

PREFACE

Whether you are entering the field of addictions counseling or are a counselor who wants to be prepared for the screening, assessment, and treatment of addiction in your practice, this text provides a foundational basis. *Foundations of Addictions Counseling* addresses real-life clinical concerns while providing the necessary information to keep up to date with field trends. It also addresses the evolving standards of professional organizations, accrediting bodies, licensure boards, and graduate programs and departments. Counselors in school, mental health, rehabilitation, hospital, private practice, and a variety of other settings must be thoroughly prepared to support clients in their quest to be healthy and unimpaired. As the addictions profession has matured, more and more emphasis has been placed on the importance of preparing counselors to work holistically and synthesize knowledge domains from mental health, developmental, and addiction perspectives. The authors provide this knowledge in support of your work on behalf of various clients and diverse communities.

Counselors can expect some of their clients to want to address concerns connected with the use of substances and the development of addictive behavior. This book draws on the specialized knowledge for each contributed chapter. It is written for use in graduate-level preparation programs for counselors. Because of the clarity of the writing and the use of case studies, it may also be adopted in some undergraduate and community college courses. Requirements of the Council for the Accreditation of Counseling and Related Educational Programs (CACREP) and other certification associations have led most university programs in counselor education to require an addictions course for all students, regardless of specialization (school, community, rehabilitation, couples, marriage and family, student personnel, etc.). Addictions counseling is also being offered for CADC I and II certifications, which require undergraduate coursework related to addictions counseling.

NEW TO THIS EDITION

- A new chapter dedicated to the process of rehabilitation in both inpatient and outpatient settings
- A major revision of Chapter 16 so that prevention across the life span is addressed in this edition
- Additional case studies to further illustrate points and enliven class discussion
- Informational sidebars to encourage the visual learner and reader contemplation
- Integration of updated and current research from the field's peer-reviewed journals
- Instructor's manual that includes updated journaling exercises, group work, PowerPoints, and experiential exercises for the online as well as face-to-face classroom.
- Connection to Pearson's *MyCounselingLab* videos, assignments, and certification practice.

It is our hope that this third edition of *Foundations of Addictions Counseling* will provide the beginning student counselor with the basics needed for follow-up courses and supervised practice in the arena of addictions counseling.

Although the text addresses the history, theories, and research related to addictions counseling, at least half of the book's emphasis is on techniques and skills needed by the practitioner. In addition, guidelines for addictions counseling in family, rehabilitation, and school settings are

addressed as are topics connected with cross-cultural counseling and addictions. Some of the topics that make the book engaging and of high interest to readers:

- Concrete reference to assessment tools
- Outpatient and inpatient treatment
- Maintenance and relapse prevention
- Counseling with addicted/recovering clients
- Counseling couples and families that are coping with addictions issues
- Addictions prevention programs for children, adolescents, and college students

Writers experienced in addictions counseling were asked to contribute so that the reader is provided with not only theory and research but also with those applications so pertinent to the role of the practicing, licensed, and certified addictions counselor. This book also reflects the view of the editors that counselors must be prepared in a holistic manner, since addiction issues are so often the reason clients seek the assistance of a professional counselor.

The book is unique in both format and content. The contributing authors' format provides state-of-the-art information by experts nationally recognized for their expertise, research, and publications related to addictions counseling. The content looks at areas not always addressed in introductory texts. Examples include chapters on professional issues in addictions counseling, process addictions, and gender and addictions counseling. Chapters focused on addictions counseling with gay, lesbian, bisexual, transgender, and questioning clients; on engaging ethnic diversity; and on pharmacotherapy provide perspectives often overlooked in texts of this kind. The format and content enhance readability and interest and should engage and motivate graduate students in counseling and aligned professions as well as those enrolled in lower division courses.

The book is designed for students taking a preliminary course in addictions counseling. It presents a comprehensive overview of the foundations of addictions counseling, the skills and techniques needed for addictions counseling, and addictions counseling in specific settings. As editors, we know that one text cannot adequately address all the complex and holistic factors involved in assisting clients who present with issues related to addictive behavior. We have, however, attempted to provide our readers with a broad perspective based on current professional literature and the rapidly changing world we live in at this juncture of the new millennium. The following overview highlights the major features of the text.

OVERVIEW

The format for the co-edited textbook is based on the contributions of authors who are recognized for their expertise, research, and publications. With few exceptions, each chapter contains case studies illustrating practical applications of the concepts presented. Most chapters refer the reader to websites containing supplemental information. Students will find it helpful to use the study material on the website maintained by Pearson Publishing. Professors may want to make use of the PowerPoints developed for each chapter, as well as the test manual that can be used to develop quizzes and exams on the book's content.

The text is divided into the following four parts with the new rehabilitation chapter capping the textbook: (1) Introduction to Addictions Counseling; (2) The Treatment of Addictions; (3) Addictions in Family Therapy, Rehabilitation, and School Settings; and (4) Cross-Cultural Counseling in Addictions.

PART 1 Introduction to Addictions Counseling (Chapters 1 through 6), begins with information on the historical perspectives and etiological models that serve as the foundation for current approaches to addictions counseling, and provides the reader with the contextual background needed to assimilate subsequent chapters. Chapters focused on substance and process addictions, professional issues, an introduction to assessment, and assessment and diagnosis of addictions are included as well.

PART 2 The Treatment of Addictions (Chapters 7 through 13) presents information about motivational interviewing, other psychotherapeutic approaches, comorbid disorders, group work, pharmacotherapy, 12-step programs, and maintenance and relapse prevention. All chapters provide overviews and introduce readers to the skills and techniques used in the addictions counseling process.

PART 3 Addictions in Family Therapy, Rehabilitation, and School Settings (Chapters 14 through 16) presents information relative to addiction and families, persons with disabilities, and children, adolescents, and college students. These chapters highlight information that has relevance and application to diverse contexts.

PART 4 Cross-Cultural Counseling in Addictions (Chapters 17 through 19) discusses ethnic diversity, gender and addictions, and gay, lesbian, bisexual, transgender, questioning affirmative addictions treatment.

An Epilogue with a new, final chapter on inpatient and outpatient rehabilitation provides the readership with even more information than in the second edition of the text. We think the additional case studies included in this third edition along with the use of sidebars enliven the content and make the text even more user friendly and practitioner oriented.

Every attempt has been made by the editors and contributors to provide the reader with current information in each of the 19 areas of focus. It is our hope that this third edition of *Foundations of Addictions Counseling* will provide the beginning student counselor with the basics needed for follow-up courses and supervised practice in the arena of addictions counseling with clients.

Chapter 1

History and Etiological Models of Addiction

David Capuzzi
Walden University
Mark D. Stauffer
Walden University

Chelsea Sharpe
Multisystemic Therapy Therapist
Athens, Georgia

The specialists serving the highest proportion of clients with a primary addiction diagnosis are professional counselors (20%), not social workers (7%), psychologists (6%), or psychiatrists (3%) (Lee, Craig, Fetherson, & Simpson, 2013, p. 2)

The history of addictions counseling, a specialization within the profession of counseling, follows a pattern of evolution similar to that witnessed in many of the helping professions (social work, psychology, nursing, medicine). Early practitioners had more limited education and supervision (Astromovich & Hoskins, 2013; Iarussi, Perjessy, & Reed, 2013), were not licensed by regulatory boards, did not have well defined codes of ethics upon which to base professional judgments, may not have been aware of the values and needs of diverse populations, and did not have access to a body of research that helped define best practices and treatment plans (Hogan, Gabrielsen, Luna, & Grothaus, 2003).



It is interesting to watch the evolution of a profession and specializations within a profession. For example, in the late 1950s, the profession of counseling was energized by the availability of federal funds to prepare counselors. The impetus for the U.S. government to provide funds for both graduate students and university departments was Russia's launching of *Sputnik*. School counselors were needed to help prepare students for academic success, especially in math and science, so the United States could "catch up" with its "competitors."

As noted by Fisher and Harrison (2000), in earlier times, barbers who also did "bloodletting" practiced medicine, individuals who were skilled at listening to others and making suggestions for problem resolution became known as healers, and those who could read and write and were skilled at helping others do so became teachers with very little formal education or preparation to work with others in such a capacity. Fifty years ago nursing degrees were conferred without completing a baccalaureate (today a baccalaureate is minimal and a master's degree is rapidly becoming the standard),

a teacher could become a school counselor with 12 to 18 credits of coursework (today a two-year master's is the norm), and 20 years ago an addictions counselor was an alcoholic or addict in recovery who used his or her prior experience with drugs as the basis for the addictions counseling done with clients.



Until the middle 1970s, there was no such thing as licensure for counselors, and those wishing to become counselors could often do so with less than a master's degree. In 1976, Virginia became the first state to license counselors and outline a set of requirements that had to be met in order to obtain a license as a counselor. It took 33 years for all 50 states to pass licensure laws for counselors; this achievement took place in 2009 when the state of California passed its licensure law for counselors.

The purpose of this chapter is threefold: first, to provide an overview of the history of substance abuse prevention in the United States; second, to describe the most common models for explaining the etiology of addiction; and third, to overview and relate the discussion of the history of prevention and the models for understanding the etiology of addiction to the content of the text.

APPROACHES TO THE PREVENTION OF ADDICTION IN THE UNITED STATES

Alcoholic beverages have been a part of this nation's past since the landing of the Pilgrims. Early colonists had a high regard for alcoholic beverages because alcohol was regarded as a healthy substance with preventive and curative capabilities rather than as an intoxicant. Alcohol played a central role in promoting a sense of conviviality and community until, as time passed, the production and consumption of alcohol caused enough concern to precipitate several versions of the "temperance" movement (Center for Substance Abuse Prevention, 1993). The first of these began in the early 1800s, when clergymen took the position that alcohol could corrupt both mind and body and asked people to take a pledge to refrain from the use of distilled spirits.



In 1784, Dr. Benjamin Rush argued that alcoholism was a disease, and his writings marked the initial development of the temperance movement. By 1810, Rush called for the creation of a "sober house" for the care of what he called the "confirmed drunkard."

The temperance movement's initial goal was the replacement of excessive drinking with more moderate and socially approved levels of drinking. Between 1825 and 1850, thinking about the use of alcohol began to change from temperance-as-moderation to temperance-as-abstinence (White, 1998). Six artisans and workingmen started the "Washingtonian Total Abstinence Society" in a Baltimore tavern on April 2, 1840. Members went to taverns to recruit members and, in just a few years, precipitated a movement that inducted several hundred thousand members. The Washingtonians were key in shaping future self-help groups because they introduced the concept of sharing experiences in closed, alcoholics only meetings. Another version of the temperance movement occurred later in the 1800s with the emergence of the Women's Christian Temperance Movement and the mobilization of efforts to close down saloons. Societies such as the Daughters of Rechab, the Daughters of Temperance, and the Sisters of Sumaria are examples

of such groups. (Readers are referred to White's discussion of religious conversion as a remedy for alcoholism for more details about the influence of religion in America on the temperance movement.) These movements contributed to the growing momentum to curtail alcohol consumption and the passage of the Volstead Act and prohibition in 1920 (Hall, 2010).

It is interesting to note that the United States was not alone during the first quarter of the 20th century in adopting prohibition on a large scale; other countries enacting similar legislation included Iceland, Finland, Norway, both czarist Russia and the Soviet Union, the Canadian provinces, and Canada's federal government. A majority of New Zealand voters approved national prohibition two times but never got the legislation to be effected (Blocker, 2006). Even though Prohibition was successful in reducing per capita consumption of alcohol, the law created such social turmoil and defiance that it was repealed in 1933.

Shortly after the passage of the Volstead Act in 1920, "speakeasies" sprang up all over the country in defiance of prohibition. The locations of these establishments were spread by "word of mouth" and people were admitted to "imbibe and party" only if they knew the password. Local police departments were kept busy identifying the locations of such speakeasies and made raids and arrests whenever possible. Often the police were paid so that raids did not take place and so patrons would feel more comfortable in such establishments.



Following the repeal of Prohibition, all states restricted the sale of alcoholic beverages in some way or another to prevent or reduce alcohol-related problems. In general, however, public policies and the alcoholic beverage industry took the position that the problems connected with the use of alcohol existed because of the people who used it and not because of the beverage itself. This view of alcoholism became the dominant view and force for quite some time and influenced, until recently, many of the prevention and early treatment approaches used in this country.

Paralleling the development of attitudes and laws for the use of alcohol, the nonmedical use of drugs, other than alcohol, can be traced back to the early colonization and settlement of the United States. Like alcohol, attitudes toward the use of certain drugs, and the laws passed declaring them legal or illegal, have changed over time and often have had racial/ethnic or class associations based on prejudice and less than accurate information. Prohibition was in part a response to the drinking patterns of European immigrants who became viewed as the lower class. Cocaine and opium were legal during the 19th century and favored by the middle and upper class, but cocaine became illegal when it was associated with African Americans following the Reconstruction era in the United States. The use of opium was first restricted in California during the latter part of the 19th century when it became associated with Chinese immigrant workers. Marijuana was legal until the 1930s when it became associated with Mexican immigrants. LSD, legal in the 1950s, became illegal in 1967 when it became associated with the counterculture.

It is interesting to witness the varying attitudes and laws concerning the use of marijuana. Many view marijuana as a "gateway" drug and disapprove of the medical use of marijuana; others think that the use of marijuana should be legalized and that access should be unlimited and use monitored only by the individual consumer.



It is interesting to note that it was not until the end of the 19th century (Center for Drug Abuse Prevention, 1993) that concern arose with respect to the use of drugs in patent medicines and products sold over the counter (cocaine, opium, and morphine were common ingredients in

many potions). Until 1903, believe it or not, cocaine was an ingredient in some soft drinks. Heroin was even used in the 19th century as a nonaddicting treatment for morphine addiction and alcoholism. Gradually, states began to pass control and prescription laws and, in 1906, the U.S. Congress passed the Pure Food and Drug Act designed to control addiction by requiring labels on drugs contained in products, including opium, morphine, and heroin. The Harrison Act of 1914 resulted in the taxation of opium and coca products with registration and record-keeping requirements.

Current drug laws in the United States are derived from the 1970 Controlled Substance Act (Center for Drug Abuse Prevention, 1993), under which drugs are classified according to their medical use, potential for abuse, and possibility of creating dependence. Increases in per capita consumption of alcohol and illegal drugs raised public concern so that by 1971 the National Institute on Alcohol Abuse and Alcoholism (NIAAA) was established; by 1974, the National Institute on Drug Abuse (NIDA) had also been created. Both of these institutes conducted research and had strong prevention components as part of their mission. To further prevention efforts, the Anti-Drug Abuse Prevention Act of 1986 created the U.S. Office for Substance Abuse Prevention (OSAP); this office consolidated alcohol and other drug prevention initiatives under the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA). ADAMHA mandated that states set aside 20% of their alcohol and drug funds for prevention efforts while the remaining 80% could be used for treatment programs. In 1992, OSAP was changed to the Center for Substance Abuse Prevention (CSAP) and became part of the new Substance Abuse and Mental Health Services Administration (SAMSHA) and retained its major program areas. The research institutes of NIAAA and NIDA were then transferred to the National Institutes of Health (NIH). The Office of National Drug Control Policy (ONDCP) was also a significant development when it was established through the passage of the Anti-Drug Abuse Act of 1988. It focused on dismantling drug trafficking organizations, on helping people to stop using drugs, on preventing the use of drugs in the first place, and on preventing minors from abusing drugs.

Time passed, and Congress declared that the United States would be drug free by 1995; that “declaration” has not been fulfilled. Since the mid-1990s, there have been efforts to control the recreational and nonmedical use of prescription drugs and to restrict the flow of drugs into the country. In 2005, Congress budgeted \$6.63 billion for U.S. government agencies directly focused on the restriction of illicit drug use. However, as noted later in this text, 13–18 metric tons of heroin is consumed yearly in the United States (Department of Health and Human Services [DHHS], 2004). In addition, there has been a dramatic increase in the abuse of prescription opioids since the mid-1990s, largely due to initiation by adolescents and young adults. As noted by Rigg and Murphy (2013), the incidence of prescription painkiller abuse increased by more than 400%, from 628,000 initiates in 1990 to 2.7 million in 2000.

There has been an attempt to restrict importation by strengthening the borders and confiscating illegal substances before they enter the United States. There has also been an attempt to reduce importation. The U.S. government uses foreign aid to pressure drug producing countries to stop cultivating, producing, and processing illegal substances. Some of the foreign aid is tied to judicial reforms, antidrug programs, and agricultural subsidies to grow legal produce (DHHS, 2004).

In an attempt to reduce drug supplies, the government has incarcerated drug suppliers. Legislators have mandated strict enforcement of mandatory sentences, resulting in a great increase in prison populations. As a result, the arrest rate of juveniles for drug-related crimes has doubled in the past 10 years while arrest rates for other crimes have declined by 13%. A small minority of these offenders (2 out of every 1,000) will be offered Juvenile Drug Court (JDC) diversionary programs as an option to prison sentences (CASA, 2004).



During the last few years, there has been much media attention focused on the drug cartels in Mexico and the drug wars adjacent to the U.S. border near El Paso, Texas. In April of 2010, the governor of Arizona signed into law legislation authorizing the police to stop anyone suspected of being an illegal immigrant and demand proof of citizenship.

CURRENT POLICIES INFLUENCING PREVENTION

Addiction today remains as formidable a reality as it ever was, with 23 million Americans in substance abuse treatment and over \$180 billion a year consumed in addiction-related expenditure in the United States (Hammer, Dingel, Ostergren, Nowakowski, & Koenig, 2012, pp. 713–714).

There are a number of current policies influencing the prevention of addiction that should be noted (McNeese & DiNitto, 2005) and are listed below.

- All states in the United States set a minimum age for the legal consumption of alcohol and prescribe penalties for retailers who knowingly sell alcohol to minors and underage customers. There are some states that penalize retailers even when a falsified identification is used to purchase liquor.
- Even though the Twenty-First Amendment repealed prohibition, the “dry” option is still open to individual states and some states, mainly in the South, do have dry counties.



Even though a few states still have “dry” counties, residents of those counties can often consume alcohol in restaurants that allow patrons to enter the establishment with a bottle of alcohol, usually wrapped or “bagged.” The restaurant then charges a fee for opening the bottle and allowing the liquor to be served. In addition, some counties allow liquor stores to be located just outside the county line, perhaps in a waterway accessed by a short walk across a connecting boardwalk or foot bridge.

- Many state governments influence the price of alcohol through taxation and through the administration of state-owned liquor stores.
- As part of the initial training of U.S. Air Force and Navy recruits, alcohol and tobacco use is forbidden during basic training and for a short time during advanced and technical training. This is because use of these substances usually has a negative effect on military readiness and performance (Bray et al., 2010).
- Besides taxation and the operation of state-owned liquor stores, government can attempt to regulate consumption by controlling its distribution. It accomplishes this through adopting policies regulating the number, size, location, and hours of business for outlets as well as regulating advertising.
- Perhaps no other area of alcohol policy has been as emotionally charged as the setting of the minimum legal age for consuming alcoholic beverages. Most states have adopted the age of 21 as the minimum legal age for unrestricted purchase of alcohol. This is a point of contention among many because at age 18 the young are eligible for military service.
- When a legally intoxicated individual (someone with a blood alcohol content [BAC] of 0.08 to 0.10) drives an automobile, in most states, a crime has been committed. Penalties can range from suspension of the driver’s license to a mandatory jail sentence, depending on the frequency of convictions.

- Insurance and liability laws can also be used to influence lower consumption of alcohol because those drivers with DUI convictions may face higher insurance premiums or may be unable to purchase insurance. In addition, in a majority of states, commercial establishments that serve alcoholic beverages are civilly liable to those who experience harm as a result of an intoxicated person's behavior.
- Public policies regarding the use of illicit drugs have not reached the same level of specificity as those regulating the use of alcohol (and, for that matter, tobacco). Since 1981 and the election of Ronald Reagan as president, federal policy has been more concerned with preventing recreational use of drugs than with helping habitual users. The approach chosen by the George H. Bush administration was one of zero tolerance. The George H. Bush administration did increase treatment funding by about 50%. Simultaneously, the administration continued to focus its attention on casual, middle-class drug use rather than with addiction or habitual use. In 1992, the presidential candidates, George H. Bush and Bill Clinton, rarely mentioned the drug issue except as related to adolescent drug use. In the year 2000, the major issue in the campaign of George W. Bush was whether Mr. Bush ever used cocaine. The administration of George W. Bush made very few changes in drug policy.
- Of major significance is the fact that SAMHSA was reauthorized in the year 2000 (Bazelon Center for Mental Health Law, 2000). That reauthorization created a number of new programs, including funding for integrated treatment programs for co-occurring disorders for individuals with both mental illness and a substance abuse disorder.
- Currently, a very controversial option for policy is being considered and discussed by policy makers (Fish, 2013). In short, replacing current assumptions and causal models underlying the war on drugs and punishment of drug users with alternative points of view could lead to a different way of understanding drug use and abuse and to different drug policy options. These alternatives could include refocusing our primary emphasis from attacking drugs to shrinking the black market through a targeted policy of legalization for adults, and differentiating between problem users (who should be offered help) and nonproblem users (who should be left alone). We could shift from a policy of punishing and marginalizing problem users to one of harm reduction and reintegration into society and shifting from a mandatory treatment policy to one of voluntary treatment. Abstinence need not be the only acceptable treatment outcome because many (but not all) problem users can become occasional, nonproblematic users.

MODELS FOR EXPLAINING THE ETIOLOGY OF ADDICTION

Historically, addiction has been understood in various ways—a sin, a disease, a bad habit—each a reflection of a variety of social, cultural, and scientific conceptions (Hammer et al., 2012, p. 713).

Substance use and abuse has been linked to a variety of societal issues and problems (crime and violence, violence against women, child abuse, difficulties with mental health, risks during pregnancy, sexual risk-taking, fatal injury, etc.). Given the impact the abuse of substances can have on society in general and the toll it often levies on individuals and families, it seems reasonable to attempt to understand the etiology or causes of addiction so that diagnosis and treatment plans can be as efficacious as possible. There are numerous models for explaining the etiology of addiction (McNeese & DiNitto, 2005); these models are not always mutually exclusive and none are presented as the correct way of understanding the phenomena of addiction. The moral, psychological,

family, disease, public health, developmental, biological, sociocultural, and some multicausal models will be described in the subsections that follow.

The Moral Model

The moral model is based on beliefs or judgments of what is right or wrong, acceptable or unacceptable. Those who advance this model do not accept that there is any biological basis for addiction; they believe that there is something morally wrong with people who use drugs heavily.

The moral model explains addiction as a consequence of personal choice, and individuals who are engaging in addictive behaviors are viewed as being capable of making alternative choices. This model has been adopted by certain religious groups and the legal system in many states. For example, in states in which violators are not assessed for chemical dependency and in which there is no diversion to treatment, the moral model guides the emphasis on “punishment.” In addition, in communities in which there are strong religious beliefs, religious intervention might be seen as the only route to changing behavior. The moral model for explaining the etiology of addiction focuses on the sinfulness inherent in human nature (Ferentzy & Turner, 2012). Since it is difficult to establish the sinful nature of human beings through empirically based research, this model has been generally discredited by present-day scholars. It is interesting to note, however, that the concept of addiction as sin or moral weakness continues to influence many public policies connected with alcohol and drug abuse (McNeese & DiNitto, 2005). This may be part of the reason why needle/syringe exchange programs have so often been opposed in the United States.

Although the study of the etiology of alcoholism and other addictions has made great strides in moving beyond the moral model, alcoholics are not immune to social stigma, and other types of addiction have yet to be widely viewed as something other than a choice. But as we move further away from the idea that addiction is the result of moral failure, we move closer to providing effective treatment and support for all those who suffer.

Psychological Models

Another explanation for the reasons people crave alcohol and other mind-altering drugs has to do with explanations dealing with a person’s mind and emotions. There are several different psychological models for explaining the etiology of alcoholism and drug addiction, including cognitive-behavioral, learning, psychodynamic, and personality theory models.

COGNITIVE-BEHAVIORAL MODELS Cognitive-behavioral models suggest a variety of motivations and reinforcers for taking drugs. One explanation suggests that people take drugs to experience variety (Weil & Rosen, 1993). Drug use might be associated with a variety of experiences such as self-exploration, religious insights, altering moods, escape from boredom or despair, and enhancement of creativity, performance, sensory experience, or pleasure (Lindgren, Mullins, Neighbors, & Blayney, 2010). If we assume that people enjoy variety, then it can be understood why they repeat actions that they enjoy (positive reinforcement).

The use of mind-altering drugs received additional media attention in the 1960s, when “flower children” sang and danced in the streets of San Francisco and other cities, sometimes living together in communities they created. Much press was given to the use of drugs to enhance sensory experience in connection with some of the encounter groups led by facilitators in southern California.



The desire to experience pleasure is another explanation connected with the cognitive-behavioral model. Alcohol and other drugs are chemical surrogates of natural reinforcers such as eating and sex. Social drinkers and alcoholics often report using alcohol to relax even though studies show that alcohol causes people to become more depressed, anxious, and nervous (NIAAA, 1996). Dependent behavior with respect to the use of alcohol and other drugs is maintained by the degree of reinforcement the person perceives as occurring; alcohol and other drugs may be perceived as being more powerful reinforcers than natural reinforcers and set the stage for addiction. As time passes, the brain adapts to the presence of the drug or alcohol, and the person experiences unpleasant withdrawal symptoms (e.g., anxiety, agitation, tremors, increased blood pressure, seizures). To avoid such unpleasant symptoms, the person consumes the substance anew and the cycle of avoiding unpleasant reactions (negative reinforcement) occurs and a repetitive cycle is established. In an interesting review of the literature on the etiology of addiction (Lubman, Yucel, & Pantelis, 2004), it was proposed that in chemically addicted individuals, maladaptive behaviors and high relapse rates may be conceptualized as compulsive in nature. The apparent loss of control over drug-related behaviors suggests that individuals who are addicted are unable to control the reward system in their lives and that addiction may be considered a disorder of compulsive behavior very similar to obsessive compulsive disorder.

LEARNING MODELS Learning models are closely related and somewhat overlap the explanations provided by cognitive-behavioral models. Learning theory assumes that alcohol or drug use results in a decrease in uncomfortable psychological states such as anxiety, stress, or tension, thus providing positive reinforcement to the user. This learned response continues until physical dependence develops and, like the explanation provided within the context of cognitive-behavioral models, the aversion of withdrawal symptoms becomes a reason and motivation for continued use. Learning models provide helpful guidelines for treatment planning because, as pointed out by Bandura (1969), what has been learned can be unlearned; the earlier the intervention occurs the better, since there will be fewer behaviors to unlearn.

PSYCHODYNAMIC MODELS Psychodynamic models link addiction to ego deficiencies, inadequate parenting, attachment disorders, hostility, homosexuality, masturbation, and so on. As noted by numerous researchers and clinicians, such models are difficult to substantiate through research since they deal with concepts difficult to operationalize and with events that occurred many years prior to the development of addictive behavior. A major problem with psychodynamic models is that the difficulties linked to early childhood development are not specific to alcoholism or addiction, but are reported by nonaddicted adults with a variety of other psychological problems (McNeese & DiNitto, 2005). Nevertheless, current thinking relative to the use of psychodynamic models as a potential explanation for the etiology of addiction has the following beliefs in common (Dodgen & Shea, 2000):

1. Substance abuse can be viewed as symptomatic of more basic psychopathology.
2. Difficulty with an individual's regulation of affect can be seen as a core problem or difficulty.
3. Disturbed object relations may be central to the development of substance abuse.

Readers are referred to Chapter 12 of *Slaying the Dragon: The History of Addiction Treatment and Recovery in America* by William L. White (1998) for a more extensive discussion of psychodynamic models in the context of the etiology of addiction.

PERSONALITY THEORY MODELS These theories make the assumption that certain personality traits predispose the individual to drug use. An “alcoholic personality” is often described by traits such as dependent, immature, impulsive, highly emotional, having low frustration tolerance, unable to express anger, and confused about their sex role orientation (Catanzaro, 1967; Miliwojevic et al., 2012; Schuckit, 1986).

Although many tests have been constructed to attempt to identify the personality traits of a drug-addicted person, none have consistently distinguished the traits of the addicted individual from those of the nonaddicted individual. One of the subscales of the Minnesota Multiphasic Personality Inventory does differentiate alcoholics from the general population, but it may only be detecting the results of years of alcoholic abuse rather than underlying personality traits (MacAndrew, 1979). The consensus among those who work in the addictions counseling arena seems to be that personality traits are not of much importance in explaining addiction because an individual can become drug dependent irrespective of personality traits (Raistrick & Davidson, 1985).

Family Models

As noted in Chapter 14, during the infancy of the field of addictions counseling, addictions counselors were used to working only with the addict. Family members were excluded. However, it soon became clear that family members were influential in motivating the addict to get sober or in preventing the addict from making serious changes.

There are at least three models of family-based approaches to understanding the development of substance abuse (Dodgen & Shea, 2000).

BEHAVIORAL MODELS A major theme of the behavioral model is, that within the context of the family, there is a member (or members) who reinforces the behavior of the abusing family member. A spouse or significant other, for example, may make excuses for the family member or even prefer the behavior of the abusing family member when that family member is under the influence of alcohol or another drug. Some family members may not know how to relate to a particular family member when he or she is not “under the influence.”

FAMILY SYSTEMS There have been many studies demonstrating the role of the family in the etiology of drug abuse (Baron, Abolmagd, Erfan, & El Rakhawy, 2010). As noted in Chapter 14, the family systems model focuses on the way roles in families interrelate (Tafa & Baiocco, 2009). Some family members may feel threatened if the person with the abuse problem shows signs of wanting to recover since caretaker roles, for example, would no longer be necessary within the family system if the member began behaving more responsibly. The possibility of adjusting roles could be so anxiety producing that members of the family begin resisting all attempts of the “identified patient” to shift relationships and change familiar patterns of day-to-day living within the family system.

FAMILY DISEASE This model is based on the idea that the entire family has a disorder or disease, and all must enter counseling or therapy for improvement to occur within the addicted family member. This is very different from approaches to family counseling in which the counselor is willing to work with whichever family members will come to the sessions, even though every family member is not present.

The Disease Model

The disease concept follows the medical model and posits addiction as an inherited disease that chemically alters the body in such a way that the individual is permanently ill at a genetic level (Lee et al., 2013, p. 4).

E. M. Jellinek (1960) is generally credited with introducing this controversial and initially popular model of addiction in the late 1930s and early 1940s (Stein & Foltz, 2009). However, it is interesting to note that, as early as the later part of the 18th century, the teachings and writings of Benjamin Rush, the Surgeon General of George Washington's revolutionary armies, actually precipitated the birth of the American disease concept of alcoholism as an addiction (White, 1998). In the context of this model, addiction is viewed as a primary disease rather than being secondary to another condition (reference the discussion, earlier in this chapter, of psychological models). Jellinek's disease model was originally applied to alcoholism but has been generalized to addiction to other drugs. In conjunction with his work, Jellinek also described the progressive stages of the disease of alcoholism and the symptoms connected with each stage. These stages (prodromal, middle or crucial, and chronic) were thought to be progressive and not reversible. Consistent with this concept of irreversibility is the belief that addictive disease is chronic and incurable. Once the individual has this disease, according to the model, it never goes away, and there is no treatment method that will enable the individual to use again without the high probability that the addict will revert to problematic use of the drug of choice. One implication of this philosophy is that the goal for an addict must be abstinence, which is the position taken by Alcoholics Anonymous (Fisher & Harrison, 2005). In addition, the idea that addiction is both chronic and incurable is the reason that addicts who are maintaining sobriety refer to themselves as "recovering" rather than as "recovered."



The vocabulary of *recovery* was first used by Alcoholics Anonymous in 1939. It is significant because we use the term *recovery* in the context of disease or illness rather than in connection with moral failure or character deficits. This reinforces the disease model to explain the etiology of addiction.

Interestingly, although Jellinek's disease model of addiction has received wide acceptance (Ferentzy & Turner, 2012), the research from which he derived his conclusions has been questioned. Jellinek's data were gathered from questionnaires. Of the 158 questionnaires distributed, 60 were discarded; no questionnaires from women were used. The questions about the original research, which led to the conceptualization of the "disease" model, have led to controversy. On the one hand, the articulation of addiction as a disease removes the moral stigma attached to addiction and replaces it with an emphasis on treatment of an illness, results in treatment coverage by insurance carriers, and sometimes encourages the individual to seek assistance much like that requested for diabetes, hypertension, or high cholesterol. On the other hand, the progressive, irreversible progression of addiction through stages does not always occur as predicted, and the disease concept may promote the idea for some individuals that one is powerless over the disease, is not responsible for behavior, may relapse after treatment, or may engage in criminal behavior to support the "habit."

The Public Health Model

It is interesting to note that the public health model was not originally conceptualized to focus on psychobehavioral ailments since, from its early beginnings, the emphasis has been on promoting healthy behaviors. As noted by Ferentzy and Turner (2012), the 20th-century psychiatrist Paul Lemkau, founding chairperson of the Mental Hygiene department in the Johns Hopkins

University School of Public Health, was one of the first to apply a public health model to mental disorders. Lemkau promoted the establishment of community, rather than residential, treatment centers because he believed that mental health, including the treatment of addiction, was a public rather than a private issue. Lemkau believed that when individuals did not engage in healthy behaviors and became addicted, it was because of the impact of social issues. He viewed addiction as a societal disease, in direct contrast to the more dominant, individualistic conceptions associated with the disease model.

The Developmental Model

As noted by Sloboda, Glantz, and Tarter (2012), the etiology of addiction can also be explicated by applying a developmental framework to understand the factors that increase or decrease risks for the individual to use or misuse drugs. They posited that vulnerability is never static or unchanging, but varies across the life span. Sloboda and her colleagues examined some of the key developmental competencies associated with the following developmental stages: prenatal through early childhood, middle childhood, adolescence, late adolescence/early adulthood, and adulthood. This research provided detailed examples of competencies that must be mastered during each of these developmental stages to decrease the possibility of engaging in risky behavior that includes the use and misuse of drugs. Readers interested in exploring the developmental model for understanding the etiology of addiction will find the Sloboda et al. (2012) an article excellent starting point for additional study.

Biological Models

Biophysiological and genetic theories assume that addicts are constitutionally predisposed to develop dependence on drugs. These theories or models support a medical model of addiction, apply disease terminology, and often place the responsibility for treatment under the purview of physicians, nurses, and other medical personnel. Usually, biological explanations branch into genetic and neurobiological discussions.

GENETIC MODELS Although genetic factors have never really been established as a definitive cause of alcoholism, the statistical associations between genetic factors and alcohol abuse are very strong. For example, it has been established that adopted children more closely resemble their biological parents than their adoptive parents when it comes to their use of alcohol (Dodgen & Shea, 2000; Goodwin, Hill, Powell, & Viamontes, 1973); alcoholism occurs more frequently in some families than others (Cotton, 1979); concurrent alcoholism rates are higher in monozygotic twin pairs than in dizygotic pairs (Kaij, 1960); and children of alcoholics can be as much as seven times more likely to be addicted than children whose parents are not alcoholic (Koopmans & Boomsina, 1995). Because of such data, some genetic theorists have posited that an inherited metabolic defect may interact with environmental elements and lead, in time, to alcoholism. Some research points to an impaired production of enzymes within the body and yet other lines of inquiry point to the inheritance of genetic traits that result in a deficiency of vitamins (probably the vitamin B complex), which leads to a craving for alcohol as well as the accompanying cellular or metabolic changes.

There have been numerous additional lines of inquiry that have attempted to establish a genetic marker that predisposes a person toward alcoholism or other addictions (Bevilacqua & Goldman, 2010). Studies that examined polymorphisms in gene products and DNA, the D2 receptor gene, and even color blindness as factors have all been conducted and then later more or less discounted. Genetic research on addiction shows potential, but is a complex activity given the fact that each individual carries genes located on 23 pairs of chromosomes. The Human

Genome Project, which is supported by the National Institutes of Health and the U.S. Department of Energy, is conducting some promising studies (NIAAA, 2000).

NEUROBIOLOGICAL MODELS Neurobiological models are complex (Jacob, 2013) and have to do with the neurotransmitters in the brain that serve as the chemical messengers of our brain (Hammer et al., 2012); Kranzler & Li, 2008; Wilcox, Gonzales, & Miller, 1998). Almost all addictive drugs, as far as we know, seem to have primary transmitter targets for their actions. The area of the brain in which addiction occurs is the limbic system or the emotional part of the brain. The limbic part of the brain refers to an inner margin of the brain just outside the cerebral ventricles, and the transmitter dopamine is key in its activity in the limbic system and the development of addiction. As a person begins to use a drug, changes in brain chemistry in the limbic system begin to occur and lead to addiction. Current thinking is that these changes can also be reversed by the introduction of other drugs in concert with counseling and psychotherapy.

Sociocultural Models

Sociocultural models have been formulated by making observations of the differences and similarities between cultural groups and subgroups. As noted by Goode (1972), the social context of drug use strongly influences drug definitions, drug effects, drug-related behavior, and the drug experience. These are contextual models and can only be understood in relation to the social phenomena surrounding drug use. A person's likelihood of using drugs, according to these models, the way he/she behaves, and the way abuse and addiction are defined are all influenced by the sociocultural system surrounding the individual.

SUPRACULTURAL MODELS The classic work of Bales (1946) provided some hypotheses connecting culture, social organization, and the use of alcohol. He believed that cultures that create guilt, suppress aggression and sexual tension, and that support the use of alcohol to relieve those tensions will probably have high rates of alcoholism. Bales also hypothesized that the culture's collective attitude toward alcohol use could influence the rate of alcoholism. Interestingly, he categorized these attitudes as favoring (1) abstinence, (2) ritual use connected with religious practices, (3) convivial drinking in a social setting, and (4) utilitarian drinking (drinking for personal reasons). The fourth attitude (utilitarian) in a culture that produces high levels of tension is the most likely to lead to high levels of alcoholism; the other three attitudes lessen the probability of high alcoholism rates. Another important aspect of Bales' thinking is the degree to which the culture offers alternatives to alcohol use to relieve tension and to provide a substitute means of satisfaction. A culture that emphasizes upward economic or social mobility will frustrate individuals who are unable to achieve at such high levels and increase the possibility of high alcoholism rates.

In 1974, Bacon theorized that high rates of alcoholism were likely to exist in cultures that combine a lack of indulgence toward children with demanding attitudes toward achievement and negative attitudes toward dependent behavior in adults. An additional important factor in supracultural models is the degree of consensus in the culture regarding alcohol and drug use. In cultures in which there is little agreement, a higher rate of alcoholism and other drug use can be expected. Cultural ambivalence regarding the use of alcohol and drugs can result in the weakening of social controls, which allows the individual to avoid being looked upon in an unfavorable manner.

CULTURE-SPECIFIC MODELS Culture-specific models of addiction are simultaneously fascinating and hampered by the possibilities inherent in promoting stereotypes and overgeneralizing

about the characteristics of those who “seem” to fit the specific culture under consideration. For example, there are many similarities between the French and Italian cultures since both cultures are profoundly Catholic and both cultures support wineries and have populations that consume alcohol quite freely (Levin, 1989). The French drink both wine and spirits, with meals and without, at home as well as away from the family. The French often consider it bad manners to refuse a drink, and the attitudes toward drinking too much are usually quite liberal. The Italians drink mostly wine, with meals and at home, and they strongly disapprove of public misconduct due to the overconsumption of wine. They do not pressure others into accepting a drink.

In some Italian American families children over the age of about 10 can drink wine with dinner, but are admonished never to drink large amounts of wine; wine is to be enjoyed in social situations and is never to be consumed in excess. As a result, these children usually become adults who drink wine in moderation and never have problems derived by too much consumption of alcoholic beverages.



As the reader might expect from prior discussion, the rate of alcoholism in France is much more problematic than that which exists in Italy. Although the authors would agree that the prevailing customs and attitudes relating to the consumption of alcohol in a specific culture can provide insight and have usefulness as a possible explanation of the etiology of addiction in the culture under consideration, readers should be cautious about cultural stereotyping and make every attempt to address diversity issues in counseling as outlined in the current version of the Code of Ethics of the American Counseling Association (ACA) as well as the ACA guidelines for culturally competent counseling practices. (See the ACA website at www.counseling.org.)

SUBCULTURAL MODELS It should also be briefly noted that there have been many investigations of both sociological and environmental causes of addiction and alcoholism at the subcultural level. Factors related to age, gender, ethnicity, socioeconomic class, religion, and family background can create different patterns within specific cultural groups (McNeese & DiNitto, 2005; White, 1998). They also can be identified as additional reasons why counselors and other members of the helping professions must vigilantly protect the rights of clients to be seen and heard for who they really are rather than who they might be assumed to resemble.

Multicausal Models

The great challenge to understanding the etiology of drug use and drug use disorders is the complexity of the phenomenon itself (Sloboda et al., 2012, p. 954).

At this point in your reading you may be wondering which of these etiological models or explanations of addiction is the correct model. As you may have already surmised, although all of these models are helpful and important information for counselors beginning their studies in addiction counseling, no single model adequately explains why some individuals become addicted to a substance and others do not. An important advance in the study of addiction is the realization that addiction is probably not caused by a single factor, and the most likely models for increasing our understanding and our development of treatment options are multivariate (Buu et al., 2009; McNeese & DiNitto, 2005; Stevens & Smith, 2005). Even though there may be some similarities in all addicted individuals, the etiology and motivation for the use of drugs varies from person to person. For some individuals, there may be a genetic predisposition or some kind of a physiological reason for use and later addiction to a drug. For others, addiction may be a result of an irregularity or disturbance of some kind in their personal development without a known genetic predisposition or physiological

dysfunction. The possible debate over which model is the correct model is valuable only because it assists the practitioner to see the importance of adopting an interdisciplinary or multicausal model.

An interesting example of a multicausal model that has been proposed is the *syndrome model* of addiction (Shaffer et al., 2004). This model suggests that the current research pertaining to excessive eating, gambling, sexual behaviors, shopping, substance abuse, and so on does not adequately capture the origin, nature, and processes of addiction. The researchers believe that the current view of addictions is very similar to the view held during the early days of AIDS awareness when rare diseases were not recognized as opportunistic infections of an underlying immune deficiency syndrome. The syndrome model of addiction suggests that there are multiple and interacting antecedents of addiction that can be organized in at least three primary areas: (1) shared neurobiological antecedents, (2) shared psychosocial antecedents, and (3) shared experiences and consequences. Another promising example of a multicausal model is the *integral model* (Amodia, Cano, & Eliason, 2005). This integral approach examines substance abuse etiology and treatment from a four-quadrant perspective adapted from the work of Ken Wilbur. It also incorporates concepts from integrative medicine and transpersonal psychology. Readers are referred to the references cited in this subsection for more complete information about both the syndrome and integral models.

The multicausal model is similar to the public health model recently adopted by health care and other human service professionals. This model conceptualizes the problem of addiction as an interaction among three factors: the “agent” or drug, the “host” or person, and the “environment,” which may be comprised of a number of entities. When the agent or drug interacts with the host, it is important to realize that there are a variety of factors within the host, including the person’s genetic composition, cognitive structure and expectations about drug experiences, family background, and personality traits, that must be taken into consideration as a treatment plan is developed. Environmental factors that need to be considered include social, political, cultural, and economic variables. When a counselor or therapist uses a multicausal model to guide the diagnosis and treatment planning process, the complex interaction of several variables must be taken into consideration.

Summary and Some Final Notations

This chapter provided an overview of the historical evolution of approaches to the prevention of addiction in the United States. It chronicled the movement from the rudimentary and unregulated approaches of early practitioners to the more carefully regulated, credentialed, and evidence-based methods in use today. The social and political influences on the attitudes toward the use of drugs for both recreational and medical purposes were also addressed. A brief review of the federal government’s role in funding agencies focused on the prevention of drug abuse as well as the provision of treatment for addicted individuals provided the background for some of the current policies influencing the prevention of addiction. Descriptions of the moral, psychological, family, disease, public health, developmental, biological, sociocultural, and multicausal models for understanding the etiology of addiction

provided the reader with the background to understand topics covered in subsequent chapters of the text.

In addition to the first chapter on history and etiological models of addiction, Part I of our text, *Introduction to Addictions Counseling*, includes chapters on substance and process addictions, professional issues, interviewing clients, and assessment and diagnosis of addiction. These introductory chapters provide the background for Part II, *The Treatment of Addictions*, which provides a thorough examination of current treatment modalities. The seven chapters in this section address motivational interviewing, psychotherapeutic approaches, co-occurring disorders and addictions treatment, group work and addictions, pharmacological treatment of addictions, 12-step facilitation of treatment, and maintenance and relapse prevention. Part III, *Addictions in Family Therapy*,

Rehabilitation, and School Settings, provides the reader with needed perspective regarding variations in treatment modalities so necessary for competent counseling in specific settings. The chapters in this section discuss interventions with couples and families, persons with disabilities and addictions, and prevention programs for children, adolescents, and college settings. Part IV, *Cross-Cultural Counseling in Addictions*, addresses ethnic diversity, gender and addictions, and gay, lesbian, bisexual affirmative addiction treatment.

The final epilogue chapter presents an interesting discussion of the characteristics and issues

connected with both inpatient and outpatient treatment of addiction.

Although it is impossible to include every conceivable topic that would be helpful to a counselor or therapist beginning the study of addictions counseling in a single text, we believe the information in this text is comprehensive enough in scope and sufficiently detailed to provide an excellent foundation for follow-up courses as well as supervised practicum and internship experiences for those wishing to develop a specialization in addictions counseling.

MyCounselingLab

Visit the MyCounselingLab site for *Foundations of Addictions Counseling*, Third Edition to enhance your understanding of concepts. You'll have the opportunity to practice your skills through video- and case-based exercises. You will find sets of questions to help you prepare for your certification exam with *Licensure Quizzes*. There is also a Video Library that provides taped counseling sessions, ethical scenarios, and interviews with helpers and clients.

Useful Websites

The following websites provide additional information relating to the chapter topics:

FUNDING OPPORTUNITIES

NIMH

www.nimh.nih.gov/

NIDA Extramural Affairs

www.drugabuse.gov/funding/

NIAAA

www.niaaa.nih.gov/

NIH Grants and Funding Opportunities

grants.nih.gov/grants/index.cfm

Enhancing Practice Improvement in Community-Based Care for Prevention and Treatment of Drug Abuse or Co-occurring Drug Abuse and Mental Disorders.

grants.nih.gov/grants/guide/rfa-files/RFA-DA-06-001.html

HRSA

www.hrsa.gov/grants/default.htm

FUNDING SOURCES FOR PREVENTION PROGRAMS

The Catalog of Federal Domestic Assistance (CFDA)

www.cfda.gov/

A database of all federal programs available to state and local governments (including the District of Columbia); federally recognized Indian tribal governments; territories

(and possessions) of the United States; domestic public, quasi-public, and private profit and nonprofit organizations and institutions; specialized groups; and individuals.

Federal Register (FR)

www.gpoaccess.gov/fr/index.html

The Federal Register is the official daily publication for all federal agency funding notices. The bound version can be viewed at a local or university library.

The Foundation Center

www.fdncenter.org/

The Foundation Center's mission is to support and improve institutional philanthropy by promoting public understanding of the field and helping grantseekers succeed.

Foundations & Grantmakers Directory

www.foundations.org/grantmakers.html

This directory lists foundations and grantmakers by name.

The Grantsmanship Center

www.tgcgrantproposals.com

This resource is designed to help nonprofit organizations and government agencies write better grant proposals and develop better programs.

A starting point for accessing grant-related information and resources on the Internet.

GuideStar

www.guidestar.org/

GuideStar is a free information service on the programs and finances of more than 600,000 charities and nonprofit organizations. The database of nonprofit organizations is searchable by several different criteria. The site also offers news on philanthropy and other resources for donors and volunteers.

The Research Assistant

www.theresearchassistant.com/funding/index.asp

Resources for new and minority drug abuse researchers.

The Robert Wood Johnson Foundation (RWJF)

www.rwjf.org/index.jsp

RWJF, the largest U.S. foundation devoted to improving the health and health care of all Americans, funds grantees through both multisite national programs and single-site projects.

U.S. Department of Education (DOE)

www.ed.gov/topics/topics.jsp?&top=Grants+%26+Contracts

DOE only posts those grants currently open for competition at this site.

U.S. Department of Housing and Urban Development

www.hud.gov/grants/index.cfm

References

- Amodia, D. S., Cano, C., & Eliason, M. J. (2005). An integral approach to substance abuse. *Journal of Psychoactive Drugs*, 37(4), 363–371.
- Astramovich, R. L., & Hoskins, W. J. (2013). Evaluating addictions counseling programs: Promoting best practices, accountability, and advocacy. *Journal of Addictions & Offender Counseling*, 34(2), 114–124. doi:10.1002/j.2161-1874.2013.00019.x
- Bacon, M. K. (1974). The dependency-conflict hypothesis and the frequency of drunkenness. *Quarterly Journal of Studies on Alcohol*, 40, 863–876.
- Bales, R. F. (1946). Cultural differences in rates of alcoholism. *Quarterly Journal of Studies on Alcohol*, 6, 480–499.
- Bandura, A. (1969). *Principles of behavior modification*. New York, NY: Holt, Rinehart, and Winston.
- Baron, D., Abolmagd, S., Erfan, S., & El Rakhawy, M. (2010). Personality of mothers of substance dependent patients. *Journal of Multidisciplinary Healthcare*, 3, 29–32.
- Bazelon Center for Mental Health Law. (2000). Legislative Update: 2000 SAMHSA reauthorization. Retrieved January 2006 from <http://www.bazelon.org/takeaction/alerts/10-17-00samhsa.htm>
- Bevilacqua, L., & Goldman, D. (2010). Geonomics of addiction. *Current Psychiatry Reviews*, 6, a22–134.
- Blocker, J. S. (2006). Did prohibition really work? Alcohol prohibition as a public health innovation. *American Journal of Public Health*, 96(2), 233–243.
- Bray, R. M., Brown, J. M., Jones, S. B., Pemberton, M. R., Vandermaas-Peeler, R., & Williams, J. (2010, January). Alcohol use after forced abstinence in basic training among United States Navy and Air Force trainees. *Journal of Studies on Alcohol and Drugs*, 71(1), 15+.
- Buu, A., DiPiazza, C., Wang, J., Puttler, L. I., Fitzgerald, H. E., & Zucker, R. A. (2009). *Journal of Studies of Alcohol and Drugs*, 70, 489–498.
- CASA: National Center on Addiction and Substance Abuse at Columbia University. (2004). *Criminal neglect: Substance abuse, juvenile justice and the children left behind*. New York, NY: Author.
- Catanzaro, P. (1967). Psychiatric aspects of alcoholism. In D. J. Pittman (Ed.), *Alcoholism*. New York, NY: Harper & Row.
- Center for Substance Abuse Prevention. (1993). *Prevention primer: An encyclopedia of alcohol, tobacco and other drug prevention terms* (DHHS Publication No. SMA 2060). Rockville, MD: National Clearing House for Alcohol and Drug Information.
- Cotton, N. A. (1979). The familial incidence of alcoholism. *Journal of Studies on Alcohol*, 40, 89–116.
- Department of Health and Human Services. (2004). *National drug control strategy*. Washington, DC: Government Printing Office.
- Dodgen, C. E., & Shea, W. M. (2000). *Substance use disorders: Assessment and treatment*. San Diego, CA: Academic Press.
- Ferentzy, P., & Turner, N. E. (2012). Morals, medicine, metaphors, and the history of the disease model of problem gambling. *Journal of Gambling Issues*, 27, 1–27. doi:10.4309/jgi.2012.27.4
- Fish, J. M. (2013). Rethinking drug policy assumptions. *Humanist*, 73(2), 12–15.
- Fisher, G. L., & Harrison, T. C. (2000). *Substance abuse: Information for school counselors, social workers, therapists and counselors* (2nd ed.). Boston, MA: Allyn & Bacon.
- Fisher, G. L., & Harrison, T. C. (2005). *Substance abuse: Information for school counselors, social workers, therapists and counselors* (3rd ed.). Boston, MA: Allyn & Bacon.
- Goode, E. (1972). *Drugs in American society*. New York, NY: Alfred A. Knopf.
- Goodwin, D. W., Hill, S., Powell, B., & Viamontes, J. (1973). The effect of alcohol on short-term memory in alcoholics. *British Journal of Psychiatry*, 122, 93–94.
- Hall, W. (2010). What are the policy lessons of National Alcohol Prohibition in the United States, 1920–1933? *Addiction (Abingdon, England)*, 105(7), 1164–1173. doi:10.1111/j.1360-0443.2010.02926.x

- Hammer, R. R., Dingel, M. J., Ostergren, J. E., Nowakowski, K. E., & Koenig, B. A. (2012). The experience of addiction as told by the addicted: Incorporating biological understandings into self-story. *Culture, Medicine and Psychiatry*, 36(4), 712–734. doi:10.1007/s11013-012-9283-x
- Hogan, J. A., Gabrielsen, K. R., Luna, N., & Grothaus, D. (2003). *Substance abuse prevention: The intersection of science and practice*. Boston, MA: Allyn & Bacon.
- Iarussi, M. M., Perjessy, C. C., & Reed, S. W. (2013). Addiction-specific CACREP Standards in clinical mental health counseling programs: How are they met? *Journal of Addictions & Offender Counseling*, 34(2), 99–113. doi:10.1002/j.2161-1874.2013.00018.x
- Jacob, C. (2013). Peter Riederer “70th birthday” neurobiological foundations of modern addiction treatment. *Journal of Neural Transmission*, 120(1), 55–64. doi:10.1007/s00702-012-0886-8
- Jellinek, E. M. (1960). *The disease concept of alcoholism*. New Haven, CT: Hillhouse Press.
- Kaj, L. (1960). *Alcoholism in twins: Studies on the etiology and sequels of abuse of alcohol*. Stockholm, Sweden: Almquist and Wiskell.
- Koopmans, J. R., & Boomsma, D. L. (1995). *Familial resemblances in alcohol use: Genetic or cultural transmission*. Amsterdam, The Netherlands: Department of Psychonomics, Vrije Universiteit.
- Kranzler, H. R., & Li, T. (2008). What is addiction? *Alcohol Research and Health*, 31, 93–95.
- Lee, T. K., Craig, S. E., Fetherston, B. T. L., & Simpson, C. D. (2013). Addiction competencies in the 2009 CACREP Clinical Mental Health Counseling Program Standards. *Journal of Addictions & Offender Counseling*, 34(1), 2–15. doi:10.1002/j.2161-1874.2013.00010.x
- Levin, J. D. (1989). *Alcoholism: A bio-social approach*. New York, NY: Hemisphere.
- Lindgren, K. P., Mullins, P. M., Neighbors, C., & Blayney, J. A. (2010). Curiosity killed the cocktail? Curiosity, sensation seeking, and alcohol-related problems in college women. *Addictive Behaviors*, 35, 513–516.
- Lubman, D. L., Yucel, M., & Pantelis, C. (2004). Addiction, a condition of compulsive behaviour? Neuroimaging and neuropsychological evidence of inhibitory dysregulation. *Society for the Study of Addiction*, 99, 1491–1502.
- MacAndrew, C. (1979). On the possibility of the psychometric detection of persons who are prone to the abuse of alcohol and other substances. *Journal of Addictive Behaviors*, 4, 11–20.
- McNeese, C. A., & DiNitto, D. M. (2005). *Chemical dependency: A systems approach* (3rd ed.). Boston, MA: Allyn & Bacon.
- Milivojevic, D., Milovanovic, S. D., Jovanovic, M., Svrakic, D. M., Svrakic, N. M., Svrakic, S. M., & Cloninger, C. R. (2012). Temperament and character modify risk of drug addiction and influence choice of drugs. *The American Journal on Addictions*, 21(5), 462–467. doi:10.1111/j.1521-0391.2012.00251.x
- National Institute on Alcohol Abuse and Alcoholism. (1996). *Alcohol alert* (no. 33). Washington, DC: U.S. Government Printing Office.
- National Institute on Alcohol Abuse and Alcoholism (2000). *Tenth special report on alcohol and health to the U.S. Congress*. Washington, DC: U.S. Government Printing Office.
- Raisitrick, D., & Davidson, R. (1985). *Alcoholism and drug addiction*. New York, NY: Churchill and Livingstone.
- Rigg, K. K., & Murphy, J. W. (2013). Understanding the etiology of prescription opioid abuse: Implications for prevention and treatment. *Qualitative Health Research*, 23(7), 963–975. doi:10.1177/1049732313488837
- Schuckit, M. A. (1986). Etiological theories on alcoholism. In N. J. Estes & M. E. Heinemann (Eds.), *Alcoholism; Development, consequences, and interventions* (3rd ed., pp. 15–30). St. Louis, MO: C. V. Mosby.
- Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry*, 12, 367–374.
- Sloboda, Z., Glantz, M. D., & Tarter, R. E. (2012). Revisiting the concepts of risk and protective factors for understanding the etiology and development of substance use and substance use disorders: Implications for prevention. *Substance Use & Misuse*, 47(8/9), 944–962. doi:10.3109/10826084.2012.663280
- Stein, D. B., & Foltz, R. (2009). The need to operationally define “disease” in psychiatry and psychology. *Ethical Human Psychology and Psychiatry*, 11, 120–141.
- Stevens, P., & Smith, R.L. (Eds.). (2005). *Substance abuse counseling: Theory and practice*. Upper Saddle River, NJ: Merrill/Prentice Hall.
- Tafa, M., & Baiocco, R. (2009). Addictive behavior and family functioning during adolescence. *The American Journal of Family Therapy*, 37, 388–395.
- Weil, A., & Rosen, W. (1993). *Alcoholism: The nutritional approach*. Austin, TX: The University of Texas Press.
- White, W. L. (1998). *Slaying the dragon: The history of addiction treatment and recovery in America*. Bloomington, IL: Chestnut Health Systems.
- Wilcox, R. E., Gonzales, R. A., & Miller, J. D. (1998). Introduction to neurotransmitters, receptors, signal transduction and second messengers. In C. H. Nemeroff & A. E. Schatzberg (Eds.), *Textbook of psychopharmacology* (pp. 3–36). Washington, DC: American Psychiatric Press.

Substance Addictions

Laura J. Veach
Wake Forest School of Medicine
Jennifer L. Rogers
Wake Forest University

Regina R. Moro
Barry University
E. J. Essic
Professional Counselor

Many tears are shed by those struggling with addiction. Tears are often accompanied by anger, frustration, fear, guilt, love, and loss. Think of this composite case: Jerry died too young struggling with addiction that eventually cost him his life and brought such grief to his splintered family, which was torn apart by an illness not yet grasped. Jerry had been a star athlete, kind brother, great son—now gone at 21, lost to our world. So many questions remain: Why did he get addicted? Why didn't he recover? Why couldn't we help him? So many whys, yet so few answers for many in our nation. The nature of addiction continues to baffle us, not only for Jerry's surviving loved ones but for many other loved ones who have lost so much because addiction took lives. It is equally baffling to differentiate key recovery predictors related to individuals who recover from individuals who do not. Looking for answers brings us to this chapter, where we search for knowledge about drugs, the brain, and addiction disorders.

Current estimates indicate that the extent of addiction disorders, with the exclusion of tobacco addiction, involves approximately 32 million Americans (James & Gilliland, 2005). The American Psychiatric Association (APA, 2013) estimates that in any given year approximately 8.5% of Americans aged 18 years or older meet new diagnostic criteria for an alcohol use disorder, 1.5% for cannabis use disorder, and approximately 0.3% for cocaine stimulant use disorders, for example. Throughout history, humans have used drugs to achieve desired changes of experiences; even ancient warriors “fortified themselves with alcohol before battle to boost their courage and decrease sensitivity to pain” (Weil & Rosen, 1983, p. 20). For some people, the ingestion of chemicals results in substance, or ingestive, addiction, which will be discussed at length in this chapter. For others, certain behaviors or processes, such as gambling, trigger process addiction, which will be reviewed in Chapter 3. Physical dependence is perhaps the most well known of the many features of the addictive process; as used in this chapter, the term *addiction* comprises all of these features. Recent emphasis among addiction specialists highlights the clarity provided by the term *addiction* rather than *dependency* or *habit*: “By emphasizing the behavioral aspects of compulsive substance use, addiction captures the chronic, relapsing, and compulsive nature of substance use that occurs despite the associated negative consequences” (Kranzler & Li, 2008, p. 93).

To better inform and prepare counselors, this chapter provides comprehensive information about the neurobiological and physiological factors regarding addiction. Tolerance and withdrawal aspects will also be reviewed. In addition, we also examine substances of addiction. First, we will discuss biological factors.

NEUROBIOLOGY AND THE PHYSIOLOGY OF ADDICTION

Records indicate that people sought help for drinking problems in Egypt approximately 5,000 years ago (White, 1998). Although substantial research exists today, many questions remain regarding addiction. Research continues to provide novel insights into the biology and treatment of addiction. However, there is to date no known single biological factor or explanation of addiction. Indeed, most addiction experts agree that “alcoholism and other addictions are complex, multiply-determined disorders in which biological and environmental factors interact to enhance personal vulnerability” (White, 1998, p. 289). Nevertheless, what has become increasingly clear is that “addictive behaviors are not the same as enhanced habits” (Yin, 2008, p. 342).

The organ of the body perhaps most researched in addiction is the brain. This research is referred to as neurobiology, and it is very complex. Consider the following: There are more than 100 billion neurons, or nerve cells, in the brain, with at least 40,000 connections, or synapses, for every neuron (Amen, 2005). Put differently, “the size of a grain of sand contains a hundred thousand neurons and one billion synapses, all ‘talking’ to one another” (Amen, 2005, p. 20). It is thought that while our neurons simply age over time, our synapses are different: they can change depending on our experiences—not only the experiences of our bodies, but also the experiences of our neurons, between which chemical messengers exchange information. For example, injuries to our brains, such as a stroke, cause permanent changes to neurons and synapses; it is thought that recovery in the brain often involves *brain plasticity*, the brain’s ability to “repair, replace, and retrain its neural circuitry” (Taylor, 2006, p. 35).

Another experience that causes permanent damage to the brain is addiction, which can be thought of as a hijacking of the brain that causes many changes in the connections between neurons (Amen, 2005; Lubman, Yücel, & Pantelis, 2004). It has been likened to “Trojan horses that sneak into the nerve cells and take control” (Moyers & Ketcham, 2006, p. 278). Compelling neurobiology studies, which have contributed to a better understanding of the brain and its complex functions pertaining to addiction, have enabled specialists to begin to take back control. The National Institute on Drug Abuse (NIDA), a key leader in addiction research, considers addiction a brain disease that can be successfully treated (NIDA, 2010a). Researchers have identified specific areas within the brain most prone to the effects of euphoria-producing connections, chemicals, or processes. These areas have been studied closely with the goal of ascertaining how the addictive cycle is triggered. Currently, a number of brain studies show that “a common element

Neuroscience of the 12 Steps



Addiction is considered to be a chronic, or lifelong, disease by both the medical establishment and programs like Alcoholics Anonymous. There is increasing neuroscientific data suggesting that 12-step programs may help addicts achieve and maintain sobriety by protecting and enhancing the prefrontal cortex of the brain (Schnabel, 2009). The prefrontal cortex—which controls complex activities like self-monitoring, social thinking, abstract thought, and moral behavior—seems to be impaired in persons struggling with addiction. The processes of attending meetings (involving social interaction) and “working the steps” (involving abstract thought and moral behavior) may strengthen the prefrontal cortex to allow for abstinence (self-monitoring). According to Nora Volkow, director of the National Institute on Drug Abuse, “A lot of the treatment programs out there are targeting these systems without necessarily knowing that they are doing it.”

Source: Schnabel, J. (2009). Neuroscience: Rethinking rehab. *Nature*, 458 (7234), 25–27.

across these studies is the identification of [brain] regions whose impaired function perturbs the balance between reward and executive control networks” (Volkow & Baler, 2013, p. 662). Many addiction experts agree that the neurobiology of addiction is complex and remains challenging, even as we better understand how the brain changes with the onset of addiction.

A basic concept of the neurobiology of addiction is the “reward pathway,” which comprises the areas of the brain most involved in addiction. The brain’s limbic system is home to the areas of the brain thought to make up the reward pathway—the ventral tegmental area (VTA), nucleus accumbens, and the prefrontal cortex as shown in Figure 2.1 (NIDA, 2007). When stimuli activate these particular areas of the brain, pleasurable sensations are produced. Chemical messengers, called *neurotransmitters*, play critical roles in transmitting information between neurons through specialized gaps, or synapses. A synapse measures between 20 and 50 nanometers; a communication between neurons at the synapse happens within milliseconds (Lovinger, 2008). Dopamine is an important neurotransmitter involved in pleasurable sensations (Lubman et al., 2004). Curiously, dopamine is “made by very few cells in the brain and acts mainly within a subset of brain regions . . . and [it] seems to have a disproportionately large impact on brain function” (Lovinger, 2008, p. 204). In Figure 2.2, an illustration shows how cocaine, for example, interferes with the normal action of dopamine by blocking the removal, or reuptake, of this important neurotransmitter (NIDA, 2010b). For example, it is with the normal “reuptake,” or removal, of dopamine with which cocaine interferes. The result is an increase of dopamine at the neurons and an overstimulation of receiving neurons called “neuroreceptors”—experienced by the user as pleasurable euphoria. An addict seeks to continue reexperiencing the euphoric sensation resulting from an abundance of powerful neurotransmitters, including dopamine. In the brain, this “dopaminergic transmission and reward pathway” is a primary feature of addiction (Lovinger, 2008; Lubman et al., 2004; NIDA, 2010b). Other important neurotransmitters, such as gamma-amino butyric acid (GABA) and glutamate, are identified in current research as significant when examining the brain’s response to alcohol (Spirito, 2009). It is believed that advanced research will unlock more keys to understand GABA’s special roles in inhibiting or slowing the dopaminergic surge (Riegal & Kalivas, 2010); intoxication, such as uncoordinated motor activity (stumbling, unsteady movements); anti-anxiety

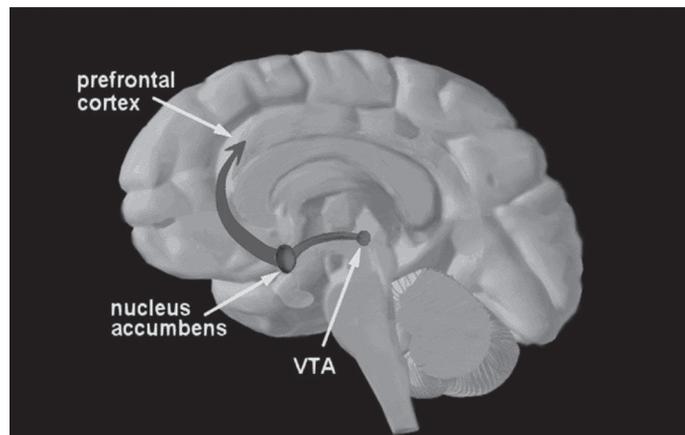


FIGURE 2.1 Reward Pathway *Source:* National Institute on Drug Abuse. (2007). Retrieved from <http://www.drugabuse.gov/publications/teaching-packets/understanding-drug-abuse-addiction/section-i/4-reward-pathway>

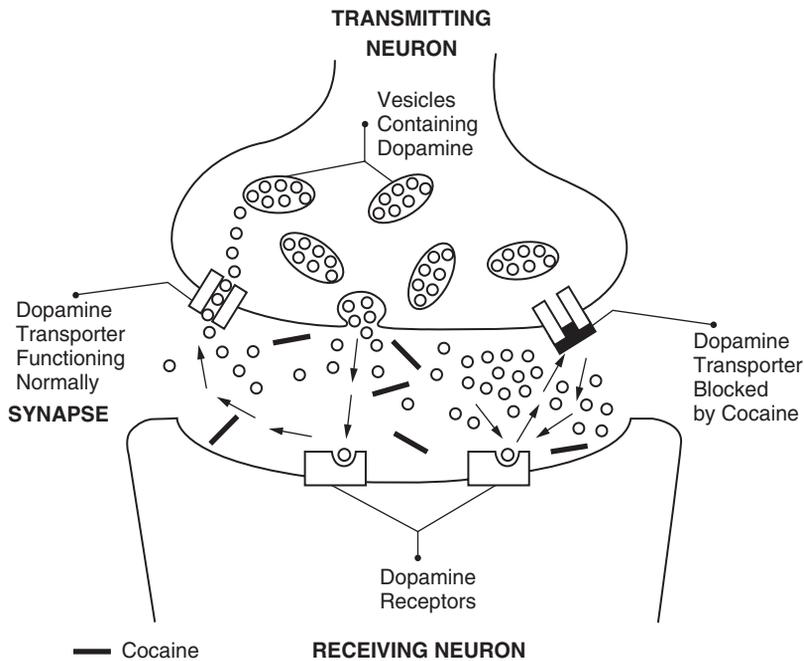


FIGURE 2.2 Cocaine Interfering with Neurons. *Source:* National Institute on Drug Abuse. (2005). Retrieved from <http://science.education.nih.gov/supplements/nih2/addiction/guide/lesson3-1.htm>

properties contributing to disinhibition, such as dancing on tables; and alcohol withdrawal complications (Lovinger, 2008). Glutamate, the predominant excitatory neurotransmitter in the brain, functions in many key aspects of the brain's operations such as learning and memory; alcohol's memory-impairing actions are thus better understood since, as only one of many of its effects on glutamate, alcohol interferes with the actions of this key neurotransmitter (Lovinger, 2008).

Brain researchers can test and assess living brain activity through the use of neuroimaging technology (Oscar-Berman & Marinkovic, 2004; Taylor, 2006). One such technique, positron emission tomography (PET), has further aided researchers by allowing them to visualize the effects of addictive chemicals and how brain activity differs between those using and those not using mood-altering substances.

In addition to understanding the role of the reward pathway in the addicted brain, neurobiology research is also investigating another complex hallmark of addiction, loss of control, described as continued drug use despite significant adverse consequences. Scientists have identified two frontal areas of the brain, the anterior cingulate cortex (ACC) and the orbitofrontal cortex (OFC), for this important neurological area of study; these areas are thought to be key components of another aspect of the brain, the inhibitory pathway. According to Lubman and colleagues (2004), for example, neuroimaging studies suggest that "compulsive behavior, as seen in both intractable addiction and OCD [obsessive-compulsive disorder], requires dysfunction within two highly interconnected cortical systems (ACC and OFC) critically involved in self-regulation (i.e., the inhibitory system)" (p. 1497).

Additional areas of intense study that address the compulsive nature of addiction and continued use despite adverse consequences (i.e., an inability to stop using even after major family, job, or integrity losses) involve another part of the brain, the cortico-basal ganglia network. Within this network lies the dorsal striatum, where substantial excitatory and inhibitory

neurotransmitters work that are primarily involved in controlling behavior. The brain pathway that begins “from the VTA to the dorsal striatum is often referred to as the habit circuit, because of its vital role in conditioned learning” (Witkiewitz, Lustyk, & Bowen, 2013, p. 354). Yin notes “it is possible that all addictive drugs, including alcohol, can affect the capacity for change (i.e., plasticity) in the cortico-basal ganglia networks, thereby altering normal learning processes that are critical for selecting and controlling actions” (2008, p. 323). Mindfulness training and neuroimaging studies, also referred to as contemplative neuroscience, have produced other exciting outcomes that point to future directions for addiction treatment and brain healing (Witkiewitz et al., 2013). One specific new approach, termed *mindfulness-based relapse prevention* (MBRP), targets reduction of cravings and relapse; MBRP shows promise as an effective method to add in addiction counseling (Witkiewitz et al., 2013). Critical research suggests that as compulsive using and drinking continue, the brain sustains physical damage and becomes less capable of unlearning. Continued emphasis on brain circuitry alteration can assist counselors in improving their understanding and empathy when the addict cannot “just learn to stop” (Riegal & Kalivas, 2010).

At present, it is significant that researchers can now study, with neuroimaging equipment, the effect of drugs on the brain’s functioning, both while under the influence of drugs and long after the drug has been eliminated from the body (NIDA, 2010a, 2010b). Notably, one neuropsychiatrist using scanning equipment for a number of years in addiction treatment notes that alcoholics “have some of the worst brains of all” (Amen, 2005, p. 81). Estimates indicate about half of approximately 20 million alcoholics in America have brain damage to some degree (Oscar-Berman & Marinkovic, 2004). Volkow and Baler (2013) highlight imaging studies that determined “relapsers show increased atrophy in bilateral orbitofrontal cortex and in the right medial prefrontal cortex and ACC, brain areas associated with error monitoring” (p. 663). Researchers have determined that some alcoholics seem to exhibit more damage to the right hemisphere of the brain than the left hemisphere (Oscar-Berman & Marinkovic, 2004). Research also suggests significant brain volume shrinkage (Crews, 2008; Sullivan & Pfefferbaum, 2005). Strikingly, “depending on age, the brain of the detoxified alcoholic can appear as ravaged as that of a patient with Alzheimer’s disease. . .” (Sullivan & Pfefferbaum, p. 583). Additionally, substantial changes have been noted in the hippocampus of youth engaged in binge drinking (Taffe et al., 2010).

Cutting-edge neurobiology research now suggests that new brain cells may be created from the division of neural stem cells, a process called *neurogenesis*. It has been discovered that alcohol can significantly disrupt neurogenesis (Crews, 2008; Taffe et al., 2010). Accordingly, promising new approaches in the treatment of cocaine addiction, for example, may involve neurosurgical procedures such as deep brain stimulation, which is currently in use with certain patients with Parkinson’s disease. Rouaud and colleagues (2009) examined the effect of deep brain stimulation in the subthalamic nucleus of rats and found evidence of a decrease in motivation for further cocaine. Extensive research with PET scans and other neuroimaging technology will add to the knowledge of the causes, effects, and treatment of addiction. These imaging tools, such as PET scans, are increasingly adding to the addiction specialist’s treatment tools and “may make it possible to develop biomarkers to predict disease trajectories and therapeutic outcomes that are necessary for individualized medicine and optimal patient care” (Volkow & Baler, 2013, p. 663). Another exciting area of research has been enabled by the ability of modern computers to more quickly analyze and compare large amounts of data. Known as bioinformatics, or data mining, this powerful tool helps researchers synthesize findings (Hitzemann & Overbeck, 2008). One such tool, the GeneNetwork (Williams & Lu, 2008), focuses on gene expression arrays.

Other physiological factors, such as tolerance and withdrawal symptoms, are important to our understanding of addiction. Tolerance, the brain and central nervous system’s neuroadaptation

to continual surges of neurotransmitters, has often been misunderstood (NIDA, 2010a). Many drinkers, including those who binge drink, mistakenly believe that they are somehow less at risk of addiction if they demonstrate greater tolerance. For example, heavy drinkers may brag that they “can drink others under the table” and show little impairment. In fact, studies indicate that a high metabolic and pharmacodynamic tolerance yields a greater risk for alcohol dependency—the body is already doing something different in metabolizing a neurotoxin (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2005; van Wormer & Davis, 2013). When the body becomes more efficient in processing and eliminating a mood-altering substance, the term *metabolic tolerance* is accurate (Doweiko, 2015). Thus, those who drink heavily are at higher risk for developing substance use disorders and display tolerance. Tolerance is one of the first signs of physical dependency (Doweiko, 2015), and the counselor is well advised to address binge drinking or drug-abusing patterns earlier rather than later. As molecular scientists conduct extensive laboratory research into the neural mechanisms involved in tolerance and addiction, there is increasing evidence supporting the involvement of complex molecular and genetic influences pertaining to alcohol tolerance (Lovinger, 2008; Pietrzykowski & Treisman, 2008).

Tolerance helps explain why approximately 11% of the drinking population consumes over 50% of the alcohol in this country (Knapp, 1996; van Wormer & Davis, 2013). It takes increasing amounts of mood-altering chemicals or processes to achieve the desired effect when tolerance develops. For example, ongoing research focused on increasing trends of risky drinking patterns of college athletes. Researchers noted that nearly 60% (59.4%) of those surveyed reported patterns of heavy drinking, consuming at least five or more drinks at any one sitting (National Collegiate Athletic Association [NCAA], 2006). Of importance is the finding that slightly more than 18% of the athletes who drink report drinking 10 or more drinks at any one drinking occasion, thus demonstrating markedly increased tolerance (NCAA, 2006).

To further illustrate this, let us look at a sample case. Susan is a 20-year-old student athlete in college. Now in her junior year, she is a strong competitor on her college swim team. Susan began drinking in her freshman year of college and would feel euphoric effects after one drink. With continued drinking, perhaps on weekends, Susan noticed after 3 months that she could have four drinks and experience minimal euphoria, so she increased her intake to achieve the desired effect. In this example, Susan found that having five or six drinks during any one drinking episode was not unusual for her, yet for a female, four or more drinks per drinking episode is defined as abusive drinking. For males, binge drinking is defined as the consumption during any one drinking episode of five or more drinks (NIAAA, 2005; Watson, 2002). With continued drinking over multiple years, Susan saw her tolerance increase. She now reports drinking at least six drinks on any one occasion, with minimal effects.

Because of a recent arrest for Driving Under the Influence (DUI), Susan goes to a counselor. The counselor should note that heavy alcohol use in women increases the chances of osteoporosis (NIAAA, 2005), a serious condition, and one of major concern to a physically active individual like Susan. The counselor should also understand that recent research indicates that women have a greater incidence of complications from alcohol use and experience more physical damage with less alcohol in a shorter time frame than males (Miller, 2004; NIAAA, 2005). Although some studies have shown that one drink daily, and no more, may have cardiovascular benefits, there is also evidence that for women, such daily consumption may increase breast cancer risks (NIAAA, 2005). It is important for the beginning counselor to also attend to issues regarding tolerance and possible physical withdrawal from drugs, especially alcohol. Fortunately, Susan agrees to continue counseling to address her drinking issues. How will you determine whether Susan is a risky drinker or alcohol dependent? What counseling approach do you think

TABLE 2.1 Commonly Abused Drugs (NIDA, 2012a)

		<h1>Commonly Abused Drugs</h1> <p>Visit NIDA at www.drugabuse.gov</p>		<p>National Institutes of Health U.S. Department of Health and Human Services NIH... Turning Discovery Into Health</p>	
Substances: Category and Name	Examples of Commercial and Street Names	DEA Schedule/ How Administered**	Acute Effects/Health Risks		
Tobacco					
Nicotine	Found in cigarettes, cigars, bids, and smokeless tobacco (snuff, spit tobacco, chew)	Not scheduled/smoked, snorted, chewed	Increased blood pressure and heart rate; chronic lung disease; cardiovascular disease; stroke; cancers of the mouth, pharynx, larynx, esophagus, stomach, pancreas, cervix, kidney, bladder, and acute myeloid leukemia; adverse pregnancy outcomes; addiction		
Alcohol Alcohol (ethyl alcohol)	Found in liquor, beer, and wine	Not scheduled/swallowed	In low doses: euphoria, mild stimulation, relaxation, lowered inhibitions, in higher doses, drowsiness, slurred speech, nausea, emotional volatility, loss of coordination, visual distortions, impaired memory, sexual dysfunction, loss of consciousness/increased risk of injuries, violence, fetal damage (in pregnant women); depression; neurologic deficits; hypertension; liver and heart disease; addiction; fatal overdose		
Cannabinoids					
Marijuana	Blunt, dope, ganja, grass, herb, joint, bud, Mary Jane, pot, reefer, green, treat, smoke, sinsemilla, skunk, weed	Smoked, swallowed	Euphoria, relaxation, slowed reaction time, distorted sensory perception, impaired balance and coordination; increased heart rate and appetite; impaired learning, memory, anxiety, panic attacks; psychosis/cough, frequent respiratory infections; possible mental health decline, addiction		
Hashish	Boom, gangster, hash, mash, oil, hemp	Smoked, swallowed			
Opioids					
Heroin	<i>Diacetylmorphine</i> : smack, horse, brown sugar, dope, H, junk, skag, skunk, white horse, China white, chesses (with OTC cold medicine and antihistamine)	Inject, smoked, snorted	<i>Euphoria, drowsiness: impaired coordination; dizziness; confusion; nausea; sedation; endocarditis; hepatitis; HIV; addiction; fatal overdose</i>		
Opium	<i>Laudanum; paregoric</i> : big O, black salif, black gum, top	I, II, IV swallowed, smoked			
Stimulants					
Cocaine	<i>Cocaine hydrochloride</i> : blow, bump, C, candy, Charlie, coke, crack, flake, rock, snow, toot	Smoked, injected	Increased heart rate, blood pressure, body temperature, metabolisms; feelings of exhilaration; increased energy, mental alertness; tremors; reduced appetite. Irritability; anxiety, panic, paranoia, violent behavior; psychosocial weight loss; insomnia, cardiac or cardiovascular complications; stroke; seizures; addiction		
Amphetamine	<i>Bupropion; Desoxyn</i> : tennis, black beauties, crosses, hearts, LA Urarround, speed, truck drivers, uppers	Smoked, injected	Also, for methamphetamine —severe dental problems		
Methamphetamine	<i>Desoxyn</i> : meth, ice, crack, chalk, crystal, fire, glass, go fast, speed	Smoked, snorted, injected			
Club Drugs					
MDMA (methylenedioxymethamphetamine)	Ecstasy, Adam, clarity, Eve, lover's speed, peace, uppers	Smoked, snorted, injected	MDMA —mild hallucinogenic effects; increased tactile sensitivity, empathic feelings; lowered inhibition; anxiety, chills; sweating, teeth clenching; muscle cramping/sleep disturbances; depression; impaired memory, hyperthermia, addiction		
Flunitrazepam**	<i>Rohypnol</i> : forget-me pill, Mexican Valium, R2, roach, Roche, roofies, roofies, roofies, rope, roofies	Smoked, snorted	Flunitrazepam —sedation; muscle relaxation; confusion; memory loss; dizziness; impaired coordination/addiction		
GB***	<i>Gamma-hydroxybutyrate</i> : G, Georgia home boy, giveous bodily harm, liquid ecstasy, seep, seepo, gopp, liquid X	Smoked, snorted	GB —irritation; nausea, headache; disorientation, loss of coordination; memory loss/unconsciousness; seizures; coma		
Dissociative Drugs					
Ketamine	<i>Ketalar</i> : ST-cat Valium, K, Special K, vitamin K	Smoked, snorted, smoked	Feelings of being separate from one's body and environment; impaired motor function/irritability; tremors; numbness; memory loss; nausea		
PCP and analogs	<i>Phencyclidine</i> : angel dust, boat, bog, love boat, peace pill	I, II swallowed, smoked, injected	Also, for ketamine —analgesia, impaired memory, delirium, respiratory depression and arrest, death		
Salvia divinorum	Salvia, Shepherds's herb, Maria Pastora, magic mint, Sally-D	Not scheduled/chewed, smoked	Also, for PCP and analogs —analgesia, psychosis, aggression, violence, slurred speech; loss of coordination, hallucinations		
Dextromethorphan (DMX)	Found in some cough and cold medications: Robitussin, Robo, Triple C	Not scheduled/swallowed	Also, for DMX —euphoria, slurred speech; confusion; dizziness; distorted visual perceptions		
Hallucinogens					
LSD	<i>Lysergic acid diethylamide</i> : acid, blotter, cubes, microdot, yellow sunshine, blue heaven	Smoked, absorbed through mouth tissues	Altered states of perception and feeling; hallucinations; nausea		
Mescaline	Buttons, cactus, mesq, peyote	Smoked, smoked	Also, for LSD and mescaline —increased body temperature, heart rate, blood pressure; loss of appetite, sweating, sleeplessness; numbness; dizziness; weakness; tremors; impulsive behavior, rapid shifts in emotion		
Psilocybin	Magic mushrooms, purple passion, shrooms, little smoke	Smoked	Also, for LSD —Flashbacks, Hallucinogen Persisting Perception Disorder		
Other Compounds					
Anabolic steroids	<i>Anadrol, Oxandrin, Durabolin, Digo-Testosterone, Equipoise</i> : roids, juke, gym candy, pumpers	IV injected, swallowed, applied to skin	Steroids —no intoxication effect; hypertension; blood clotting and cholesterol changes; liver cysts; hostility and aggression; acne; in adolescents—premature stoppage of growth; in males—prostate cancer, reduced sperm production, shrunken testicles, breast enlargement; in females—menstrual irregularities, development of beard and other masculine characteristics		
Inhalants	<i>Solvents</i> (paint thinners, gasoline, glue), <i>gases</i> (butane, propane, aerosol propellants, nitrous oxide), <i>nitriles</i> (isozamyl, isobutyl, cyclohexyl), laughing gas, poppers, snappers, whippets	Not scheduled/inhaled through nose or mouth	Inhalants (varies by chemical)—stimulation; loss of inhibition; headache; nausea or vomiting; slurred speech; loss of motor coordination; wheezing/cramps; muscle weakness; depression; memory impairment; damage to cardiovascular and nervous systems; unconsciousness; sudden death		

TABLE 2.1 Commonly Abused Drugs (NIDA, 2012a)

Substances: Category and Name	Examples of Commercial and Street Names	DEA Schedule/ How Administered**	Acute Effects/Health Risks
Prescription Medications			
CNS Depressants			
Stimulants			
Opioid Pain Relievers			

For more information on prescription medications, please visit <http://www.nida.nih.gov/DrugPages/PrescriptionDrugsChart.html>.

* *Schedule I and II drugs have a high potential for abuse. They require greater storage security and have a quota on manufacturing, among other restrictions. Schedule I drugs are available for research only and have no approved medical use; Schedule II drugs are available only by prescription (nonrefillable) and require a form for ordering. Schedule III and IV drugs are available by prescription, may have no refills in 6 months, and may be ordered orally. Some Schedule V drugs are available over the counter.*
 ** *Some of the health risks are directly related to the route of drug administration. For example, injection drug use can increase the risk of infection through needle contamination with staphylococci, HIV, hepatitis, and other organisms.*
 *** *Associated with sexual assaults.*

Principles of Drug Addiction Treatment

More than three decades of scientific research show that treatment can help drug-addicted individuals stop drug use, avoid relapse and successfully recover their lives. Based on this research, 13 fundamental principles that characterize effective drug abuse treatment have been developed. These principles are detailed in NIDA's *Principles of Drug Addiction Treatment: A Research-Based Guide*. The guide also describes different types of science-based treatments and provides answers to commonly asked questions.

- 1. Addiction is a complex but treatable disease that affects brain function and behavior.** Drugs alter the brain's structure and how it functions, resulting in changes that persist long after drug use has ceased. This may help explain why abusers are at risk for relapse even after long periods of abstinence.
- 2. No single treatment is appropriate for everyone.** Matching treatment settings, interventions, and services to an individual's particular problems and needs is critical to his or her ultimate success.
- 3. Treatment needs to be readily available.** Because drug-addicted individuals may be uncertain about entering treatment, taking advantage of available services the moment people are ready for treatment is critical. Potential patients can be lost if treatment is not immediately available or readily accessible.
- 4. Effective treatment attends to multiple needs of the individual, not just his or her drug abuse.** To be effective, treatment must address the individual's drug abuse and any associated medical, psychological, social, vocational, and legal problems.

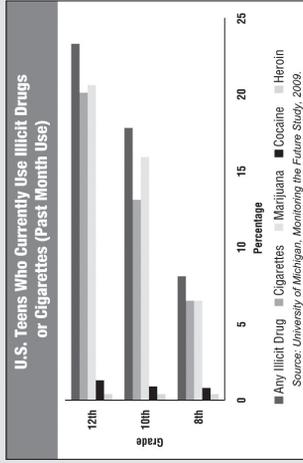
require medication, medical services, family therapy, parenting instruction, vocational rehabilitation and/or social and legal services. For many patients, a continuing care approach provides the best results, with treatment intensity varying according to a person's changing needs.

9. Many drug-addicted individuals also have other mental disorders. Because drug abuse and addiction—both of which are mental disorders—often co-occur with other mental illnesses, patients presenting with one condition should be assessed for the other(s). And when these problems co-occur, treatment should address both (or all), including the use of medications as appropriate.

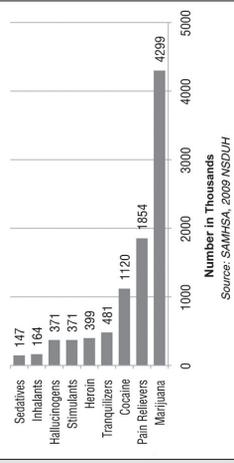
- 10. Medically assisted detoxification is only the first stage of addiction treatment and by itself does little to change long-term drug abuse.** Although medically assisted detoxification can safely manage the acute physical symptoms of withdrawal, detoxification alone is rarely sufficient to help addicted individuals achieve long-term abstinence. Thus, patients should be encouraged to continue drug treatment following detoxification.
- 11. Treatment does not need to be voluntary to be effective.** Sanctions or incentives from family, employment settings, and/or the criminal justice system can significantly increase treatment entry, retention rates, and the ultimate success of drug treatment interventions.
- 12. Drug use during treatment must be monitored continuously, as lapses during treatment do occur.** Knowing their drug use is being monitored can be a powerful incentive for patients and can help them withstand urges to use drugs. Monitoring also provides an early indication of a return to drug use, signaling a possible need to adjust an individual's treatment plan to better meet his or her needs.
- 13. Treatment programs should assess patients for the presence of HIV/AIDS, hepatitis B and C, tuberculosis, and other infectious diseases, as well as provide targeted risk-reduction counseling to help patients modify or change behaviors that place them at risk of contracting or spreading infectious diseases.** Targeted counseling specifically focused on reducing infectious disease risk can help patients further reduce or avoid substance-related and other high-risk behaviors. Treatment providers should encourage and support HIV screening and inform patients that highly active antiretroviral therapy (HAART) has proven effective in combating HIV, including among drug-abusing populations.

- 6. Counseling—individual and/or group—and other behavioral therapies are the most commonly used forms of drug abuse treatment.** Behavioral therapies vary in their focus and may involve addressing a patient's motivations to change, building skills to resist drug use, replacing drug-using activities with constructive and rewarding activities, improving problem-solving skills, and facilitating better interpersonal relationships.
- 7. Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies.** For example, methadone and buprenorphine are effective in helping individuals addicted to heroin or other opiates stabilize their lives and reduce their illicit drug use. Also, for persons addicted to nicotine, a nicotine replacement product (nicotine patches or gum) or an oral medication (bupropion or varenicline), can be an effective component of treatment when part of a comprehensive behavioral treatment program.
- 8. An individual's treatment and services plan must be assessed continually and modified as necessary to ensure it meets his or her changing needs.** A patient may require varying combinations of services and treatment components during the course of treatment and recovery. In addition to counseling or psychotherapy, a patient may

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Dependence on or Abuse of Specific Illicit Drugs in Past Year Among Persons 12 or Older, 2009



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would be most helpful for this athlete? How would you gauge your rapport and empathy with her? What will you do if she continues risky drinking?

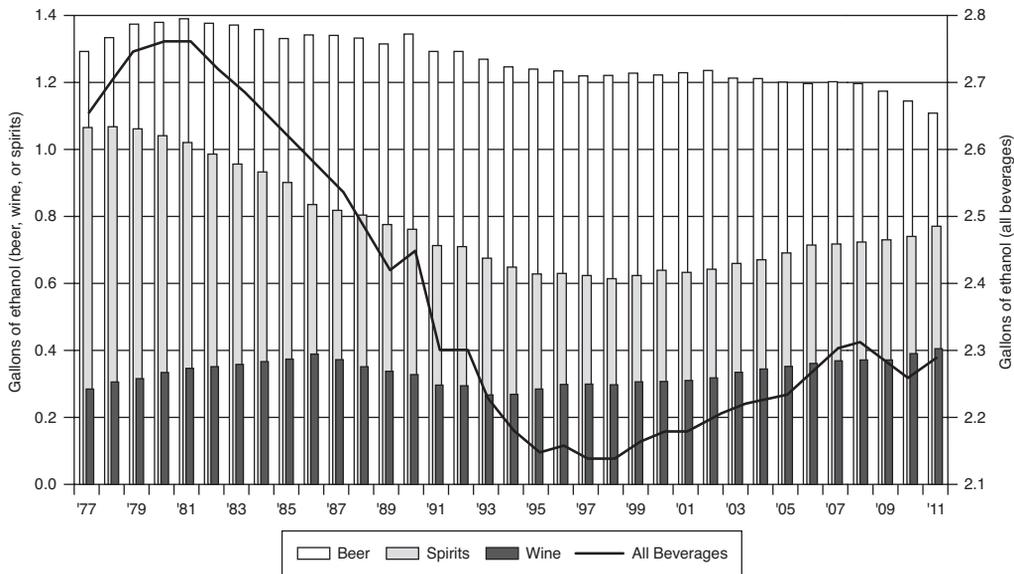
Substance withdrawal refers to the physiological changes that occur when a substance leaves the body. These changes, depending on their severity, can provide evidence that pharmacodynamic tolerance is present. Most withdrawal symptoms, which are usually the opposite of the drug effects, can begin within 4 hours of last use and may continue for varying lengths of time, usually 3–7 days, depending on the substance, degree of physical dependence, genetic factors, and overall health of the person (Doweiko, 2015). At its most benign, a hangover after an episode of heavy drinking is one example of substance withdrawal. In its more complicated progression, withdrawal, depending on the drug use, can manifest as mild to extreme tremors; nausea or vomiting; mood disturbances such as pronounced anxiety, depressed mood, and increased irritability, or *anhedonia*; neurological disturbances such as delusions, headaches, sleep disturbance, mild to severe seizures, or delirium tremens involving visual, auditory, or tactile hallucinations; physiological conditions such as diarrhea, goose bumps, fever, or rhinitis; and cardiac complications including elevated blood pressure, pulse, and cardiac arrhythmias (Doweiko, 2015; van Wormer & Davis, 2013). Complicated alcohol withdrawal, for example, is one of the most serious life-threatening types of withdrawal and nearly 15% of alcohol-dependent individuals can have withdrawal seizures if not medically detoxified.

SUBSTANCES OF ADDICTION

There are a number of chemical substances with addictive properties. The most recent data in the United States regarding patterns of illicit drug use point toward increasing use (NIDA, 2014a). To better understand these substances, they are classified into the following categories: depressants, opioids, stimulants, cannabinoids, and hallucinogens. Table 2.1 shows commonly abused illicit and prescription drugs, the Drug Enforcement Agency (DEA) Schedule regulating drugs, route of administration, drug effects, and health risks in a chart prepared by the National Institute on Drug Abuse (NIDA, 2012a). History shows a pattern of increasing concentration levels to better achieve maximum euphoric effects.

Depressants

ALCOHOL It is important to understand the most commonly abused substances that jeopardize the health and well-being of an individual. By far, the most abused mood-altering substance today is ethanol, or ethyl alcohol, with approximately 71% of people in the United States over age 18 reporting alcohol consumption within the previous 12 months in 2012 (NIAAA, 2014), and nearly a quarter of drinkers reported binge drinking within the recent month (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013). Note the alcohol consumption per capita values displayed in Table 2.2. The Centers for Disease Control and Prevention (CDC) and NIAAA note that excessive drinking is the primary risk factor leading to injury, and a major cause of death, ranking third in the United States (NIAAA, 2014). This translates to one preventable fatality that is alcohol related every 48 minutes and nearly 51 billion dollars in total costs for alcohol-related crashes (CDC, 2013). Alcohol is “humanity’s oldest domesticated drug” (Siegal & Inciardi, 2004, p. 78), and no one is immune from its potential for addiction. Regarding its effects and attraction, Knapp writes that alcohol is “the drink of deception: alcohol gives you power and robs you of it in equal measure” (1996, p. 95).

TABLE 2.2 Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977–2011

Source: LaVallee, R. A., LeMay, H. A., & Yi, H.-Y. (2013). *Surveillance Report #97*. Retrieved from <http://pubs.niaaa.nih.gov/publications/surveillance97/CONS11.htm>

Alcohol has certainly been evident in anthropological records for centuries, although it is not clear how it was first discovered. Historians generally believe it was about 10,000 years ago, after berries or fruits left too long in the sun began fermenting, resulting in a crude version of wine (Erickson, 2001; Siegal & Inciardi, 2004). Distilling alcohol to get higher potency began around 800 A.D. in Arabia. Jabir ibn Hayyan, otherwise known as Geber, in searching for an alchemy formula, burned impurities in wine and thus discovered distilled spirits (Spicer, 1993). Distillation, however, was not popular until the 13th century, when a university professor in France, Arnauld de Villeneuve, promoted this new type of alcohol as a cure for diseases (Spicer, 1993).

Alcohol is classified as a depressant to the central nervous system. As such, it often was used as an anesthetic or sleep aid. Drinking to achieve relaxation and euphoria contributed to the reputation of alcohol as a desirable social lubricant due to its disinhibition and relaxation effects. However, alcohol is also a powerful neurotoxin, and alcoholism leads to critical areas of damage to key executive brain functioning with a “profound untoward effect on the cerebrum and cerebellum” (Sullivan & Pfefferbaum, 2005, p. 590).

Many addiction specialists and addiction counselor educators emphasize that the critical ingredient in alcohol is ethanol, whether a person consumes beer, wine, or distilled liquor. It is important for those counselors working with clients discussing information about alcohol use to address the common misconception that some alcoholic beverages are safer or less addicting than others. Some individuals have rationalized that since beer, for example, is only 5% ethanol, it is less harmful, and hence less addicting. What is important to understand is that “the same quantity of alcohol is consumed if someone drinks either a 12-ounce can or bottle of beer, a three- to four-ounce glass of wine, or a mixed drink made with one and one-half ounces of

distilled spirits” (Siegal & Inciardi, 2004, p. 75). Although the overall sizes of the drinks vary, the amount of ethanol is equivalent, and it is ethanol that is the significant addicting agent in alcoholic beverages.

To better determine the potency of ethanol, the term *proof* is used to indicate the beverage’s strength or, in other words, the percentage of pure ethanol in the beverage. Using the standard formula, one roughly doubles the percentage of ethanol to determine potency; for example, wine is generally around 7% alcohol, equating to 14 proof; the same is true for over-the-counter cough and cold preparations containing alcohol, such as popular brands that may be 20% alcohol, or surprisingly, 40 proof. Conversely, to determine the percentage of ethyl alcohol in a beverage, one can divide by half the designated proof, for example, 151-proof rum is 75.5% ethanol.

Physiologically, when alcoholic beverages are consumed, ethanol is readily absorbed into the bloodstream through the lining of the stomach and small intestine, so its mood-altering effects are usually felt within 20 minutes. The effect of ethanol can be moderated by a variety of factors such as food in the stomach, total body weight, gender, and the response to alcohol (tolerance). There are notable gender differences. Researchers have established that women achieve higher blood alcohol content (BAC) levels when consuming the exact same amount of alcohol as males (NIAAA, 2005; Oscar-Berman & Marinkovic, 2004). Explanations of this difference point out that women experience higher alcohol concentrations due to lower dilution rates, since women have less water weight per pound than men (NIAAA, 2005). Because several researchers noted women show more severe consequences, faster progression through the stages of alcohol dependency, and higher BACs, the term *telescoping* is often used when describing women’s responses to alcohol (Gilbertson, Prather, & Nixon, 2008). Questions remain whether this telescoping effect is due to gender differences, as neuroscientists using neuroimaging have observed micro- and macrostructural brain damage differences between male and female alcoholics (Gilbertson et al., 2008). Gender issues pertaining to substances are also discussed in greater detail in Chapter 18.

The effects of alcohol are experienced biologically for as long as the ethanol remains in the body. The liver is the major organ responsible for eliminating, or detoxifying, alcohol. The main job of the liver is to metabolize or excrete toxins, processing ethanol as a toxin to the system (Doweiko, 2015)—hence the appropriate term, *intoxicated*. The liver processes ethanol at relatively the same speed and rate for most people. Myths of drinking pots of hot coffee or taking frequent cold showers do not speed the rate at which the liver metabolizes ethanol (van Wormer & Davis, 2013). No substance exists that can accelerate the rate of breakdown of ethanol (Siegal & Inciardi, 2004). Of particular note to the counselor regarding ethanol-metabolizing rates are the number of young people who die each year as a direct result of alcohol poisoning (Falkowski, 2000). Often those with little experience drinking alcohol do not understand that overintoxication can be fatal. Since death due to overintoxication occurs infrequently, awareness of this danger is often limited, so it is important that counselors stress the risk one takes when consuming large quantities of alcohol quickly. Respiratory arrest or aspiration of vomit have been the leading fatal factors in recent high-profile deaths of inexperienced young college drinkers after imbibing large quantities of alcohol in a short time period (Falkowski, 2000).

An additional important concept for the counselor to understand is the method of measuring the amount of alcohol in one’s body. To determine the amount of alcohol in the bloodstream, a BAC is often measured either by a breathalyzer or a blood sample. There are a number of portable, easy-to-use breathalyzer instruments available for measuring BAC. Ordinarily a BAC level is best obtained within 12 hours after drinking as the ethanol may be eliminated from the body after this time period. The relatively short elimination time for alcohol is one of the main reasons

a breathalyzer is the preferred measuring method, as opposed to a urine drug screen, the preferred method for measuring other drug levels.

Hospital emergency rooms and trauma units are the most likely setting to obtain blood samples for alcohol levels, often due to alcohol-related injuries such as falls, burns, and motor vehicle crashes. The National Highway Traffic Safety Administration (NHTSA, 2012) estimates that a person dies every 51 minutes in an alcohol-related crash in the United States. Further, new reports of deaths from impaired driving find that less than 20% of impairment is due to additional other drugs (CDC, 2013); alcohol is the primary drug involved in impaired-driver fatalities. Health care costs are extensive when trauma injury, such as injuries received in a motor vehicle crash, are alcohol related. Alcohol screening for risky drinking and brief counseling intervention (ASBCI) studies in trauma settings have recently demonstrated such efficacy that the American College of Surgeons' Standards now require ASBCI services in all Level I Trauma Centers in the United States (American College of Surgeons, 2006). This innovative policy mandates that Level I Trauma Centers use the "teachable moment" generated by traumatic alcohol-related injury (approximately 45–50% of trauma patients) as a gateway to effective prevention of future alcohol abuse, especially with underage and young adult drinkers, and to decrease or delay the onset of alcohol use disorders (SAMHSA, 2007). Nationally, many Level 1 and 2 hospital trauma centers are increasing routine alcohol screenings and brief counseling interventions in concentrated efforts to reduce trauma recidivism and impact risky drinking patterns (SAMHSA, 2007; Schermer, 2005). The use of an evidence-based screening tool, such as a positive finding of binge drinking, is used to help identify risky drinkers (SAMHSA, 2007). This new prevention strategy indicates that a brief counseling intervention has a powerful impact that facilitates changes in future behavior (Dunn et al., 2008; Leontiva et al., 2009; O'Brien, Reboussin, Veach, & Miller, 2012; Toumbourou et al., 2007) and reduces hospital trauma recidivism by 50% (Crawford et al., 2004; Gentilello et al., 1999). One study examining youth aged 12–18 admitted to a hospital with major injuries found that alcohol counseling during their hospitalization reduced alcohol consumption in addition to further injury (Dunn et al., 2008). By far, those deemed risky drinkers (approximately 30% of drinkers) have a favorable response to ASBCI, may delay or prevent alcohol dependency by changing risky drinking patterns, and improve their overall health. More than 50% of alcohol-impaired drivers involved in a fatal automobile crash have a BAC at or above .15 (NHTSA, 2012). Currently all 50 states and the District of Columbia have enacted .08 BAC laws stating that any driver with a BAC at or above .08 would be charged with operating a vehicle illegally, commonly referred to as DUI (NHTSA, 2012). Drivers aged 21–25 were reporting driving under influence (26.1%) at more than twice the average rate in the United States (12.4%; 30.9 million individuals) (SAMHSA, 2009).

Employers are also affected by alcohol-related trauma: The total cost to employers related to automobile crashes where at least one driver was alcohol impaired is more than \$9 billion annually and of that total, \$3.1 billion is directly related to alcohol impairment on the job (NHTSA, 2004). Recent data further indicated that in 2008, 56.2% of whites aged 12 and above reported current alcohol use, followed by 43.3% of persons identified as American Indians or Alaska Natives, 43.2% for persons of Hispanic descent, 41.9% of African-Americans, and 37% of persons identified as Asian (SAMHSA, 2009). The SAMHSA data further showed the highest rate of binge drinking patterns was noted in the Hispanic population (25.6%). Youth are not immune to alcohol-related trauma. Toumbourou et al. (2007) examined current studies regarding patterns of alcohol use worldwide and noted "hazardous alcohol use alone has been estimated to cause 31.5% of all deaths in 15–29 year old men in the developed world and 86% of the 3.6 million substance-related deaths of 15–29 year old men and women worldwide" (p. 1391).

Their findings also show that harmful use and abuse rather than dependence make up the majority of problems in substance use among adolescents. Miller, Levy, Spicer, and Taylor (2006) calculated that in the United States, alcohol use by minors accounted for approximately 16% of all alcohol sales in 2001. Their findings further illustrated cost by calculating that 3,170 deaths, 2 million other harmful events, \$5.4 billion in medical costs, \$14.9 billion from loss of work or other resources, for a total cost of \$41.6 billion in lost quality of living, were all attributed to underage drinking. The findings noted that alcohol-related violent acts and motor vehicle crashes were primary factors in the cost analysis. The CDC also identified patterns of alcohol use among high school students (9th–12th graders) in its biannual Youth Risk Behavior Surveillance Survey (YRBSS); in 2007, three-fourths (75%) of students reported consuming one or more alcoholic beverages in their lifetime, with slightly over one-fourth (26%) indicating a pattern of heavy drinking as defined by five or more drinks during any one drinking occasion on at least one day in the month preceding the survey (2009). On closer examination, it is of particular note that just under half (40.4%) of male 12th graders indulged in binge drinking in the month prior to the survey, far exceeding the next highest percentage of binge drinkers (26.1%) who were 18–24 years of age (CDC, 2009). Further comparison data indicate, for example, that less than a tenth (7.8%) of those aged 55–64 reported similar binge drinking patterns (Centers for Disease Control and Prevention, 2009). College students aged 18–22 were found to have the highest binge drinking rates (40.5%), with approximately 16% deemed heavy drinkers (SAMHSA, 2009).

Case Study. In an informal survey done by a student reporter for the high school newspaper, it was reported that almost 20% of the student body used either cigarettes or smokeless tobacco (which were viewed as much safer than cigarettes). While the numbers for most illicit drug use was low, 1 in 15 students reported recreational use of prescription drugs ranging from OxyContin to Ritalin. Almost 70% of the 300 students surveyed reported alcohol use within the past 6 months, with 41% reporting semiregular binge drinking (30% of 11th and 12th graders and 11% of 9th and 10th graders).

What major issues should the school counselor and faculty be concerned about, and how might they go about effectively addressing these issues? Which behaviors offer the highest risks and why? Which behaviors, and with whom, would you address first? Discuss how you think these students compare to national averages, including illicit drug use.

In summary, alcohol abuse, addiction, and risky drinking create significant problems for many people. The addiction counselor benefits from increased knowledge and awareness about



Addiction, Mental Health, and Childhood Trauma

In a recent study examining traumatic childhood events among persons diagnosed with both substance use and mental health disorders who were being treated in an in-patient setting, 65.9% of the 402 participants reported emotional abuse and neglect during their childhood (Wu, Schairer, Dellor, & Grella, 2010). Physical abuse was reported by 49.3%, sexual abuse was reported by 48%, and family violence was reported by 56%. The severity of childhood traumatic events was scored on a 6-point scale. Each unit increase in severity of trauma increased the risk of lifetime alcohol dependence by 18% and tobacco use by 16%. As has been found in previous research, there is strong correlation between substance use, mental health diagnoses, and childhood trauma, suggesting the ecological complexity of substance abuse.

Source: Wu, N. S., Schairer, L. C., Dellor, E., & Grella, C. (2010). Childhood trauma and health outcomes in adults with comorbid substance abuse and mental health disorders. *Addictive Behaviors*, 35(1), 68–71.

the most commonly abused substance, alcohol, which impacts far more individuals in a negative way than any other mood-altering chemical substance.

Case Study. Because several members of Ellen’s family, including both parents, were alcoholic, she abstained from alcohol until she was 29, when she began drinking socially. Six years later, her drinking began affecting her job. An increasing pattern of absenteeism, tardiness, and attitude problems resulted in a confrontation with her boss, who required she get an assessment and follow any recommendation made. The results indicated a high degree of tolerance, and a multitude of social and physical problems related to her drinking. She insists that she drinks only wine, not hard liquor, does not drink every day, and never before evening, so she is certain that alcohol is not a problem.

What areas of her life need more exploration? What kinds of data and counseling techniques might a counselor use to help break through Ellen’s denial and increase her motivation to address the issues alcohol is causing in her life?

Counseling in a Hospital Trauma Center: A Doctoral Counseling Student’s Perspective



When someone is admitted to a trauma center in America, there is around a 50% chance that the incident that brought him or her there will have involved alcohol consumption. It is no wonder, then, that Level I Trauma Centers in the United States are required to provide patients with both alcohol screening and brief counseling intervention, when problem drinking is indicated. The manner in which those services are delivered varies across institutions. Currently, only a few use professional counselors. One of these is the Wake Forest Baptist Medical Center (WFBMC) trauma center. This vignette offers one counselor’s observations about the alcohol screening and brief counseling intervention done there, drawn from the writer’s experience over the course of about one year. It is an experience that has been overwhelmingly positive.

The setting at the WFBMC trauma center is dynamic and fast paced. Mornings begin with surgery rounds, during which each patient’s plan of care is reviewed with a multidisciplinary care team. Amid a cacophony of ringing phones and buzzing pagers, medical professionals engage in intense conversations, exploring, inquiring, and debating one another in an effort to ensure provision of the best care. The counselor’s contributions to the discussion are critical: sharing each patient’s blood alcohol level upon admittance; recommending, when necessary, a Clinical Institute Withdrawal Assessment (CIWA); noting other important mental health concerns she may have gleaned during a visit with a patient in recent days.

The trauma center is not a traditional counseling setting. At any moment, a physician may call requesting a session with a patient with a substance abuse history or a nurse may pull me aside in the hall with concerns about a patient. Moreover, the patients do not present as traditional clients. A trauma patient does not schedule an appointment. Each and every one bears the fresh physical and emotional wounds of the terrible incident that put them where they lay: a gunshot, a stabbing, a serious fall, a crushing car accident. Some are lucky even to have survived. All likely are in one of the most vulnerable states, both physically and emotionally, they ever have been.

It is the counselor who is equipped to assist such patients as they struggle with a trauma fresh in their minds. It is the counselor, sitting at their bedside, to whom they express frustration, sadness, and confusion. Many, in such moments, recognize that addiction or substance abuse led them to this frightening place. It is through counseling that these individuals are able to consider the risks associated with their behavior. And, often, it is through counseling that they may decide to make a change.

Many of the patients I visited not only were willing to discuss their concerns about their drinking habits, but eager. While some express ambivalence, many hope for a better future and desperately crave

a new beginning. It is the honor and privilege of the counselor to assist them as they begin their journey, even if only for a brief time. My experience in the WFBMC trauma center has provided a valuable new perspective on counseling and what it means to be a counselor. The work is challenging, compelling, and rewarding. It has afforded the unique opportunities both of learning, first hand, the inner workings of a hospital setting and of collaborating with interdisciplinary teams. The physicians, medical students, physician assistants, and nurses alongside whom I work have shown an appreciation for and understanding of the complex psychosocial issues with which their patients have presented. It is evident that WFBMC trauma center values providing high-quality, integrated care. Counselors have been included as a part of the team. From this counselor's perspective, their inclusion has proven vital.

Leigh Zick Dongre, M.A., LPCA, NCC, is a Ph.D. student in Counselor Education and Supervision at the University of North Carolina at Charlotte. She is a Graduate Assistant for the Trauma Service and Burn Unit at Wake Forest Baptist Medical Center from May 2013 to the present.



Counseling in a Hospital Trauma Center: A Master's Student Reflecting on Her Practicum

When I began my graduate studies in counseling at Wake Forest University, I had been out of school for a quarter of a century. I felt a sense of urgency when picking my practicum site, knowing that my experiences during the semester's placement would be the foundation on which I would build my professional career. I felt called to serve at a site that would stretch my abilities and challenge my confidence, and my experience in the trauma unit at WFBMC has afforded me countless opportunities to take what I have learned so far in my coursework and translate it into action. No patient on the trauma floor has *chosen* to spend time in the hospital. Removed from the normality of day-to-day life, patients often feel isolated, confused, and overwhelmed by the sights and sounds of a trauma ward. In addition to the physical stresses of injury following a traumatic event, there is a sense of emotional vulnerability that is palpable as I enter into a patient's room. While my first responsibility is to provide support, I also have the opportunity to conduct alcohol screening and brief interventions with patients who meet the criteria, and have discovered, much to my initial surprise, that a hospital bed is fertile ground for self-assessment and is often where decisions to change are born. Recovering from trauma, patients are often very willing to look at their lifestyle and behaviors regarding their use of alcohol, and I have been astounded at the eagerness many patients demonstrate when considering their drinking habits. Taking the opportunity to conduct an Alcohol Use Disorder Identification Test (AUDIT) inventory with patients provides them a lens through which they may assess their choices and consider whether changes in those choices may positively impact their lives. I have been humbled by the openness and meaningful self-assessment that I have witnessed during my time on "Reynolds 11." No matter where I go in my professional and academic career, I *will* encounter clients struggling with addiction. Having this opportunity to see what change can look like in patients who have endured a physical trauma has been a true privilege.

Sara W. Bailey is a Graduate Student in the Counseling Department of Wake Forest University. She is the 2014–2015 WFU Counseling Department Anderson Fellow at the Memory Assessment Clinic Counseling Center at Wake Forest Baptist Medical Center.



The *Teachable Moment*, focused on alcohol screening, brief counseling interventions, and policy implications in a Level I Trauma Center at Wake Forest University Baptist Medical Center in North Carolina, is a 3-year prospective clinical trial research study funded by the Substance Abuse Policy Research Program of The Robert Wood Johnson Foundation. Principal Investigator: **Mary Claire O'Brien, M.D.**; Co-Investigators: **Laura J. Veach, Ph.D.**, Preston Miller, M.D., and **Beth Reboussin, Ph.D.**

Janeé R. Avent, Ph.D. (*Assistant Professor of Counseling, University of Texas San Antonio; former student, University of North Carolina at Greensboro*): One of the most stressful times for a counseling graduate student is finding an internship site. As always, I chose to embark on something that was both new and seemingly quite challenging. I selected a new internship in the Trauma Center of Wake Forest University Baptist Medical Center. I did not know what to expect coming into this internship. When I began my internship, I had limited counseling experience and had never worked in a hospital setting.

This learning experience has been both challenging and rewarding. Challenging in that it is never an easy task to walk unexpectedly into a client's hospital room in the trauma center to talk with them about their alcohol use. Challenging in that it is difficult to ask concerned family members to step out of the room while I talk with their loved one in confidence about risky drinking. There is also a personal emotional challenge that comes with witnessing someone in such physical and affective pain concurrently.

Nonetheless, for every measure of challenge, there is an even greater sense of reward. It is so easy to view oneself as the expert, but it never ceases to amaze me how much the clients teach me—they teach me about strength, determination, and humility. Many are willing to be vulnerable and discuss personal issues surrounding alcohol and related injuries because they are willing to do whatever is necessary to make healthy changes in their lifestyles. Even the clients who are not ready to discuss change remind me that I am here to plant a seed and hopefully one day that seed will grow.

Due to the support and respect I receive from the entire Trauma community, this experience has been very rewarding. The learning curve has been very steep and there has been a significant amount to process at one time, but it has been manageable because of the trust and reassurance I gain from the Trauma surgeons and staff, my clinical supervisors, and the Teachable Moment research team. If internship is the time when one is shaping clinical approach and preparing for a future career in counseling, then I can only be excited about the possibilities that exist not only for me but for the counseling profession. There are new opportunities that unfold every day, and I have the ability to work with populations that I had not anticipated, but I have come to appreciate and greatly enjoy.

Janeé R. Avent is an Assistant Professor at the University of Texas San Antonio. She was the Counseling Intern for the Trauma Service and Burn Unit of Wake Forest Baptist Medical Center June 2009–May 2010.

SEDATIVES/HYPNOTICS Another classification of drugs that depress the central nervous system is sedative/hypnotic drugs. The most common drugs in this group are benzodiazepines, barbiturates, and nonbarbiturates. Currently, benzodiazepines, sometimes referred to as tranquilizers, are frequently prescribed for a wide range of symptoms, from sleeplessness, anxiety, and muscular strain, to seizures (Erickson, 2001). They are of particular risk for women. For instance, findings show women are 55% more likely to be prescribed benzodiazepines than are men (NIDA, 2005). With their discovery in the 1960s, many heralded them as a much safer alternative to barbiturates in the belief that no addictive potential existed. Decades later, researchers found that benzodiazepines, such as Valium (diazepam) or Xanax (alprazolam), are highly addictive with long-term use and often have serious withdrawal complications requiring medical detoxification. Researchers also note that benzodiazepines, even taken as prescribed by a physician, are toxic to the brain, as evidenced with brain scanning techniques showing “an overall diminished or dehydrated pattern of activity, just as with drugs of abuse” (Amen, 2005, p. 79). Benzodiazepines are often prescribed as the initial drug for treating anxiety despite research showing limited effectiveness with long-term use, in part due to tolerance issues. Short-term use (4–8 weeks) may show maximum effect for anxiety, but other medications, such as antidepressants with anti-anxiety actions, are far more effective for long-term anxiety management without the addictive potential as seen with benzodiazepines (Doweiko, 2015).

Concerns about benzodiazepine abuse and addiction are growing. For example, trend analyses note a 41% increase (from 71,609 to 100,784) in benzodiazepine-related emergency department visits between 1995 and 2002 (Crane & Lemanski, 2004). Addiction treatment admissions in which tranquilizers were the primary drug of addiction climbed 79% over a 10-year period, 1992–2002 (SAMHSA, 2005). For women, it is a particularly troublesome pattern when “men lead women in numbers of addicts for every substance except prescription medications” (Briggs & Pepperell, 2009, p. 20).

Another concern about benzodiazepines is their potential for use as a date-rape drug. Rohypnol (flunitrazepam), a benzodiazepine with amnesiac properties that is approximately 10 times more potent than Valium, has been used in sexual assault crimes (Falkowski, 2000).

Central nervous system depressants also include barbiturates, such as Tuinal (amobarbital with secobarbital) or Nembutal (pentobarbital). Barbiturates use was most prevalent during the 1950s through the 1970s when, at that time, they were second only to alcohol as a drug of abuse (Erickson, 2001). Barbiturates are fast-acting. Within the brain, neurotransmitters and depolarizing activity decreases, thereby further depressing the central nervous system and thus making barbiturates dangerous in their potential for lethal overdose, especially if combined with other central nervous system depressants (Erickson, 2001).

Nonbarbiturates include drugs such as Quaalude (methaqualone) and have much the same physiological profile as barbiturates. Because of accidental overdosing dangers associated with both barbiturates and nonbarbiturates, their use, fortunately, has declined.

Case Study. Daphne, a 35-year-old African-American married mother of two, has struggled with anxiety since she was young, but has done well and graduated with a master’s degree in nursing 2 years ago. This year she was hired to teach nursing students in a hospital program. Due to her anxiety, her physician prescribed Valium. She loves her job, but feels that the stress of being “on stage” can only be managed with the help of her medication. For 6 months, her physician continued to prescribe the sedative, but has refused to prescribe it any longer because she is demanding more and stronger dosages in order to cope. Daphne has come to you in hopes of convincing the psychiatrist in your practice to prescribe Valium for her.

What are the issues here, and how would you address them? If she continues to work with you, what kind of treatment plan would you create with her, and what are some of the modalities you might employ?

Opioids

Opium is “the parent of all narcotic drugs” (Weil & Rosen, 1983, p. 80) and contains 20 different drugs, the primary one being morphine. Opioids, derivatives of opium compounds, are abused because of their ability to affect the brain’s reward pathway dramatically and produce a longer-lasting euphoria that includes initial sensations compared often to orgasm, followed by drowsy bliss-like states. Opioid use disorders continue to have a profound impact in our culture. Morphine was used extensively in the Civil War and the resulting addictive patterns became known as “soldier’s disease” (Stevens, 2009).

Heroin, more potent than morphine, was not extracted from opium until 1895 and heralded because it reduced the side effects associated with morphine (Stevens, 2009). In the United States, for decades, many prevention and addiction specialists focused on heroin abuse and addiction due to its highly addictive nature and potency.

Intravenous injection is the preferred route of administration in heroin addiction; however, recent trends indicate an increase in the use of heroin by snorting and smoking, possibly

due to higher grade potency in recent years and heightened awareness of HIV infection risks (Dziegielewski & Suris, 2005). One addict's case example describes the heroin addictive cycle aptly as “a shot of heroin and all that pain and suffering gets instantly traded in for rainbows, warm sunshine, and laughter. . . . [F]ear of withdrawal combined with the easy access of high purity heroin is what keeps so many addicted” (Dziegielewski & Suris, 2005, p. 155).

Long-term efforts to recover from heroin addiction may include use of a slower-acting opioid, such as methadone, to assist the heroin addict in harm reduction. After three decades of methadone maintenance programs, methadone is generally regarded as effective in harm reduction for opioid and heroin addiction treatment (Dziegielewski & Suris, 2005). A newer, slow-acting synthetic opiate, buprenorphine, is also gaining in use as an alternative to methadone (Doweiko, 2015) and is used in treating opioid addiction. One study by Horton et al. (2009) stressed that even past use of heroin, found in as many as 1 in 4 of those seeking residential substance abuse treatment, indicates a greater tendency for riskier behaviors, poorer outcomes, and higher relapse potential, possibly related to clinical dissociation patterns. Horton and colleagues encourage better screening for dissociative disorders among clients with a history of heroin use in addition to continued research.

OxyContin is the trade name for one synthetic opioid that has received extensive media attention due to its abuse potential and addictive features. Recent information, for example, indicates that in 2001 more than 7.2 million prescriptions were written for OxyContin, resulting in sales of \$1.45 billion, increasing the next year to sales of \$1.59 billion (Inciardi & Goode, 2004). From 1994 to 2002, NIDA (2005) noted a 450% increase in oxycodone-related medical emergencies. The continued search for other pain management medications in lieu of opioids because of their serious addictive properties remains important. Overall, addiction specialists view opiate abuse and addiction with significant concern. More research is needed to better understand the neurobiology of opiate addiction to develop more effective treatment resources.

Case Study. Injured in an accident, Peter, a 23-year-old separated white male, was hospitalized for several weeks and given morphine for pain. Upon discharge, OxyContin was prescribed. Two months after release, Peter continues to describe high levels of pain. He has seen his physician twice to request more and stronger dosages of OxyContin. Today he made a third appointment and his estranged wife called the physician to discuss her concerns over Peter's continued pain, as well as his changing behavior, including irritability, work absenteeism, and his often groggy appearance. Peter told her that he is having flashbacks about the accident and that the medication seems to help alleviate these as well as his physical pain.

As a counselor, discuss how you and the doctor can help Peter deal with his emotional and physical issues. Discuss the complications of the addictive and medical issues present, and how addiction theory and practice can be put to use in this example.

Stimulants

TOBACCO The primary mood-altering substance in tobacco products is nicotine, a mild stimulant. It is believed that the indigenous people of the Americas used tobacco long before the first white Europeans arrived. The resulting history and expansion of the use of tobacco has had profound effects. Tobacco addiction is associated with the deaths of 100 million people in the 20th century (NIDA, 2010a). It is important to examine trends among youth since substantial prevention efforts have been implemented to reduce tobacco use. In 2008, adolescents aged 12–17 showed a declining trend of tobacco use since 2002, decreasing from 15.2 to 11.4%, with most of that decline attributed to decreasing cigarette use (SAMHSA, 2009). However, slightly over

one-fifth of adults continue to smoke despite evidence of serious health risks associated with smoking (Stevens, 2009).

Cigarette use is associated with those addicted to other substances. In 2008, one survey found that heavy alcohol intake was associated with tobacco use; 58% of heavy drinkers also smoked cigarettes in the same month (SAMHSA, 2009).

In an effort to find the benefits of nicotine without the dangers associated with becoming a smoker, some rationalized that chewing or smokeless tobacco might be less dangerous to one's health; adolescent trends have remained relatively stable, with approximately 2% of 12- to 17-year-olds reporting monthly use of smokeless tobacco (SAMHSA, 2009). More evidence indicates that smokeless tobacco, for example, carries significant health risk for hypertension, coronary artery disease, oral cancer, oral lesions, and tumors (Doweiko, 2015; Prentice, 2003). Medications such as Bupropion, Varenicline, and nicotine replacement aids are increasingly utilized to treat tobacco addiction (NIDA, 2010a).

Case Study. Many studies have shown a high concurrent use of cigarettes with alcohol and other substance use. Many treatment centers have instituted no-smoking policies, believing that in addition to the risks posed by nicotine addiction, continued tobacco use may heighten the likelihood of relapse for recovering alcoholics and drug addicts. Others believe that forcing a nicotine-dependent person to stop smoking when he or she is in substance abuse treatment may cause that person to drop out of treatment, thus lessening the chances of recovery from the primary addiction. A new treatment center, ChangeNOW, is totally smoke-free.

When consulting with this new treatment center, what conceptual views would you support and why? How would you address these issues with both the counselors you are consulting with (several of whom smoke) and with a new client, a heavy smoker, who really wants a referral from you to this new facility?



What About Caffeine Addiction?

Many people have had the experience of having ingested too much or too little coffee in the morning. Among mood-altering drugs, caffeine is the most widely used worldwide. It is regularly consumed by over 85% of children and adults in the United States. The DSM-5 describes diagnostic criteria for four caffeine-related conditions: caffeine intoxication, caffeine withdrawal, other caffeine-induced disorders (e.g., sleep-related, anxiety), and unspecified caffeine-related disorder. Also, Caffeine Use Disorder is included in the DSM-5's Section III—indicating that more research is required to ascertain whether it is a clinically significant disorder. Researchers at American University recently developed the Caffeine Withdrawal Symptom Questionnaire (CWSQ), the first validated measure of caffeine withdrawal symptoms. In their rigorously designed double-blind study, seven major types of symptoms emerged: (1) fatigue/drowsiness, (2) low alertness/difficulty concentrating, (3) mood disturbances, (4) low sociability/motivation to work, (5) nausea/upset stomach, (6) flu-like feelings, and (7) headache. The researchers hope that their ongoing work refining this instrument will serve to help in the assessment, diagnosis, and understanding of caffeine withdrawal.

Sources: American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Juliano, L. M., Huntley, E. D., Harrell, P. T., & Westerman, A. T. (2012). Development of the Caffeine Withdrawal Symptom Questionnaire: Caffeine withdrawal symptoms cluster into 7 factors. *Drug and Alcohol Dependence, 124*(3), 229–234.

EPHEDRINE, AMPHETAMINES, AND AMPHETAMINE-LIKE MEDICATIONS Other types of stimulants include ephedrine, amphetamines, and amphetamine-like medications (e.g., Ritalin, Concerta). Unlike many other mood-altering substances that are primarily used for the euphoria produced by the drug, amphetamines are often used for the euphoric experience and to enhance productivity. Although, as Weil and Rosen point out, “instead of automatically improving physical and mental performance, stimulants sometimes just make people do poor work faster” (1983, p. 38).

Abuse of Prescription Stimulants by Young People



Researchers identified 21 studies representing a total of 113,104 subjects in a recent systemic review of the medical literature examining the prevalence of nonprescribed stimulant medication use among children and young adults (Wilens et al., 2008). According to the research, 5–9% of grade school and high school students reported taking nonprescribed stimulant medications (i.e., Ritalin, Adderall) in the last year. The reported rates among college-age persons ranged from 5 to 35%. Among those people who had a prescription for stimulants, 16–29% had been asked to give, trade, or sell their medications. Reasons stated for using nonprescribed stimulants included improving alertness and concentration, experimenting, and getting high. Persons at the highest risk for misusing and diverting stimulants included whites, members of fraternities and sororities, individuals with lower grade point averages, those prescribed immediate-release compared to extended-release preparations, and individuals who reported attention deficit hyperactivity disorder (ADHD) symptoms.

Source: Wilens, T., Adler, L., Adams, J., Sgambati, S., Rotrosen, J., Sawtelle, R., Utzinger, L., & Fusillo, S. (2008). Misuse and diversion of stimulants prescribed for ADHD: A systematic review of the literature. *Journal of the American Academy of Child and Adolescent Psychiatry*, 47(1), 21–31.

Ancient Chinese medicine began using plants containing ephedrine over 5,000 years ago; more recent medical refinement resulted in extensive use in the United States after 1930 for problems mainly affecting the respiratory system. The legal ban in 2004 of ephedrine (Hall, 2004) was a result of a drug fraught with significant side effects. Almost 70 years ago efforts to find a synthetic alternative to ephedrine with fewer side effects (such as anxiety) and better outcomes resulted in the pharmaceutical development of amphetamines.

Several addiction experts note that *speed* (a slang term for amphetamines) was used extensively by military personnel during wartime in the 1940s to improve endurance and alertness (Miller, 2004; Weil & Rosen, 1983). In the 1950s, it was injected as a treatment to stop heroin addiction (Miller, 2004). Amphetamine use in the 1960s and 1970s spiraled, with “approximately 10 billion amphetamine tablets manufactured in the United States in the year 1970” (Doweiko, 2009, p. 118). With such extensive amphetamine use, many of the negative side effects such as agitation with severe anxiety, cardiovascular damage, paranoia, severe depression, drug-induced psychosis, and withdrawal-induced suicidal ideation were discovered. Warnings about the abuse and addiction potential of speed were commonplace in the early 1970s with slogans such as “Speed Kills” (Johnston, 2010). Overall, the illicit use of amphetamines has been problematic, highlighted by increasing methamphetamine-related episodes; NIDA (2014b) documented that substantial brain changes can be observed with imaging studies showing both chemical and cellular changes in the brains of chronic and prolonged methamphetamine abuse. Current research shows an increasing overall usage rate of amphetamines among athletes (4.1%), including greater use of stimulants by females as compared to male athletes, and higher rates of use in white athletes as compared to their non-white peers (NCAA, 2006).

Current research shows an increasing overall usage rate of amphetamines among athletes (4.1%) including greater use of stimulants by females as compared to male athletes, and higher rates of use in white athletes as compared to their nonwhite peers (NCAA, 2006). Methamphetamine (“meth”) is often the preferred stimulant of abuse and can be taken by mouth, snorted, smoked, or most problematically, injected. Recovering amphetamine addicts show continued slower physical movement and impaired memory even after ceasing any methamphetamine use for 9 months, and researchers are further concerned that addicts may have an increased risk for other neurodegenerative diseases (Zickler, 2002). The methamphetamine manufacturer cautions in the *Physician’s Desk Reference* (PDR) that “methamphetamine has a high potential for abuse . . . [that] may lead to drug dependence” (*Physician’s Desk Reference*, 2002, p. 440). Tolerance to methamphetamine develops quickly, which can exacerbate the addictive cycle. Often, end-stage addiction includes intravenous administration and severe withdrawal, profound weight loss, extreme dental complications, severe risk of contracting HIV and hepatitis B and C, intense craving patterns, brain damage, and often, significant cardiac complications (NIDA, 2014c). Culturally, a primary diagnosis of a methamphetamine/amphetamine use disorder is most often seen in non-Hispanic white individuals (66%); next, individuals of Hispanic origin (21%); and lastly 3%, respectively, in Asian/Pacific Island or non-Hispanic black individuals (APA, 2013). Encouraging data from 2008 show the rates of monthly use of methamphetamine decreased over 50% between 2006 and 2008 in the United States (SAMHSA, 2009). Further, reports by the DEA (2013) cite a 67% reduction in methamphetamine use by teens from 2000 through 2012.

Alternatives to pharmaceutically produced amphetamines are illicit amphetamines. One example is a form of methamphetamine known as “ice” and, more recently, methcathinone or “Kat.” Both Kat and ice produce stimulant effects and have many of the same risks and side effects as amphetamines; because of the lowered cost associated with illicit amphetamines—averaging \$15 per gram—combined with the relative ease of manufacturing the drug, illegal methamphetamine labs remain a significant concern in many communities (Stevens, 2009). One report, in an effort to educate individuals to better detect illegal methamphetamine-making labs, stressed that a variety of toxic chemicals are often present—such as lye, rock salt, lithium from batteries, pool acid, iodine, antifreeze, paint thinner, and lighter fluid—and are detectable during manufacturing, particularly with items “such as phosphine, ether, ammonia, battery acid, and acetone, [because they] have distinctive smells . . . phosphine smells like garlic, sulfur smells like rotten eggs, ammonia smells like cat urine, and acetone smells like nail polish remover” (Scott, 2002, p. 29). In 2012, the DEA (2013) reported a continued reduction in meth lab incidents involving explosions, dump sites, and raids, citing just over 11,000 for the year while seizing the largest annual amount of methamphetamine of nearly 4,000 kilograms. Efforts to reduce the illegal manufacture of methamphetamine continue in the United States, but children and individuals remain at risk from the toxic chemical spills and explosions associated with such labs.

Other stimulants of particular focus for the counselor are amphetamine-like stimulants, such as Ritalin or its generic name, methylphenidate. For a number of years, methylphenidate has been used extensively for the treatment of ADHD. Its main action in the brain involves blocking dopamine reuptake, which results in behavior changes of improved concentration and tracking of information (Doweiko, 2015). Ritalin also exhibits side effects that include weight and appetite loss, insomnia, nausea, hypertension, anemia, or perseveration (Doweiko, 2015). Newer research points to complications such as liver damage, decreasing seizure thresholds, growth hormone disruption, visual hallucinations, cardiac arrhythmias, and heart tissue damage

in some individuals; of note, youth can be sensitive to problematic side effects (Breggin & Cohen, 2007; Doweiko, 2015). Unfortunately, more reports indicate Ritalin is also being abused by illegally diverting the drug to individuals without a prescription. Breggin and Cohen (2007) further point out that Ritalin (methylphenidate) and other amphetamines (dextroamphetamine, dexamphetamine [Adderall], methamphetamine [Desoxyn]), often prescribed for young people in the treatment of ADHD, were required by the Federal Drug Administration in 2006 to be labeled with a warning against prescribing them to individuals with heart problems, due to an increasing number of reports about sudden death in children and adults prescribed these stimulants. Continued research into the long-term effects of Ritalin and other stimulants prescribed for ADHD remains a needed priority.

Case Study. Bailey, 21, is a gay biracial single male and has been through treatment four times for his methamphetamine addiction, the last one a 7-day program followed by a 4-week intensive outpatient program (IOP). After this last attempt, he was able to stay clean for only 2 weeks before relapsing, despite being highly motivated. While high, he was arrested for stealing \$34 from a convenience store. He was referred to drug court, and the judge has agreed to give him one last try at treatment before incarcerating him.

What treatment level, modalities, length, and aftercare plans do you think would be most likely to help Bailey attain and maintain sobriety? Discuss the difficulties a meth addict faces in maintaining recovery that differ from those of many other substances. What, if any, other issues might the counselor want to consider?

COCAINE Cocaine is also classified as a stimulant, as is crack cocaine, the smokeable, concentrated form of cocaine. History shows, as with many mood-altering drugs, increasing efforts to produce more concentrated forms of the drug to achieve maximum euphoric effect. Note in Table 2.3 the history of methods used to increase the concentration of cocaine (Inaba & Cohen, 2007). Current trends show a steady decline in use of cocaine since the mid-1990s. For example, a 2012 report indicated cocaine use by U.S. workers dropped by nearly 40% in the years 2008–2012 (DEA, 2013).

Epidemics of cocaine abuse and addiction occurred in the late 1800s and again in the early 1900s, which helped lead to its prohibition of nonmedical use with legislation of the Harrison Act of 1914 (Doweiko, 2015). By the late 1970s, many stimulant abusers and addicts were seeking a safer alternative to amphetamines—hence, the rise in cocaine use began again. This time a new, more powerful form of cocaine, crack, was synthesized, and its distribution was rampant throughout all socioeconomic strata in the 1980s and early 1990s (Stevens, 2009). Currently, it is estimated that cocaine-use disorder among adults 18 years old and higher is 0.3% of the U.S. population (APA, 2013). Since smoking a substance is the fastest route into the bloodstream, usually in approximately 4 seconds, intense cravings accompany the pattern of abuse and increasing doses are often sought by the user. Addiction can develop quickly, within weeks to months (APA, 2013). In one addict’s account, the initial experience with crack is aptly described as an all-encompassing experience: “In seconds my brain exploded . . . My heart felt as if it would explode with light, with love. Nothing else mattered except reaching that peak of rapture over and over again” (Moyers & Ketchum, 2006, pp. 101–102). Many celebrities and professional athletes were featured in media segments about their cocaine and crack addictions, while many prevention specialists organized to combat the deleterious consequences of cocaine abuse and dependency. At one time it was believed that cocaine users were only at risk for habituation or psychological dependence; however, it is now clear that physical dependence

TABLE 2.3 History of Cocaine: Methods to Increase Potency

Time Period	Methods to Increase the Potency of Cocaine	Time for Euphoric Effect to Reach Brain
Peru, 1450s	Chew coca leaf with charred oyster shells (slow absorption rate).	20–30 minutes
Europe & United States, 1900s	Snort powder cocaine (snuff); increased absorption rate via mucosa in nasal passages via snorting.	3–5 minutes
	Liquify cocaine in liquid products claiming improved health such as tonics or soft drinks, such as Coca-Cola.	15–30 minutes
	Injecting cocaine either intravenously (IV) or intramuscularly (IM); increased absorption rapidly with intense euphoric effect.	30 seconds (IV) 3–5 minutes (IM)
United States, 1970s	Smoking cocaine known as “freebasing” (complicated mixing of highly flammable ethyl ether with cocaine to produce more concentrated form of cocaine via heating in a pipe). Addiction potential appeared in diagnostic literature.	5–8 seconds
United States, 1980s	Smoking “crack” cocaine, readily packaged concentrated form of cocaine in smokeable form (simple and expedient path to intoxication peak). Highest risk for addiction because of most rapid delivery and easily concealed packaging also led to ease of sales and distribution resulting in crack epidemic.	5–8 seconds

Source: Inaba, D. S., & Cohen, W. E. (2007). *Uppers, downers, all-arounders* (6th ed.). Medford, OR: CNS Productions, Inc.

can occur, as evidenced by tolerance and withdrawal symptomatology (APA, 2013). Cocaine’s effect on the brain involves many of the same brain regions in the reward pathway, particularly sexual desire, complicating recovery efforts, again because of intense cravings. One writer, who struggled in recovery from crack addiction, described the cravings that led to yet one more relapse, after a 3-year abstinence, as “a ‘physiological imperative’ . . . evoking a howling internal torment that overrides the need for food, for water, for sleep, for love” (Moyers & Ketcham, 2006, p. 278).

In summary, stimulant drugs often result in a strong potential for abuse and dependency, with physical and psychological complications thwarting recovery efforts.

Case Study. Bette is a 34-year-old Latina woman with two children aged 10 and 4. She began using cocaine recreationally with friends a few months ago. She has become rapidly dependent on the drug and is now using rock cocaine as well. She vanished from home for 4 days after emptying the family bank account of \$14,000. She reports wanting to stop, but has tried three previous times (two of them short in-patient stays) to quit and has relapsed within a few days each time. Explain what is happening in terms of addiction theory and discuss the components of a treatment plan that could be developed as an effective intervention.

Cannabinoids

Marijuana, possibly one of the most controversial illicit drugs, is in a drug class all by itself. Marijuana “is an ancient drug, used since prehistoric times in parts of the Old World” (Weil & Rosen, 1983, p. 113). It often acts like a stimulant; at other times it is similar to a depressant and it resembles a mild psychedelic drug. It is in its own classification as a cannabinoid because of its many unique properties. It is considered to be the most commonly abused illegal drug (APA, 2013). The latest data trends indicated that those aged 50 and older are showing increased use of illicit drugs. For example, in 2002, 1.9% of those aged 55–59 reported illicit drug use, whereas in 2008 that percentage increased to 5% (SAMHSA, 2009).

For a number of years, experts questioned whether one could develop a dependency on marijuana. However, by 1983 experts in drug issues noted that tolerance, withdrawal, and dependence occurred with regular marijuana use. It became increasingly clear that the pattern of dependency is different: “[A]t its worst marijuana dependence consists of chain smoking, from the moment of getting up in the morning to the time of falling asleep . . . but dramatic withdrawal syndromes don’t occur . . . and craving for the drug is not nearly as intense as for tobacco, alcohol, or narcotics” (Weil & Rosen, 1983, p. 119). Diagnostic categories for marijuana dependence are included as a substance-use disorder in the widely accepted diagnostic manual of mental disorders; the cannabis-use disorder is considered severe if 6 or more of the 11 diagnostic criteria are met; moderate if 4–5 criteria are met; and mild if there are 2–3 of the criteria present (APA, 2013). For teens, it is noted that use before age 15 is a “robust predictor of the development of cannabis use disorder and other types of substance use disorders and mental disorders during young adulthood” (APA, 2013, p. 513).

The negative physical effects of smoking marijuana on a frequent basis are seen with the reduced lung capacity estimated between 15% and 40% (Prentice, 2003). Other concerns include lowered testosterone levels, increased exercising pulse rates upwards of 20%, and decreased muscle strength (Prentice, 2003). Brain changes, especially in short-term memory and executive functioning, the capacity to learn, and focused attention are also associated with negative effects of continued marijuana abuse (APA, 2013). Recently, the APA recognized withdrawal complications and included, for the first time in the *Diagnostic Statistical Manual* (5th edition; DSM-5), important guidance as follows: “abrupt cessation of daily or near-daily cannabis use often results in the onset of a cannabis withdrawal syndrome . . . [causing] significant distress and contribute to difficulty quitting or relapse” (2013, p. 511). Also, newer analyses note an association between the use of marijuana and psychosis-related complications. One recent in-depth examination, using sibling pair analysis of over 3,000 individuals since birth, found at the 21-year follow-up significant patterns that support mounting evidence that “longer duration since first cannabis use was associated with multiple psychosis-related outcomes in young adults” (McGrath et al., 2010, p. E5). These psychosis-related outcomes include diagnoses of schizophrenia, persistent delusional disorder, or acute psychotic disorders, for example; these diagnoses were seen at a much higher rate in those individuals who reported at least 6 years of marijuana use. These outcomes could not be better explained by factors such as family mental illness, environmental concerns, or genetics (McGrath et al., 2010). Promising new research will continue to yield a better understanding of the unique properties and health effects of marijuana.

Hallucinogens and Other Psychedelics

Another classification of commonly abused drugs includes hallucinogens. Examples of hallucinogens include lysergic acid derivatives (LSD) or psilocybin, indole-type hallucinogens, and phencyclidine (PCP), a phenylethylamine-type hallucinogen, also referred to as a dissociative anesthetic. Hallucinogens range in their effect on the brain; for example, LSD alters the



Legalization of Marijuana

Growing support for the legalization and regulation of medical marijuana is evidenced by recent changes in state marijuana laws. At the time of this writing, 20 states and the District of Columbia have enacted laws to legalize medical marijuana, and 13 states have pending legislation or ballot measures regarding the legalization of medical marijuana. States require a recommendation from a physician stating that a patient would benefit from medical marijuana use. Physicians may prescribe marijuana for many different conditions, including multiple sclerosis and cancer. Parental consent must be provided for patients under the age of 18. Alabama and Indiana have not legalized medical marijuana, but they have enacted pro-medical marijuana legislation. Additionally, 15 states have recently enacted legislation that decriminalizes first-time possession of small amounts of marijuana for personal use. While the specific amount limit varies state to state, offenders receive no prison time or personal criminal record as long as there is no intent to distribute or sell. Research examining decriminalization of marijuana suggests that it has had little to no impact on people's decisions to use the drug, has contributed to the reduction of juvenile offenses, and lessens expenses related to arrests and prosecution of marijuana convictions. Currently, Washington and Colorado are the only states that have legalized marijuana for recreational use. Commerce of recreational marijuana is regulated by state laws, similar to the laws that regulate alcohol sales. Colorado officially legalized recreational marijuana on January 1, 2014. While it is too early to see the full effects, budget numbers predict that more than \$100 million in revenue for the state was generated from taxes and reduced criminal costs. Although state laws differ regarding the use and possession of marijuana, federal laws prohibit its use, even for medicinal purposes. Possession of marijuana can be classified as a misdemeanor depending on the number of offenses, but the cultivation and sale of marijuana or any associated paraphernalia is considered a felony. The incongruence between state and federal laws regarding this substance will likely continue to garner attention in the legislature, courts, and public discourse on this controversial matter.

Sources: Healy, J. (2014, February 20). Colorado expects to reap tax bonanza from legal marijuana sales. *The New York Times*. Retrieved from <http://www.nytimes.com/2014/02/21/us/colorado-expects-to-reap-tax-bonanza-from-legal-marijuana-sales.html>

Lyman, R. (2014, February 26). Pivotal point is seen as more states consider legalizing marijuana. *The New York Times*. Retrieved from <http://www.nytimes.com/2014/02/27/us/momentum-is-seen-as-more-states-consider-legalizing-marijuana.html>

NORML. (n.d.). *Federal laws and penalties*. Retrieved from <http://norml.org/laws/item/federal-penalties-2>

NORML. (n.d.). *Marijuana decriminalization and its impact on use*. Retrieved from <http://norml.org/aboutmarijuana/item/marijuana-decriminalization-its-impact-on-use-2>

NORML. (n.d.). *States that have decriminalized*. Retrieved from <http://norml.org/aboutmarijuana/item/states-that-have-decriminalized>

Procon.org. (n.d.). *13 states with pending legislation to legalize marijuana*. Retrieved from <http://medicalmarijuana.procon.org/view.resource.php?resourceID=002481>

Procon.org. (n.d.). *20 legal medical marijuana states and DC: Laws, fees, and possession limits*. Retrieved from <http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881>

neurotransmitter serotonin, and PCP blocks major neurotransmission reuptake and disrupts neuro-electrical impulses (Erickson, 2001). Currently, 1.1 million people were identified as hallucinogen users within the recent month they were surveyed. Rates of reported use remain relatively unchanged in the past decade (SAMHSA, 2013).

Other psychoactive drugs that are not technically hallucinogens but have perception-altering properties—psychedelics—include MDMA (commonly known as “ecstasy” as a pill or “Molly” when in pure-powder form). The most popular psychedelic of the 1990s, MDMA, also

designated as 3,4-methylenedioxymethamphetamine, is a synthesized psychoactive drug with stimulant properties. Its chemical makeup is a “synthetic compound related to both mescaline and the amphetamines” (Inciardi & McElrath, 2004, p. 286). In recent years, two major drugs that have psychedelic effects—synthetic cathinones and pure powder-form MDMA—have seen increasing abuse. Synthetic cathinones have emerged in recent years because they are being marketed as “bath salts.” As such, they were able to be sold legally in gas stations, in convenience stores, and on the Internet (Wiedland, Halter, & Levine, 2012). Users report seeking synthetic cathinones for their amphetamine-like properties (Prosser & Nelson, 2012); however, users also report psychedelic effects such as hallucinations, paranoia, and psychosis (Wiedland et al., 2012). The dangerous adverse effects from using synthetic cathinones led to a drastic surge in emergency department visits and calls to poison control centers (NIDA, 2012b). Pure powder-form MDMA, or “Molly,” has typically been associated as a party drug due to the resulting effects of euphoria, empathy toward others, and sensory distortions felt for approximately 3–6 hours after use (NIDA, 2013). Many users seek Molly from the belief that it is free from additives and therefore safer than other drugs of abuse (Kahn, Ferraro, & Benveniste, 2012). However, in a sample of Molly pills obtained and tested in the southeastern United States, hundreds of the pills contained methylone, one of the synthetic cathinones found in “bath salts” (NIDA, 2014b). In addition, cocaine and heroin have also been found. Users seeking Molly are often unaware that the pure drug they think they are using is actually a dangerous mix of substances.

In addition, hallucinogens and other psychedelic drugs may often be used with other addictive drugs, but are not regarded as having physiologically addicting properties such as tolerance or withdrawal syndromes. Psychological dependency, however, has been noted with hallucinogens and other psychedelics. Complications from traumatic experiences and emotions are noted as unpredictable responses to hallucinogens (NIDA, 2010a).

Summary and Some Final Notations

Most current research and treatment approaches point to the multiple genetic and environmental factors in attempting to better understand all addictions, and emphasize treating the whole person (Center for Substance Abuse Treatment [CSAT], 2008). Although promising genetic research into addiction (Conner et al., 2005) has been conducted in the previous decade, researchers have not yet defined a single physiological or neurobiological marker as the key link to predicting or diagnosing addiction (Doweiko, 2015; Volkow & Baler, 2013).

This chapter provided the reader with information to better inform and prepare him-or herself to be an effective counselor. Comprehensive information about the neurobiology and physiological factors regarding addiction indicate how much progress has been made in our understanding of addiction. In addition, various substances of addiction were examined. Finally, it is important to conclude that continued evidence-based research remains key for providing effective addictions counseling.

MyCounselingLab

Visit the MyCounselingLab site for *Foundations of Addictions Counseling*, Third Edition to enhance your understanding of concepts. You'll have the opportunity to practice your skills through video- and case-based exercises. You will find sets of questions to help you prepare for your certification exam with *Licensure Quizzes*. There is also a Video Library that provides taped counseling sessions, ethical scenarios, and interviews with helpers and clients.

Useful Websites

The following websites provide additional information relating to the chapter topics:

Al-Anon and Alateen

www.al-anon.org/

Alcoholics Anonymous World Services, Inc.

www.alcoholics-anonymous.org/

Center for Substance Abuse Treatment (CSAT)

www.samhsa.gov

Cocaine Anonymous World Services, Inc.

www.ca.org/

Genetic Bioinformatics

genenetwork.org

Information on the Links Between HIV/AIDS and Drug Use

HIV.drugabuse.gov

Motivational Interviewing Information

www.motivationalinterviewing.org/

Narcotics Anonymous

www.na.org/

National Clearinghouse for Alcohol and Drug Information (NCADI)

ncadi.samhsa.gov/

National Council on Alcoholism and Drug Dependence, Inc. (NCADD)

www.ncadd.org

National Institute on Alcohol Abuse and Alcoholism (NIAAA)

www.niaaa.nih.gov

National Institute on Drug Abuse (NIDA)

www.nida.nih.gov

NIDA for Teens—The Science Behind Drug Abuse

www.teens.drugabuse.gov

Office of National Drug Control Policy (ONDCP)

www.whitehousedrugpolicy.gov

Screening and Brief Interventions

beta.samhsa.gov/sbirt

Substance Abuse and Mental Health Services Administration (SAMHSA), Department of Health and Human Services

www.samhsa.gov/

References

- Amen, D. G. (2005). *Making a good brain great: The Amen Clinic program for achieving and sustaining optimal mental performance*. New York, NY: Harmony Books.
- American College of Surgeons. (2006). *Resources for optimal care of the injured patient: 2006*. Chicago, IL: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Breggin, P. R., & Cohen, D. (2007). *Your drug may be your problem: How and why to stop taking psychiatric medications* (rev. ed.). Philadelphia, PA: Da Capo Press.
- Briggs, C. A., & Pepperell, J. L. (2009). *Women, girls, and addiction: Celebrating the feminine in counseling treatment and recovery*. New York, NY: Routledge.
- Center for Substance Abuse Treatment. (2008). *Managing depressive symptoms in substance abuse clients during early recovery. Treatment Improvement Protocol (TIP) Series 48* (DHHS Publication No. SMA 08-4353). Rockville, MD: SAMHSA.
- Centers for Disease Control and Prevention. (2009). *The issue: Excessive drinking and injuries*. Retrieved from <http://www.cdc.gov/injuryresponse/alcohol-screening/>
- Centers for Disease Control and Prevention. (2013). *Impaired driving: Get the facts*. Retrieved from http://www.cdc.gov/Motorvehiclesafety/Impaired_Driving/impaired-driv_factsheet.html
- Conner, B. T., Noble, E. T., Berman, S. M., Oskaragoz, T., Ritchie, T., Antolin, T., & Sheen, C. (2005). DRD2 genotypes and substance use in adolescent children of alcoholics. *Drug and Alcohol Dependence*, 79, 379-387.
- Crane, E. H., & Lemanski, N. (2004). *Benzodiazepines in drug abuse-related emergency department visits: 1995-2002, The DAWN Report*. Rockville, MD: Office of Applied Studies, Substance Abuse & Mental Health Services Administration.
- Crawford, M. J., Patton, R., Touquet, R., Drummond, C., Byford, S., Barrett, B., . . . , Henry, J. A. (2004). Screening and referral for brief intervention of alcohol-misusing

- patients in an emergency department: A pragmatic randomized controlled trial. *Lancet*, 364, 1334–1339.
- Crews, F. T. (2008). Alcohol-related neurodegeneration and recovery. *Alcohol Research & Health*, 31(3), 377–388.
- Doweiko, H. E. (2009). *Concepts of chemical dependency* (7th ed.). Belmont, CA: Thomson Brooks/Cole.
- Doweiko, H. E. (2015). *Concepts of chemical dependency* (9th ed.). Belmont, CA: Brooks/Cole.
- Drug Enforcement Agency. (2013). *Successes in the fight against drugs*. Retrieved from www.justice.gov/dea/resource-center/2012_successes.pdf
- Dunn, C., Rivara, F. P., Donovan, D., Fan, M. Y., Russo, J., Jurkovich, G., & Zatzick, D. (2008). Predicting adolescent alcohol drinking patterns after major injury. *The Journal of Trauma: Injury, Infection, and Critical Care*, 65(3), 736–740.
- Dziegielewska, S. F., & Suris, N. (2005). Heroin and other opiates. In S. F. Dziegielewska (Ed.), *Understanding substance addictions: Assessment and intervention* (pp. 150–173). Chicago, IL: Lyceum Books, Inc.
- Erickson, S. (2001). Etiological theories of substance abuse. In P. Stevens & R. L. Smith (Eds.), *Substance abuse counseling: Theory and practice* (2nd ed., pp. 77–112). Upper Saddle River, NJ: Prentice-Hall.
- Falkowski, C. L. (2000). *Dangerous drugs: An easy-to-use reference for parents and professionals*. Center City, MN: Hazelden.
- Gentilello, L., Rivara, F., Donovan, D., Jurkovich, G. J., Daranciang, E., Dunn, C. W., . . . , Ries, R. R. (1999). Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Annals of Surgery*, 230, 473–483.
- Gilbertson, R., Prather, R., & Nixon, S. J. (2008). The role of selected factors in the development and consequences of alcohol dependency. *Alcohol Research & Health*, 31, 389–399.
- Hall, J. (2004, May 18). Ephedrine ban has holes. *The Free Lance-Star*. Retrieved from <http://www.freelancestar.com/News/FLS/2004/052004/05182004/1360590>
- Healy, J. (2014, February 20). Colorado expects to reap tax bonanza from legal marijuana sales. *The New York Times*. Retrieved from <http://www.nytimes.com/2014/02/21/us/colorado-expects-to-reap-tax-bonanza-from-legal-marijuana-sales.html>
- Hitzemann, R., & Oberbeck, D. (2008). Strategies to study the neuroscience of alcoholism: Introduction. *Alcohol Health & Research*, 31, 231–232.
- Horton, E. G., Diaz, N., Peluso, P. R., Mullaney, D., Weiner, M., & McIlveen, J. W. (2009). Relationships between trauma, posttraumatic stress disorder symptoms, dissociative symptoms, and lifetime heroin use among individuals who abuse substances in residential treatment. *Journal of Addictions & Offender Counseling*, 29, 81–95.
- Inaba, D. S., & Cohen, W. E. (2007). *Uppers, downers, all-arounders* (6th ed.). Medford, OR: CNS Productions, Inc.
- Inciardi, J. A., & Goode, J. L. (2004). OxyContin: Miracle medicine or problem drug? In J. C. Inciardi & K. McElrath (Eds.), *The American drug scene* (4th ed., pp. 163–173). Los Angeles, CA: Roxbury Publishing.
- Inciardi, J. A., & McElrath, K. (Eds.). (2004). *The American drug scene* (4th ed.). Los Angeles, CA: Roxbury Publishing.
- James, R. K., & Gilliland, B. E. (2005). *Crisis intervention strategies*. Belmont, CA: Thomson Brooks/Cole.
- Johnston, L. D. (2010). *Monitoring the future: National survey results on drug use, 1975–2008: Volume II: College students*. Darby, PA: DIANE Publishing.
- Juliano, L. M., Huntley, E. D., Harrell, P. T., & Westerman, A. T. (2012). Development of the Caffeine Withdrawal Symptom Questionnaire: Caffeine withdrawal symptoms cluster into 7 factors. *Drug and Alcohol Dependence*, 124(3), 229–234.
- Kahn, D. E., Ferraro, N., & Benveniste, R. J. (2012). 3 cases of primary intracranial hemorrhage associated with “molly,” a purified form of 3,4-methylenedioxymethamphetamine (MDMA). *Journal of the Neurological Sciences*, 323(1-2), 257–260. doi: 10.1016/j.jns.2012.08.031
- Knapp, C. (1996). *Drinking: A love story*. New York, NY: Dell Publishing.
- Kranzler, H. R., & Li, T.-K. (2008). What is addiction? *Alcohol Research & Health*, 31, 93–95.
- Leontiva, L., Horn, K., Helmkamp, J., Furbee, M., Jarrett, T., & Williams, J. (2009). Counselors’ reflections on the administration of screening and brief intervention for alcohol problems in the emergency department and 3-month follow-up outcome. *Journal of Critical Care*, 24, 273–279.
- Lovinger, D. M. (2008). Communication networks in the brain: Neurons, receptors, neurotransmitters and alcohol. *Alcohol Research & Health*, 31, 196–214.
- Lubman, D. I., Yücel, M., & Pantelis, C. (2004). Addiction, a condition of compulsive behaviour? Neuroimaging and neuropsychological evidence of inhibitory dysregulation. *Addiction*, 99, 1491–1502.
- Lyman, R. (2014, February 26). Pivotal point is seen as more states consider legalizing marijuana. *The New York Times*. Retrieved from <http://www.nytimes.com/2014/02/27/us/momentum-is-seen-as-more-states-consider-legalizing-marijuana.html>
- McGrath, J., Welham, J., Scott, J., Varghese, D., Degenhardt, L., Hayatbakhsh, M. R., . . . , Najman, J. M. (2010). Association between cannabis use and psychosis-related outcomes using sibling pair analysis in a cohort of

- young adults. *Archives of General Psychiatry*, 67, E1–E8. doi:10.1001/archgenpsychiatry.2010.6
- Miller, M. A. (2004). History and epidemiology of amphetamine abuse in the United States. In J. C. Inciardi & K. McElrath (Eds.), *The American drug scene* (4th ed., pp. 252–266). Los Angeles, CA: Roxbury Publishing.
- Miller, T. R., Levy, D. T., Spicer, R. S., & Taylor, D. M. (2006). Societal costs of underage drinking. *Journal of Studies on Alcohol*, 67, 519–528.
- Moyers, W. C., & Ketcham, K. (2006). *Broken: My story of addiction and redemption*. New York, NY: Penguin Books Ltd.
- National Collegiate Athletic Association. (2001). *NCAA study of substance use habits of college student-athletes*. Indianapolis, IN: Author.
- National Collegiate Athletic Association. (2006). *NCAA study of substance use of college student-athletes*. Indianapolis, IN: Author.
- National Highway Traffic Safety Administration. (2004, January 15). *The economic burden of traffic crashes on employers*. Retrieved from <http://www.nhtsa.dot.gov/people/injury/airbags/EconomicBurden/index.html>
- National Highway Traffic Safety Administration. (2012). *Traffic safety facts: Alcohol-impaired driving*. Retrieved from <http://www.nrd.nhtsa.dot.gov/Pubs/811700.pdf>
- National Institute on Alcohol Abuse and Alcoholism. (2005). *Alcohol: A women's health issue* (NIH Publication No. 03–4956). Rockville, MD: Author.
- National Institute on Alcohol Abuse and Alcoholism. (2014, February). *Alcohol facts and statistics*. Retrieved from <http://niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/alcohol-facts-and-statistics>
- National Institute on Drug Abuse. (2005). *Prescription drugs: Abuse and addiction*. Research Report Series. Retrieved from <http://www.drugabuse.gov/ResearchReports/Prescription/prescription.html>
- National Institute on Drug Abuse. (2006). *Medical consequences of drug abuse*. Retrieved from <http://www.drugabuse.gov/consequences/>
- National Institute on Drug Abuse. (2007). *The reward pathway*. Retrieved from <http://www.drugabuse.gov/publications/teaching-packets/understanding-drug-abuse-addiction/section-i/4-reward-pathway>
- National Institute on Drug Abuse. (2010a). *Drugs, brains, and behavior: The science of addiction* (NIH Pub. No. 10–5605). Retrieved from www.nida.nih.gov/scienceofaddiction
- National Institute on Drug Abuse. (2010b). *Drugs change the ways neurons communicate*. Retrieved from <http://science.education.nih.gov/supplements/nih2/addiction/guide/lesson3-1.htm>
- National Institute on Drug Abuse. (2012a). *Commonly abused drugs*. Retrieved from <http://www.drugabuse.gov/DrugPages/DrugsOfAbuse.html>
- National Institute on Drug Abuse. (2012b). *Drug facts: Synthetic cathinones ("bath salts")*. Retrieved from <http://www.drugabuse.gov/publications/drugfacts/synthetic-cathinones-bath-salts>
- National Institute on Drug Abuse. (2013). *Drug facts: MDMA (ecstasy or molly)*. Retrieved from <http://www.drugabuse.gov/publications/drugfacts/mdma-ecstasy-or-molly>
- National Institute on Drug Abuse. (2014a). *Drug facts: Nationwide trends*. Retrieved from <http://www.drugabuse.gov/publications/drugfacts/nationwide-trends>
- National Institute on Drug Abuse. (2014b). *Emerging trends*. Retrieved from <http://www.drugabuse.gov/drugs-abuse/emerging-trends>
- National Institute on Drug Abuse. (2014c). *Methamphetamine*. Research Report Series Drug Facts. Retrieved from <http://www.drugabuse.gov/sites/default/files/drugfactsmeth.pdf>
- O'Brien, M. C., Reboussin, B., Veach, L. J., & Miller, P. R. (2012). *Robert Wood Johnson Grant # 65032: The Teachable Moment Study*. Unpublished research report.
- Oscar-Berman, M., & Marinkovic, K. (2004). *Alcoholism and the brain: An overview*. Retrieved from <http://pubs.niaaa.nih.gov/publications/arh27-2/125-133.pdf>
- Physician's desk reference* (56th ed.). (2002). Montvale, NJ: Thomson PDR.
- Pietrzykowski, A. Z., & Treistman, S. N. (2008). The molecular basis of tolerance. *Alcohol Research & Health*, 31(4), 298–309.
- Prentice, W. E. (2003). *Arnheim's principles of athletic training: A competency-based approach* (11th ed.). New York, NY: McGraw Hill.
- Procon.org. (n.d.). *13 states with pending legislation to legalize marijuana*. Retrieved from <http://medicalmarijuana.procon.org/view.resource.php?resourceID=002481>
- Procon.org. (n.d.). *20 legal medical marijuana states and DC: Laws, fees, and possession limits*. Retrieved from <http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881>
- Prosser, J. M., & Nelson, L. S. (2012). The toxicology of bath salts: A review of synthetic cathinones. *Journal of Medical Toxicology*, 8(1), 33–42. doi:10.1007/s13181-011-0193-z
- Riegel, A. C., & Kalivas, P. W. (2010). Neuroscience: Lack of inhibition leads to abuse. *Nature*, 463, 743–744. doi:10.1038/463743a
- Rouaud, T., Lardeux, S., Panayotis, N., Paleressompouille, D., Cador, M., & Baunez, C. (2009). Reducing the desire for cocaine with subthalamic nucleus deep brain

- stimulation. *Proceedings of the National Academy of Sciences*, 107(3), 1196–1200. Retrieved from <http://www.pnas.org/cgi/doi/10.1073/pnas.0908189107>
- Schermer, C. R. (2005). Feasibility of alcohol screening and brief intervention. *The Journal of Trauma: Injury, Infection, and Critical Care*, 59(3), S119–S123.
- Schnabel, J. (2009). Neuroscience: Rethinking rehab. *Nature*, 458(7234), 25–27.
- Scott, M. S. (2002). Clandestine drug labs. *Problem-Oriented Guides for Police*, No 16. Washington, DC: U.S. Department of Justice.
- Siegal, H. A., & Inciardi, J. A. (2004). A brief history of alcohol. In J. C. Inciardi & K. McElrath (Eds.), *The American drug scene* (4th ed., pp. 74–79). Los Angeles, CA: Roxbury Publishing.
- Spicer, J. (1993). *The Minnesota Model: The evolution of the multi-disciplinary approach to addiction recovery*. Center City, MN: Hazelden Educational Materials.
- Spirito, A. (2009). Alcohol Education Inventor—Revised: What every mental health professional should know about alcohol. *Journal of Substance Abuse Treatment*, 37, 41–53.
- Stevens, P. (2009). Introduction to substance abuse counseling. In P. Stevens & R. L. Smith (Eds.), *Substance abuse counseling* (4th ed., pp. 1–30). Upper Saddle River, NJ: Pearson Education, Inc.
- Substance Abuse and Mental Health Services Administration. (2005). Characteristics of primary tranquilizer admissions: 2002. *The DASIS Report*. Rockville, MD: Office of Applied Studies, SAMHSA. Retrieved from <http://www.oas.samhsa.gov/2k5/tranquilizerTX/tranquilizerTX.htm>
- Substance Abuse and Mental Health Services Administration. (2007). *Alcohol screening and brief intervention for trauma patients: Committee on Trauma quick guide* (DHHS Publication No SMA 07–4266). Rockville, MD: SAMHSA.
- Substance Abuse and Mental Health Services Administration. (2009, October 15). *The NSDUH Report: Trends in tobacco use among adolescents: 2002 to 2008*. Rockville, MD: Office of Applied Studies, SAMHSA.
- Substance Abuse and Mental Health Services Administration. (2013). *Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings* (NSDUH Series H-46, HHS Publication No. SMA 13–4795). Rockville, MD: SAMHSA.
- Sullivan, E. V., & Pfefferbaum, A. (2005). Neurocircuitry in alcoholism: A substrate of disruption and repair [Electronic version]. *Psychopharmacology*, 180, 583–594.
- Taffe, M. A., Kotzebue, R. W., Crean, R. D., Crawford, E. F., Edwards, S., & Mandyam, C. D. (2010). Long-lasting reduction in hippocampal neurogenesis by alcohol consumption in adolescent nonhuman primates. *Proceedings of the National Academy of Science*, 107(24), 11104–11109.
- Taylor, J. B. (2006). *My stroke of insight: A brain scientist's personal journey*. New York, NY: Viking.
- Toumbourou, J. W., Stockwell, T., Neighbors, C., Marlatt, G. A., Sturge, J., & Rehm, J. (2007). Interventions to reduce harm associated with adolescent substance use. *The Lancet*, 369, 1391–1401.
- van Wormer, K., & Davis, D. R. (2013). *Addiction treatment: A strengths perspective* (3rd ed.). Pacific Grove, CA: Brooks/Cole.
- Volkow, N. D., & Baler, R. D. (2013). Brain imaging biomarkers to predict relapse in alcohol addiction. *JAMA Psychiatry*, 70, 661–663.
- Watson, J. C. (2002). Assessing the potential for alcohol-related issues among college student-athletes. *Athletic Insight*, 4(3). Retrieved from <http://www.athleticinsight.com/Vol4Iss3/AlcoholAssessment.htm>
- Weil, A., & Rosen, W. (1983). *Chocolate to morphine*. Boston, MA: Houghton Mifflin.
- White, W. L. (1998). *Slaying the dragon: The history of addiction treatment and recovery in America*. Bloomington, IL: Chestnut Health Systems.
- Wiedland, D. M., Halter, M. J., & Levine, C. (2012). Bath salts: They are not what you think. *Journal of Psychosocial Nursing and Mental Health Services*, 50(2), 17–21.
- Wilens, T., Adler, L., Adams, J., Sgambati, S., Rotrosen, J., Sawtelle, R., . . . Fusillo, S. (2008). Misuse and diversion of stimulants prescribed for ADHD: A systematic review of the literature. *Journal of the American Academy of Child and Adolescent Psychiatry*, 47(1), 21–31.
- Williams, R. W., & Lu, L. (2008). Integrative genetic analyses of alcohol dependence using the GeneNetwork Web resources. *Alcohol Research & Health*, 31, 275–277.
- Witkiewitz, K., Lustyk, M. K., & Bowen, S. (2013). Retraining the brain: A review of hypothesized neurobiological mechanisms of mindfulness-based relapse prevention. *Psychology of Addictive Behaviors*, 27, 351–365.
- Wu, N. S., Schairer, L. C., Dellor, E., & Grella, C. (2010). Childhood trauma and health outcomes in adults with comorbid substance abuse and mental health disorders. *Addictive Behaviors*, 35(1), 68–71.
- Yin, H. H. (2008). From action to habits: Neuroadaptations leading to dependence. *Alcohol Research & Health*, 31, 340–344.
- Zickler, P. (2002). Methamphetamine abuse linked to impaired cognitive and motor skills despite recovery of dopamine transporters. *NIDA Research Findings*, 17(1), 4–6.