especially—drugs *and* crime. Possibly the effects of alcohol, GHB, barbiturates, PCP, and ketamine *conduce to* criminal behavior. Barbiturates are illegal for nonmedical use, and most of the other sedatives, apart from alcohol, are not legally available in the United States. Hence, the issue of the criminalization of drugs, or drugs *as* crime, is crucial for the sedatives as well.

Opiates/Narcotics

Opiates—once more commonly called narcotics—have a specific action in which psychopharmacologists are very interested: They act to depress or inhibit a particular function—the perception of pain. Opiates are the most efficient and effective of all painkillers and are essential in the practice of medicine. However, at a sufficiently high dosage, narcotics also produce mental clouding, a euphoric high or intoxication. In addition, narcotics have, as we have seen, a fairly narrow safety margin. They are physically addicting and can produce death by overdose. The opiates are the natural derivatives of opium: morphine, heroin, and codeine. The opioids are the entirely synthetic narcotics with effects very similar to the opiates: methadone, Demerol (meperidine), Dilaudid (hydromorphone), OxyContin (oxycodone), and fentanyl (Duragesic). Many scholars and researchers use the terms *opiates* and *opioids* interchangeably; confusingly, some also use the term "opioids" to refer only to the commercially-produced opiates, such as hydrocodone and oxycodone.

The painkilling property of the opiates makes them of interest to the physician. But their narrow safety margin, their euphoria-inducing and their addicting properties, also make them of interest to the social scientist. Their narrow safety margin tells us that they are dangerous drugs. Compared with other drugs, they are highly likely, on a dose-for-dose basis, to lead to death by overdose. At the same time, their euphoria-inducing property tells us that many users are likely to be motivated to take them, and their addicting quality likewise tells us that they are likely to be used on a compulsive basis. Societies universally control or criminalize such behavior ("drugs *as* crime") which, combined with their illegality, such behavior is likely, in turn, to produce or conduce to criminal acts ("drugs *and* crime"). Sociologists and criminologists are very interested in the narcotics.

Hallucinogens/Psychedelics

Hallucinogens have effects on the CNS that are not easily classified in terms of stimulation or depression; they occupy their own territory. The hallucinogens include LSD, mescaline (a naturally-occurring chemical found in the peyote cactus), psilocybin (the naturally-occurring chemical found in the mushroom of the same name), and the extremely short-acting DMT (dimethyltryptamine)—the last of which seems to have had a cultural renaissance, partly because of the rediscovery that it occurs in nature, both in the plant ayahuasca (yagé), which members of some South American tribes use, and endogenously, in minute quantities, in animals, including humans, and partly because a film, *DMT: The Spirit Molecule* (2010), gave the drug some cachet. Drug texts often mention other substances, such as MDMA (Ecstasy) and PCP, as hallucinogens (for instance, Hanson, Venturelli, and Fleckenstein, 2020; Hart and Ksir, 2020), but these drugs have none of the major subjective effects of LSD, psilocybin, and mescaline and hence, are not true hallucinogens. The hallucinogens stimulate a range of psychic effects: eidetic imagery (vivid closed-eye visual imagery), synesthesia (the mixing or translation of one sense into another—for instance, "seeing" sound), subjective exaggeration, the "eureka" experience (the ordinary becoming the extraordinary), emotional lability (extreme mood shifts, from ecstatic to depressive), a sense of timelessness, sensory overload (a bombardment of the senses), and striking alterations of visual stimuli. We'll look at the subjective effects of LSD in Chapter 8.

Most of the harms attributed to the psychedelics in the 1960s—hallucinations, psychotic episodes, psychosis, suicidal behavior, violence, and genetic damage most prominent among them—turn out to have little or no factual foundation. Perhaps the most remarkable fact about the hallucinogens is that they are hardly ever abused. By that I mean that they are used episodically, sporadically, and infrequently; very few users take them frequently, chronically, or compulsively. LSD's month-to-lifetime continuance rate is the lowest of all the well-known drugs or drug types. Hardly any users take hallucinogens frequently or regularly. In the universe of at-least one-time users, for all drugs, LSD is among the *least* likely to have been taken within the past 30 days. This is almost certainly because LSD and the psychedelics are not reinforcing in the usual sense of the word. (If permitted to take them at will, laboratory animals do not repeat their use of LSD.) The enjoyment of taking hallucinogens is an extremely cultivated taste. In addition, aside from their illicit sale, the hallucinogens or psychedelics are very unlikely to be implicated in criminal behavior. On the other hand, LSD's impact on human emotion, cognition, and behavior is spectacular; the fact that their effects are so profound and disruptive to every-day life explains why it is rarely used on a compulsive basis. (The doses taken currently are much lower than they were in the sixties and seventies and hence, less disruptive than they were back then.) And the legal controls imposed on the distribution of LSD are interesting sociological and criminological topics in their own right.

Marijuana/Cannabis

What is referred to as "marijuana" is the dried buds and flowers (now, increasingly less commonly, the leaves) of the cannabis plant; its Latin name is *Cannabis sativa*. Hashish

is the dried resin of the cannabis plant and is usually more potent than marijuana. The main psychoactive ingredient of marijuana is THC. Marijuana varies enormously in THC content, from less than 1 percent to more than 10 percent. Many specially-tended, home-grown hydroponic plants (those that are grown in water rather than soil) contain buds that are well over 10 percent THC. Hashish, which is much less readily available in the United States than marijuana preparations (but more common in Europe), usually contains 10–15 percent THC.

At different times, observers have classified marijuana as a stimulant, a depressant, a psychedelic and a hallucinogen—even a narcotic. Actually, it is none of these. Although marijuana does produce sedation in users, this is not regarded by most pharmacologists as its central effect. Very few users have reported psychedelic-like effects with the drug. Today, marijuana is regarded as occupying its own unique category. Marijuana is not cross-tolerant with any of the psychedelics, which means that it belongs in a category by itself.

In spite of the fact that marijuana is smoked—an extremely efficient and effective route of administration—the effects of marijuana are not powerfully reinforcing, nor does the drug have a high potential for producing a strong dependence. Some research on laboratory animals supposedly indicates that marijuana may be a "harder" drug than was previously thought, that withdrawal-like symptoms appear when the drug is discontinued (Swann, 1995; Tanda, Pontieri, and DiChiara, 1997; Tsou, Patrick, and Walker, 1995). However, the fact that the vast majority of human users take the drug in moderation, do not become dependent, and do not experience withdrawal symptoms when they stop, probably suggests that these studies may not have been sufficiently lifelike for researchers to draw conclusion from them about the abuse or dependence potential of marijuana. Yes, there are chronic and heavy marijuana users—an account from one of them follows Chapter 8—but compared to most users, they are comparatively rare.

Marijuana, like alcohol, is used extremely frequently among people who violate the law. Studies show that arrested offenders are more likely to test positive for marijuana than any other illicit drug, with the partial exception (depending on the city and the sex of the arrestee) of cocaine. Unlike alcohol, however, it is not clear what marijuana's role is in the commission of crimes. Marijuana is much less likely to be associated with violent behavior than alcohol. And, since it does not produce the same kind of compulsive drug taking as heroin and crack cocaine, it is not as likely to be as closely implicated in money-making crimes. But to the interested sociologist, the enormous distribution of marijuana, an illegal substance used currently, that is, within the past month, in 2019 by 32.4 million Americans, 11.5 percent of the population age 12 and older, is fascinating. Moreover, unlike the use of practically all the other drugs or drug types, over the past 15 years of so, marijuana has increased substantially, up from 5.8 to 6.2 percent using during the prior month between 2002 and 2008, respectively, to 11.5 percent, in 2019—nearly a doubling. For all the categories interviewed by the MTF study (8th, 10th, and 12th graders, and college students, as well as 19-to-22-year-olds not in college), the use of marijuana was at an all-time high, and *vaping* marijuana during the past 30 days doubled or more than doubled between 2017 and 2019. We'll take a look at these developments in detail in Chapter 8. And the marijuana industry—very

likely, America's number one agricultural crop—makes the drug a fit and worthy subject of inquiry for the inquisitive criminologist. In addition, the *criminalization*—and the attempted *de*criminalization—of marijuana are as interesting to the sociologist and criminologist as for any other drug or drug type.

Ecstasy/MDMA

MDMA—"XTC," "E," or Ecstasy—is often classified as a hallucinogen (Hart and Ksir, 2020, Chapter 14; Hanson, Venturelli, and Fleckenstein 2020, Chapter 12). But as I just said, it possesses none of the major properties of LSD and the other psychedelics, such as spectacular alterations of visual stimuli, synesthesia, or eidetic imagery. As with marijuana, it seems reasonable to classify Ecstasy as belonging to its own category. Some observers argue that the fact that MDMA induces an extremely strong feeling of closeness with others suggests that it is an "empathogen"—an agent that induces empathy: a sense of trust, openness, peacefulness and serenity, along with the sense that one is experiencing the world afresh, for the first time. Like LSD, Ecstasy is rarely used on a compulsive basis. And the drug is not associated with criminal behavior. However, critics of the drug argue that, in animal experiments, continued use of Ecstasy produces a permanent depletion of serotonin, a crucial neurotransmitter that regulates emotion, mood, cognition, sex, and sleep. If this effect took place in humans, Ecstasy could be an extremely dangerous drug. Between the 1990s and 2000, the use of Ecstasy grew faster than any other major drug, but its use since 2000 has declined significantly. In 1985, possession and sale of Ecstasy became illegal at the federal level.

Disassociative Anesthetics: PCP and Ketamine

Many pharmacologists classify PCP (and, by implication, its milder but related cousin, ketamine) as a hallucinogen because of its capacity to induce hallucinations. I believe this to be a mistake because these drugs are vastly more different than they are similar. The florid bursts of vivid color and the synesthesia that people who ingest LSD and the other psychedelics and hallucinogens see and experience are completely absent with PCP and ketamine. Moreover, PCP and ketamine principally cause a physical disassociation from one's surroundings and anesthesia, which are utterly foreign to the psychedelics. Virtually no one who has taken both drugs would make this mistake. More properly, we should regard both PCP and ketamine as *disassociative anesthetics* because their principal and most important effects on users are their feeling of numbness and sensing that they are alienated or removed from their surroundings.

For most users and for most episodes of use, the effects of PCP and ketamine are sensed as intoxicating, pleasurable, and euphoric; ketamine's effects are generally experienced more rapidly and less intensely, but of a similar nature. Other effects include a sense of unreality, timelessness, weightlessness, and disorientation. Perhaps of all drugs, according to both the American Psychiatric Association and NIDA (the National Institute on Drug Abuse), PCP is most likely to induce panic attacks or a psychosis-like or schizoid state that include fear and paranoia, delusions. Likewise, also perhaps more than for any other drug, erratic, unpredictable, seemingly bizarre behavior—such as jumping from heights or running into moving traffic—very occasionally accompany the high.

CHART 1-1 A Classification of Psychoactive Drugs

Sedative-hypnotics/general depressants

alcohol (ethyl alcohol, or ethanol)
barbiturates: Nembutal, Tuinal, Amytal, Seconal, phenobarbital, pentobarbital
benzodiazepines (Librium, Valium, Xanax, Halcion, Ativan)
miscellaneous sedatives: meprobamate (Miltown, Equanil);
methaqualone (Quāālude, Mandrax, Sopor); GHB (gamma-hydroxybutyrate), or
Rohypnol

Antidepressants or mood elevators

Prozac, Elavil, Zoloft, Sinequan, Tofranil, Paxil

Antipsychotic agents

phenothiazines: Thorazine, Stelazine, Mellaril, Haldol

Hallucinogens/psychedelics

LSD ("acid"), mescaline ("mesc"), psilocybin ("'shrooms")

Opiates/Narcotics

opiates (opium and its derivatives): opium, morphine, heroin, codeine
opioids (synthetic narcotics): methadone, oxycodone (OxyContin), Darvon,
Percodan, fentanyl, Dilaudid, Demerol, hydrocodone, buprenorphine

Stimulants

cocaine ("coke"), crack cocaine
amphetamine (Adderall, Benzedrine, Dexedrine, "speed")
methamphetamine (Methedrine, Desoxyn, "meth," "crank," "crystal," "ice")
Ritalin (methylphenidate)
caffeine

Disassociative anesthetics

PCP (Sernyl, Sernylan, "angel dust")
ketamine ("K," "special K," "super K")

Nicotine

Drugs not easily classifiable in a general category

marijuana
MDMA (Ecstasy, "XTC," "E," "X")

Medical scientists developed PCP in the late 1950s as an injectable anesthetic—for which it was effective—but quickly discovered its multiple undesirable side effects. In the late 1960s, the drug, called "angel dust," had escaped from labs and medical settings and was used—in crystalline form, sprinkled on parsley, and smoked—on the street, recreationally. Even when its administration was restricted to animals, dealers and users stole batches to sell for recreational purposes; by the mid-1980s, PCP was banned even

from veterinary medicine. Today, it is a Schedule II drug; today, nearly all illicit PCP is manufactured illegally, in clandestine labs. Even polydrug users have discovered the harmful effects of PCP; according to MTF, the annual prevalence figure for high school seniors dropped from 1979 to 2016 from 7 to 1 percent.

A FINAL THOUGHT

There are two perspectives on the study of human drug consumption: the *pathology* orientation and the *impartial* or unbiased perspective.

The "pathology" orientation assumes that altering one's consciousness is inherently abnormal to begin with, that the human brain is so fined-tuned, and the human body, already in such a balanced, homeostatic equilibrium, that to substantially alter their physiological condition is to imperil their functioning. According to pathology researchers and commentators, drugs *as recreation*, by its very nature, constitutes abuse; it is unnatural, abusive, and medically risky, and should be avoided. "Recreational" drug use is an oxymoron, a contradiction; there is *no* safe drug-taking for fun. All illicit drug use is harmful and hence, abusive. Physicians are the ultimate arbiters of drug use, and their judgment is that drugs have a legitimate purpose exclusively within a medical context; the mind-active properties of medicines constitute an unfortunate side-effect that humanity would be vastly better-off without.

The "pathology" orientation resounds, for example, in the words of Hardin and Helen Jones, who associate the "sensual" drugs with psychiatric and medical harm. "Sensual drugs are those that the body has no need for," they declare. By taking drugs for pleasure, over time, the drug user feels "less and less satisfaction," eventually, feeling only a release from misery and a suspension from the agony of withdrawal. "In contrast," the Joneses declare, "Naturally attained pleasure enlarges the sense of satisfaction and can be repeated indefinitely" (1977, pp. 2–3). This approach deems any and *all* changes from everyday functioning as abnormal (pp. 217–222). The "pathology" orientation is reflected in the titles, and the content, of many drug texts with the free and easy use of the word "abuse." Many authors maintain that *all* use of psychoactive substances constitutes "abuse" because that's not what drugs are "supposed" to be used for.

A second approach to the study of drug recreational use is to adopt a more objective or impartial approach. Some authors (myself included) refer to drug "abuse" as the harmful use or misuse of drugs, which usually entails consuming substances in such quantities that they harm the functioning of the body. The words of Carl Hart and Charles Ksir, in their classic textbook, *Drugs, Society, and Human Behavior*, now in its 17th edition (2020), remain as true and as relevant today as when they appeared in the volume's first edition, almost a half-century ago: "Drugs, per se, are not good or bad." What is "bad" is the misuse or abuse of a psychoactive substance—that is, the *way* a drug is used. Even illicit substances do not possess "an almost magical power to produce evil." Drugs do not suck users into a whirlpool of heavier and heavier—and increasingly destructive—abuse. Norman Zinberg (1984) makes a strong case for *controlled* intoxicant use, and the *National Survey on Drug Use and Health* belies its title by demonstrating that *most* users of *all* recreational drugs are sporadic and occasional users. To the impartial author or researcher,

recreational drug use is not inherently or by its very nature "abuse." Only when getting high entails inappropriate or excessive use does it become "abuse."

SUMMARY

Drugs are both physical substances, with measurable effects, as well as symbols—socially and legally constructed entities that society thinks about and reacts to, and talks and writes about in certain ways. Pharmacologists study the molecular action of drugs on organisms, and psychopharmacologists study how a drug's chemistry interacts with the body's neurology, and hence its brain and spinal column—its mental processes. Many of these actions translate into the real-world "effects" we observe when people take drugs. Much of the most innovative and influential research on drug use is being conducted at the molecular and neurochemical level. Drugs can be thought of, in conjunction with substances called neurotransmitters, as a "key" that unlocks a site in the brain (a "lock") that causes a chemical reaction to take place. Neurotransmitters—which are in effect endogenous drugs, those that originate entirely within the body itself—regulate countless functions, from the molecular level through the brain to the relevant organs of the body. These functions include hunger, emotion, pleasure (sexual pleasure included), fatigue, and anger. Drugs mimic or block the usual chemical reactions caused by neurotransmitters and either prevent certain functions from taking place or exaggerate those that usually take place. Many of these chemical reactions produce behavior in which we, as sociologists and criminologists, are interested, with addiction or behavioral dependence foremost among them.

Understanding drug use requires a grasp of the acute-chronic distinction, the ED/LD ratio, and drug tolerance. In addition, four factors that influence drug effects are crucial: dose, potency/purity, route of administration, and drug mixing.

Some drug effects (acute) occur within the span of a single episode of use, under the influence—for instance, the marijuana smoker's high, the heroin addict's overdose, the LSD user's dilated pupils. Other drug effects (chronic) take place over an extended period of time—the cigarette smoker's cancer, the alcoholic's damaged liver, the methamphetamine addict's damaged brain. The acute-chronic distinction is crucial to any student and researcher of drug use.

Aside from the chemical features and actions of drugs themselves, of the many thousands of factors that influence drug effects, four stand out as crucial for us, as students of the intersection between drugs and human behavior.

Route of administration is central to any understanding of drug use and drug effects. How drugs are taken influences what they do. "How" refers to techniques of use—for our purposes, mainly smoking, injecting, sniffing (snorting), and swallowing. The same drug may be taken in different ways and have very different effects. (Not different "actions," but different effects.) In the Andean region of South America, indigenous residents chew coca leaves (containing 1% cocaine); such a route of administration produces effects vastly milder than smoking crack, also a cocaine product. Both routes entail "taking" cocaine, but they produce such different effects that it is difficult to think of both as entailing the use of the same drug. Both smoking and IV administration of drugs are very swift,

efficient, and effective routes through which to take psychoactive substances. Snorting and oral administration are vastly less efficient and produce slower and less intense "highs."

Dose is also central to the enterprise of understanding drug use. While pharmacologists study drug effects in a laboratory setting, social scientists look at the impact of drug use in naturalistic settings. What's more important here is the dose characteristically taken, not the potential effect of a drug in an artificial context. In all societies, norms and rules regulate the use of drugs and the amount that is regarded as acceptable to use. Most consumers of alcohol do not become high or intoxicated when they drink because they usually consume modest amounts, but if their dose were to increase drastically, they would become not only intoxicated but seriously debilitated as well. To know the effects of drugs in real-life situations, it is necessary to know the customarily taken doses.

Potency and *purity* are central to drug taking and its impact. In the 1980s, heroin was available, illegally, on the street at a purity of roughly 3–5 percent heroin. This means that most of what addicts were taking was inert, nonactive fillers. Today, heroin is available on the street at a purity of 40–50 percent. This means that users are taking nearly 10 times more heroin per packet than they did two or three decades ago. Different batches of marijuana will contain varying percentages of THC (tetrahydrocannabinol), the drug's psychoactive ingredient, from less than 1 percent THC for wild marijuana growing in roadside ditches to more than 10 percent THC for hydroponic or sinsemilla cannabis. Batches of greater potency will produce more extreme effects, or the same effects at lower doses.

Lastly, *drug mixing* influences drug effects. Increasingly, different drugs are used together, with many users enjoying the effects of two or more drugs simultaneously. For instance, a "speedball," a concoction taken on the street, is a mixture of heroin and cocaine or methamphetamine. Most drug episodes that result in trips to the hospital and, even more seriously, death by overdose, were a consequence of taking two or more drugs at the same time. Hence, the pharmacological interaction of the drugs users actually take is crucial. The effects of some drugs, when taken together, are additive. With other drugs, taken together, the effect is synergistic—they multiply one another, their effect, together, is greater than twice as much as each single drug, taken alone. Alcohol and barbiturates are the classic example here.

Drugs may be looked at with respect to the dosage at which certain effects take place. The "effective dose" (ED) is the dosage at which a certain relevant effect occurs (among a specific percentage, usually 50 percent, of a designated population) which is of interest to a given researcher or observer. To the marijuana smoker, the relevant ED is the amount that causes a high or intoxication. To the physician, the relevant ED is the dose of morphine, Percodan, or Darvon that is necessary to alleviate pain in patients with a certain level or degree of pain.

In contrast, "lethal dose" (LD) is the dosage that produces death in a percentage of a designated population. Most drug-related acute deaths occur as a result of shutting down or inhibiting signals from the brain commanding breathing and/or heartbeat. Some drugs have an affinity for specific sites in the brain that control these functions. Fifty percent of humans will die if they have four-tenth of 1 percent (0.4%), in volume, of alcohol in their bloodstream; 100 percent will die if their blood contains more than 0.8 percent alcohol, by volume. Hence, for alcohol, the LD50 is 0.4 percent BAC, and the LD100 is 0.8 percent. One of the few drugs not to have an LD is marijuana; most pharmacologists

believe there is no dose (that, for all practical purposes, users actually take) that will cause death by overdose with cannabis.

Drugs differ with respect to the ratio or gap between ED and LD. For some drugs (barbiturates and heroin are excellent candidates here), it takes only 10 times as much to kill an organism (LD) as it does to produce a given effect, such as intoxication or sedation (ED). For these drugs, the ED/LD ratio is 1 to 10, narrow enough to cause a very substantial number of deaths by overdose. As I explained, for marijuana, the ED/LD is enormous, almost incalculable. Hence, hardly anyone—possibly no one—dies of an "overdose" of marijuana. (But marijuana, through its principle psychoactive ingredient THC, does influence other functions of the body, such as coordination and cognition.) Hence, our twin concepts, ED and LD, as well as their relationship *for specific drugs*, is central to any social scientist's understanding of how and why drugs are used as well as with what consequences.

Drug tolerance is a crucial pharmacological concept because, over time, with most drugs, to achieve the same effect, a user needs to take an increasing dose. Addicts take a quantity of heroin that would kill a nonuser; their bodies have become habituated to the drug. *Behavioral tolerance* refers to the fact users are able to comport themselves under the influence in such a way that minimizes the negative effects of the drug. Some drinkers say they can drive as well under the influence as normally. This is not true, but they *are* able to drive better than an inexperienced drinker who is under the influence.

Drugs break down in different ways; some course through and exit the body fairly quickly, while others are more slowly metabolized by and eliminated from the body. Heroin is a rapidly-metabolized drug and evidences no build-up over time, while marijuana is slowly metabolized and tends to store over time in fatty tissue. The *fate* of drugs is an important feature of recreationally-used substances, and may have crucial consequences.

Drugs are classified in different ways. For our purposes, psychoactive effects fall into the following categories: general depressants, or *sedative/hypnotics*, which have a generalized inhibiting effect on all or most organs and functions of the body; *narcotics*, which dull the mind's perception of pain; *stimulants*, or substances that speed up signals passing through the CNS; *hallucinogens* or psychedelics, which generate profound alterations in the perception of sensory stimuli. Sedative/hypnotics include alcohol, GHB, barbiturates, methaqualone, and the tranquilizers, including Rohypnol and Valium. The *disassociative anesthetics*, PCP and ketamine ("special K"), have sedative-like properties. Narcotics include opium and its derivatives—morphine, heroin, and codeine—as well as the many synthetic potent analgesics, such as methadone, oxycodone, Darvon, Dilaudid, Percodan, and fentanyl. The stimulants are made up mainly of powder cocaine and crack cocaine, amphetamines, and methamphetamine, a chemical relative of amphetamine. Marijuana and Ecstasy do not seem to easily fall into any broader class of drugs and hence, occupy separate and independent categories.

We can sort drug authors and researchers into two approximate categories with respect to their position on psychoactive drug use. The first is made up of those who are guided by the "pathology" position; they argue that use for recreational purposes constitutes, *by its very nature*, a form of abuse or misuse. It is a type of pathology that should not exist and should be excised from the human community. The second is those that argue more objectively and impartially that recreational drug use is a continuum, a type of behavior similar to other risk-taking activities—such as hang-gliding, mountain-climbing,

cave exploring—that is enjoyed by a segment of the society, that, like drinking alcohol, brings pleasure to most users, but which entails a measure of psychiatric, behavioral, and physical risk for those who use uncontrollably, in quantities, or under circumstances, that are inappropriate and inadvisable.

ACCOUNT: Interview with John, an Advertising Executive

John is married, in his early 70s, has several grown children, is a successful advertising executive, lives in New York, and travels extensively in the service of his job. As with all of the accounts in this book, I've altered some biographical details to make John less identifiable.

EG: You mentioned that you currently consume one or more controlled substances. Why don't you tell me a bit about this use—what are the substances, how long have you been using, what your patterns of use are, what are some of your typical or atypical experiences, what your use of psychoactive substances does for you, how you obtain the drugs you've used, with whom do you do use them?

John: I've tried speed, acid, mushrooms, cocaine, marijuana, and a variety of prescription medications. As a recreational experience, pain medication hasn't been all that pleasurable, so I haven't done that in quite a while. I smoked hash in Europe—I lived there for five years, in London. Of course, hash is a lot like marijuana—it's the same drug. However, the drugs I've used *frequently* over a period of years comes down to only two—marijuana and cocaine. I really got started late. The first time I even *saw* marijuana was the day before I graduated from college. This was in '64. I was shocked—the whole thing seemed so decadent. But I started smoking marijuana years later, in '67. I was already 25 at the time. But all through college and up until the early sixties, I consumed a lot of alcohol. I found that the consumption of both cocaine and marijuana cut down on my use of cocaine. If I had to take one or the other, I'd take marijuana. In '67, I worked in broadcasting—a lot of creative people worked in broadcasting, a lot of whom used drugs recreationally, I was drawn to taking part in it myself as well. I was also in marketing, and a lot of the people I worked with used marijuana. There's a strong connection between the use of cocaine and sex. The sexual revolution of the sixties extended into the seventies, but up until the late seventies, the use of cocaine was fairly confined. Then in the eighties, cocaine seemed to be all over the place. Drug use was not that unusual in the eighties at suburban parties. In those industries, in that age group—in their thirties and forties—for those who could afford it, there was a lot of use. Where I purchased marijuana and cocaine, these kids who worked in the mail room had it, and we purchased it from them. When I worked in the office, a lot of clients would also use. Bartenders would do a lot of dealing. You knew that a particular dealer was going to show up at a particular bar. A lot of dealers would sell in grams. A gram of cocaine was tucked into a book of matches. For a long time, a gram of

cocaine cost $100. In New York, we made a connection with a couple of Colombians, who sold us coke. When they were near you, they would call you, and you'd go downstairs and they'd sell it to you in the car. I don't ever remember buying marijuana from Colombians. It was aging hippies who sold it to you. To this day, I know an aging hippie who sells grass. You could meet him or he'd come to your place. He also deals a bit in cocaine, but just for a few people. I have not used cocaine in about 10 years. I had a heart issue. I knew that it would be idiotic for me to continue using cocaine with that condition. I used to do a lot of traveling to major cities. I found it exceptionally easy to find drugs when I traveled. I'd call the guy in the advertising agency who sells commercial time for the network—he'd get it. In my case, I had sales staffs, but I was the one doing the traveling. A majority of the people in my business were doing drugs. One of my salesmen would get me in touch with a bartender. Or I would travel with cocaine. I would only travel with cocaine if I was going to travel with a woman. I wouldn't travel with marijuana—it smells. The sexual revolution escalated the use of drugs. If a woman used drugs that would increase the drug use of the guy she was with. Women absolutely go crazy over cocaine and sex—although for me, it hampers performance.

EG: It obstructs blood flow. You mentioned Amyl nitrite. It does the opposite—it increases blood flow. What was that like?

John: Yeah. Yeah. It was great. Women love it. For that matter, men like it, too. When you snap it at the point of orgasm, it intensifies the orgasm. I figure anything that feels that good has got to be dangerous. It was big in the gay community; I don't know how popular it was in the straight community. I took it maybe 50 times over the decade of the seventies. I know I didn't take it in the sixties and I moved to New York in 1978, and I didn't take it here—so in a period of eight to ten years, that's how often I took it. I've used marijuana a lot, though. I saw the price of marijuana go from $20 an ounce to $300. The *quality* has gone up at least ten times. In the old days, the quality marijuana was called "Acapulco Gold." [Chuckles.] It was pretty strong. I personally somewhat like the psychedelics. Not acid—that's a too much of a commitment. I don't want to be up for 24 hours. I'm talking about mushrooms. But they are very, very rare. I read Steve Jobs' book. He says that you should take a trip from time to time. But you have to be really careful. You get paranoid on acid. I've never regretted doing that though. I particularly remember the seventies and eighties before [Mayor] Bloomberg. I was still a little on the wild side. I'd ask the cabdrivers if I could smoke. Two out of three said OK. One even asked me to leave him one [joint]. At a lot of parties, people would be smoking and the people who didn't smoke didn't mind if you did, and if they did mind, you could step outside. A lot of us grew up with parents who were restricted and repressed. So, when the sixties rolled around, we were rebelling against our parents. And let me say, marijuana was a lot easier on the body than alcohol. I moved from Washington, which was a fairly conservative town, to LA, which was much more relaxed and permissive, and then to San Francisco. Drugs were simply part of the social scene. I got into the international side of the business [I worked in] during the eighties and nineties, and in the nineties, I moved to London. An unbelievable amount of

drugs were done in London and Paris. Especially London. There were periods when I'd smoke probably 250 days a year. After a while, the effect of the drug would just stop. I'd have to clean out my system. I never talked with anyone about this before, perhaps because I was too ashamed to admit it. I also felt that to some degree I was getting dependent on marijuana. People say that marijuana makes them more creative. I've tried to write on marijuana—it was gibberish.

EG: In the last year, how often would you say you've smoked marijuana?

John: In the last year, I would say 40 times. With marijuana, I used to smoke a lot on my own. That would be OK. But as of late, I would have to be in a social setting. But in the past eight years or so, at my age, you don't exactly just go over to people's places and smoke marijuana. Environments change. One of the most interesting things that happened to me, once, years ago, I was talking to a cop. We were talking about how someone gets marijuana. I asked him, what about the guys in Washington Square Park? He said, don't buy from those guys, there are cameras all over the Park. If you want grass, I can give you the phone number of a guy you can buy it from. I don't think that would happen today. The thing about my life was that I drank quite a bit from early on. The effects of grass are so much better than alcohol. It's such a stupid thing that we don't legalize marijuana. I read an article about this Mexican drug lord who is responsible for 7,000 deaths. All of this would end with legalization. We are paying for the deaths of the people who develop cirrhosis of the liver and the people who die of lung cancer from smoking.

EG: I think that, today, most of the opposition to legalization comes from people who say that it would encourage automobile accidents—more people are going to drive while they're under the influence of marijuana.

John: I've smoked marijuana quite a few times and then I got in the car and drove. I never felt I was impaired.

EG: So, would you say that, over time, your use of marijuana has tapered off?

John: Yeah. Though I would say that's been only in the last few years. Two years. One of the things I think about is how lucky I've been. The ins and outs of airports. The times when I've overindulged. The possible danger from drug dealers. Actually, I've never hung around with drug dealers who might have been dangerous. I've had a circle of friends, and only one of us would buy it and we'd split it up. I've always felt uncomfortable carrying illegal drugs outside my home. I'd carry cocaine but I've never felt that a dog could smell that. I had a close call once. I was traveling with my girlfriend. She had a silver cigarette case in her purse, we were in an airport, and the metal detector went off, and the guard, who was a woman, opened up the case, and there were six marijuana cigarettes inside. She closed it up and said, "Have a nice weekend." Another time, in the London airport, a beagle approached my bag, and at that very moment, his handler got a phone call, and he left the vicinity. [Long pause.] In the seventies and eighties, in broadcasting, drug use was *rampant*. Advertising. Marketing. Same thing. There are fewer people, now, that I know, that use drugs. I don't know anyone my age—I'm 71—who uses cocaine. Since the age of 60, I haven't known anyone who used cocaine. Even with marijuana, I've known fewer people who use it than I did before. Also, I'm concerned about preserving my health. It doesn't seem to be worth the risk. On

14th Street, between Fifth and Sixth Avenues, there is a smoke shop. He sells a lot of smoking paraphernalia. They sell devices for smoking marijuana. There are dozens of stores like that, twenty maybe, right around here. Bongs. Glass pipes. I don't know if they sell marijuana under the table, but their primary business is selling devices for smoking grass. For many years, I smoked out of a tiny water pipe—the top was a bowl, and you put a screen on top of the bowl, and you smoked the grass off the screen. After a week, when I cleaned out the pipe, it was really disgusting—all the tar and shit. Last year, I went to a wedding in Vermont, and I smelled marijuana smoke coming out of a room, and I went in and asked, "Why don't you invite me in?" The kids there got the biggest kick out of me being interested. They think of me as being a thousand years old. It's interesting—none of my kids used drugs.

EG: What about your wife?

John: Out of maybe 5,000 times I smoked grass, my wife, in 30 years of marriage, smoked grass maybe 20 times. In my group, smoking marijuana was particularly skewed towards men. But cocaine, I would say that it ramped up the sexual appetite of women and lowered any barriers and inhibitions against having sex. It shot a lot of dopamine into their systems. If you ended up with a woman using cocaine, chances are, you would be having sex with her. They really came onto you. One of the things I wanted to say about cocaine was that in the eighties and nineties, it was adulterated with a lot of shit. It was cut with speed. Dealers also put a lot of baby laxative in it. It was often crap—a very unsatisfying experience. Often, I'd wake up with a bloody nose. With pure cocaine, you could go to sleep at night. Years ago, with the crap they mixed it with, you'd stay up all night and then maybe you'd have to go to work in the morning. When I used cocaine, I made friends in high places and we'd end up doing some radical things. Sometimes we'd go into the wrong sections of Harlem and Washington Heights—the Dominican sections of Manhattan, at night, when we shouldn't have. I was very nervous going up there. It was the dumbest thing I've done in my life. But I knew this guy once, I had his phone number, he had mine, and he called me when he was in the neighborhood, so I didn't go into unsafe neighborhoods much. Sometimes I'd buy what was called an "Eight Ball" from him, which was three and a half grams. That generally ran $250. If you knew Colombians, it would cost you $150. In Miami, the cocaine is cheaper and purer. By the time it gets up here, everybody's dumped a lot of crap into it. Years ago, I had this very conservative lawyer in London and he'd come over here, and his drug dealer was actually a nurse. He'd take pharmaceuticals to get high. You can't believe how conservative this guy was—but it was all a show, I felt. I was out there with a lot of people who used drugs, but I didn't have much exposure to people who used much beyond coke and marijuana. There was only one person I knew who used heroin. I never, ever, *ever* had any desire to use heroin. Opium was weird. I rolled it up in a cigarette with tobacco. It was great for about 15 minutes, but then I proceeded to fall asleep. It was also very constipating. I think that I was psychologically addicted to marijuana but not physically. I see a really great psychologist. It's really great talking to someone you have total confidence in and you can talk to about these things. I feel that talking to the psychologist has

enabled me to cut down on using the marijuana. I feel that smoking grass has cut into my work. But still, my doctor, who is a conservative Jewish guy, he's 78, said that he cannot say with confidence that it is bad for you. I would say, however, that the continual use of it has cut into my productivity.

QUESTIONS

Does it seem incongruous that John is both a drug user—some observers would say a drug abuser—as well as a successful, affluent executive? What do you think his peers would say and do if they discovered his recreational, mind-transforming activities? Would they take him as seriously as they do now? Would they continue to hire him? What does this seeming incongruity say about the theories that experts use to explain drug use? Or the assumptions many observers have about the negative impact of drug use on success, even the ability to lead the sort of life that a man such as John leads? Does this account change the way you think about drug use, especially about the intersection of drug use and every-day life?

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CHAPTER

2 Rates and Patterns of Drug Use

Getty Images

Here are three crucial concepts that guide us to an understanding of rates and patterns of drug use: over-all prevalence rates, continuance or "loyalty" rates, and life cycle rates. They provide baselines that allow us to compare one user's pattern of use with another's, use during one period of history with that of another, and use patterns of one drug versus those of another. We also need to take a look at drug dependence—as distinct from drug "loyalty"—and the distinction between drug *use* and drug *abuse*, not to mention to what extent it makes sense to refer to drug "abuse" in the first place.

OVER-ALL PREVALENCE RATES

It is important to distinguish between and among rates of different drugs and drug types. Many commentators discuss illicit drugs as if the use of each and every one is precisely equivalent. Different drugs attract users at substantially variable rates. The *prevalence rate*—the number and percentage of people in the population who use a given drug during a designated period—is crucial; we must never lose sight of the *size* of the users of a given drug versus that of another. Hence, when the 2019 *National Survey on Drug Use and Health* (NSDUH), which appeared in 2020, reported that 11.5 percent of the population age 12 and older used marijuana at least once during the past month, while 0.7 percent did so for cocaine, these are *prevalence* rates for that month for these two drugs. We could measure prevalence rates by lifetime, past year, or past month—or even daily use, which is quite rare—but most drug researchers consider use during the past month (or 30 days) as "current" use. It is important to keep in mind, when we look at drug "use," that *most* instances of illicit drug use entail the use of marijuana and that the vast majority of all instances of the consumption of psychoactive substances involves the drinking of alcohol.

Journalists have been known to exaggerate the magnitude of shifts from one decade to another, claiming that a particular drug is the "drug of choice" during each period. Supposedly, LSD was *the* drug of the 1960s—the implication being that it was the most frequently used drug during that decade. The same can be said of cocaine during the 1980s (the so-called *me* or "greed" decade). In 2008, Newsweek decided that prescription drugs were teenagers' "drug of choice." In 2012, the *New York Post* reported that Xanax, a sedative, an anti-anxiety agent, had become the addicts' "drug of choice." In 2013, *New York Magazine* disclosed that modafinil was Wall Street's "drug of choice." These declarations make good copy, they help sell magazines and newspapers, but to believe them rather than designate them to the dustbin of hyperbole, we need to verify them empirically; we need to distinguish between the drug that commentators *say* is typical, characteristic, common, or paradigmatic of a period, and the drug that valid, systematic *evidence* says is actually used most frequently.

But here's an interesting wrinkle on the legal-illegal distinction. It's also true that, as the latest NSDUH demonstrates, among younger sectors of the population, marijuana use has surpassed the use of tobacco cigarettes. In fact, among persons age 12–17, during the past year, only 5.4 percent have smoked a tobacco cigarette, and only 2.3 percent have done so during the past month. The comparable figures for this age group in past-year and past-month marijuana use are 13.2 percent versus 7.4 percent, respectively. The decline of cigarette smoking—and the rise of marijuana use—are recent and radical changes in American patterns of drug use worth paying attention to. In any case, with respect to use, marijuana towers head and shoulders above the other illicit drugs. As we see in Table 2-1, for no other illicit drug is past-month use as high as 1 percent, but for marijuana, it's over 10 percent. No other illegal substance is used to the same degree as marijuana. It's also necessary to keep in mind that even alcohol and tobacco are illegal for 12- to 17-year-olds. To complicate matters even further, marijuana possession is becoming decriminalized in an increasing number of states in the United States.

Let's put a little flesh on these bones. As we can see in Table 2-1, in 2019, between 1 out of 10 and half of *all* Americans (46.2%) age 12 and older said that they had used marijuana at least once in their lives; roughly 1 in 6 (17.5%) did so in the previous year;

TABLE 2-1 Over-all Prevalence Rates: Use of Major Drugs, Age 12 and Older, 2019

	Life-Time	Past Year	Past Month
Any illicit	50.2	20.8	13.0
Marijuana	46.2	17.5	11.5
Cocaine	15.1	2.0	0.7
Crack	3.4	0.3	0.1
Heroin	16.0	2.2	0.7
LSD	10.0	0.9	0.2
Ecstasy	7.3	0.9	0.2
Meth	5.8	0.7	0.4
Alcohol	80.3	65.1	50.8
Cigarettes	55.0	20.2	16.7

Source: Adapted from NSDUH, 2020.

and about 1 in 9 (11.5%) did so during the prior month. Cocaine, the illicit drug with the *next*-highest incidence rate, racked up figures of only 15.1 percent lifetime use, 2.0 percent past year, and 0.7 percent past month use, respectively. Hence, the first take-away fact here is that marijuana is the illicit drug that attracts the largest number of users—by far. There is no close competitor. The *majority* of people who use, and have used, an illicit drug, specifically use and have used marijuana; the total number of instances of marijuana use is greater than that number for all other illegal drugs combined. This has been true for decades and, in all likelihood, it will remain true for decades to come. By common user consensus, it is the safest and regarded as the easiest to take, with the fewest side-effects, which are part of its appeal; it's also widely available. Of course, it's widely available because people want to buy it and hence, are willing to sell it.

Let's keep in mind, however, that some of the drugs that are used by relatively few people generate an enormous volume of social and personal disruption, including a great deal of criminal behavior. Two such drugs are heroin and crack cocaine. In NSDUH, heroin ranks near the bottom in lifetime popularity, having ever been used by only 2.1 percent of the population, and during the past month, by a minuscule 0.2 percent. Crack cocaine is also used by a very small proportion of respondents—3.4 percent ever, and 0.1 percent during the past month. If NSDUH had access to prison and homeless populations, the heroin and cocaine figures would no doubt be substantially higher. But no matter what information we manage to obtain, compared with other drugs, some substances are used by relatively *few* people, yet have huge repercussions in terms of criminal activity and the criminal justice system—and heroin and crack are two such drugs. In any examination of drugs and crime, we have to make a sharp distinction between the rates of use and social impact.

What *hasn't* changed is the pre-eminence of alcohol. Another takeaway fact from Table 2-1 is that alcohol is by far the most popular of *all* psychoactive substances, legal and illegal. This has been true for at least a century, is true now, and, in all likelihood, it will remain true a century from now. Moreover, it is true globally as well. Half the American population age 12 or older (51%) say they imbibed at least one alcoholic drink in the past month; 8 in 10 (roughly 80%) consumed alcohol one or more times during

their lives. The sheer number and percentage of people who use alcohol means that this drug's entanglement in activities of all kinds, including criminal behavior, is likely to be considerable. There are some indications that drinking in the United States has become somewhat more moderate than in the past, which is something of a change, albeit not nearly so as those changes (in opposite directions) for cigarettes and marijuana.

Before we launch into life-cycle rates, which examines drug use by age, let's consider a few variables or factors that also might be correlated with over-all drug use. Race or ethnicity? The only two interesting features of ethnic differences in drug use is that whites, African Americans, and Latino use at virtually identical rates (21.7%, 21.9%, and 19.1%, any illicit drug use during the past *year*, respectively, for the population age 12 and older), while Asian American rates are significantly lower (10.0%) and persons who self-identify as belonging to two or more races, are significantly higher (31.9%). Clearly, race gives us virtually no causal purchase. Education likewise draws a blank. For instance, high school drop-outs, 16.3 percent past-year use; college graduates, 17.4 percent. The gender difference is small but statistically significant—males, 21.9 percent past-year use, females, 15.0 percent—barely worth more than a nod of recognition. It's also true that the unemployed are more likely to use an illicit drug in the past month than the full-time employed (30.3% versus 20.6%), but that finding seems commonsensical and banal. Differences in regional residence is small, as are those for urbanization. Only for age do we discern a sociologically satisfying and compelling patterning in drug use. Let's take a closer look at this relationship.

Life-Cycle Rates

From time to time, the media report that drug use has become uncharacteristically high among an age segment of the population not typically given to high rates of use. For example, we read or hear that drug use is "common," "rampant," or "epidemic" among 11- or 12-year-olds, among the middle-aged, or even the elderly. If true, such developments would be big news. Apparently, even when they haven't taken place, it's news anyway.

When it comes to which social characteristics influence whether people use psychoactive substances, age is *by far* the most important social factor; it produces the greatest spread in use from one category to another, and by a considerable margin. As we just saw, not race or ethnicity, gender, education, socioeconomic status, or residence even come close. And age influences the use of both illicit and legal substances. When we look at Table 2-2, we don't want to get lost in the tangle of precise figures; instead look at the *trajectory*—the arc, the over-all pattern. In spite of slight variations, wrinkles, and wiggles in this picture, during the era when we have had reliable figures, for more than a half-century, drug use has been, and remains, relatively low among the youngest categories (pre-teens and early teenage years), extremely high among young adults (ages 18–25), then lower in the somewhat older adult years (ages 26–34), and lower still after the age of 35. After the age of 65, illicit drug use is relatively rare. This is precisely what the figures in Table 2-2 say. Of course, drug abuse among the very young is far more problematic, harmful, and disruptive than it is among young adults and the middle-aged sectors of the population. In addition, the very young are largely dependent in regard to their daily rounds on adults—parents and teachers most notably—and so, have a more difficult time *logistically* with managing the use and abuse