

# Healing Addiction

An Integrated  
Pharmacopsychosocial  
Approach to Treatment

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John Wiley & Sons, Inc.

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## CHAPTER 1

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# The Many Faces of Addiction

ADDICTION IS THE nation's number-one health problem today. Perhaps you thought that distinction belonged to cancer or cardiovascular conditions. But in part because it provides the behavioral underpinnings for so many of the common "lifestyle-related" diseases, addiction is the most widespread and costly of all illnesses. Over the course of a lifetime, at least 20 percent of Americans suffer from substance use disorders, and many of them die as a direct or indirect consequence of these disorders. As commonly recognized, substance use disorders include alcoholism, cigarette smoking, marijuana smoking, and the abuse of cocaine, heroin, and amphetamines. However, newer research findings indicate that the mechanisms of addiction are shared with other problematic and repetitive behaviors that interfere with a balanced lifestyle, such as out-of-control gambling, exercise, computer gaming and viewing pornography on the Internet, and problematic hypersexuality. For example, the current epidemic of obesity, affecting the health of both young and old, can be attributed to similar addictive brain processes that in the past were considered unique to drug abuse and addiction.

Addiction is defined as a persistent, repetitive, and often irresistible self-destructive activity that, at least in the beginning, is perceived as rewarding by individuals, but that robs them of time, resources, or the motivation to do the things that are part of a balanced life and may well have been part of their lives before becoming addicted.

When these behavioral disorders are included in the definition, the

percentage of people afflicted with addiction-related disorders is far greater than the 20 percent suffering from substance abuse disorders. Because these afflictions frequently have catastrophic consequences, not only for the addicts but also for family members, friends, and coworkers, it is fair to say that the overwhelming majority of Americans—and indeed of the population of the entire world—will suffer adverse consequences from addiction at some point during their lives.

In this book, we advocate and teach you about the *pharmacopsychosocial* approach to addiction treatment. Pharmacopsychosocial therapy is a breakthrough treatment that uses the latest nonaddictive pharmaceuticals to treat addiction while integrating the psychological and social support necessary to enable the medications to help addicts gain control of their disease.

Contrary to the common myth that addictions are untreatable, we believe that addictions *are* treatable. The prognosis is similar to that of other chronic, life-threatening conditions, such as emphysema, heart attacks, hypertension, and diabetes. Many addicts, if given medical and psychological treatment and social support, can recover their health and lead normal, productive lives. In fact, the goal for the treatment of addiction is recovery, whereas preventing complications may be all that is possible for those suffering from the other chronic disorders just mentioned.

In *The Diseasing of America* (Free Press, 1989), Stanton Peele proposes ways of understanding and coping with addiction that recent research has seriously called into question. During its ascendancy, this title and follow-up titles, such as *The Truth About Addiction and Recovery* (Simon & Schuster, 1991), sold hundreds of thousands of copies. The main idea of these books is that addiction can be overcome through willpower and mentoring by other recovering addicts. These books emphasize that addiction is not a disease that can be treated with pharmaceuticals or should be covered by medical insurance policies. But recent studies of brain activity using functional brain imaging tools, such as functional magnetic resonance imaging (fMRI), have shown that these treatment ideas are wrong. In particular, neuroscientists have shown that addiction alters the neurochemical operations of the brain. Today there are dozens of books about *particular* addictions, such as alcoholism, gambling addiction, cigarette smoking, and even overeating and problematic hypersexuality. In this book, we provide the reader with an authoritative, up-to-date guide to understanding and treating *addiction as a whole*. To this end, we discuss addictions in the context of commonly associated mental and physical conditions. We also show patients, physicians, and counselors how to communicate more effectively and



thus increase chances of successful treatment. To do so, we employ the newer integrative perspectives on treatment stemming from the latest findings of neuroscience.

The bad news is that although *some* addicts can recover on their own or with 12-step programs, those who don't seek and receive professional treatment are probably destined to see their condition worsen until it eventually destroys their health and their life. The good news is that medical science now recognizes that addiction is treatable, and, as we have said, success rates are similar to the success rates for other long-term chronic diseases.

So what can people do if they are suffering from addiction? First, they must decide that their behavior represents a significant problem to themselves and to those they hold dear *and* that they are ready to accept treatment. If people are ready for the changes that come with treatment, they must make a commitment to persevere until their addiction is under control and they can lead a productive life. This perseverance must include a commitment to relationships with others with whom they engage in the journey of recovery. Addiction is a lonely state focused on an illness; recovery involves broadening patients' horizons, including developing relationships with others that allow them to grow beyond the myopic concerns of repetitive harmful behaviors. Once addicts have made this commitment, they must learn what medical science can teach us about their disease. Equally important, they must come to appreciate which components of recovery require personal growth beyond the scope of medical understanding. This aspect of recovery is commonly referred to as spirituality, but, in essence, it represents a level of comfort with the uncertainties of life over which none of us has much control. To live life successfully, addicts must come to grips with a delicate balance of relative certainties and uncertainties. The mastery of this skill can save their lives.

Each type of addiction may have unique features that set it apart from other types. However, we wish to emphasize the similarities shared by people who suffer from *all* addictive disorders. In addition to certain similarities in the causes and life courses of addictive disorders, the aspects of addictions that relate to their treatment are, in fact, the most important features they have in common. All addictions are disorders of brain circuitry that result in uncontrolled and repetitive behavior. Addicts may not recognize how harmful these behaviors may be, until the behaviors progressively disrupt their lives. If allowed to run their course, the behaviors will eventually displace all other pursuits.

About half of all addicts are born with genetic markers that predispose them to become addicted. But despite an important genetic

component, addiction is *learned behavior*. It is important to understand, therefore, that *genetic risk does not preordain that you will be an addict*. In fact, part of what we are trying to do in this book is to help those with a significant family history of addiction *prevent* the development of addiction in themselves and their children. Our learning is modulated by our emotions and our experience of the world. Addicts learn over time to become numb to the joy they had previously derived from life's normal activities, as these activities are progressively supplanted by repetitive, out-of-control behaviors. Although initially perceived as beneficial and pleasurable, the behaviors become overwhelming and all-consuming and eventually brain chemistry is modified in such a way that these behaviors become "hard-wired" in the brain. Recognizing that you are at significant risk to become an addict because of your family history may enable you to make choices that steer you away from this outcome.

### WHO IS THE ADDICT?

People who suffer from the disease of addiction and those who love them are looking for a way out: a treatment that can cure the disease and allow formerly addicted people to live normal, productive, happy lives. But before you can understand how to treat addiction successfully, it is vital that you understand just what addiction is.

Maybe you think you know what addiction is and that you can recognize an addicted person when you see one. Studies by hundreds of researchers, however, reveal that addiction is a complex disease, manifesting itself in many different and, at first sight, confusing ways. It is not only addicts and their families who are confused by this baffling disorder. Many excellent physicians are uncomfortable making this diagnosis, either because they lack appropriate training or have difficulty in accepting addiction as other than a "bad habit" that will go away if left alone.

Do you think you know what an addict "looks like"? In your mind, are addicts people sitting in ramshackle apartments, shooting heroin into their veins? Or do you also regard alcoholics—people from any walk of life who drink excessively without being able to stop—as typical addicts? Would you include the people who use their ingenuity to run methamphetamine labs and abandon their children in order to attain the potent, long-lasting high engendered by this drug? Or the "mellow," unmotivated potheads who grow marijuana and do little else but smoke it? Or the college students who need three or four extra years to complete their education or drop out as a result of excessive

“partying”? As we shall see, all these are, in fact, examples of people suffering from the disease of addiction. However, as we shall also see, addiction has many other faces. People with this disease may be addicted not to one drug alone but to many drugs, drugs with a range of diverse pharmacological profiles that interact to heighten the confusion in their lives.

Moreover, addiction is not limited to “substance” abuse. Behavioral addictions can be as destructive to your well-being as substance abuse. Therefore, people who gamble, eat, surf the Internet, or are consumed by work at the expense of other aspects of their lives engage in these behaviors in the same “addictive” manner as those who are addicted to drugs. In fact, brain imaging studies substantiate this understanding of the commonality between substance abuse and behavioral addictions. These studies demonstrate that many of the same areas of the brain are activated during the anticipation of a reward, whether the reward arises from a drug or a behavior to which the individual is addicted. People frequently engage in destructive, out-of-control—or “addictive”—activities to assuage their emotional suffering from other psychiatric illnesses. The intense mental focus required by these activities corresponds with the “high” or “altered” or “numbed” mental states experienced by substance abusers.

Is addiction simply a sign of a weak character, the inability to “say no”? Certainly not! Addiction is a disease. It is a brain disease, contracted when something goes wrong with the biochemistry or physiology of the brain. It is also a disease of the mind, contracted when a person has the necessary emotional disposition or vulnerability to succumb to it. Finally, it is a social disease, because addictive behavior occurs in a social context that not only makes it possible but actually fosters its development. Thus, regardless of the face an addiction presents—regardless of whether drug abuse or other behaviors are involved—treating the disease of addiction successfully requires a therapy that addresses the neurochemical, psychological, and social components of the illness.

As we have said, neuroscientists have shown that addiction is a disease of brain circuitry, not a “bad habit” or character defect. Further, they have shown that it is a disease that can be treated successfully. Addictions are best understood in terms of the neuroadaptive factors (related to memory and learning) that they have in common instead of in terms of their differences. A holistic approach that uses psychological counseling, social intervention, and psychiatric treatments with pharmacological agents offers the best hope for treating the disease of addiction in its many faces.

## SYMPTOMS OF ADDICTION

What are the symptoms that all the people suffering from the disease of addiction have in common? In addicts, we find out-of-control behavior that is self-destructive. These two symptoms are always present.

First, the disease manifests itself in behavior that is *out of control*. If a person's conduct is under his or her control, then the person is not properly considered an addict. For example, a person who uses heroin once or visits a casino to gamble on one occasion would not be considered a heroin or gambling addict. What about a person who uses heroin twice? Three times? Many dozens of times? How about someone who visits the casinos to gamble every week for several years? Would such repeated users of heroin and regular gamblers be properly called "addicts"? Again, the answer is that simply engaging in the activities that can support addictions repeatedly does not, in and of itself, make a person an addict. An addicted person is someone who is overcome by forces that are beyond his or her ability to manage. Whatever else addicts may be, they are people who are being driven or compelled to engage in certain conduct. Although this conduct seems desirable at first blush, it quickly loses this attraction for addicts, as their control over their use of drugs or engaging in addictive behaviors diminishes.

This brings us to the second sign or symptom of addiction: behavior that is *self-destructive*. You might wonder how a given behavior can be desirable and self-destructive at the same time. In fact, any behavior, no matter how innocuous it may appear, becomes problematic and ultimately self-destructive if it disturbs a balanced life. The *loss of control* over the behavior and the *destructive consequences* it causes is what renders a particular behavior harmful. For example, eating ice cream can be quite pleasant. However, eating nothing except ice cream and eating ice cream incessantly would soon become both boring and unhealthy, resulting in obesity, diabetes, and other illnesses related to gaining weight. The onset of obesity and related health problems is likely to diminish the person's ability to get around and fend for himself, thereby reducing his self-esteem and making him depressed and causing him to eat more. Complications of diabetes could cause the person's vision to become disturbed, and he could begin to experience burning pains from his nerves. Ultimately, he may become unable to carry out his responsibilities as a member of his family and at the workplace. Life is too complex, varied, and exciting to be restricted by focusing on eating ice cream! As organisms we were designed by evolution to enlist a range of behaviors to enable us to survive and thrive. However, addiction impairs our capacity to adapt to life's challenges. Addicts function in a rut.

Therefore, the two symptoms of addiction—the inability to control a behavior and the self-destructive consequences of a behavior—are really two sides of the same coin. We know this because the clearest evidence that a behavior is really out of control is that a person continues to engage in that behavior, even when it has markedly adverse effects on his life.

When we encounter people who persist in behavior that is impairing or even destroying the fabric of their lives, and who are incapable, despite every effort on their part, to stop engaging in this behavior, we have very probably found people suffering from the disease of addiction.

### STAGES OF ADDICTION

Addiction to drugs or alcohol is not an all-or-nothing condition. In the early stages, before the onset of a full-blown addiction, people toying with drugs or alcohol often say they are just “partying.” Partying (sometimes called “chipping”) is the intermittent use of an addictive drug—for example, alcohol, marijuana, heroin, or cocaine—presumably to make life more “fun,” make human interactions more enjoyable, to loosen inhibitions, and so on. Intermittent use, also called “abuse,” supports a low-level addiction during which a person can carry on a relatively normal life. People suffer “hangovers” and other mild withdrawal symptoms, often no more than a feeling of unease or disturbed sleep, when they skip using the drug. People with the time and money to keep partying can continue the process of abusing drugs for years. People who party with drugs often sniff them or take them orally, which are less addictive modes of ingestion than injecting or smoking. However, abusing drugs is an unstable condition. Eventually, people who party excessively almost always cross the line, by starting to use the drug every day, and graduate into full-blown addiction.

The disease of brain circuitry that characterizes addiction makes it a mental illness like many others, including thought disorders, dementia, and mood disorders. Schizophrenia, or psychosis, is primarily a thought disorder. Dementia is primarily a disorder characterized by impaired cognitive abilities and memory in a person who was previously functioning normally. Depression is primarily a mood disorder. Addiction is primarily a drive disorder; however, problems with mood, cognitive capacity, and thought can also complicate addiction. In addiction, normal drives go awry, leading to a problematic imbalance of biological, psychological, or social functioning, an imbalance of so-called biopsychosocial components. Drive disorders are also present in other psychiatric

disorders, and understanding addiction may therefore help us to understand several psychiatric disorders.

### PRIMARY AND SECONDARY ADDICTION

Addiction may be a person's *primary* problem, or it may be a *secondary* problem, resulting from a person's efforts to cope with a deep-seated mental or emotional disorder. Primary addiction, like all psychiatric illnesses, arises directly from a combination of biological, psychological, and social factors. Secondary addiction results from an attempt by someone afflicted with another psychiatric disorder, such as a thought or mood disorder, or a physical incapacity, to relieve suffering by self-medication. Therefore, addiction bears a complex relationship with other mental illnesses. In order to discover the best treatment strategy for each patient, we must unravel this relationship in him or her.

To better understand the important phenomenon of secondary addiction, consider a few examples of this condition.

- Bill W., a U.S. soldier, returns from military duty in Iraq suffering from post-traumatic stress disorder. He finds that he is unable to cope with normal responsibilities and relationships outside the military. He is haunted by memories, shrinks from loud noises, becomes withdrawn, and is beset by severe nightmares. To help counteract his depression and block his memories, he starts to smoke marijuana and to drink alcohol heavily. As time goes on, his life seems to have come to a standstill. His wife has been patient, and she has encouraged Bill to get counseling. But he ignores her. He has even lashed out at her several times and thrown a vase at her once, so that she is now frightened to stay in the same apartment with him. He feels that he is a failure because he cannot recover from his problems, but he refuses to seek help. Finally he commits suicide.
- Ellen B. cannot stand to have her husband touch her unless she is drunk or high on drugs. She is despondent, has very poor self-esteem, and has gained a great deal of weight. During therapy with her psychiatrist, she reveals that her mother spent very little time with her and was very promiscuous. Ellen was also sexually abused by more than one of her mother's live-in boyfriends, and her mother did nothing to protect her. In her early teens, Ellen began smoking marijuana, which she got from her older friends, in an attempt to dissociate or "numb out" during episodes of sexual abuse. As she began to understand that her mother would never protect her, she coped

with her unhappiness by initiating and increasing her use of a variety of drugs. Ellen also became promiscuous, getting a “charge” out of the sense of power she experienced by controlling men with one-night stands. However, except for the time when she was high on drugs, she would experience flashbacks that made her panicky and nightmares and would avoid sexual contact with men. Ellen began to use opiates, such as prescription painkillers, and benzodiazepines, such as Valium or Ativan, regularly and continued the use of marijuana to help her forget her past and medicate her anxiety and various physical pains. She starts visiting doctors with vague complaints for which she can get prescriptions to “help” her. For example, her family doctor has prescribed narcotic pain pills for her chronic back pain. The doctor has been unable to identify an anatomically based cause for the back pain, but he continues to prescribe the pills, because she claims they make her feel better. Her back pain is exacerbated by the fact that she continues to gain weight and fails to exercise, because escalating drug abuse has made her increasingly lethargic and withdrawn. She wants to stay married, but as her husband pressures her to get help, she responds by increasing her drug use.

- Dennis R. was successful in everything he tried. He was the high school quarterback and received a football scholarship to an excellent school. Although he partied all through college, he still won multiple honors in football. He was headed for the pros. He painted the town red during an incredibly successful career, surviving several “career-ending” injuries, always to return better than ever. He hated when his pro career ended, but he began to thrive in the business world. In his early forties, the multiple injuries from his football days began to cause him pain. Eventually, chronic back pain made it very difficult for Dennis to get started in the morning, and sometimes it was hard to get through the day without a good stiff drink. Although he retained his ability to drink heavily from his earlier life, he had avoided it because he was building his many businesses and did not want to compromise his success. However, since drinking helped him tolerate his pain, he stepped it up a notch. Not liking the hangovers and the effects on decision making, he decided to visit his family doctor, who suggested a number of lifestyle changes: Take more care of his physical health, begin exercising again with support from a nutritionist and physical therapist, cut back from his breakneck business traveling, and so on. Dennis was honest with his doctor: He wanted a “quick fix” because he was about to take his corporation public, and he couldn’t risk starting to

slack off. Since Dennis had had previous surgeries related to sport injuries, his doctor suggested a visit to a pain clinic. The pain doctor reviewed his history and his wishes and felt that chronic low-dose OxyContin might do the trick. The drug worked great and allowed Dennis to carry on. However, after a few months, the OxyContin stopped working for him. The pain doctor recommended that Dennis increase his dose of OxyContin, which helped a lot. During his second year of using OxyContin, Dennis started feeling low and noticed that his energy was waning. He started making mistakes in the business. His frustration led him to start drinking again, and his wife became quite concerned, as there was not much he could do to alleviate his recurring back pain. Dennis became withdrawn and distant from his wife and friends. The business suffered, and he became less responsive to his wife. Her concern turned to anger, and she threatened divorce unless he changed his ways.

We could tell many other stories—the physically abusive and rigid father who produces an antisocial son who becomes an addict; avoidant children who become socially phobic and can relieve their loneliness only with drinking; the young man who was in an automobile accident and was given opioids for pain and found they gave him energy; the head injury patient whose consequent irritability and impulsiveness led to sexual and other acting out that he cannot discontinue; the prostitute or exotic dancer who can work only while high; people who become nervous in intimate situations and so have many meaningless one-night stands.

When addiction is a person's only psychological, emotional, or behavioral problem, he or she is said to be suffering from a *primary addiction*. If people suffer from psychological, emotional, and behavioral problems that began before the onset of their addiction and were the cause of their becoming addicts, they are said to be suffering from a *secondary addiction*.

This book will explain how treatment with addiction-specific medicines, such as methadone, naltrexone, buprenorphine, or acamprostate, among others, may be indicated to help overcome primary addictions. (See Appendices D and E for a complete list and description of these medicines.) However, people with other primary psychopathologies—for example, depression, anxiety, or psychosis—frequently develop a secondary addiction to drugs or alcohol. (In fact, secondary addiction is probably more prevalent than primary addiction.) When addiction is the secondary problem and another disorder is the primary problem,



pharmacopsychosocial treatment for the underlying condition must come first. For example, say a woman who suffers from long-standing depression uses heroin to attempt to feel better; it is essential to treat the underlying depression in order to help her stop using heroin.

In order to provide enlightened treatment, doctors and therapists must be able to grapple with the complex relationship of addiction with other mental and physical illnesses. Unfortunately, many addiction treatment programs are poorly equipped to address those other disorders, and psychiatric treatment facilities usually want to avoid or fail to address the needs of addicted patients, even though they suffer from bona fide psychiatric illnesses. And the pharmaceutical industry often excludes from clinical trials of antidepressants, mood stabilizers, and other psychiatric medications patients with alcoholism or drug addictions, even though by doing so they are leaving out a large group of people who suffer from the primary disorders for which these medications are being developed. Only recently have pharmaceutical companies started taking an interest in this enormous addicted patient population, by developing medications specifically for addiction treatment and by evaluating their medications in patients with co-occurring addiction and other psychiatric disorders. Comorbidity, the presence of a psychiatric illness co-occurring with addiction, is widespread for all psychiatric illnesses but is particularly marked in cases of mood disorders, such as bipolar disorder, and in certain personality types. For example, 30 to 50 percent of the addiction patients treated at the Vanderbilt Addiction Center at Vanderbilt University in Nashville, Tennessee, meet criteria for bipolar disorder or post-traumatic stress disorders.

Throughout this book we will consider the place of psychotherapeutic support and how important it is to understanding and grappling with the underlying causes of addiction. The most common areas needing this support involve psychological trauma, life experiences, and developmental processes. And because addiction is a social phenomenon as well, and because it cannot be understood or managed without considering the situation of the addicted person in society, we will also explore the social factors that give rise to addiction and the critical role family, friends, and work experience play in recovery. Psychological and social interventions can both help addicts to learn to cope with and change maladaptive behaviors and actually modify the activity and structure of the brain on a molecular level.

Finally, we will focus on resilience of the human spirit, an ephemeral trait that allows addicts to recover and is not easily defined using the

“scientific method.” Empathy expressed by other addicts, for example, in the context of self-help groups, can help those who, because of drugs and alcohol, are on the precipice of self-destruction turn toward a better life, a life that is not one of quiet desperation but imbued with zest, healthy relationships, and fulfillment. The cost of the alternative is to recreate the turmoil of addiction in the generation that follows, and no addict, no matter how ill, wants to do that.

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## CHAPTER 2

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# The Historical Development of Drug Addiction

SINCE THE BEGINNING of recorded history, people of almost every society have used psychoactive substances for medical purposes. Equally ancient is the self-administration of psychoactive agents to “feel good” or otherwise to alter one’s subjective state and experience of the world. The socially acceptable amount used varied from place to place, but some people always consumed more than was generally considered acceptable within social norms. Inhabitants of Sumerian city-states drank beer before 3000 B.C. Opium was used in Greek and Roman medicine and was widely available in Egypt, Persia, and India prior to the Christian era. South American Indians ingested cocaine by chewing the leaves of the coca plant. Marijuana, the flowering tops of the weed *Cannabis sativa*, has long been smoked to treat pain, convulsions, glaucoma, muscle spasms, bronchial asthma, and nausea and vomiting. Tobacco, the source of nicotine, was introduced into European culture by the sixteenth-century Spanish explorers of the New World, where Native Americans commonly smoked the plant. From Spain, tobacco use spread throughout the world.

Recently, pharmaceutical science has created a wide range of new central nervous system (CNS) depressants and stimulants, hallucinogens, and dissociative anesthetics, such as phencyclidine (PCP), as well as variations of traditional psychoactive compounds. Technological advances

in preparation (e.g., distillation processes for ethanol, purification of cocaine, synthesis of heroin from morphine, “cooking” recipes to turn the cold medicine pseudoephedrine into methamphetamine) and drug delivery (the hypodermic needle) have allowed the self-administration of increasingly greater doses of the drugs found in nature or their synthesized derivatives.

### CHANGING ATTITUDES ABOUT PSYCHOACTIVE SUBSTANCES

Whenever people take “inappropriate” or “excessive” amounts of a psychoactive substance, they are regarded as having a “disorder,” and society’s response has been to regard such people as addicts. In the 1960s, because the term “addiction” was considered pejorative, the term “dependence” became widely used by doctors. “Dependence” is still the preferred term, according to the *Diagnostic and Statistical Manual of the American Psychiatric Association (DSM)*, although, since the 1990s, the terms “addiction” and “addict” resurfaced in the scientific and clinical literature, either interchangeably with “dependence” or “dependent person” or as a particularly severe form of dependence. We have chosen to use both terms interchangeably in this book.

Addicts are, in turn, seen as either patients or criminals and, hence, as moral or immoral, innocent or guilty, victims or perpetrators. Accordingly, the task of rehabilitation is assigned to medicine or the criminal justice system. Only in recent years have these two extreme views been reconciled in the forum of drug courts, specializing in prosecuting drug cases. These courts are a compassionate and effective way to deal with severely addicted criminals who require incarceration but have not perpetrated violent crimes. In our culture, there is no straightforward correspondence between a drug’s effects on health and whether it is classified as licit or illicit within criminal law. For example, the use of alcohol, which poses a great health and safety risk, is not illegal, while the use of far less toxic drugs, such as marijuana, is severely sanctioned by the law.

The ever-changing drug laws in the United States document cyclical shifts in our attitudes toward and ways of dealing with drug use. These cycles include, in sequence: permissiveness, criminal prohibition, enforcement, nonenforcement, and noncriminal regulation. Today there is a concept known as *nonpredatory behaviors*. These are culturally accepted offenses that involve voluntary participation with no perceived *direct* victim. Most scientists and doctors would classify psychoactive drug use in this category.

At different times during the twentieth century, the legal system fo-

cused its suppression efforts on, in turn, alcohol, heroin, marijuana, cocaine, and methamphetamine. The rational basis for these efforts at legal control is subject to question. The prohibition of the production and sale of alcohol in the United States from 1919 to 1933 had its impetus in the moral pressure of temperance ideology rather than a concern for health. Drinking had been a concern of the churches in America since the beginning of the nineteenth century. During Prohibition, alcohol continued to be consumed; in fact, use actually became much riskier, since the manufacture of alcoholic beverages was unregulated and the alcohol produced was often tainted.

With the criminalization of opiates by the Harrison Act of 1914, opiate addicts became socioeconomically marginalized. The cost of heroin skyrocketed, making it impossible for addicts to purchase the drug without recourse to crime. Heroin addicts were forced into a particularly damaging lifestyle, characterized by predatory crime and self-neglect, including malnutrition and infectious diseases, even though it is clear that well-controlled opiate use is less physically dangerous than the equivalent use of certain other psychoactive agents, such as alcohol, that are not illegal.

One of the most controversial legal sanctions has resulted in the enormous financial and social costs of the large-scale criminalization of marijuana, even though the drug has arguably few demonstrable adverse effects on health. These costs increased dramatically as millions of mainly young people began using the drug in the 1960s and 1970s. Harsh legal controls have been mostly ineffective in reducing the prevalence of cannabis use. It became increasingly stylish among college students in the 1980s and 1990s to “smoke pot.” Many of these smokers are responsible legal, political, and medical professionals today. There are also many advocates for the legalization of marijuana in the legal and medical community.

In the late 1980s, in response to alarm over the devastating consequences of cocaine use by rich and poor alike, the government launched a “War on Drugs,” appointed a “drug czar,” and enacted legislation focused on the reduction of the supply of cocaine. Nevertheless, many contend that the reduction of cocaine use that followed was not attributable to stricter legal controls but instead reflected the changing fashions in preferences among users of psychoactive drugs.

The highly addictive drug methamphetamine (meth) is probably the biggest concern today. Manufacturing methamphetamine is both easy and cheap. Further, users become addicted quickly, and their downward slide is faster than is seen with other addictive drugs. According to a review conducted by the federal government’s Mental Health and Substance Abuse Administration, the number of meth users seen in

drug abuse clinics quadrupled during the 10-year period from 1993 to 2003. Currently, in response to widespread press coverage of the damage to lives caused by methamphetamine, several governmental jurisdictions are launching major offensives on this gargantuan and growing problem. New government initiatives on meth are discussed at <http://methresources.gov>.

Even though our policymakers focus on the actual drugs involved, drugs are not so much the problem as is the predisposition of some people to cope with stress through many forms of addictive behaviors. Addictive behavior is one way people cope with the human condition, and prohibition of a drug will only make it appear more compelling to those who wish to be different and cannot fit in well with mainstream society. There seems to be a cycle of about 20 to 30 years during which attention and concern shifts from one addictive drug or addictive behavior to another. For example, marijuana and cocaine were partially remediated in the late 1970s but then became “demonized” again in the late 1980s. The “War on Meth,” so recently declared by the government, is eerily reminiscent of the earlier clamor against cocaine. The fact is, despite the changing focus of attention and concern, human nature is *not* changing. The question of which drug is being used is actually somewhat incidental in the context of social disapproval and criminalization. At the end of the day, drugs are just one form of addictive behaviors—behaviors that include gambling, overeating, and hypersexuality. The recent development of addictive Internet activity clearly shows that behavioral addictions are also influenced by technological advances.

#### EPIDEMIOLOGY: THE PREVALENCE OF DRUG USE

It has long been noted that the popularity of specific psychoactive drugs of abuse varies widely over time. In the late 1960s, the techniques of epidemiology—the science that studies the distribution of diseases and their effect on society—was finally applied to drug use. Epidemiological findings are important, for example, in helping public health officials to plan how to allocate public funds to most efficiently help people with problems associated with drug and behavioral addictions.

Epidemiologic surveys in the United States objectively document the changing fashions of drug abuse. There were epidemics of marijuana abuse in the 1960s, of heroin in the 1970s, and of cocaine in the 1980s. These studies occurred against a background of an upward trend in the usage of all drugs, including alcohol, during the 1970s, followed by a downward trend in the 1980s. Most recently there has been a return to the use of heroin and other opioids, particularly prescription pain

medications, such as MS-Contin (morphine sulfate) and OxyContin (oxycodone). There has also been an increasing interest in so-called club or designer drugs. Most dangerous of all, methamphetamine has become a scourge in our communities over the past few years (see [www.drugabuse.gov/DrugPages/Methamphetamine.html](http://www.drugabuse.gov/DrugPages/Methamphetamine.html)). All this is taking place at a time during which research funded by the National Institute on Drug Abuse has documented declining drug use by teenagers.

The somewhat irrational demonizing of individual drugs has occurred repeatedly in history: Consider the slogans "demon rum," "reefer madness," and "speed kills." The recurrent theme is to blame most of the evils of society on expanding abuse of a particular drug. The disease of addiction is blamed on the drug rather than on the problems of the drug user. Even the most benign of drugs, caffeine, has been castigated, without weighing the fact that the relative risks associated with caffeine consumption are not in the same ballpark as those from alcohol, marijuana, cocaine, or heroin. Also, coffee and tea and other caffeinated products have been consumed for centuries, with no documented harmful or out-of-control behavior resulting from their use.

It is often assumed that there is specificity between an individual's brain biology and the particular drug of abuse chosen, making the person more vulnerable to a given drug and less so to others. Although, as will be shown, there certainly are significant differences in dependence liabilities of various drugs when assessed in laboratory models, all drugs of abuse are potentially problematic to individuals who are addiction prone. Apparently, instead of harboring a specific weakness for or susceptibility to a given drug, most drug abusers use whatever drug is most "fashionable" or most readily available. This seeming interchangeability among various drugs of abuse suggests that the neurobiological bases of addiction are not the results of the particular chemical effects of a specific drug, as previously thought. Rather, the basis of addiction lies in the more general effects of all addictive drugs on fundamental drives or motivations of the people inclined to try them and continue to use them.

More Americans use alcohol than any other drug. The most commonly used illicit substance is marijuana. Younger people tend to combine alcohol with illegal drugs to which they have access; older people generally use alcohol alone or together with prescribed medications. National studies have consistently shown that use and abuse of alcohol and other drugs is most widespread among young people ages 18 to 34. However, the current preoccupation with perpetuating youth has spread beyond the clothes people wear and the increasing demand for plastic surgery to encompass drug use patterns; the "youth" pattern of

drug use also has extended to those in their forties and even fifties. The highest rates of drug use and abuse are observed for young men, but, as in so many other areas of life today, the genders are becoming more and more alike in their proclivities for drugs.

Contrary to some popular myths, drug abuse and drug dependence are not problems confined to a small sector of the population. In fact, drug and alcohol abuse and dependence are among the most widespread of all mental illnesses, affecting nearly 15 percent of all people in the United States, over 18 years old. Alcohol abuse and drug abuse independently afflict nearly 13 percent and 8 percent of the population, respectively. In 1990, according to Regier and associates, the prevalence rates for abuse of and dependence on other psychoactive substances were:

Marijuana	4.3%
Amphetamines	1.7%
Barbiturates	1.2%
Opiates	0.7%
Hallucinogens	0.3%
Cocaine	0.2%

Year-to-year fluctuations in these values likely represent differences in the pattern of use and the populations surveyed as well as changes in diagnostic criteria and the study methods employed. Statistics are updated as they are gathered on [www.drugabuse.gov/infofacts/nation\\_trends.html](http://www.drugabuse.gov/infofacts/nation_trends.html) and [www.niaaa.nih.gov/databases/qf.htm](http://www.niaaa.nih.gov/databases/qf.htm).

As we have stated, alcohol and drug use have a profound relationship with other mental problems. In fact, the odds of suffering from a mental disorder are nearly three times greater for those who abuse alcohol or other drugs and nearly five times greater for those with alcohol or other drug dependence. Approximately half of those in the U.S. National Comorbidity Survey with lifetime alcohol or drug abuse or dependence also had at least one lifetime mental disorder. Conversely, half of the respondents with a mental disorder met criteria for either alcohol or drug abuse or dependence. Furthermore, the use of alcohol and other addictive drugs seems to go hand in hand, and many addicts use more than one psychoactive substance at a time. For example, over 20 percent of alcohol users suffer from other drug abuse problems, compared with less than 4 percent among the general population.

Among psychiatric illnesses, the so-called “externalizing disorders,” relating to interactions with other people, which include antisocial personality and attention deficit/hyperactivity, are more likely to be



associated with substance use disorders than the “internalizing disorders,” which include anxiety and mood problems. Of the internalizing disorders, bipolar disorder is the one most commonly associated with substance abuse. The extensive overlap between substance use disorders and other mental disorders has led to theories that many of the same problems that give rise to alcohol and drug abuse also engender certain other mental disorders. Behavioral genetic studies suggest that the same genetic factors may contribute to both the externalizing disorders and to substance use disorders. Doctors and counselors should be alert to these facts when confronted with new patients with mental disorders, and doctors should be very cautious about prescribing medications that have the potential for abuse or dependence.

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## CHAPTER 3

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# Addiction as a Disease

THE BIOPSYCHOSOCIAL MODEL of the causes of addiction provides the basis for the pharmacopsychosocial treatment of addiction. The perspective offered by the biopsychosocial model is very different from the traditional medical model, which regards drug use as merely a bad habit, until organ damage occurs. It also is very different from the traditional social learning model, which denies that addiction is an illness, even when organ damage or other physical problems develop. In contrast, the biopsychosocial model shifts our focus from the drug itself to understanding drug use as a disease whose course depends on the interactions of the addictive drug or compulsive behavior, the biogenetic and psychological susceptibilities of the individual, and the social context in which drug use or other out-of-control behavior occurs.

The effects of a psychoactive drug are determined by its pharmacologic actions, the dose and the route of administration, and a host of individual factors. Descriptive terms, such as "excessive use," "abuse," "misuse," and "addiction," which are generally used to express the magnitude and consequences of psychoactive drug use, depend on difficult and often changing value judgments.

However, medical diagnoses, which are called for in dealing with the disease of addiction, must stand on more objective ground. The effort to develop diagnostic criteria is guided by an attempt to define maladaptive patterns of drug use in terms of their objective consequences.

The direct consequences of acute intoxication are predictable from the

*pharmacological actions* of the drug. For example, central nervous system (CNS) stimulants enhance arousal, attention, and performance at low doses but can lead to psychomotor agitation, psychotic confusion, and convulsions at higher doses.

The *route of drug administration* can influence the medical complications of drug use as well as the intensity with which people pursue the use of drugs. For example, intravenous administration results in rapid entry of the drug into the brain with intense but relatively short-lived euphoria; compulsive, bingelike use; increased likelihood of death from an overdose; and medical complications from infections related to neglect of sterile technique and cross-contamination of blood that occurs when different people use the same injection equipment without adequate cleansing. In contrast, a drug that is taken orally affects the brain relatively slowly. The oral route of administration poses its own dangers, however. These dangers can be seen in alcohol consumption, which is often associated with damage to the gastrointestinal tract, including gastritis, ulcers, and cancers.

The many *individual factors* particular to each person greatly complicate an understanding of any drug's pharmacological effects. These effects include variables such as a person's previous experience with the drug, the social context in which the drug is used, and the presence of genetic susceptibilities or medical disorders that affect the central nervous system (CNS) or other organ systems that influence brain sensitivity to drug action or how concentrated the drug will become in the brain.

## THE DRIVE TO USE DRUGS

The biopsychosocial perspective provides a framework for understanding the entire spectrum of drug use, from its initiation to its progression to addictive use, as well as the acquisition of tolerance and physical dependence. Biopsychosocial processes that initiate, maintain, and regulate a person's drug-seeking behavior include the positive reinforcing effects of drugs—that is, their rewarding effects—environmental stimuli associated with drug effects, and the aversive effects of drugs. All of these processes are modified, to some extent, by a person's biology, especially his or her genetic makeup; by psychological factors, including the person's previous drug use; and by social factors, such as the influence of a person's family and friends and environment on his or her choices.

The biopsychosocial model of the causes of addiction has led scientists to recognize the central role of conditioning and learning in drug addiction. The brain mechanisms underlying addiction can be explored

by studying the neuropharmacology and neuroanatomy of the brain systems that control the experience of reward.

Drugs that can give rise to addictions are “positive reinforcers.” That is, laboratory animals (and, by inference, people) that are given the opportunity to self-administer the drug will tend to do so.

Drugs that prompt self-administration include stimulants (e.g., cocaine and amphetamine), opiate analgesics (e.g., morphine and heroin), dissociative anesthetics (e.g., phencyclidine [PCP]), CNS depressants (barbiturates, benzodiazepines, and ethanol), nicotine, and some volatile solvents (e.g., glue). Interestingly, in animal models, hallucinogens such as LSD (lysergic acid diethylamide) and the cannabinoid that is the active component of marijuana do not initiate positive reinforcement leading to self-administration. This evidence underlines the fact that animal models are only partially generalizable to humans and suggests that reward is not the full story.

The characteristic effects of most drugs of abuse—the subjective responses of a person taking them—are obviously major factors in why people use them. However, these stimulus properties are complex and multifaceted, because they encompass both favorable and aversive effects.

The favorable effects include the feelings of euphoria and well-being that follow the administration of a drug, the relief of anxiety or depression, and improved physical and mental performance. Favorable effects also include the alleviation of withdrawal symptoms.

The aversive effects take many different forms. The initial exposure to nicotine in the form of smoking cigarettes often results in distressing symptoms such as coughing, nausea, and light-headedness. The initial exposure to alcohol is likely to result in unpleasant hangovers, and chronic alcohol use often results in severe gastritis. Such aversive effects can lead users to terminate smoking cigarettes or reduce or limit their alcohol consumption. What is so intriguing is the fact that drug use often continues in spite of these adverse effects—either because all your friends are starting to smoke when you are a young teenager and you want to be like them, or because you are so addicted to alcohol that you tolerate the pain of gastritis just so that you can attain the “benefits” of drinking.

The combination of favorable and aversive effects underscores that the drive to use drugs is not simply pleasure-seeking, as the popular media commonly represents it to be. Drug use is, rather, a means of changing one’s experience of the world, whatever that experience may be for a particular individual. Such changes can also be accomplished by engaging in behavior that does not involve the use of drugs: gambling,

for instance. It therefore must be recognized that some individuals use drugs or engage in addictive behaviors not because it makes them *feel good*, but because it makes them *feel less bad* or, perhaps, *not feel at all*. For this reason, a punitive attitude in treatment is doomed to failure. The constructive approach to treatment is to help addicted individuals understand what they are running from by using drugs or numbing out in other ways and what they aim to accomplish in treatment.

If an addictive drug or behavior is repeatedly administered in the same set of circumstances—a certain situation, time, or place—the accompanying environmental stimuli may become associated with the drug or behavioral effects. This effect is the result of so-called Pavlovian conditioning processes, named after Ivan Pavlov, a Soviet behavioral scientist who discovered that dogs could be conditioned to react physically to auditory stimuli. For example, a dog can be trained to salivate when hearing a certain bell, even though no food is present. This acquired link between a stimulus and a reaction is the result of the formation of neural connections within existing brain circuits. When people are placed in the circumstances in which they previously used an addictive drug, the stimuli they experience often triggers either reexperiencing aspects of the drug use or cravings to use the drug. For example, patients who haven't injected heroin for many years can experience a desire to use heroin when they return to the location where they previously used it or even when they view a film portraying people injecting drugs. This phenomenon is closely related to such common experiences as having one's mouth water when one smells a favorite food or becoming sexually aroused when one's partner wears a seductive outfit or fragrance. (A patient of Dr. Martin who had been sober for several months while receiving buprenorphine—a medicine used to treat opiate addiction—and was doing very well, indeed, described how he was disturbed by recollective triggers of cravings when he saw the protagonist in a movie inject morphine. The man had to leave the theater.)

In general, the way drugs affect a person is shaped by psychological factors and social context, including the presence of psychopathology, such as anxiety, depression, attention deficits, or thought disorders, and previous exposure to psychoactive drugs.

## DRUGS AND THE CHEMICAL SYSTEMS OF THE BRAIN

The powerful favorable effects of drugs, especially the euphoria they produce, involve several neurotransmitter systems of the brain. These brain systems have been identified by scientists as mainly the dopamine, opioid, and gamma-amino butyric acid (GABA), and glutamate systems

(although the brain is so complex that other systems yet to be discovered also likely play a role). The regions of the brain that are governed by these neurotransmitters, including the nucleus accumbens, are often called “pleasure centers” by the popular press. For the reasons just given, the term “reinforcement centers” might be more appropriate. It is the reinforcement centers of the nervous system that steer people through the challenges of life and prompt them to approach or avoid a particular stimulus or situation.

Current thinking is that all addictive drugs are “dopaminergic” to some degree: that is, they generate the release of the neurotransmitter dopamine, which results in psychostimulant actions in nerve cells within the “reward” circuits of the brain and reinforces continued drug use. For example, studies confirm that dopamine is released from dopamine neurons in the nucleus accumbens when cocaine reaches the brain after a person introduces the drug into the bloodstream. Conversely, when dopamine signals in the nervous system are blocked, the desire to continue using cocaine is extinguished. These phenomena confirm the idea that the dopamine system is a critical component of the reward pathways of the brain.

However, attributing the reward effects of drugs and out-of-control behaviors, such as gambling, to the operations of the dopamine system alone is probably an oversimplification. This is because the effects of drugs and addictive behaviors on dopamine transmission are altered by other neurotransmitters, especially norepinephrine, serotonin, GABA, glutamate, and opioids that are naturally produced by the brain. These neurotransmitters also play a part in reinforcing the use of stimulants, opiates, alcohol, and other CNS depressants.

## NEUROADAPTATION

### TOLERANCE

After repeated exposure to many of the drugs that affect the brain, a greater dose is required to produce the level of intoxication that was experienced when the person started using the drug. Hardened users are scarcely affected by doses of the drug that at first were sufficient to cause intoxication. This phenomenon, called “tolerance,” is a pharmacological characteristic shared by many psychoactive substances of abuse, particularly CNS depressants and opioids, that enables and encourages the use of progressively greater doses. (Note that tolerance to all pharmacological actions of a given drug or within all organ systems of the body may not develop at the same time or to the same degree.) A common re-

lated phenomenon is so-called cross-tolerance. For example, tolerance to one CNS depressant, such as a barbiturate, usually results in some cross-tolerance to other (even chemically unrelated) CNS depressants, such as alcohol, which suggests that they share certain mechanisms of pharmacological action.

#### DEPENDENCE

*Dependence* is defined by the presence of tolerance, the emergence of a withdrawal syndrome when drug use is discontinued, or the accompanying "craving" for the drug. Scientists use the term "neuroadaptation" to designate the neuronal changes and symptoms that occur as a result of repeated drug administration, encompassing both biological tolerance and "physical" (as opposed to "psychological") dependence. The term "dependence syndrome" refers to the elements of psychological dependence, including drug-seeking and psychological and social consequences of drug use. Repeated cycles of drug administration and withdrawal cause both tolerance and physical dependence to re-emerge more quickly. Once again, this phenomenon suggests similarities between tolerance and physical dependence and learning and memory.

#### WITHDRAWAL

When addicts abruptly discontinue using drugs or engaging in addictive behaviors, a *withdrawal syndrome* emerges. The symptoms of withdrawal are generally the opposite of the effects of intoxication with the drug or the effects produced by the behavior. For example, withdrawal from CNS depressants causes hyperexcitability, whereas withdrawal from stimulants causes depression. In addition to effects like these, which are associated with specific drugs, the withdrawal syndrome for all drugs of abuse also causes a stress reaction, in which the brain attempts to reverse the neuroadaptive changes that occur as a result of long-term drug administration. The severity of withdrawal symptoms is correlated with the dose addicts had been using and the duration of their use.

The initial concern in treating addicts is to grapple with the consequences of physical dependence and to treat the effects of the withdrawal syndrome, which lasts up to one week after last drug use and which is often accompanied by medical problems. The long-term treatment is directed at resolving the so-called protracted abstinence syndrome, which includes longer-term physiological problems, lasting

weeks to months, such as sleep and hormonal disturbances, and psychiatric problems, such as anxiety, depression, and difficulty in concentrating and thinking clearly. This protracted abstinence syndrome is what increases the risk of relapse during the first six months following the discontinuation of drug use.

#### DEPENDENCE SYNDROME

The concept of a dependence syndrome derives from the biopsychosocial model of the causes of addiction. This model frames, for the first time, the interactions among the pharmacological actions of the drug, individual biogenetic characteristics, including psychological problems, and the effects of the environment that are generalizable to all drugs of abuse. Behavioral addictions also follow this pattern. The dependence syndrome should be clearly distinguished from what are merely the physical responses to drug administration. For example, a patient who has been receiving morphine for acute pain relief following surgery clearly exhibits neuroadaptation, that is, she experiences changes in her brain in response to morphine administration. But she is not likely to develop a dependence syndrome once she has recovered from the pain associated with the surgery and is discharged from the hospital. Fundamental to the concept of the dependence syndrome is that *drug-seeking behavior*, not mere neuroadaptation, is the critical factor in sustaining drug addiction. Focusing on drug-seeking behavior avoids the need to draw a line between so-called psychological and physical dependence. Regarding the mind (psyche) and the body (soma) as two sides of the same coin is a seminal concept in modern psychiatry and medicine.

#### ADDICTION AS DEFINED BY THE AMERICAN PSYCHIATRIC ASSOCIATION

The criteria for diagnosis of drug and alcohol addiction, as presented by the American Psychiatric Association in its *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (*DSM-IV*) are based on the concept of the dependence syndrome.

The presence of one or more of three clusters of symptoms is required for the diagnosis of psychoactive substance dependence:

1. *Loss of control*: The substance is taken in larger amounts or over a longer period than intended, or there are unsuccessful efforts to reduce use.



2. *Importance of drug use in the person's life:* The person spends a great deal of time in drug-related activities at the expense of important social, occupational, or recreational activities, which are reduced or given up, or the person continues abusing substances despite knowing that he has a persistent or recurrent physical or psychological problem that likely has been caused or exacerbated by the substance.
3. *Neuroadaptation:* The presence of tolerance or withdrawal.

In the *DSM-IV*, dependence syndromes are associated with all commonly abused psychoactive drugs, specifically alcohol, amphetamine, cannabis, cocaine, hallucinogens, inhalants, nicotine, heroin and other opioids, PCP and related substances, sedatives and hypnotics, as well as miscellaneous drugs, including anabolic steroids, nitrous oxide, and various over-the-counter and prescription drugs that do not readily fall into other categories.

The *DSM-IV* defines "substance abuse" as "clinically significant impairment or distress" in life-functioning as a result of substance use that has not risen to the level of a full dependence syndrome. However, it must be recognized that the line between where abuse ends and dependence begins is somewhat arbitrary. The treatment goal is to differentiate between pathological alcohol or drug users who lose control of the amount of drugs or alcohol they use from those who do not. Then the assessment can be made of the degree these patients suffer associated problems while continuing substance use. Presumably not all people abusing drugs progress to dependence. But once a person is diagnosed with dependence, there is no way back to abuse.

## COMPLICATIONS OF DRUG ABUSE

There is a stigma associated with being an addict. Because of this stigma, patients resist admitting that they have a drug problem. Most people grow up believing that discussing physical problems, such as a broken leg or a heart attack, is more acceptable than discussing emotional distress. For these reasons, physicians are most likely to confront the problem of addiction when addicts come for treatment of another physical or psychological condition. The limitations on physicians' time imposed by the strictures of managed care cause many to confine their treatment response to the immediate problem presented to them, instead of inquiring into its root causes. Out of frustration over seeing the same patients returning with the same problems, physicians may sim-

ply reach for their prescription pad to prescribe a remedy (e.g., Valium or Xanax). The drugs may pacify the patients, but, unfortunately, they do nothing to address their underlying problems. In addition, many of these prescribed drugs are themselves addictive, and, if physicians recognize a pattern of misuse, they frequently refuse to write patients more prescriptions. Thus the patients have acquired a further problem in the course of these doctor visits: They now have another addiction to cope with. Patients try to manage this prescription-drug addiction by finding another doctor who will prescribe the drug for them or by seeking out illicit "street" sources.

The medical and psychiatric complications of drug abuse of which physicians should be aware encompass both *direct* and *indirect* effects of drug abuse. Direct effects include:

- Overdose
- Organ damage
- Metabolic problems

Indirect effects or consequences include:

- Inappropriate use of prescribed medicines, such as painkillers and tranquilizers
- Failure to comply with the prescribed treatment of coexisting illnesses
- Malnutrition
- Trauma
- Infection
- General neglect

Obviously, treatment of severe medical complications must take precedence when these complications are life threatening. However, such initial treatments usually fail to resolve the underlying problem of drug abuse, which must be recognized and addressed if patients are to recover from the disease of addiction itself.

One of the most difficult problems in making a diagnosis and initiating treatment is the tricky question of whether a drug addict's psychological problems are a consequence of drug use or are caused by a separate psychiatric condition. Clearly, mental disorders associated with substance abuse and other mental disorders overlap. For example, delirium, psychotic, mood and anxiety disorders, sexual dysfunction, and sleep disorders can have their origins in intoxication or withdrawal. Alternatively, these may be separate problems, requiring their

own treatment. It is not easy to distinguish if a complicating psychiatric disorder is the primary (separate) problem or whether it is secondary to substance dependence (i.e., caused by drug addiction). This is particularly true if both disorders started early in life or if they arose around the same time in a person's life. It is critical, however, that this distinction be drawn. Physicians who do not recognize the underlying primary disorder of drug addiction may prescribe medications that can cause dependence (e.g., benzodiazepines [Ativan or Valium] or stimulants) to treat secondary psychiatric disorders, to the detriment of the patient.

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## CHAPTER 4

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# Biopsychosocial Factors in Addiction

WHEN WE LOOK at a group of people suffering from the disease of addiction, one thing we notice right away is the many differences among them. They have varying levels of intelligence, education, and income; the onset of their addictions began at different ages; they are of both sexes; and some look hale and hardy, while others look extremely ill. So, whatever addiction is, it doesn't strike only at one group within society.

In this chapter, we approach the question of what addiction is by examining what physical, social, and psychological problems cause people to initiate and persist in behavior that seriously hurts them.

There is no single explanation of why, although alcohol and other psychoactive drugs and outlets for addictive behaviors, such as compulsive gambling, are widely available, some people develop an addiction while others do not. Psychoactive substance use disorders are complex and multifaceted, and they take different forms in different people. The life situations of people that give rise to drug use vary widely. In some people, using drugs seems to continue inexorably until they die as a result of the drugs' damaging effects; other people can decrease or stop using drugs completely. Because of the diversity in the ways drug use manifests itself, drug addiction is best understood as a result of many different factors interacting over time.

The fact that many people who take drugs when they are young do

not become addicted has led to the search for the factors that make some people vulnerable to addiction. A variety of biological and psychological factors probably predispose a person to become an addict. These factors include:

- Genetically based resistance (low susceptibility) or sensitivity to the immediate intoxicating effects of a given drug or behavior
- The way the person metabolizes the drug
- The usually rapid adaptation of the brain to regular exposure to the drug or behavior
- Personality traits that incline a person to use the drug or engage in compulsive behaviors (e.g., thrill seeking or antisocial traits)
- High susceptibility to the neurological and emotional damage caused by regular drug use

### BIOLOGICAL FACTORS: BRAIN CHEMISTRY

While, as we shall see, addiction is more than simply a function of brain chemistry, recognizing and understanding the many ways the addicted person's brain is different from the brain of a healthy, nonaddicted person is one of the keys to understanding the nature of addiction. The most critical discovery in addiction treatment in recent years is the way in which abstinence from addictive drugs or addictive behaviors can help to restore the normal function of an addicted person's brain. However, recovery of the brain may take a long time: a year or even longer, and some brain functions may never fully recover.

One of the most exciting areas of research is determining the ways in which safe, effective pharmaceutical therapies enhance the capacity of addicts to maintain abstinence, thus allowing the brain circuitry to mend itself. Moreover, in individuals with addiction that is secondary to other psychiatric or medical conditions, addressing these conditions appropriately with the help of pharmaceutical therapies will also facilitate abstinence and brain recovery from the ravages of drug dependence. Once the brain circuitry has been repaired and underlying psychiatric disorders are brought under control, patients are able to begin breaking the pattern of their previously out-of-control, self-destructive behavior. There is more to the story of addiction than a breakdown in brain function, but repairing the breakdown that does occur and teaching addicts to cope with deficits that cannot be reversed are absolutely necessary for additional therapeutic efforts to be effective.

## PSYCHOLOGICAL FACTORS

Although the psychological profiles of the addicted people whose stories we tell throughout this book are very different from each other, studies have demonstrated that certain common psychological factors can predispose or even drive a person to become an addict. A single example illustrates this process. People who suffer from depression naturally seek relief from the profound sadness and worry or self-doubt that their depression causes. One way of coping with the effects of depression is to use drugs or alcohol to alleviate depressive moods. The problem with this way of coping with depression is that it does not address the underlying causes of the depression, which means, of course, that it will not help the person to feel better in the long run. Therefore, the underlying depression persists, and the sufferer continues to self-administer increasing amounts of drugs and alcohol with little success controlling the depression. Unfortunately, the regular use of substantial amounts of potentially addictive substances has psychiatric, medical, and social consequences that in themselves can encourage the onset of addiction. Once addiction has set in, its destructive effects are so devastating that the original depression may be misconstrued as just another of the many components of addiction. Nevertheless, the depression remains the underlying problem that must be addressed if the addiction is to be treated successfully and overcome. The good news is that depression, anxiety, or phobias often can be alleviated with psychotherapy, counseling, and the use of pharmaceuticals. When the emotional problems that gave rise to an addiction are relieved, addicts finally have a chance of being successfully treated for the addiction.

Certain emotional hardships have also been seen as increasing a person's vulnerability to becoming addicted to drugs. These include mental disorders, such as bipolar disorder, attention deficit/hyperactivity disorder, and psychosis; medical illnesses and physical injuries, such as those that cause chronic pain or other disabilities; and severe stress, such as follows a crime, a military battle, a sexual assault, or financial disaster. The problem is that certain people become addicted to drugs when they attempt to "self-medicate" these chronic problems. However, the tendency to experience heightened stress when faced with extreme challenges may arise from the same brain chemistry as drug addiction itself. Therefore, heightened stress may not, in fact, be the reason a person becomes an addict. For example, not everyone who is involved in a major external upheaval, such as 9/11 or Hurricane Katrina, is affected in the same way or to the same degree or is left with equally disturbing memories, such as flashbacks or nightmares.

## SOCIAL FACTORS

We've all heard of "peer pressure"—the inclination, especially as experienced by young people, to join in with the activities of their crowd, even when doing so means compromising standards of conduct or safety they had previously respected. Peer pressure is definitely one example of social factors that create the setting for addictions to develop. A seemingly paradoxical example of this phenomenon arises from the fact that psychoactive drugs are illegal. The attempt to control the use of these drugs, by making them illegal, bonds drug users into a subculture of lawbreakers, tending to isolate them from the rest of society and, frequently, serving to intensify their preoccupation with drugs. The illegality of drugs also serves to put people beyond the pale of legitimate treatment options. Many people fear that they have become "criminals" simply because they are using illegal drugs. They fear admitting their condition to doctors or hospital staff because they want to avoid being stigmatized as lawbreakers or even being prosecuted and imprisoned.

While poverty, another social condition, certainly does not invariably lead to addiction, it creates a constellation of factors that help predispose a person to contracting the disease of addiction. Obviously, not all of the social factors that contribute to creating and sustaining addiction can be overcome. Parents who cannot properly care for their children are an example of an intractable problem, and one that makes children vulnerable to becoming addicts as they grow up. Or parents who drink or who use drugs and then offer them to their children create a high probability that the children will develop a substance abuse problem. However, by identifying the social causes, we can formulate ways to intervene on the behalf of patients—for instance, by helping them to find a decent job or put a roof over their heads—and thereby enable them to recover. Teachers can present drug and alcohol education in schools and direct vulnerable children to speak with school counselors.

Social relationships also contribute to a person's vulnerability to developing an addiction to drugs. The favorable attitudes of friends about drug use and how they influence each other, the lack of availability of alternatives to drug use, such as educational, recreational, and occupational opportunities, and the availability of drugs during a person's early development also lead to drug use and, ultimately, to drug addiction. To give a single example: Growing up in a family in which all adversity or causes for celebration are seen as excuses or opportunities to "get high" can teach young people that alcohol and drug use is a normal and desirable coping mechanism.

The essence of social interventions is to help addicted people to find out what help is available, to understand what is keeping them from availing themselves of help, and to motivate them to seek and accept help. On one hand, shame about needing help is a powerful barrier to asking for assistance. On the other hand, a sense of entitlement that some addicts evince can be a turn-off to social workers and others who are attempting to provide help. Clearly, what works best is a balanced approach in which help is sought, provided, and actively used, rather than taken for granted. As a result of this approach, addicts, instead of continuing to feel as if they are blowing aimlessly in the wind, begin to feel that they have some control over their lives.

### BIOPSYCHOSOCIAL FACTORS AND THE TYPICAL COURSE OF ADDICTION

The typical course of addiction begins with *exposure* of a vulnerable individual to a given psychopharmacological agent in a certain social context; *dependence* follows, characterized by compulsive drug use; and eventually *medical, psychiatric, and social complications* develop. At each stage, the interactions among the drugs, the user, and the environment are altered. For example, social drinking on a date by a teenager differs dramatically from drinking alcohol to prevent morning “shakes” or from drinking after discharge from the hospital following treatment of liver failure. Similarly, “snorting” a line of cocaine obtained from a friend at a party on the weekend is different from working as a prostitute to earn money to buy cocaine and using a needle shared with an HIV-positive partner to inject the drug intravenously.

The stages in the development of drug and behavioral addictions are strikingly similar. However, the *speed* of both progression and the severity of the problem varies widely among different drugs and among different behaviors. Factors affecting the speed and severity of addiction to drugs include how available a drug is (e.g., its cost and purity), its route of administration, and its reinforcing effects, especially the power of the drug to promote craving for the drug. Often months or years can pass between initial exposure to alcohol and people becoming compulsive users. In contrast, only weeks or months may be required for casual cocaine use to become a full-blown cocaine addiction. Similarly, the serious complications caused by drinking alcohol typically occur 10 to 15 years after initial exposure to alcohol. Serious problems with cocaine usually begin in less than 1 or 2 years.

People often use several addictive drugs simultaneously or use different drugs serially, switching from one to another. Such multiple drug



use indicates that the similarities in the use of various drugs are more important than their differences. In addition, it is common for people using addictive drugs to also engage in addictive behaviors, such as gambling or compulsive overeating. It is not uncommon for problematic hypersexuality, so-called sexual addiction, pathological gambling, or drug addiction to trigger each other.

Youngsters usually use legal, easily available drugs, such as tobacco and alcohol, before they begin using illegal drugs, such as marijuana, heroin, and cocaine. For this reason, these readily obtainable drugs are called "gateway drugs." It is believed, but it has not been proven, that preventing the use of these "softer" drugs will reduce the likelihood that youngsters will abuse "harder" drugs. Of course, people don't always follow the usual pattern of starting with softer drugs and moving on to using more serious ones. For example, in inner cities, where crack cocaine or heroin is often available to preadolescents, drug use may begin with these drugs. More recently, in rural communities, the ready availability of methamphetamine from local meth labs has created a similar shortcut to highly addictive "hard" drugs.

The typical pattern of progressing from softer drugs to harder drugs, however, suggests that the same factors that make people vulnerable to becoming addicted to one drug also make them vulnerable to the use of others. This pattern also suggests that similar diagnostic criteria and treatment strategies should be applied to the abuse of *all* drugs.

As young people are developing into adults, some are also becoming full-blown addicts. All adolescents are confronted with the challenges of learning about human intimacy and sexuality, beginning productive work, and, in general, exploring and facing the challenges of life. Drug use plays a part in determining whether they will be able to meet these challenges or whether they will be overwhelmed by the problems that addiction creates. Addictive behaviors, such as sexual addiction, compulsive thrill seeking, and becoming a workaholic, interfere with successfully meeting these life challenges in ways that are similar to the interference created by substance abuse. Sadly, these young people, whose behavior is no longer under their control, often miss the chance to initiate fulfilling relationships, establish intimacy and a healthy family life, and obtain a college or professional degree.