CONCEPTS OF CHEMICAL DEPENDENCY

NINTH EDITION

HAROLD E.
DOWEIKO

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To Jan,
who lit the spark of love within
for whom the flames still burn.

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PREFACE

The world of the neurosciences is constantly changing. New discoveries about the process of neurotransmission, how neurotransmitter receptor sites are distributed throughout the brain, how certain chemicals damage neurons or aid in their recovery, how the brain experiences and recovers from trauma all conspire to make a textbook such as this exceptionally difficult to keep current. Many long-cherished theories have been discarded, whereas new information leads to the formation of new theories or suggests new directions for theoretical inquiry. An excellent example is Koob's (2009) assertion that scientists are only now starting to explore the role of glial[1] cells in the brain. The glial cells comprise 90% of the brain's mass, play roles in the process of neurogenesis, provide metabolic support of the neurons, and are involved in the process of neurotransmission itself.

Over the years, there have been a number of changes made to this text, and this process has continued with the current edition. New research is cited, and the process of publishing journal articles online before the publication of the printed version has resulted in the citation of numerous journal articles that were "published online prior to print." Further, because research suggests that substance use patterns between young adults who go on to attend college and those who do not might differ, a new chapter that focuses just on substance use issues in the college student population has been added to the text. Information about the synthetic THC-like compounds that became popular drugs of abuse in the first months of this decade has also been reviewed. Several of the chapters have been rewritten in an attempt to avoid duplication of material. Out of curiosity, I tried to count every change made to the manuscript from the addition or deletion of a reference to the addition of new material and deletion of material not thought relevant, movement of a section to another part of a chapter so that it would be more appropriate there, and so on, and gave up at 600.

With the publication of the *Diagnostic and Statistical Manual of Mental Disorders* (5th Edition) *(DSM-5)* (American Psychiatric Association, 2013), it was necessary to include a new section in each chapter devoted to a drug(s) of abuse integrating the *DSM-5* diagnostic criteria for that substance into the text in addition to the substance-induced disorders that might accompany the abuse of each compound. A new appendix has also been added to explore the changes between the diagnostic criteria utilized in the *DSM-5* and those of its predecessors and how the *DSM-5* does not have separate categories for substance abuse and substance addiction as was true in the previous edition of the *Diagnostic and Statistical Manual of Mental Disorders.*

Over the years, several instructors have contacted the author to inquire about the chapter sequence decisions. It is difficult to write a text that will be used across a range of diverse fields of study in the order that will meet the demands of that class (psychology, sociology, nursing, and substance abuse counseling to name a few of the college classes that have used earlier editions of this text). I do believe that it is important to review the drugs of abuse and their effects first so that

[1]See Glossary.

the student might understand why the abuse of these compounds is so appealing and to ground the student in the world of substance *abuse* and not other fields of study. The author of this text was, for example, speaking at a seminar about the total amount of amphetamine that an addict might inject in a "speed run"[2] when a nurse blurted out that the hypothetical person could not *possibly* be injecting that much methamphetamine because it was dangerous and potentially fatal. "Welcome to the world of amphetamine abuse" was the author's response. Substance abuse is a different reality than the one, pharmaceutical sciences, taught in nursing schools, psychology programs, sociology programs, or even medical school. On more than one occasion, the author of this text has been approached by a trauma surgeon to explain why a person would knowingly expose themselves to such high doses of anabolic steroids, and how would this affect their behavior? On many occasions, students or seminar participants have expressed surprise at some of the contaminants or adulterants found in illicit drugs. The average person does not understand that persons with a substance use disorder (SUD) frequently view contaminants as part of the cost of abuse of their desired drug(s). For these reasons, the author of this text has adopted the philosophy that to understand and treat the SUDs, you need to first understand the chemicals being abused and their effects.

Supplements

- ***Online Instructor's Manual*** *contains information to assist the instructor in designing the course, including chapter outlines, key terms, discussion questions, teaching and learning activities, learning objectives, and additional online resources.*
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Disclaimer

The clinical examples used in this text are based on a wide variety of sources, including (but not limited to) characters as portrayed in various movies, books, or television programs, news stories from the media, clinical examples provided in various references cited at the end of this text, or as portrayed by presenters at various workshops that the author has attended. *All examples provided are hypothetical in nature. Any resemblance to any person, living or dead, is entirely because of chance and should not be inferred by the reader.* Further, the practice of substance abuse counseling or psychotherapy is very complex and the practitioner should be familiar with a wide range of resources in conducting their practice. *Neither the author nor the publisher shall be liable or responsible for any harm, loss, or damage allegedly arising from any information or suggestion made in or omitted from this text.*

[2]Discussed in the chapter on amphetamine abuse and addiction.

CHAPTER 1

Why Worry about Substance Abuse or Addiction?

Introduction

Historical evidence would suggest that substance abuse has been a problem for society for thousands of years, and substance use disorders (SUDs) collectively remain the most prevalent mental health issue facing society today (Kilts, 2004; Vuchinich, 2002). Substance use disorders[1] might take any number of forms, including the subset of SUDs known as alcohol use disorders (AUDs) and nicotine use disorders (NUDs). Another subform of SUDs is composed of those who abuse prescription drugs. The most prominent form of SUDs is the abuse of illegal drugs such as the hallucinogens, cocaine, narcotics, and marijuana.[2] Finally, there are those who abuse compounds not normally intended for human use such as the inhalants or anabolic steroids.[3]

The face of SUDs has changed over time as one compound or another gains widespread acceptance among those who wish to abuse such a substance and then is replaced by the next popular drug of abuse. However, alcohol and nicotine hold a unique position in this process: Their use is legal for persons above a certain age. This contributes to the stable levels of alcohol or tobacco use in the United States in spite of widespread acknowledgment of the physical, social, and financial toll that each causes to society. There have been initiatives to ban the use of these compounds over the years with arguable success. In contrast to the patterns of alcohol or tobacco use, the illicit drugs follow a curious cycle: First one compound becomes a popular drug of abuse, and then it is slowly replaced by another, "better" illicit drug of abuse. After the physical and emotional dangers of that substance are discovered, drug abusers switch to another, purportedly "better" and "safer" drug of abuse. In this chapter we will begin to examine the impact of SUDs on society.

[1]Because the term *alcoholic* has been found to actually deter many in need of treatment for their alcohol use problem from seeking rehabilitation (Keyes et al., 2010), the term "alcohol use disorder" will be used to indicate persons who abuse or are addicted to alcohol, while the more inclusive term "substance use disorder" is used to address the entire spectrum of drug use disorders.

[2]This is because most people are loath to classify alcohol abuse or addiction as a *substance* use disorder. After all, it is only alcohol, right?

[3]While many of the steroid compounds being abused were indeed intended for human use, they are used at dosage levels far in excess of what is deemed medically acceptable, and thus could be said not to be intended for human use. Further, many of the steroid compounds being abused were not intended for use with humans, but were designed for use with animals, and diverted to the illicit market.

Substance Use Disorders as Unsuspected Influences on Society

It is difficult to identify every way in which SUDs influence society. It has been estimated that the direct and indirect costs of SUDs consume *over 15 percent* of the average state's budget[4] (National Center on Addiction and Substance Abuse at Columbia University, 2009a). Society's response to this problem is somewhat ambivalent as evidenced by the fact that each year in the United States $264 billion is spent purchasing illicit drugs, whereas another $200 billion is spent annually fighting the "war on drugs." Politicians hide the full cost of this "war" by sliding part of the expense from one budgetary column to the next (National Center on Addiction and Substance Abuse at Columbia University, 2009a). For example, the cost of incarcerating those who are convicted of drug-related offenses is part of the Department of Corrections budget, whereas the cost of providing health care and social support for those convicted of drug-related offenses is part of the Human Services budget, and so on (Cafferty, 2009).

In the second decade of the 21st century the rising cost of health care in the United States has become hotly debated. Politicians speak at length about the rising cost of health care, but ignore the impact of SUDs, as evidenced by the following facts:

- *Approximately 25% of patients seen by the primary care physician have an SUD (Jones, Knutson, & Haines, 2004).*
- *Excessive alcohol use was a factor in 50% of all deaths from acute traumatic injuries (Baron, Garbely, & Boyd, 2009).*
- *Approximately 1 million hospital emergency room visits are the result of illicit drug abuse (Centers for Disease Control and Prevention, 2010b).*
- *Approximately 40% of all hospital admissions can be tied either directly or indirectly to alcohol use/abuse (Baron et al., 2009; Greenfield, 2007; Greenfield & Hennessy, 2008).*
- *Hospitalized persons with an SUD are more likely to require rehospitalization within 30 days of discharge than nonusers (Walley et al., 2012).*
- *Approximately 25% of those individuals on Medicaid have an SUD. As this group ages, their medical costs increases at a higher rate than for age matched individuals without an SUD (Clark, Samnaliev, & McGovern, 2009).*

The SUDs are frequently intertwined with psychiatric problems, further contributing to the rising cost of health care as evidenced by the facts that:

- *Substance Use Disorders are a factor in 50–75% of all psychiatric hospital admissions (Miller, 2004).*
- *Substance Use Disorders are the second most common cause of suicide in this country.*
- *One-third of those persons who commit suicide had alcohol disorders (Karch, Dahlberg, & Patel, 2010).*
- *Between 40 and 60% of those individuals who do commit suicide were intoxicated at the time of their deaths,[5] and 10% had evidence of other drugs of abuse in their bodies at the time of their death (Karch, Cosby, & Simon, 2006; Scott & Marcotte, 2010).*
- *Traumatic brain injury (TBI) accounts for almost one-third of trauma-related deaths in the United States each year, and between 29 and 52% of who survive the TBI have alcohol in their body at the time of admission (Miller & Adams, 2006).*

Substance Use Disorders and Interpersonal Violence

There is a well-documented relationship between SUDs and violent behavior that has remained relatively constant over the years. Half of all perpetrators of a violent crime have been found to have been drinking before the commission of that crime (Coghlan, 2008; Parrott & Giancola, 2006). It has also been found that substance-abusing adults were 2.7 times as likely to have physically abused a child, and 4.2 times as likely to have neglected a child as were their non-substance-abusing peers (Ireland, 2001). Alcohol is a

[4]Alcohol-related disease results in approximately 20,700 deaths each year in this country, a figure that does not include persons who die in alcohol-related accidents or who are killed in an alcohol-related homicide (Johnson, 2010).

[5]The discrepancy between these two figures is explained by the fact that many of those who commit suicide consume alcohol as a way to steel their courage before taking their own lives, while others commit suicide impulsively while intoxicated.

factor in 40–86% of all homicides committed in the United States (Parrott & Giancola, 2006)[6] and 40% of homicide cases in Europe (Coghlan, 2008). Illicit drug use increases the woman's chance of being murdered by her significant other by as much as 28-fold, even if she was not abusing chemicals herself at the time of her death (Parrott & Giancola, 2006).

The Scope of the Problem of the Substance Use Disorders

At least half of the world's population has used at least one psychoactive substance at least once with alcohol being the most commonly used psychoactive chemical (Leamon, Wright, & Myrick, 2008). However, only about 200 million people, or about 5% of the entire population of the world, has abused an *illicit* substance (United Nations, 2012). The majority of those who use a psychoactive substance do so on a short-term experimental basis and rarely present the problems to society seen in cases of substance *addiction*. Addiction develops only in a minority of persons who abuse a compound(s). However, a thriving "black market"[7] has evolved to meet the demand for illicit drugs created by the curious user, the infrequent abuser, the heavy abuser or the person who is addicted to a chemical(s). The worldwide illicit drug trade is estimated to be an $800 billion/year industry, making it larger than the annual gross domestic product of 90% of the world's countries (United Nations, 2012; Vital Signs, 2007).

In a sense, illicit drug use might be said to be an "American way of life." Sixteen percent of the entire population over the age of 12 is addicted to nicotine, alcohol, or illegal drugs (Winerman, 2013). This figure is deceptive however since it is possible for a person who is addicted to nicotine to also be addicted to another compound such as alcohol. Still, with just under 5% of the world's total population the United States consumes 60% of the illicit drugs produced on this planet ("Drug War Success Claims Challenged," 2006). Each day in the United States, approximately 8,000 people try an illicit drug for the first time (Lemonick & Park, 2007; Substance Abuse and Mental Health Services Administration, 2009). Many of these individuals probably only experiment with illicit drugs out of curiosity for <12 months[8] and then discontinue or curtail further use of that compound (Center for Substance Abuse Research, 2008).

The most commonly abused illicit substance is marijuana, with 75.7% of illicit drug users abusing marijuana, and 57.3% of illicit drug abusers using only marijuana (Substance Abuse and Mental Health Services Administration, 2009). This figure still means that 8.6 million people over the age of 12 abused an illicit compound other than marijuana in the month preceding the survey (Substance Abuse and Mental Health Services Administration, 2009). An interesting research study conducted by Banta-Greene, Field, Chiala, and Sudakin (2009) revealed that waste water from both rural and urban areas contained measurable amounts of cocaine and methamphetamine metabolites, underscoring the widespread abuse of these compounds in this country. In the next section, we will more closely examine the scope of the problem of SUDs in this country.

Alcohol Use, Abuse, and Addiction

As the estimated 119 million people in the United States who ingest alcohol at least once each year can attest alcohol is a popular recreational chemical (Office of National Drug Control Policy, 2006). For most of these people alcohol will not become a problem in any sphere of their lives. However, between 8 and 16 million persons in the United States do become physically dependent on alcohol, whereas another 5.6 million are believed to abuse it on a regular basis (Bankole & Alt-Daoud, 2005). This may underestimate the total number of persons with an alcohol use disorder, since many high-functioning persons with an AUD are able to successfully hide this fact from friends, family, and coworkers, possibly for decades (Benton, 2009).

For the average person alcohol might represent a pleasant diversion from the stress of daily living; however, a minority of those who drink consume a disproportionate amount of the alcohol produced. Ten percent of drinkers consume 60% of the alcohol consumed in the United States, whereas the top 30% of drinkers consume 90% of the alcohol consumed in this country (Kilbourne, 2002). If their drinking has resulted in their suffering social, physical, emotional, or vocational

[6]These different estimates reflect the different methodologies used in different research studies.

[7]See Glossary.

[8]However, it is important to keep in mind that even those who are merely curious about the effects of an illicit drug(s) run the risk of becoming addicted.

consequences[9] then they are said to have an AUD. The majority of those in the United States who do develop an AUD are male by a ratio of approximately 2–3 men to every woman (Kranzler & Ciraulo, 2005a). These figures underscore the danger of alcohol use and abuse in spite of its legal status as a socially acceptable recreational compound for adults.

Estimates of the Problem of Opiate Abuse and Addiction[10]

When many people in the United States hear the term *narcotics* they immediately think of heroin, a drug that does indeed account for 71% of the opiate use disorders around the world (United Nations, 2012). Globally, it has been estimated that 15.6 million people either abuse, or are addicted to, heroin (United Nations, 2012). In the United States current estimates suggest that approximately 3 million people have abused heroin at some point in their lives and that there are between 810,000 and 1 million people currently dependent on it (Jaffe & Strain, 2005). The states with the largest numbers of opioid abusers are thought to be California, New York, Massachusetts, and New Jersey, although heroin use disorders are found in every state of the union (Jaffe & Strain, 2005), with a male to female ratio of 4 to 1 (Krambeer, von McKnelly, Gabrielli, & Penick, 2001).

Unfortunately, heroin is only one of a wide range of opioids that might be obtained and abused.[11] In the United States is a growing number of people who are addicted to prescription narcotic analgesics either prescribed for the user, or obtained from illicit sources. An estimated 33 million persons are thought to have used a narcotic analgesic not prescribed to them at some point in their lives, and 5 million are thought to have done so in just the past year. The problem of medication diversion is an ongoing one in the United States with the result that many opioid addicts support their opioid abuse almost exclusively on prescribed medications either obtained from a physician or obtained from illicit sources. Thus the estimate of 800,000 to 1 million heroin addicts *underestimates* the total number of people addicted to an opiate in this country by an unknown margin.

[9]The topic of determining whether a person has an AUD will be discussed later in this book.

[10]For the purpose of this text, the terms "opioid," "opiate," and "narcotic" will be used interchangeably, although, as will be discussed in Chapter 14, there are technical differences between these terms.

[11]The topic of opioid abuse and addiction is discussed in Chapter 14.

Estimates of the Problem of Stimulant Abuse and Addiction[12]

Globally, the problem of central nervous system (CNS) stimulant abuse[13] has apparently reached a plateau with approximately 25 million people around the world abusing a CNS stimulant at least once each year (United Nations, 2012). In North America,[14] the demand for the most potent of the CNS stimulants, the amphetamines (especially methamphetamine), has been stable, with about 3.8 million people in North America abusing these compounds at least once each year (United Nations, 2012). Much of the methamphetamine in the United States enters the country from other countries, although there are still local "labs" making small amounts of methamphetamine for local consumption. The media in the United States often focuses on local CNS stimulant use disorders; however, in reality only 15% of CNS stimulant abusers live in North America (United Nations, 2012). As is true for narcotic analgesics, an unknown percentage of prescribed CNS stimulants are diverted to the illicit market, providing a pool of unrecognized stimulant abusers/addicts who rely on these.

Estimates of the Problem of Cocaine Abuse and Addiction

The number of cocaine abusers/addicts has remained relatively stable around the globe over the past decade (United Nations, 2012). Globally, approximately 14 million people are cocaine abusers or addicts, the vast majority of whom are thought to live in North America[15] (United Nations, 2012). In the United States, it has been estimated that there are perhaps 2.5 million people who are addicted to cocaine, and an unknown number of people who have abused it at some point in their lives (Grinfeld, 2001). The true scope of cocaine abuse/addiction in the United States is confused by the fact that in spite of its reputation, researchers during the last wave of cocaine abuse in the

[12]This topic is discussed in more detail in Chapter 12.

[13]Which includes the abuse of methylphenidate and the various amphetamines.

[14]Which, as noted earlier in this chapter, includes both Canada and the United States.

[15]The United Nations defines "North America" as including both Canada and the United States.

United States concluded that only 3–20% of those who abused cocaine would go on to become addicted to it[16] (Musto, 1991).

Estimates of the Problem of Marijuana Use, Abuse, and Addiction

Globally, it is estimated that at least 160 million people have used marijuana in the past 12 months (United Nations, 2012). Just under 30 million people are thought to be current users of marijuana in North America[17] (United Nations, 2012). Approximately 25% of the entire population of the United States is thought to have abused marijuana at least once, and of this number 3 million people are thought to be addicted to it (Grinfeld, 2001).[18]

Estimates of the Problem of Hallucinogen Abuse[19]

Many researchers question whether it is possible to become *addicted* to hallucinogens. But it is thought that perhaps 10% of the population of the United States has abused hallucinogen at least once in their lives (Sadock & Sadock, 2007). It is estimated that 1.1 million persons in the United States have abused a hallucinogenic compound in the past month (Substance Abuse and Mental Health Services Administration, 2009).

Estimates of the Problem of Tobacco Abuse and Addiction

Tobacco is a special product: It might be legally purchased by adults, yet is acknowledged to be destructive and addictive. Unfortunately, tobacco products are easily available to adolescents, and in some cases to children. Researchers estimate that approximately 20.8% of the entire population of the United States are current cigarette smokers, 25% are former smokers, and 50% have never smoked (Hays et al., 2011; Sadock & Sadock, 2007).

The Cost of Chemical Abuse/Addiction

Globally, the drug use disorders are the sixth leading cause of disease in adults (Leamon et al., 2008). Illicit drug use is thought to cost the global economy $880 billion/year, with the AUDs costing the world economy another $880 billion/year (Vital Signs, 2007). In the United States, the alcohol and drug use disorders are thought to drain at least $375 billion/year from the economy (Falco, 2005). The annual toll from the various diseases associated with illicit drug use in the United States, combined with the number of drug related infant deaths, suicides, homicides, and motor vehicle accidents, is estimated to be approximately 12,000–17,000 people a year (Donovan, 2005; Miller & Brady, 2004; Mokdad, Marks, Stroup, & Gerberding, 2004).

All of the estimates cited in the last paragraph are in addition to the 440,000 persons who are thought to die each year from smoking-related illness brought on by their own tobacco use, and the additional 35,000 to 56,000 persons each year in the United States who are thought to lose their lives to illness brought on by exposure to "secondhand" or "environmental" tobacco smoke (Benson & Sacco, 2000; Bialous & Sarna, 2004; Mokdad et al., 2004). Further, approximately 100,000 people die each year in the United States as a direct result of their alcohol use (Niami et al., 2003; Small, 2002). Notice that the last sentence stated "as a *direct* result" of the individual's alcohol use. The alcohol use disorders contribute to or exacerbate 60 different disorders (Room, Babor, & Rehm, 2005). A person might die from one of the disease states exacerbated by their drinking, but the disease state will be identified on the death certificate as the primary cause of death, not their alcohol abuse. If one were to include these "indirect" alcohol-related deaths, it becomes clear that alcohol either directly or indirectly causes as many deaths each year in the United States as do tobacco products (Room et al., 2005).

[16]The danger, as will be discussed again in Chapter 12, is that it is impossible to predict at this time *which* individual will go on to become addicted to cocaine, and thus the use of this compound is discouraged, if only for this reason. Other dangers associated with cocaine use/abuse/addiction will be discussed in Chapter 12.

[17]Remember, again, that this includes *both* the United States and Canada.

[18]Although most people do not think of marijuana as a potentially addictive substance, as will be discussed in Chapter 13, some abusers do indeed become addicted to it.

[19]This is a difficult subject to discuss in depth since some researchers classify MDMA as a hallucinogen, others classify it as an amphetamine, and still others call it an hallucinogenic amphetamine compound. For the sake of this text it will be classified as a hallucinogen. See Chapter 15 for more details on this issue.

The Cost of Alcohol Use/Abuse/Addiction

Globally, alcohol use is thought to be a direct factor in 10–11% of all deaths each year (Stevenson & Sommers, 2005). In the United States, alcohol dependence ranks third as the most common cause of preventable death (Johnson, 2010). The annual economic impact of alcohol use/abuse/addiction in the United States is thought to be at least $185 billion/year, of which $26 billion is for direct health care costs, and $37 billion as a result of lost productivity brought on by alcohol-related premature death (Belenko, Patapis, & French, 2005; Gilpin & Kolb, 2008; Petrakis, Gonzalez, Rosenheck, & Krystal, 2002; Smothers, Yahr, & Ruhl, 2004). To state this data in other, more personal terms, the alcohol use disorders cost every man, woman, and child in the United States $638 per year (Grant et al., 2006).

It has been estimated that the complications brought on by alcohol use account for 15–25% of the annual total expenditure for health care each year in the United States (Anton, 2005; Swift, 2005). Although only 5–10% of the population in this country has an AUD, they consume a disproportionate amount of the yearly health care expenditure in the United States as evidenced by the fact that between 15 and 30% of those individuals in nursing homes are thought to be there either as a direct or indirect result of their AUD (Schuckit, 2006a). Alcohol abuse is also a factor in numerous motor vehicle accidents, which collectively cost the U.S. economy an estimated $24.7 billion/year (Craig, 2004). Alcohol is thought to be involved in approximately 40% of all motor vehicle accidents and 40–60% of all traumatic injury cases involve patients with an SUD (Craig, 2004; Savage, Kirsh, & Passik, 2008).

The Cost of the Tobacco Use Disorders

Although it is legally produced, purchased, and used by adults without restriction, tobacco use extracts a terrible toll around the globe. Globally, more than 3 million people/year die around the world as a direct result of their use of tobacco products, of whom about 442,000 live in the United States (Hays et al., 2011). The annual economic losses from in just the United States alone amounts to $157 billion/year (Hays et al., 2011). One in every five deaths in this country can be directly traced to smoking-related illness (Sadock & Sadock, 2007). This figure does not include those persons who die as a result of exposure to "secondhand" or "environmental" tobacco smoke each year in this country.

The Cost of the Substance Use Disorders

It has been calculated that when one totals the cost of premature death and illness, lost wages, financial losses by victims of substance-related crime, who were hurt by others combined with the cost of law enforcement activities directly aimed at the problem of SUDs, illicit substance use costs at least $900 for every person 18 years or older in the United States each year (Heyman, 2009). When the cost of disability, accidental injuries, health care, and absenteeism from work are added together, the total economic impact of SUDs on the U.S. economy each year is estimated to be $428 billion (Gonzalez, Vasisileva, & Scott, 2009).

The health care problem has received much publicity in recent years, although the role of SUDs in this problem has received surprisingly little media attention. The negative impact of SUDs on health care was illustrated by the team of Santora and Hutton (2008) who concluded that hospitalized alcohol abusers had average hospital care expenses that were 120% higher than for the person who was not an abuser, and that opioid abusers who are hospitalized require health care expenditures that are 482% higher than for non-abusers. As will be discussed in the next section, society's response to this crisis has arguably been haphazard, piecemeal, and frequently inadequate.

Who Treats Persons with an SUD?

Having established that SUDs are a legitimate problem we are left with the question: Who treats those people with such disorders? The various state governments spend only four cents of every dollar on programs devoted to the prevention and treatment of persons with an SUD (Grinfeld, 2001). Health care professionals in general are woefully ill-prepared to work with substance abusers. Although between 15 and 30% of patients seen by the typical primary care physician have an SUD, most physicians are still undertrained (or not trained) to recognize substance abusers (O'Connor, Nyquist, & McCellan, 2011). Less than one-fifth of the physicians surveyed reported that they thought that they were trained to treat patients with the most common form of SUDs, AUDs, whereas less than 17% thought that their training was sufficient to enable them to work with patients with other forms of SUDs (Clay, Allen, & Parran, 2008).

Further, most physicians emerge from graduate training with a negative attitude toward individuals with an SUD (Renner, 2004a). Possibly as a result of this deficit in their training and their preconceptions about persons with an SUD, fewer than one-third of physicians carefully screen for SUDs among their patients (Greenfield & Hennessy, 2008b). Less than 50% of patients who go to see a physician about alcohol-related problems are even *asked* about their alcohol or drug use by their physician (Pagano, Graham, Frost-Pineda, & Gold, 2005). This failure to inquire about a patient's substance use habits might be a major reason why SUDs are both underdiagnosed and under-treated (Clay et al., 2008; Greenfield & Hennessy, 2008a, 2008b). This conclusion is supported by the observation that less than 1% of internal medicine and family practice physicians, and only 5.1% of psychiatric consultations result in an accurate diagnosis of an SUD when it is present (Banta & Montgomery, 2007).

Physicians are taught that the addictions are chronic, treatable disorders, yet "more often than not [will] view the addicted patient as challenging at best and not worthy of customary compassion" (Brown, 2006, p. 5). Physician postgraduate educational programs do attempt to address this problem; however, the average length of such training in the addictions is only about 8 hours (Renner, 2004a). Nor is this professional blindness limited to physicians. Although nursing professionals frequently have more contact with patients than do physicians, "the majority of nursing schools … required only 1 to 5 clock hours of instruction on alcohol and drug abuse content during their entire undergraduate curricula" (Stevenson & Sommers, 2005, p. 15). Thus those health professionals who will have the most contact with the patient, the nursing staff, are as ill-prepared to work with patients with SUDs as is the average physician.

Marriage and family therapists are another group of health care professionals that, as a whole, are ill prepared to recognize much less deal with SUDs. Such problems are rarely identified, vital clues to the nature of the disorder within the family are missed, and therapy might be rendered ineffective. If these disorders are identified, they are usually addressed by a referral to another therapist of another discipline by the marriage or family therapist. This interrupts the continuity of care and therapy is often carried out in a haphazard manner with little communications between treatment professionals. Further, if there is a dual diagnosis situation (substance abuse with co-occurring mental illness) there is a definite need for family therapy, although this is rarely initiated (Minkoff, 2008).

In spite of the obvious relationship between SUDs and various forms of psychopathology, "most clinical psychologists are not well prepared to deal with issues involving substance use or abuse" (Sobell & Sobell, 2007, p. 2). Seventy-four percent of psychologists surveyed admitted that they had no formal training in the identification or treatment of the addictions, and rated their graduate school training in this area as being inadequate (Aanavi, Taube, Ja, & Duran, 2000). Only professional substance abuse counselors are required to have a high level of professional training in the recognition and treatment of SUDs, with national standards for individuals working in this field having recently been established. Because such counselors make up only a minority of those in the health care industry, the most common response to the question of who treats those individuals who are addicted to alcohol or drugs is all too often "nobody."

Chapter Summary

The problem of excessive alcohol use, and illicit drug, has plagued society for generations. Solutions to the problem of SUDs that have proven inadequate include banishment, execution, castration, incarceration, religious intervention, and various forms of treatment. The United States, with a minority of the world's population, is the largest consumer of illicit drugs, which drains an estimated $428 billion from the economy each year. Alcohol use disorders drain an additional $400 billion/year from the U.S. economy, yet society's response to the problem of SUDs has been poor at best, if virtually entirely ineffective.

CHAPTER 2

The Nature of the Beast
(Being an Examination of the Problem of SUDs)

Introduction

There are multiple perspectives on substance use disorders (SUDs) in the United States. Biologists have documented episodes where at least some mammals appear to intentionally seek out compounds such as fermented fruits or mushrooms that can alter that creature's perceptions of the world. Such episodes have been captured on film, and many are available for viewing as public entertainment over the "Internet." Domestic cat owners have supplied their pets with "cat nip," often doing so on a regular basis much to the delight of their four-legged family members. It would appear that we share the desire to chemically alter our perception of the world with our mammal cousins.

The American Society of Addiction Medicine (ASAM) has suggested a model of SUDs that integrates the biological, psychological, and sociological theories of the addictions into one unified model.[1] This model attempts to address the various forces that exacerbate or inhibit the individual's substance use behaviors, and although it is not the grand unified theory (GUT) of addictions that has long been sought, it is a major step in the formulation of a GUT. However, until this GUT is advanced, we are left with the question: What are SUDs, and why are they a problem?

Why Do People Choose to Use Drugs or Alcohol?

There are many answers to this question because substance abstinence/use/abuse is a common endpoint of the various forces that help to shape that individual's life and decisions. An individual might choose to initiate substance use for a variety of reasons. The individual might use chemicals to express a previously forbidden impulse, cope with emotional or physical pain, explore alternative realities, substitute a substance-induced feeling of euphoria for the less mundane reality in which they live, as a way to escape from the pain of their social status, or as a sign of rebellion, just to mention a few of the reasons why a person might initiate substance use (Rasmussen, 2008). Why they continue to use alcohol or drugs is possibly quite different and the reason(s) for the continuation of substance use should be explored on a case-by-case basis.

Our hedonistic society would seem to encourage at least the explorational use of the drugs of abuse which have become so pervasive in our culture that every one of us must make a conscious choice every day to

[1]Discussed in Chapter 25.

use/not use a recreational chemical(s).[2] A possible reflection of this decision making process is seen in Figure 2-1. Admittedly, for most of us this decision is so automatic that it does not even require conscious thought. However the decision to initiate substance use is influenced by a wide range of factors including:

Blindness to the Compound's Effects: Unfortunately, one side effect of alcohol, the drugs of abuse, and some prescription medications is substance-induced "blindness," for want of a better term. The person will report that they *feel* better, when an objective observer would say that they have actually decompensated in terms of their interpersonal behaviors, ability to handle finances, ability to maintain cognitive function, and attend to the necessary activities of daily living (Breggin, 2008). Many abusers of narcotic analgesics are wrongfully told that they cannot become addicted to a substance that they simply "snort," and they believe this myth in spite of the libraries of data that argues the exact opposite. Often, the price for this ignorance is the development of a physical addiction to what was once a recreational substance.

Pharmacological Reward Potential: The reward potential of a compound depends upon its chemical structure, the individual's biochemistry, and the route of administration (Budney et al., 2003; O'Brien, 2006). Those compounds that have a rapid onset of action or *immediacy of effect* (Kalivas, 2003) and that induce a greater sense of pleasure have the highest reward potential for abuse (O'Brien, 2011).

The basic laws of behavioral psychology hold that if something (a) increases the individual's sense of pleasure, or (b) decreases his/her discomfort, then s/he is likely to repeat the behavior (in this case using alcohol or a drug). In contrast, if a compound were to (c) increase the individual's sense of discomfort, or, (d) reduce the individual's sense of pleasure, s/he would be less likely to repeat that behavior. Arguably, although the reward potential of the drugs of abuse might be a powerful incentive for repeated use, it is not sufficient in itself to induce addiction to that compound (Kalivas, 2003).

Social Learning: The role of social learning is a form of psychological learning that is discussed in Chapter 25. It is mentioned here because social learning is involved in the development of the individual's expectations for each potential recreational substance.

Individual Expectations: Substance use expectations begin to evolve in childhood or early adolescence, and evolve over time as a result of such influences as peer groups, childhood exposure to advertising, parental substance use behaviors, and past experiences (Monti, Kadden, Rohsenow, Cooney, & Abrams, 2002; Sher, Wood, Richardson, & Jackson, 2005). The individual's expectations for a substance are also strongly influenced by the context and cultural traditions in which s/he uses that chemical (Lindman, Sjoholm, & Lang, 2000; Sher et al., 2005). The topic of how individual expectations about the effects of a substance overlap the topic of learning theory is discussed in more detail in Chapter 25.

Cultural/Social Influences: Each individual lives in a cultural matrix that both helps shape his or her behavior and is affirmed by that person's adherence to those norms. The topic of the social/cultural factors that influence substance use behaviors will be discussed in more detail in Chapter 25.

Legal Sanctions: In today's society the job of enforcing social rules is often carried out by the judicial system. If the individual should elect to use a drug(s) whose use is not approved of by society or a drug that is socially accepted, in an unacceptable manner,[3] the legal system steps in to punish this unacceptable behavior (Szasz, 2009). However, the perspective of SUDs as reflecting a "disease" state as advocated by the health care establishment is often at conflict with that of the legal system, which adheres to the premise that the individual must be held accountable for his or her socially inappropriate behaviors deemed unacceptable to the parent society, including the use of chemicals. This topic will be explored further in Chapter 25.

[2]In response to those of you who wish to argue this past point, consider the following: Where is the nearest liquor store, or bar? If you wanted to do so, would you know where to buy some marijuana? If you did not know, would you know the name of a person to ask who would know? Are there certain people that you know of (co-workers, friends, and others) whose company you avoid because you do not approve of their substance use? You see: We are not so removed from the problem of recreational drug use as we would like to believe, are we?

[3]Even in this category, there are contradictions. For example, the recreational use of a narcotic is illegal, and a matter for the courts to handle. However, if the person were to have a valid prescription from a physician, s/he now becomes a "patient" for whom the use of the same compound is sanctioned.