

Internet Addiction: A Handbook and Guide to Evaluation and Treatment
Edited by Kimberly S. Young and Cristiano Nabuco de Abreu
Copyright © 2011 John Wiley & Sons, Inc.

P A R T I

Understanding Internet Behavior
and Addiction

C H A P T E R 1

Prevalence Estimates and Etiologic Models of Internet Addiction

KIMBERLY S. YOUNG, XIAO DONG YUE, and LI YING

INTERNET ADDICTION was first researched in 1996, and findings were presented at the American Psychological Association. The study reviewed over 600 cases of heavy Internet users who exhibited clinical signs of addiction as measured through an adapted version of the *DSM-IV* criteria for pathological gambling (Young, 1996). Since then, subsequent studies over the past decade have examined various aspects of the disorder. Early studies attempted to define Internet addiction and examined behavior patterns that differentiated compulsive from normal Internet usage. More recent studies examined the prevalence of Internet addiction and investigated the etiologic factors or causes associated with the disorder. Much of this examined the impact of computer-mediated communication on the way people will adapt to interactive features of the Internet, and initial studies from the United States spread into the United Kingdom and countries such as Russia, China, and Taiwan. As the problem has become more widespread, little is still understood as to the reasons why people become addicted to the Internet. This chapter presents the data associated with prevalence of Internet addiction, as available in various countries, to gather a sense of the scope of the problem. The chapter also provides the theoretical frameworks to understand the etiologic models or causal factors associated with the development of Internet addiction. From the academic perspective, this chapter helps identify future areas of research as new studies in the field continue to emerge. From the mental health perspective, the chapter will assist clinicians in developing more empirically sound methods to assess and potentially treat Internet-addicted clients.

PREVALENCE ACROSS CULTURES

Early research has investigated the prevalence of addictive use of the Internet. In one of the first studies, Greenfield (1999) partnered with ABCNews.com to survey Internet users. From 17,000 responses, the study estimated that 6% of Internet users fit the profile of Internet addiction. While this study relied on self-reported data, it did include a cross-sectional population and was considered one of the largest psychological surveys conducted solely on the Internet. Another well-known U.S. study, conducted by a team of researchers at Stanford University Medical Center, found that one in eight Americans suffered from one or more signs of Internet addiction (Aboujaoude, Koran, Gamel, Large, & Serpe, 2006).

Studies among college populations showed slightly higher prevalence rates than found in the general population of Internet users. Using various versions of the *DSM*-based criteria, at the University of Texas, Scherer (1997) found 13% of 531 campus students surveyed exhibited signs of Internet dependency. Morahan-Martin and Schumacher (1999) found that 14% of students at Bryant College in Rhode Island met the criteria, and Yang (2001) estimated that 10% of students met the criteria at the University of Taiwan. Conclusions suggested that college students had easier access to the Internet and it was more encouraged, contributing to the higher prevalence of addictive use on campuses.

Among adolescents, a study in Finland investigated the prevalence of Internet addiction among 12- to 18-year-olds. Findings suggested that 4.7% among girls met the definition of Internet addiction as assessed by Young's Internet Addiction Diagnostic Questionnaire (1998), and of boys 4.6% met the definition. Studies related to the prevalence of specific types of Internet abuse also emerged by the late 1990s. Studies on online sexual activities were the most prevalent, and estimates based on survey data showed that 9% of users fit signs of addiction related to sexually explicit material on the Internet (Cooper, 2002).

In 2001, Bai, Lin, and Chen reported the results of a survey to determine the prevalence of Internet addiction disorder among visitors to a virtual mental health clinic where 100 volunteer mental health professionals provide, at no charge, online answers to visitors' questions about mental problems. During the study period all visitors to the virtual clinic completed Young's eight-item Internet Addiction Diagnostic Questionnaire. Among the 251 clients, 38 clients or 15% met criteria for Internet addiction disorder. Clients who met the criteria did not differ significantly from those who did not in age, gender, education, marital status, occupation, or impending diagnosis. However, the rate of comorbid substance use disorder was significantly higher among clients who met the criteria for Internet addiction disorder than among those who did not.

In 2003, Whang, Lee, and Chang investigated the prevalence of Internet overuse in Korea. They used a modified version of Young's Internet Addiction

Scale, and 13,588 users (7,878 males, 5,710 females), out of 20 million from a major portal site in Korea, participated in this study. Among the sample, 3.5% had been diagnosed as Internet addicts (IAs), while 18.4% of them were classified as possible Internet addicts (PAs).

A study, I-Cube 2006, conducted by the Internet & Mobile Association of India, covering 65,000 individuals by household survey in 26 cities in India, says that about 38% of Internet users in that country have shown signs of heavy usage (about 8.2 hours per week). Young males, especially college students, form the major chunk of Internet user base. Indians go online for a number of activities, including e-mail and instant messaging (98%), job search (51%), banking (32%), bill payment (18%), stock trading (15%), and matrimonial search (15%).

There are limited numbers of studies estimating how common the issue of Internet addiction is in India. Kanwal Nalwa, PhD, and Archana Preet Anand, PhD, of the department of psychology, Punjabi University in India, conducted a study for preliminary investigation of the extent of Internet addiction in schoolchildren 16 to 18 years old in India (Nalwa & Anand, 2003). They identified two groups, dependents and nondependents. Dependents were found to delay other work to spend time online, lose sleep due to late-night logons, and feel life would be boring without the Internet. Not surprisingly, dependents spent more time online and scored higher on loneliness measures than the nondependents.

The understanding that Internet use can be a disorder is still in its initial stages in India. Since 2007, certain educational institutions, such as the Indian Institutes of Technology (IITs), a group of leading engineering universities, have been restricting campus Internet use during night hours because of reports of some suicides being linked to the presumed antisocial behavior that excessive Internet use promotes (Swaminath, 2008).

According to the most recent Statistical Report on Internet Addictions in China (Cui, Zhao, Wu, & Xu, 2006) by the China Youth Association for Internet Development, adolescent Internet addicts in China make up about 9.72% to 11.06% of the total number worldwide of adolescent Internet users. Specifically, of 162 million Internet users in China, those users who are younger than 24 years old occupy approximately 63% of the total number of Internet users, which amounts to about 100 million. Of these 100 million young users, about 9.72% to 11.06% are serious addicts, amounting to about 10 million young people.

Prevalence statistics vary widely across cultures and societies. In part, researchers are utilizing various instruments to define Internet addiction, making it harder to have consistency across studies. Further, these studies are confounded by various methodologies, some using online survey data posted to the World Wide Web using cross sections of populations, and some only targeting a specific campus or university. Generally, we can say that it seems that the prevalence of Internet addiction is the lowest among adolescents, with ranges of 4.6 to 4.7%. That number goes up among the general

population of Internet users, with ranges of 6 to 15% of the general population fitting the signs of addiction; and it goes up to 13 to 18.4% among college students, who appear to be the most at risk. These numbers estimate the scope of the problem and suggest that a significant proportion of online users may suffer one or more signs of Internet addiction.

ETIOLOGIC FACTORS

Addictions are defined as the habitual compulsion to engage in a certain activity or utilize a substance, notwithstanding the devastating consequences on the individual's physical, social, spiritual, mental, and financial well-being. Instead of addressing life's obstacles, tackling daily stress, and/or confronting past or present trauma, the addict responds maladaptively by resorting to a pseudo coping mechanism. Typically, addiction manifests both psychological and physical characteristics. Physical dependence occurs when an individual's body develops a dependence on a certain substance and experiences withdrawal symptoms upon discontinuing the consumption, such as drugs or alcohol. While initially an addictive substance induces pleasure to the user, his or her continued consumption is driven more by a need to eliminate the anxiety brought about by its absence, thus leading the individual to compulsive behavior. Psychological dependency becomes evident when the addict experiences withdrawal symptoms such as depression, cravings, insomnia, and irritability. Both behavioral addiction and substance addiction usually give rise to psychological dependence. The following outlines various models proposed to explain Internet addiction related to the psychological dependency. As a behavioral addiction, the focus on psychological issues that increase consumption of the Internet is helpful to aid in clinical understanding of why people overuse.

COGNITIVE-BEHAVIORAL MODEL

Caplan (2002) viewed technological addictions as a subset of behavioral addictions; Internet addiction featured the core components of addiction (i.e., salience, mood modification, tolerance, withdrawal, conflict, and relapse). From this perspective, Internet addicts displayed a salience for the activity, often experiencing cravings and feeling preoccupied with the Internet when offline. He also suggested that using the Internet as a way to escape troubling feelings, developing a tolerance for the Internet to achieve satisfaction, experiencing withdrawal when reducing Internet use, suffering from increased conflicts with others because of the activity, and relapsing back to the Internet were also signs of addiction. This model has been applied to behaviors such as sex, running, food consumption, and gambling (Peele, 1985; Vaillant, 1995) and is useful to examine pathological or addictive Internet use.

Davis (2001) introduced a cognitive-behavioral theory of pathological Internet use (PIU) that attempts to model the etiology, development, and outcomes

associated with PIU. Davis characterizes PIU as more than a behavioral addiction; instead he conceptualizes PIU as a distinct pattern of Internet-related cognitions and behaviors that result in negative life outcomes. Davis proposes that there are two distinct forms of PIU: specific and generalized. Specific PIU involves overuse or abuse of content-specific functions of the Internet (e.g., gambling, stock trading, viewing pornography). Moreover, Davis argues that such stimuli-specific behavioral disorders would likely be manifested in some alternative way if the individual were unable to access the Internet. Generalized PIU is conceptualized as a multidimensional overuse of the Internet itself that results in negative personal and professional consequences. Symptoms of generalized PIU include maladaptive cognitions and behaviors related to Internet use that are not linked to any specific content. Rather, generalized PIU occurs when an individual develops problems due to the unique communication context of the Internet. In other words, the person is drawn to the experience of being online in and of itself, and demonstrates a preference for virtual, rather than face-to-face, interpersonal communication.

Within this context, researchers have suggested that moderated and controlled use of the Internet is most appropriate to treat Internet addiction (Greenfield, 2001; Orzack, 1999). Specifically, cognitive behavioral therapy (CBT) has been suggested as the preferred mode of therapy treatment for compulsive Internet use (Young, 2007). CBT is a familiar treatment based on the premise that thoughts determine feelings. In one study of 114 patients, CBT was used to teach patients to monitor their thoughts and identify those that trigger addictive feelings and actions while they learn new coping skills and ways to prevent a relapse. CBT required three months of treatment or approximately 12 weekly one-hour sessions. The early stage of therapy is behavioral, focusing on specific behaviors and situations where the impulse-control disorder causes the greatest difficulty. As therapy progresses, there is more of a focus on the cognitive assumptions and distortions that have developed and the effects of the compulsive behavior.

Specifically, research suggests that the focus of recovery should examine both computer behavior and noncomputer behavior (Hall & Parsons, 2001). Computer behavior deals with actual online usage with a primary goal of abstinence from problematic applications while retaining controlled use of the computer for legitimate purposes. For example, a lawyer addicted to Internet pornography would need to learn to abstain from adult web sites, while still being able to access the Internet to conduct legal research and to e-mail clients. Noncomputer behavior focuses on helping clients develop positive lifestyle changes for life without the Internet. Life activities that do not involve the computer, such as offline hobbies, social gatherings, and family activities, are encouraged. Similarly to food addiction, where recovery can be objectively measured through caloric intake and weight loss, online addicts can objectively measure success through maintaining abstinence from problematic online applications and increasing meaningful offline activities. Once a baseline has been established, behavioral therapy is used to relearn how to

use the Internet to achieve specific outcomes, such as moderated online usage and more specifically abstinence from problematic online applications and controlled use for legitimate purposes. Behavior management for both computer usage and adaptive noncomputer behavior focuses on current online behavior.

From a cognitive perspective, addictive thinkers will for no logical reason feel apprehensive when anticipating disaster (Hall & Parsons, 2001). While addicts are not the only people who worry and anticipate negative happenings, they tend to do this more often than other people. Young (1998) first suggested that this type of catastrophic thinking might contribute to compulsive Internet use in providing a psychological escape mechanism to avoid real or perceived problems. Subsequent studies hypothesized that other maladaptive cognitions such as overgeneralizing or catastrophizing and negative core beliefs also contribute to compulsive use of the Internet (Caplan, 2002; Caplan & High, 2007; Davis, 2001; LaRose, Mastro, & Eastin, 2001). Those who suffer from negative thinking often suffer from low self-esteem and maintain pessimistic attitudes. They may be the ones drawn the most to the anonymous interactive capabilities of the Internet in order to overcome these perceived inadequacies. Early treatment outcome studies show that CBT can be used to address these negative thoughts to overcome their personal feelings of low esteem and worth (Young, 2007). The cognitive model helps to explain why Internet users develop a habit or compulsive use and how negative self-thoughts maintain patterns of compulsive behavior.

NEUROPSYCHOLOGICAL MODEL

Scholars from mainland China have paid increasing attention to the problem of Internet addiction in Chinese society. In its 2005 report, the China Youth Association for Network Development (CYAND) puts forward, for the first time, a standard to judge the Internet addiction as having one prerequisite and three conditions (CYAND, 2005). The prerequisite is that the Internet addiction must severely jeopardize a young person's social functioning and interpersonal communication. An individual would be classified as an Internet addict as long as he or she meets any one of the following three conditions: (1) one would feel that it is easier to achieve self-actualization online than in real life, (2) one would experience dysphoria or depression whenever access to the Internet is broken or ceases to function; (3) one would try to hide his or her true usage time from family members. Ying, director of the Institute of Psychological Development for the CYAND, has proposed a neuropsychological chain model to account for the Internet-addictive behavior (Tao, Ying, Yue & Hao, 2007) (see Figure 1.1 and Table 1.1).

When examining the primitive drive associated with addiction, much of research stems from brain behavior related to chemical dependency. The pharmacological activation of brain reward systems is largely responsible for producing a drug's potent addictive properties. Personality, social, and genetic

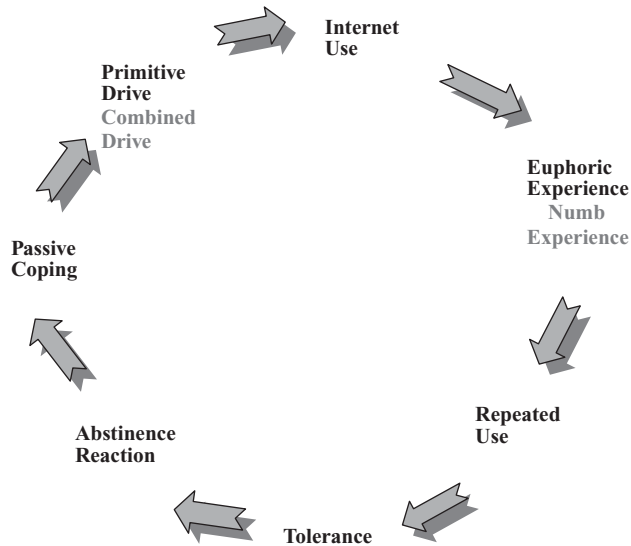


Figure 1.1 Neuropsychological chain model of Internet addiction

Table 1.1
Explanation of the Neuropsychological Link of Internet Addiction

Main Concept	Specific Explanation
Primitive drive	The instinct of an individual to pursue pleasure and avoid pain, which is representative of various motives and impulses to use the Internet.
Euphoric experience	The Internet activities stimulate the central nervous system of the individual, who will feel happy and satisfied. The feeling will drive the individual to continuously use the Internet and extend euphoria. Once addiction is formed, the euphoric experience will soon be transformed into a habit and numbness state.
Tolerance	Because of repeated use of the Internet, the sensory threshold of the individual increases; in order to achieve the same happy experience, the user must increase time and passion. High-level tolerance is the springboard for Internet addiction and the result of reinforcement of euphoric experience concerning the Internet.
Abstinence reaction	The physical and psychological syndromes happen once the individual stops or after decreased Internet use, mainly including dysphoria, insomnia, emotional instability, irritability, and so on.
Passive coping	Passive behaviors accommodating to the environment form once the individual is confronted with frustration or receives outside harmful effects, which include passive behaviors such as adverse event imputation, cognition falsification, and the formed suppression, escape, and aggression.
Avalanche effect	The avalanche effect includes passive experience consisting of tolerance and abstinence reaction, and combined drive consisting of individual passive coping styles on the basis of the primitive drive of the individual.

factors may also be important, but the drug's effects on the central nervous system (CNS) remain the primary determinants of drug addiction. Nonpharmacological factors are likely to be important in influencing initial drug use and in determining how rapidly an addiction develops. For some substances, nonpharmacological factors may interact with the drug's pharmacological action to produce compulsive substance use. In these cases, addictive behavior may involve use of substances that are generally not considered addictive.

Dopamine is one of a number of neurotransmitters found in the central nervous system. Dopamine has received special attention from psychopharmacologists because of its apparent role in the regulation of mood and affect and because of its role in motivation and reward processes. Although there are several dopamine systems in the brain, the mesolimbic dopamine system appears to be the most important for motivational processes. Some addictive drugs produce their potent effects on behavior by enhancing mesolimbic dopamine activity (Di Chiara, 2000). The neurochemical connection to behavioral addictions such as gambling or food have yet to be made, but early studies have suggested that neurochemical processes play a role in all addiction, whether to substances or to behaviors (Di Chiara, 2000).

The proposed model of brain reward circuitry in addiction involves the increase of dopamine when certain areas of the brain are stimulated. The brain has specialized pathways that mediate reward and motivation. Direct electrical stimulation of the medial forebrain bundle (MFB) produces intensely rewarding effects. Psychomotor stimulants and opiates can also activate this reward system by their pharmacological actions in the nucleus accumbens and ventral tegmental area, respectively. The ventral tegmental action of opiates probably involves an endogenous opioid peptide system (ENK), but the anatomical location of that system has not yet been identified. Natural rewards (e.g., food, sex) and other substances (e.g., caffeine, ethanol, nicotine) may also activate this brain reward system (Di Chiara, 2000).

As we discover new areas of neurochemical processes in addictive behavior, it is essential to understand the physical and psychological effects. Researchers have long associated addiction with changes in neurotransmitters in the brain, and some theorists have argued that all addiction, independent of type (sex, food, alcohol, the Internet), can be triggered by similar changes in the brain. To this end, new studies have been conducted on pharmacological treatments of Internet addiction. At Mount Sinai School of Medicine in New York, researchers tested the use of the antidepressant escitalopram (Lexapro, from Forest Pharmaceuticals) in 19 adult subjects who had impulsive-compulsive Internet usage disorder, defined as time-consuming and uncontrollable, or distressing Internet usage resulting in social, occupational, or financial difficulties (Dell'Osso et al., 2008). Study participants took escitalopram in an open-label phase for 10 weeks, and then those who responded were randomized in a double-blind, placebo-controlled nine-week phase to continue with this drug or switch to a placebo. During the open-label phase, addicts had a very healthy response to the drug; on average, the number of hours spent

online went from 36 hours to 16 hours. While this study is one of the first, and further research in larger trials is needed to investigate drug efficacy for addressing Internet addiction, it is important to identify the impact of drug treatment with this disorder and other associated pharmacological treatments in compulsive disorders.

COMPENSATION THEORY

The Institute of Psychology of the Chinese Academy of Sciences proposed a “compensation theory” to account for the causes of young people’s Internet addiction in China. Specifically, Tao (2005) argues that the “single assessment system” for academic excellence has led many young people to look for “spiritual compensation” from the online activities. In addition, by engaging in Internet activities, the young people also look for compensation for self-identity, self-esteem, and social networking. For the past 20 years, Chinese young people have used poetry, the guitar, and sports to express their needs and feelings, whereas now they tend to use electronic games and other Web-based tools.

Previous research has also examined the notion of adults as well as children using the Internet as a means to compensate or cope with deficits in self-esteem, identity, and relationships. Using the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), one early study found higher levels of loneliness among students who were considered pathological or addicted users of the Internet (Morahan-Martin & Schumacher, 2003). In general, Internet addicts have difficulty forming intimate relationships with others and hide behind the anonymity of cyberspace to connect with others in a nonthreatening way. Online, a person can create a social network of new relationships. With routine visits to a particular group (i.e., a specific chat area, online game, or Facebook), a person can establish a high degree of familiarity with other group members, thus creating a sense of community. Like all communities, the cyberspace culture has its own set of values, standards, language, signs, and artifacts. Individual users adapt to the current norms of the group. Existing solely online, the group often disregards normal conventions about privacy (e.g., by posting personal messages to public bulletin boards or chat rooms); it exists in a parallel time and space and is kept alive only by users connecting with one another via the computer.

Once membership in a particular group has been established, Internet addicts rely on the conversation exchange for companionship, advice, understanding, and even romance. The ability to create a virtual community leaves the physical world behind to the degree that well-known, fixed, and visual people no longer exist, and anonymous online users form a meeting of the minds living in a purely text-based society. Through the exchange of online messages, users compensate for what they may lack in real life (Caplan & High, 2007). They may be able to use chat, instant messaging, or social networking to find psychological meaning and connection, quickly form

intimate bonds, and feel emotionally close to others. The formation of such virtual arenas creates a group dynamic of social support to answer a deep and compelling need in people whose real lives are interpersonally impoverished and devoid of intimacy. Some life circumstances, such as being a homebound caretaker, disabled person, retired individual, or homemaker, can limit a person's access to others. In these cases, individuals are more likely to use the Internet as an alternative means to develop the social foundations that are lacking in their immediate environments. In other cases, those who feel socially awkward or who have difficulty developing healthy relationships in real life find that they are able to express themselves more freely and find the companionship and acceptance missing in their lives.

In the now-famous Home Net Study, Krant et al. (1997) also found that social isolation and depression were correlated with Internet usage. The researchers at Carnegie Mellon University conducted one of the few longitudinal studies on the psychological impact of Internet use. Researchers there randomly selected families with no prior computer experience and gave them computers and instructions on Internet use. After one to two years, increased use of the Internet was associated with decreased family communication and reduced size of the local social circle. The researchers' findings showed that even within small amounts of Internet use, participants experienced increased loneliness and depression. Increases in loneliness and decreases in social support were particularly pronounced for the youth. Researchers have found that the more Internet-addicted users were, the more likely they used the Internet to escape (Young & Rogers, 1997). When they got stressed out by work or were just depressed, Internet addicts showed a high tendency to access the Internet and reported higher degrees of loneliness, depressed mood, and compulsivity compared to the other groups. Depression has been linked to Internet overuse in general. It has not been shown whether depression causes the addiction or if being addicted causes depression, but studies have shown the two syndromes are highly correlated, reinforcing one other.

As researchers continue to understand the dynamics associated with Internet addiction, it is important for clinicians to understand how users may compensate for what is missing in their lives through their Internet use. Internet use can become highly reinforcing to overcome low self-esteem, social awkwardness, loneliness, and depression. Those who suffer from these problems may be more at risk and vulnerable to developing the disorder. Treatment models with this in mind need to examine other comorbid factors the client may be dealing with. That is, is the client using Facebook to fulfill missing social needs? Is the client using online relationships to make friends because of social phobia? Is the client using online games to feel powerful when suffering from low self-esteem? Is the client using the Internet to cope with clinical depression? Helping the client to understand how he or she uses the Internet to compensate for missing social or psychological needs will be a useful first step toward recovery.

SITUATIONAL FACTORS

Situational factors play a role in the development of Internet addiction. Individuals who feel overwhelmed or who experience personal problems or who experience life-changing events such as a recent divorce, relocation, or a death can absorb themselves in a virtual world full of fantasy and intrigue (Young, 2007). The Internet can become a psychological escape that distracts a user from a real-life problem or difficult situation. For instance, someone going through a painful divorce can turn to online friends to help cope with the situation. For someone who has recently been relocated by a new job or within the same company, starting over can be lonely. As a means to cope with the loneliness experienced by the new surroundings, a user can turn to the Internet to fill the void of those lonely evenings. The user may also suffer from a history of alcohol or drug dependency, only to find in compulsive use of the Internet a physically safe alternative to their addictive tendency. They believe that being addicted to the Internet is medically safer than being addicted to drugs or alcohol, yet the compulsive behavior still avoids the unpleasant situation underlying addiction.

Users who suffer from multiple addictions are at the greatest risk to suffer from Internet addiction. People who have addictive personalities may be more likely to use alcohol, cigarettes, drugs, food, or sex as a way of dealing with problems. They have learned to cope with situational difficulties through addictive behavior, and the Internet seems a convenient, legal, and physically safe distraction from those same real-life problems. In cases where an Internet addict also suffers from a sexual or gambling addiction, the Internet serves as a new outlet to engage in sexual or gambling behavior. Sexual compulsives discover a new source for sexual gratification through online pornography and anonymous sex chat. The Internet allows them a way to continue in the sexual behavior without the physical need of visiting strip clubs or prostitutes, and provides a new and socially acceptable way to cope. Those with a history of gambling addiction can visit virtual casinos and poker sites to gamble.

In China, there is one cultural factor not present in U.S. studies. Some have argued that the Chinese educational system constitutes the major situational factor for teenagers' Internet addictive behaviors (Tao, 2005; Tao et al., 2007). Dr. Ran Tao, director of the Center for Youth and Adolescent Development of the Beijing General Military Hospital, explains that as Chinese parents all hope their children have a bright future, and passing the college entrance examination has been a "gold index" for personal success, this has contributed significantly to children's pressure for learning and stress at school at the cost of their fun-seeking after school (Lin & Yan, 2001; Lin, 2002).

We see that situational stress, whether divorce, bereavement, recent loss of a job, or striving for academic success, can drive someone to utilize the Internet with greater intensity. Those individuals who use the Internet as a momentary escape or means of coping with situational stress may not initially be addicted

to the Internet. Their behavior may be temporary and even fade over time. However, in cases where the behavior becomes persistent and continuous, online activities can become all-consuming. Behavior progressively revolves around Internet use. Behavior adapts to more of a focus on applications that may have initially been required for work use, such as a BlackBerry device, or may have been an activity that the user did for recreation, such as a chat room or game. As behavior escalates, online use becomes more chronic and more ingrained and develops into a compulsive obsession. At this stage, life becomes unmanageable for the addict, as relationships or careers are jeopardized because of the compulsive behavior.

A person is vulnerable to addiction when that person feels a lack of satisfaction in life, an absence of intimacy or strong connections to other people, a lack of self-confidence or compelling interests, or a loss of hope (Peele, 1985, p. 42). In a similar manner, individuals who are dissatisfied or upset by a particular area or multiple areas of their lives have an increased likelihood of developing Internet addiction because they don't understand another way of coping (Young, 1998). For example, instead of making positive choices that will seek out fulfillment, alcoholics typically drink, which dulls the pain, avoids the problem, and keeps them in a status quo. However, as they become sober, they realize that their difficulties have not changed. Nothing is altered by drinking, yet it appears easier to drink than to deal with the issues head-on. Paralleling the alcoholics' behaviors, addictive users access the Internet to dull the pain, avoid the real problem, and keep things in status quo. However, once offline, they realize that nothing has changed. Such substitution for missing needs often allows the addict to temporarily escape the problem, but the substitute behaviors are not the means to solve any problems. Therefore, it is important for the therapist or treating practitioner to assess a client's current situation in order to determine if he or she is using the Internet as a security blanket to avoid an unhappy situation such as marital or job dissatisfaction, medical illness, unemployment, or academic instability.

IMPLICATIONS

Over the past decade a great deal has been published regarding Internet addiction and compulsive use of the Internet. While preliminary in nature, this research suggests that addictive use of the Internet has created a significant psychological and social problem. Of all the ways of measuring Internet addiction, *DSM*-based criteria appear to be the most accepted way to define the disorder. Recently, the American Psychiatric Association has considered including Internet addiction in the *DSM-V* (Block, 2008) and decided to include it in the appendix.

From the mental health perspective, Internet users who become addicted fear that the field has been slow to respond, as a limited number of recovery centers have dedicated services related to Internet addiction. To pursue such effective recovery programs, continued research is needed to better

understand the underlying motivations of Internet addiction. Future research should focus on how a psychiatric illness such as depression or obsessive-compulsive disorder plays a role in the development of compulsive Internet use. Longitudinal studies may reveal how personality traits, family dynamics, or interpersonal skills influence the way people utilize the Internet. Last, further outcome studies are needed to determine the efficacy of specialized therapy approaches to treat Internet addiction and compare these outcomes against traditional recovery modalities. From the technical perspective, new software designed to prevent Internet misuse and overuse has emerged as monitoring software for companies such as WebSense or Spy Monkey for personal use to manage online time.

Studies to specifically examine the use of 12-step programs have not been documented. The field appears too young to have achieved relevant data on the potential effectiveness of support groups as part of the treatment protocol with Internet-addicted clients. It has been discussed in the literature that research on Internet addiction has been problematic. Several studies lack the empirical robustness of experimental design, relying more on survey data and self-reported data from self-selected populations. The research also lacks proper use of control groups, and in some cases it utilizes a small number of anecdotal case studies and questionnaires to draw conclusions. While methodological problems remain, studies have replicated results in various parts of the world, and certain trends can be drawn from numerous viewpoints presented in the field.

REFERENCES

- Aboujaoude, E., Koran, L. M., Gamel, N., Large, M. D., & Serpe, R. T. (2006). Potential markers for problematic Internet use: A telephone survey of 2,513 adults. *CNS Spectrum, The Journal of Neuropsychiatric Medicine*, *11*(10), 750–755.
- Bai, Y.-M., Lin, C.-C., & Chen, J.-Y. (2001). The characteristic differences between clients of virtual and real psychiatric clinics. *American Journal of Psychiatry*, *158*, 1160–1161.
- Block, J. J. (2008). Issues for DSM-V: Internet addiction. *American Journal of Psychiatry*, *165*, 306–307.
- Caplan, S. E. (2002). Problematic Internet use and psychosocial well-being: Development of a theory-based cognitive-behavioral measurement instrument. *Computers in Human Behavior*, *18*, 553–575.
- Caplan, S. E., & High, A. C. (2007). Beyond excessive use: The interaction between cognitive and behavioral symptoms of problematic Internet use. *Communication Research Reports*, *23*, 265–271.
- China Youth Association for Network Development (CYAND). (2005). Report of China teenagers' Internet addiction information 2005 (Beijing, China).
- Cooper, A. (2002). *Sex & the Internet: A guidebook for clinicians*. New York: Brunner-Routledge.

- Cui, L. J., Zhao, X., Wu, Z. M., & Xu, A. H. (2006). A research on the effects of Internet addiction on adolescents' social development. *Psychological Science, 1*, 34–36.
- Davis, R. A. (2001). A cognitive behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187–195.
- Dell'Osso, B., Hadley, S., Allen, A., Baker, B., Chaplin, W. F., & Hollander, E. (2008). Ecitalopram in the treatment of impulsive-compulsive Internet usage disorder: An open-label trial followed by a double-blind discontinuation phase. *Journal of Clinical Psychiatry, 69*(3), 452–456.
- Di Chiara, G. (2000). Role of dopamine in the behavioural actions of nicotine related to addiction. *European Journal of Pharmacology, 393*(1–2), 295–314.
- Greenfield, D. N. (1999). Psychological characteristics of compulsive Internet use: A preliminary analysis. *CyberPsychology & Behavior, 2*, 403–412.
- Greenfield, D. N. (2001). Sexuality and the Internet. *Counselor, 2*, 62–63.
- Hall, A. S., & Parsons, J. (2001). Internet addiction: College students case study using best practices in behavior therapy. *Journal of Mental Health Counseling, 23*, 312–322.
- Krant, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1997). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*, 1017–1031.
- LaRose, R., Mastro, D., & Eastin, M. S. (2001). Understanding Internet usage: A social-cognitive approach to uses and gratifications. *Social Science Computer Review, 19*(4), 395–413.
- Lin, X. H. (2002). A brief introduction to Internet addiction disorder. *Chinese Journal of Clinical Psychology, 1*, 74–76.
- Lin, X. H., & Yan, G. G. (2001). Internet addiction disorder, online behavior and personality. *Chinese Mental Health Journal, 4*, 281–283.
- Morahan-Martin, J., & Schumacher, P. (1999). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*, 1–17.
- Morahan-Martin, J., & Schumacher, P. (2003). Loneliness and social uses of the Internet. *Computers in Human Behavior, 19*, 659–671.
- Nalwa, K., & Anand, A. (2003). Internet addiction in students: A cause of concern. *CyberPsychology & Behavior, 6*(6), 653–656.
- Orzack, M. H. (1999). Computer addiction: Is it real or is it virtual? *Harvard Mental Health Letter, 15*(7), 8.
- Peele, S. (1985). The concept of addiction. In S. Peele, *The meaning of addiction: Compulsive experience and its interpretation*. Lanham, MD: Lexington Books.
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*, 472–480.
- Scherer, K. (1997). College life online: Healthy and unhealthy Internet use. *Journal of College Development, 38*, 655–665.
- Swaminath, G. (2008). Internet addiction disorder: Fact or fad? Nosing into nosology. *Indian Journal of Psychiatry [serial online], 50*, 158–160. Available from <http://www.indianjpsychiatry.org/text.asp?2008/50/3/158/43622>.
- Tao, H. K. (2005). Teenagers' Internet addiction and the quality-oriented education. *Journal of Higher Correspondence Education (Philosophy and Social Sciences), 3*, 70–73.

- Tao, R., Ying, L., Yue, X. D., & Hao, X. (2007). *Internet addiction: Exploration and intervention*. [In Chinese]. Shanghai, China: Shanghai People's Press, 12.
- Vaillant, G. E. (1995). *The natural history of alcoholism revisited*. Cambridge, MA: Harvard University Press.
- Whang, L., Lee, K., & Chang, G. (2003). Internet over-users' psychological profiles: A behavior sampling analysis on Internet addiction. *CyberPsychology & Behavior*, 6(2), 143–150.
- Yang, S. (2001). Sociopsychiatric characteristics of adolescents who use computers to excess. *Acta Psychiatrica Scandinavica*, 104(3), 217–222.
- Young, K. S. (1996). Internet addiction: The emergence of a new clinical disorder. Poster presented at the 104th Annual Convention of the American Psychological Association in Toronto, Canada, August 16, 1996.
- Young, K. S. (1998). *Caught in the Net: How to recognize the signs of Internet addiction and a winning strategy for recovery*. New York: John Wiley & Sons.
- Young, K. S. (2007). Cognitive-behavioral therapy with Internet addicts: Treatment outcomes and implications, *CyberPsychology & Behavior*, 10(5), 671–679.
- Young, K. S., & Rogers, R. (1997). The relationship between depression and Internet addiction. *CyberPsychology & Behavior*, 1(1), 25–28.