Problematic Internet Use: Controversies and Implications for Practice

Faculty

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Audience

This course is designed for social workers, therapists, mental health counselors, and other members of the interdisciplinary team who work with individuals who have problematic Internet behaviors.

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Course Objective

The purpose of this course is to provide mental health professionals with the information necessary to identify pathologic Internet behaviors and provide interventions to halt problematic use of the Internet.

Learning Objectives

Upon completion of this course, you should be able to:

1. Discuss general Internet usage patterns.

2. Define and identify types of problematic Internet use.

3. Explain the current state of problematic Internet use research and barriers to improving knowledge.

4. Describe characteristics of the Internet that make it susceptible to compulsive behaviors.

5. Describe the prevalence of problematic Internet use.

6. Compare the theoretical perspectives used to explain problematic Internet use.

7. Identify risk factors for problematic Internet use.

8. Identify the signs of problematic Internet use.

9. Explain the social, familial, interpersonal, occupational, mental health, and physical consequences of problematic Internet use.

10. Evaluate approaches to the treatment of problematic Internet use.

INTRODUCTION

In 2021, nearly 60% of the world's population (4.66 billion people) were current Internet users [6]. The advancement of technology and the advent of the Internet have had a significant impact on daily life. The Internet has provided unlimited access to a wealth of information and has afforded the ability to communicate without the barrier of geographical location [1]. Characteristics of the Internet that make it extremely rewarding for users include ease of use, accessibility, low cost, efficiency, stimulation, and ease of communication.

The amount of time spent on the Internet has also significantly increased in the past two decades. It is estimated that users spend an average 8 hours and 14 minutes online every day [7]. This is a significant increase compared with 2013, when Americans spent an average of five hours per day on digital media (e.g., the Internet, mobile devices), which was itself an increase compared to three hours just three years earlier [2; 3; 4]. In 2023, it is projected that Americans will spend 4 hours and 35 minutes every day watching media on mobile devices [7]. In 2022, Internet users spent approximately 147 minutes per day just on social networking sites [11].

Because of the widespread use of the Internet and the staggering increase in amount of time spent online, some clinicians, scholars, and researchers have proposed that, like any substance or behavior, it is possible to become addicted to the Internet or to pathologically use the Internet. As a result, terms such as "problematic Internet use," "excessive Internet use," "net addiction," "Internet dependence," "compulsive Internet use," "pathologic Internet use," "Internetmania," and "online addiction" have emerged [5; 12; 99]. Differing theoretical perspectives and a lack of universally accepted definitions have caused controversy in the terminology used; therefore, for purposes of this course, the term "problematic Internet use" will be used to describe the overuse, inappropriate use, or compulsive use of the Internet. Please note that the use of this term does not connote endorsement of any one specific theoretical perspective.

INTERNET USAGE PATTERNS

In order to understand the impact of the Internet on personal lives, it is important to obtain a brief glimpse of Internet usage. According to the U.S. Census Bureau, 92% of all households had Internet use and 85% had broadband access in 2018 [100]. Individuals 18 to 29 years of age use the Internet the most (99%), while adults 65 years of age and older use the Internet the least (75%); Internet use also increases with income and education levels [52]. With Web 2.0, more people are using social networking sites and creating and viewing podcasts, vodcasts, and blogs. As of 2021, the top five Internet activities were texting or instant messaging, e-mail, using social networking sites, engaging with online financial services, shopping, making travel reservations, and other online consumer services [91].

Cell phones, particularly smartphones (and therefore, the Internet), are an integral part of the fabric of individuals' lives. In 2021, an estimated 97% of adults in the United States own any type of cell phone, and 85% specifically own a smartphone [92]. However, the phone is more than just a means to connect with other people. According to the Pew Internet and American Life Survey, 39% of adults in the United States, 70% of adolescents, and 72% of young adults (18 to 29 years of age) indicated that the phone is a way to deal with boredom [9]. Another study found that at least 63% of high school students use the Internet to escape from problems or a depressed mood [98]. In a focus group study of Australian adolescents and their use of cell phones, interesting themes emerged [10]. While it is not surprising they were attached to their cell phones, these adolescents expressed that the number of calls they received on their cell phone was associated with how valued or loved they felt. When they could not use their cell phones, they felt disconnected. This speaks to how cell phones have become entrenched in individuals' social and personal lives. At least 46% of Americans think that a smartphone is something that they could not live without [94].

Texting and social media are now the preferred methods of communication on cell phones [93; 94]. Among those who own a smartphone, 97% use it for texting [94]. On average, texters 18 to 24 years of age send and receive 128 text messages every day [13]. In one study, subjects received about 2,000 texts monthly [101]. Adolescents are the largest consumers of text messaging on cell phones, and a Pew Internet survey showed that 38% of teens texted friends on a daily basis in 2008; with the addition of social media to texting, this increased to 62% in 2015, surpassing all other forms of daily communication [9; 93]. According to an Experian marketing survey, young adults in the United States sent and received an average of 3,850 text messages per month in 2013 [13]. This compares to 2,240 text messages per month for the next highest users, adults 25 to 34 years of age. More than 33% of professionals admit that they do not go more than 10 minutes without sending or receiving a text message during the workday [13]. More than half of individuals respond to text messages within 1 to 2 minutes [97]. Adolescents in 8th to 12th grade receive an average of 111 texts daily [139].

More individuals are using social networking sites for personal and professional purposes as well. The most popular social networking sites are YouTube (used by 81% of adults), Facebook (used by 69% of adults), and Instagram (used by 40% of adults) [102]. In a 2019 survey, 74% of the research participants reported using Facebook on a daily basis [102]. In general, users of social networking sites are diverse in terms of race, level of education, and income. There are slight gender and larger age differences in use, especially among the various websites. An estimated 77% of online women and 61% of online men use Facebook. A total of 70% of online adults 18 to 29 years of age use the site, compared with 77% of those 30 to 49 years of age, 73% of those 50 to 64 years of age, and 50% of those 65 years of age and older [14]. With the COVID-19 pandemic and related individuals spent much more time alone, moving to online classes and shopping. Experts have speculated that addictive or problematic behaviors on the Internet may have been exacerbated [140].

INTERNET-RELATED PROBLEMS

Although new technologies open doors to new opportunities, they can also bring new challenges and problems, and the Internet is no exception. The Internet can be a tool used to commit various criminal activities, including child pornography, human trafficking, harassment, stalking, scams, and fraud [16]. Those with a drive to act out sexually may be more likely to take action using the Internet due to the perceived anonymity and ease. In a survey of 1,504 mental health professionals, counselors, and clinicians, participants were asked to identify Internet-related problems their clients had brought into their clinical sessions. The most common problems were overuse, pornography, infidelity, sexual abuse, and harassment [16; 103; 104; 105; 106; 107; 108]. Psychiatric mental health nurses identified these same types of problematic Internet exposures in a 2015 survey, indicating that the problems over the past decade have remained constant [15]. Further, isolative-avoidant use is a concern. Clients who use the Internet to such an extent that they have reduced their face-to-face encounters were reported by 10% of participants.

OVERUSE

By far, overuse was the most common problem, with 61% of professionals reporting having clients who excessively use the Internet. In one survey, 28% of adults reported being online "almost constantly." Certainly, this category can overlap with additional compulsions. For example, an individual may excessively use the Internet to engage in viewing online pornography. A specific amount of online activity has not been set as the threshold of what is considered excessive; rather, usage is considered problematic if it interferes with day-to-day activities.

In a systematic study, Internet gaming disorder prevalence estimates ranged from 0.21% to 57.5% in the general population [141]. A relatively newly recognized disorder, Internet gaming disorder is characterized by an overwhelming preoccupation with online activities to an extent that leads to impairment or distress. In another study, a number

of study participants (15%) reported having clients presenting with gaming, role-playing, and gambling problems, primarily stemming from the client's own behavior. This category included persons with problematic behaviors related to online gambling, solitary gaming (e.g., solitaire), interpersonal gaming with other people online (both known and unknown), and fantasy games involving role playing. Online poker is a rapidly growing type of gambling.

PORNOGRAPHY

More than half (56%) of the mental health professionals surveyed regularly dealt with Internet-related pornography issues, such as overuse, family conflict, unwanted exposure, subsequent development of sexually deviant interests, and illegal pornography. It is reported that 53.3% of adults turn to the Internet to meet their sexual needs, spending at least one hour per week engaging in some form of online sexual activity. It has been estimated that 10% of the population may meet the criteria for cybersex addiction. Generally, men are twice as likely as women to view online pornographic content; this gap is even greater among those 18 to 27 years of age [142].

INFIDELITY

Internet infidelity is defined as a relationship that starts via e-mail, chatrooms, or Internet games and that has a sexual and/or romantic nature. Forming relationships online may be easier because people feel safer self-disclosing because of the physical distance [143]. About 20% of professionals' cases involved couples coping with sexual infidelity from Internet activities and the negative impact on the relationship.

SEXUAL ABUSE

Sixteen percent of professionals reported cases involving a client (often an adolescent or child) who had received unwanted sexual advances over the Internet, including inappropriate sexual and exploitive involvement. In a 2019 study, 5.8% of adolescents reported having become acquainted with someone online with the objective of engaging in online sexual activity in the past year. Nearly 33% had been pressured to engage in online sexual activity at least once.

HARASSMENT

One in 10 professionals had clients who were either perpetrators or victims of online harassment. Online harassment was defined as experiencing defamatory postings by someone else, impersonating another person online, stalking, threatening violence, or physical and emotional abuse as a result of an online relationship. Digital polyvictimization, or a variety of technology-based harassment, was reported in 75% of a community sample of adults. These victims were at increased risk for post-traumatic stress and anxiety. Interestingly, research indicates that men are more likely than women to experience online harassment because men were more likely to post their opinions on potentially controversial subjects and to engage with other hostile users [144].

PROBLEMATIC INTERNET USE: DEFINITIONS AND CONTROVERSIES

DEFINITIONS

Many definitions have been presented for problematic Internet use in the literature. Ivan Goldberg was the first individual to coin the term "Internet addiction disorder" in a satirical article he self-published in 1996. Using the established criteria for pathologic gambling, Goldberg created seven diagnostic criteria for the diagnosis [17]:

- Desire to increase time online
- Dreaming of being online
- Attempts to limit Internet use without success
- Increased usage brings about social, physical, and psychological consequences
- Tolerance
- Withdrawal
- Activities normally enjoyed are given up for more Internet use

Since this first appearance of the term, debate has continued regarding its appropriateness as a diagnosis and regarding clinical criteria. As a result, the term "problematic Internet use" has been preferred [99]. This is a more general term and avoids debate regarding whether behavior qualifies as a diagnosable disorder or an addiction [109; 145]. Furthermore, it takes into account the wide range of Internet behaviors that can be involved [145; 146]. While the ICD-11 includes gaming disorder, the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5-TR) does not—it includes Internet gaming disorder as a condition in need of further research [147]. No other online behaviors have established criteria to define an associated disorder.

Indeed, many persons with Internet misuse or compulsion can be categorized into an existing psychiatric disorder, indicating that it may be a symptom rather than a unique disorder. Some have suggested that problematic Internet use could fall under the category of behavioral addictions. Behavioral addictions, also referred to as process addictions, refer to compulsive behaviors related to sex, gambling, gaming, and shopping [18]. A behavior moves away from being "normal" and to being pathologic when it produces positive emotions while being performed, but results in negative impact on mood and outlook when the individual cannot stop or reduce the behavior despite the negative consequences [18]. Behavioral addictions are characterized by feelings of tension prior to engaging in the act, and subsequent feelings of gratification or pleasure during and immediately after engaging in the act until the process begins again [19]. It parallels substance use disorders in its progression, consequences, and relapsing patterns.

In persons with problematic Internet use, behaviors range from passive technology use (e.g., watching videos on the Internet) to active usage (e.g., playing games via the Internet) [20]. In either case, the individual invests time and resources into using the technology, and when the use is reduced, the individual experiences anxiety and irritability. Some researchers have suggested more than 5 hours of online activity per day as a diagnostic criterion, but this is far from agreed upon [110]. Tolerance also increases, with more time dedicated to the behaviors. Often, individuals will deny the severity of the problem.

Others have suggested that Internet use disorder may be an impulse control disorder [147]. Problematic Internet use appears similar to impulse control disorders such as pathologic gambling or kleptomania because the behaviors are pleasurable and one cannot resist the impulse to engage in the behavior(s) despite negative consequences [21]. Because use of the Internet can activate reward circuits in the brain, it shares common symptoms/consequences with other impulse control disorders [22]. Like dependence disorders, different types of Internet misuse share four common features: excessive use, withdrawal, tolerance, and negative repercussions [23].

In addition to controversy surrounding the categorization of problematic Internet behaviors, criteria to define the disorder have not been clearly identified. One factor is the inclusion of a time criterion. For example, one paper published in 1996 suggested that Internet addiction involved spending an average of 38 hours or more per week on some sort of Internet activity [24]. A 2008 publication asserted that those with Internet use disorder can spend 40 to 80 hours per week on compulsive behaviors, and it is not unimaginable that addicts can engage in a single session lasting up to 20 hours [25]. However, these definitions do not take into account those who spend time on the Internet for work purposes. Using length of time as the sole or major criterion does not take into account the context [26]. To address this, some have suggested a criterion involving the extent of the negative impact. The extent of an individual's impairment or dysfunction mentally, emotionally, socially, occupationally, and/or scholastically as a result of Internet use or seeking behaviors may be a defining characteristic.

It has also been proposed that the type of online activity and the purposes it ultimately serves will act to further categorize those with problematic Internet use. For example, some have organized compulsive online activities under three headings: excessive gaming, sexual preoccupations, and social media/e-mail/text messaging [23; 27]. Still others have distinguished online activities based on the type of gratification individuals can derive [28]. For example, an activity that involves employing the Internet to locate specific information that pertains to day-to-day activities is referred to as content gratification. In other cases, online activity may produce process gratification, which involves satisfaction stemming from the technology itself and the prolonged activity that distracts an individual from fulfilling other responsibilities [28].

The DSM-5 unnecessarily contributed to this confusion in the introductory text for Internet gaming disorder by stating that it was also commonly referred to as Internet use disorder or Internet addiction [111]. This message was unclear, but some features unique to the Internet may promote excessive or addictive behaviors, including [112; 113; 114; 115; 116; 117]:

- Accessibility through high-speed broadband connections

- Affordability, as the Internet lacks previous cost restraints

- Anonymity, which can encourage behaviors inhibited offline by stigma and fear of detection and increase perceived control over the content, tone, and nature of online experience. Anonymity can increase the comfort level of users with fears of social rejection by removing the ability to look for and detect disapproval or judgment in facial expressions or body language.

- Convenience of use in familiar, comfortable environments, reducing perceptions of risk

- Escapism. Online gaming, gambling, buying, or sex is reinforced by a subjectively experienced "high," with habitual pursuit a core feature of addiction. Relief from negative emotions and distress related to real-world problems further reinforces the behavior.

- Immersion can facilitate a dissociation-like state in which the user loses track of time, feels like someone else, blacks out, or experiences a trance-like state, a reinforcing effect for some.

- Disinhibition. The core reward for some. Users tend to lower their defenses and emotionally reveal themselves faster online than offline. Socially inhibited users can find the disinhibiting environment and perceived connection to others powerfully reinforcing.

Other contributors to online impulsivity include invisibility and the absence of authorities (e.g., police, parents, teachers) that communicate power and hierarchy offline and constrain behavior [117]. Freed of inhibitions that maintain offline behavior within the boundaries of civility, social acceptability, and legality, users may act on impulses online they would otherwise attempt to resist [118].

Because there are no official diagnostic criteria for problematic Internet use and the term is so controversial, the terminology used to discuss and study the behaviors is diverse. Researchers have used "excessive," "problematic," "at-risk," and "addictive" in various settings to describe these behaviors, but these terms are nebulous and their definitions vary [27]. Resolving the issues surrounding the definition of problematic Internet use or addiction is not simple, and more research is necessary to further explore the facets of this complex disorder.

Types of Internet Misuse

Problematic Internet use is a broad term that can encompass different types of behavioral problems [29; 30]. Some subtypes include:

- Cybersexual addiction: Compulsive use of pornographic websites and electronic materials

- Cyber-relationship addiction: Pathologic abuse of online relationships

- Online gambling compulsions: Pathologic gambling behaviors facilitated by online gambling websites

- Information overload: Overuse of the Internet to seek information and read blogs
- Online gaming compulsions: Joining online groups to play virtual fantasy world games (e.g., Fortnite, FarmVille) and to engage socially with other players.

CHALLENGES IN THE STUDY OF PROBLEMATIC INTERNET USE

Although the topic of problematic Internet use has become of increased interest for researchers and empirical studies in this area have been completed, there are still many research challenges that have yet to be resolved. It is important to keep these in mind when reviewing the findings of studies presented in this course. Some barriers affecting Internet misuse research include [5; 12; 26; 38; 119]:

- Lack of consensus on the definition of Internet addiction/misuse
- Variability of assessment instruments. Difficulty agreeing on Internet misuse terminology and criteria has led to the development of a wide range of diagnostic instruments. When researchers use different instruments, it is difficult to compare findings across studies.
- Self-reported data. Many studies rely on self-reports, which raises questions about the reliability of the data.
- Small sample sizes. Cross-sectional samples (i.e., recruitment of respondents at one point in time, usually with small sample sizes) are common, which raises the issue of generalizability.
- Adolescent samples. The majority of studies have focused on adolescents and young adults in school settings, which again can affect the generalizability of findings.
- Lack of causal inference. Many studies are cross-sectional and correlational in nature. As a result, it is not possible to make causal inferences regarding what factors precede and precipitate Internet addiction. More experimental and longitudinal studies are required.

- Failure to control for other variables. A range of variables might explain the negative effects of problematic or excessive misuse of the Internet.

PROFESSIONALS' OPINIONS AND VIEWS OF PROBLEMATIC INTERNET USE

In the debate of whether the concept of Internet addiction or misuse is a real social or mental health problem and if it warrants a specific diagnostic category, mental health professionals' beliefs and opinions play a large part. In a 2009 study with 98 psychiatrists and mental health professionals, 81.9% believed that problematic Internet use was a clinical problem [31]. The participants' responses could be categorized into three types of groups based on their beliefs regarding Internet addiction:

- Internet addiction is a clinical problem and will continue to increase in the future.
- Internet addiction may not be a problem or a diagnostic category.
- Internet addiction is a clinical problem and may be more serious in the future; however, the media has played a role in exaggerating its scope and severity.

ATTRIBUTES OF THE INTERNET THAT CONTRIBUTE TO MISUSE

The Internet has certain characteristics that promote disinhibition, which can encourage greater disclosure, less restraint, and greater expressiveness [32]. These attributes can make the Internet attractive for users, but they also contribute to problematic behaviors. One such attribute is the relative anonymity of online interactions. There is a perceived safety in being unknown that allows one to take on different personas or say or do things one might otherwise not. For the most part, the Internet, particularly websites, blogs, and other text-based platforms, lends itself to invisibility. In online communication, there is often no concern about nonverbal cues and messages sent. Feeling free of oversight can result in problematic use.

Online, people can interact and communicate with each other in non-real-time. This asynchronicity provides no feedback loop to discourage negative behavior [32]. Because there are no immediate social and nonverbal cues online, Internet users are able to assign a voice and/or image to another user (consciously or unconsciously) [32]. This projection of real and imagined characteristics onto others' online personas, called solipsistic introjection, can result in false bonding and trust. All of these factors combine to make it easier for a person to dissociate online fiction from offline fact (i.e., dissociative imagination).

In most online situations, there is minimal to no sense of the authority figure. Even if there is a designated authority figure, the social cues that inform authority off-line, such as attire, height, and body language, are not present, which can weaken the relationship. As with the feeling of invisibility, the lack of an authority presence can lead to reduced inhibitions.

These characteristics can be seductive and make it easier for users to take on new personas if they so choose. These new identities often fulfill unmet needs or symbolize who users would like to be [33].

SCOPE OF PROBLEMATIC INTERNET USE

Because there is no consensus about the definition of problematic Internet use/addiction and no official diagnostic criteria, it is difficult to determine the prevalence of the condition. It appears that problematic Internet use/addiction affects between 2% and 38% of all Internet users [38; 42; 99; 120].

Four main methods are typically used by researchers to assess Internet addiction/problematic use [38]:

- Online dependence and spending more time online than intended, in general, without considering behavior
- Internet use as a typical addictive behavior affecting personal development and relationships

- Compulsive Internet use for specific activities (e.g., gambling, pornography)
- Only the activity (e.g., online gaming) is considered problematic, with the Internet simply the vehicle

The lack of agreement about definitions and criteria makes it a challenge to compare prevalence figures across studies, and as discussed, the methodology employed can be problematic [34; 38]. Please keep these caveats in mind when reviewing the following prevalence figures.

CHILDREN AND ADOLESCENTS

Higher rates of Internet use have been reported in students with average or poor academic performance [121]. The prevalence of problematic Internet use among youths may be lower than adult or college-age individuals because adolescents' Internet usage is typically restricted during school hours. In a study of 7,292 adolescents 12 to 18 years of age, 4.6% boys and 4.7% girls were considered addicted to the Internet, with criteria analogous to those established for pathologic gambling [34]. In a Norwegian telephone study with 3,237 youths 12 to 18 years of age, 2% were addicted to the Internet and almost 9% were considered at risk according to the Young Diagnostic Questionnaire [35]. In a study of 1,618 adolescents 13 to 18 years of age in China, 10.2% were considered moderately addicted and 0.6% were considered severely addicted to the Internet according to the Internet Addiction Test (IAT) [36]. In Japan, researchers found a prevalence rate of 4.6% elementary-aged children [148]. A 2017 Italian study of 224 high school students used the IAT and the Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A) to assess Internet addiction and problematic Internet use [96]. According to IAT scores, 1.6% had Internet addiction and 24.6% of the students had problematic Internet use. MMPI-A score analysis found that problematic Internet use was strongly associated with "schizophrenia and bizarre mentation" [96]. Entertainment, searching for information, and communicating with friends were the most commonly cited reason for use in all studies.

COLLEGE STUDENTS

In a U.S. study of 485 college students enrolled in a southeast university, 57.2% of the sample met the criteria for Internet abuse using liberal criteria, and 21.9% met the definition of Internet abuse using conservative criteria [37]. In terms of Internet dependence, 26.3% of the students were dependent according to liberal criteria, while 1.2% met the definition of Internet dependence using conservative criteria. A small study from 2015 found that 48% of college students who self-identified as "intensive Internet users" met criteria for Internet addiction (e.g., preoccupation with Internet, lying about use, inability to control use, moody or depressed when trying to quit), and another 40% were just below the threshold for addiction [98].

In a study involving 2,749 college students in eight countries in Asia and the Middle East (Bangladesh, Croatia, India, Nepal, Turkey, Serbia, Vietnam, and United Arab Emirates), the overall prevalence for problematic Internet use was 8.4% [122]. The rate in the Asian countries tended to be higher.

A cross-comparative study of university students from the United States and China found that Chinese students displayed a higher rate of problematic Internet behaviors compared to the Americans [40]. Specifically, 14% of the Chinese students were severely addicted to the Internet compared to 4% of their American counterparts. In addition, 64% of the Chinese sample was moderately addicted compared to 23% of the American sample. The authors speculate the differences may be due to the fact that China is rapidly industrializing and Internet adoption is increasing while in the United States the Internet is much more commonplace.

It is also possible that problematic Internet use may co-occur with specific psychosocial factors (e.g., loneliness, stress). The most powerful predictor of problematic Internet use is history of previous misuse or risk [123].

ADULTS

In a telephone survey of 2,513 adults in the United States, 0.3% to 0.7% were categorized as addicted to the Internet using questions extrapolated from the established criteria for impulse control disorders, obsessive-compulsive disorder, and substance use disorders [41]. A great majority of respondents were regular Internet users, and 5.9% of these regular Internet users felt that their interpersonal relationships suffered because of their extensive Internet use. Nearly 4% felt preoccupied when they were not on the Internet, and 13.7% stated they had a hard time staying away from the Internet for several days at a time. In a 2017 survey of adults 18 to 65 years of age, the overall rate of Internet addiction was 1.3%—2% among men and 0.6% among women [124].

A 2014 meta-analysis of global Internet addiction found an average 6% addiction rate across 31 nations in all included studies (comprising nearly 90,000 participants) [42]. The prevalence of Internet addiction in North America was 8%. Eligibility criteria included studies that used the Young Diagnostic Questionnaire, the IAT, or both [42]. A 2022 study with medical students in Egypt found that 9% screened positively for Internet addiction [149]. In a systematic review and meta-analysis of studies involving healthcare professionals, the prevalence rate was 9.7% [150].

GENDER

There are mixed empirical findings regarding gender differences in problematic Internet use. Most studies have indicated that men are more likely than women to display signs of problematic Internet use [1; 38; 43; 151]. However, one study indicated that women were less likely than men to have no or limited symptoms of behavioral pathology [43]. Another study found that female high school students with problematic Internet use have poorer mental health than their Internet-addicted male counterparts and are more likely to be engage in compulsive Internet use, especially social media use [39].

A meta-analysis study of 101 empirical studies examining the role of gender in problematic Internet use worldwide found the overall effect was small [125]. The largest gender gap was noted in Asia and the lowest was in North America.

It may be that there are gender differences in the transitions from one stage to another on the continuum of problematic Internet use [44]. For example, men are more likely to transition from intermittent misuse to being completely addicted, but there were no gender differences in the transition from non-addiction to intermittent misuse.

Some have speculated that these gender differences may be explained by differences in how men and women use the Internet. In general, men tend to seek online activities that are characterized by dominance, control, or power, and women are more likely to seek online activities that promote relationships and connection with others [1; 39]. This difference could explain gender variations between studies, particularly if diagnostic criteria are skewed toward one type of behavior. If time spent on synchronous or real-time Internet communication platforms (e.g., social media) for pleasure-seeking or for avoidance is a criterion, women may score higher [45].

THEORETICAL EXPLANATIONS FOR PROBLEMATIC INTERNET USE

Theories are logical systems that provide frameworks for organizing and understanding observations. They are intended to offer comprehensive, simple, and dependable explanations and predictions of observable phenomena. Theories provide direction for how to proceed during various phases of the change process. Several theoretical frameworks have been used to explain the possible causes of problematic Internet use.

SOCIAL SKILLS DEFICIT THEORY

The social skills deficit theory proposes that the development of problematic Internet behaviors is the result of a lack of social skills. It has been postulated that individuals who are lonely, who lack social and interpersonal skills, and who have emotional regulation deficits are more likely to use computer-mediated interactions to compensate [21; 126; 152]. In an online environment, these individuals can develop support structures and build relationships with less risk. But, they may also create new personas or identities in order to feel greater control over the impressions they convey [21; 126]. Because anonymity is a key factor in Internet use, de-individualization is common, with individuals likely to modify their self-presentation online. In a 2010 study, Facebook profiles of 100 students were analyzed for self-promotion, defined by choice of photographs and descriptions of oneself, which was then correlated with users' narcissism and self-esteem scores [46]. Users who scored higher on narcissism were more likely to spend more time on Facebook than those who scored lower. But, users with lower self-esteem indices were also likely to spend more time on Facebook than users with high self-esteem. Researchers hypothesized that individuals may use the Internet as a medium to "recreate" themselves, thereby improving self-esteem.

INTERPERSONAL THEORY

According to interpersonal theory, individuals' relationships are focal points to understanding behaviors. Early interpersonal relationships, particularly the parent-child relationship, provide the foundation for an individual's well-being and sense of self. This theory also posits that social anxiety results from poor early interpersonal relationships, with children responding to anxiety from the caregiver to form an internalized negative self-image [47]. For these people, the Internet may help to build a social connectedness and sense of belonging to compensate for poor early social relationships [47]. Studies indicate that poor or challenging interpersonal relationships increase levels of social anxiety, which then influences problematic Internet use [47].

BIOLOGIC AND NEUROBIOLOGIC THEORIES

A large body of research has established the role of neurotransmitters in the pathogenesis of addiction, with serotonin involved with the inhibition of behavior and dopamine influencing learning and motivation [19; 99; 153]. Brain structure can also influence the development of addiction and compulsive behaviors/poor inhibition. Persons with problematic Internet use have been found to have less gray matter in the left anterior and posterior cingulate cortex areas of the brain [120]. In a small-scale study of adolescents, participants who displayed signs of problematic Internet use had lower gray matter density in areas of their brains responsible for reward anticipation, empathy, memory retrieval, and social emotions than their non-addicted counterparts [48; 153]. Cause and effect was not established. Other studies have found significantly higher sympathetic nervous system activation in high-risk Internet abusers, indicating a possible biologic predisposition [49].

COGNITIVE-BEHAVIORAL THEORIES

Cognitive-behavioral theories focus on the link between maladaptive cognitions, thought patterns, and negative beliefs and behavior. Using this perspective, individuals with cognitive distortions regarding self-image may find the anonymity of the Internet attractive and pursue an online persona in order to compensate for perceived deficiencies [50]. Conversely, those with pre-existing psychological difficulties may have cognitive distortions triggered by Internet use, which then results in excessive or problematic use [145]. It also appears that those with problematic Internet use tend to use catastrophic thinking as a way to escape and deal with their problems [99].

DIATHESIS STRESS MODEL

The diathesis stress model adopts some components of cognitive-behavioral theory, but it also focuses on the social context and the individual's pre-existing vulnerabilities. According to this model, there must first be a predisposing vulnerability and an acute stressor in order for the unhealthy behavior to arise [51]. This predisposing vulnerability may be present in the form of an existing psychopathology. For example, an individual with pre-existing symptoms of anxiety or depression may turn to the Internet in response to a stressful life event [51]. Through use of the Internet and its various applications, the behaviors are reinforced, and the pleasurable responses from spending time on the Internet may result in continual and excessive use. An individual's maladaptive cognitions (e.g., distorted view of oneself) perpetuate the misuse of the Internet [51].

GROHOL'S MODEL OF PATHOLOGICAL INTERNET USE

Grohol maintains that individuals, particularly newcomers to the Internet or to a specific Internet use (e.g., social media), go through phases in terms of how they engage and interact with online technology [154]. Stage 1 is the enchantment phase, in which the individual learns to navigate the virtual environment and immerses him/herself into it. Some people have difficulty moving beyond this phase, finding themselves spending more and more time online. Others progress to stage 2, or the disillusionment (avoidance) phase. In this stage, individuals are no longer enchanted with the different features of the Internet and may abandon or avoid use when possible. The final step is stage 3, the balance (normal) phase. Persons in this phase find a balance in incorporating the use of the Internet with their other daily activities.

BEHAVIORAL ECONOMICS

Behavioral economics integrates operant learning theory in psychology and microeconomics to understand what motivates people's behavior. Behavioral economics proponents assert that behavior is predicated upon an evaluation of the perceived costs and rewards of each activity [127]. Addiction occurs over time when there is delay discounting, which is shown when a person chooses an immediate versus a delayed reward [127].

PERSON-AFFECT-COGNITION-EXECUTIVE (I-PACE) MODEL

The Person-Affect-Cognition-Executive (I-PACE) Model was developed by who argued that problematic Internet use can be explained by dynamic processes that involve predisposing individual factors [155]. These factors include genetic predisposition, personality, and affective and cognitive processes, including coping styles, maladaptive thoughts, and executive functioning level [6].

RISK FACTORS

NOVELTY SEEKING AND IMPULSIVITY

Novelty seeking, or the proclivity to pursue intense novel stimuli in order to obtain excitement and exhilaration, has been linked to substance abuse and impulse control disorders [119]. In a study of different personality traits as possible predictors of problematic Internet use in adolescents, novelty seeking was the strongest predictor for problematic Internet use [53].

TIME SPENT ON INTERACTIVE APPLICATIONS

More time spent on Internet applications with an interactive component, such as chat rooms or role-playing simulation such as Second Life or Sims, increases the risk of developing problematic Internet behaviors [33]. In a study of Turkish pre-teens, researchers found that as Internet use transitioned from primarily gaming to chatting over time, the amount of time spent online increased, with some reporting spending more than 10 hours per day online [54]. Another study found that the use of Internet chat applications was a key variable that was correlated with the transition from intermittent problematic Internet use to full addiction [44]. Similarly, in another study with adolescents, excessive use of synchronous or real-time communication applications (e.g., instant messaging, texting, chatting) predicted compulsive use of the Internet within six months; this was not true of e-mail applications [55]. There may be a component of real-time applications that evokes compulsive patterns, preoccupation, and loss of control. However, it is still not completely clear whether Internet applications that have an interactive feature are more "addictive" or if these features attract more individuals who are lonely, isolated, and/or lack social skills.

BOREDOM AND ATTENTION DEFICIT

In studies of high school students in Taiwan, the level of boredom in an individual's leisure time predicted risk of problematic Internet use [56]. In a study of 564 junior high school students, a positive relationship was noted between attention deficit hyperactivity disorder (ADHD) and problematic Internet use [156]. Similarly, another study found that attention deficit was related to problematic Internet use among college students in Taiwan, with stronger correlation in women than in men [57]. This was more so the case for women than men. It is plausible that the Internet offers a vehicle for an individual to be engaged in activities that require quick responses, which then offsets the feeling of boredom, particularly in persons with ADHD.

DISSATISFACTION WITH FAMILY LIFE

For adolescents, dissatisfaction with family life may predict problematic Internet use. Research indicates that adolescents who disclose being very dissatisfied with their family or who have dysfunctional families are more likely to be addicted to the Internet compared to their satisfied counterparts [36; 119; 157]. In a study of 903 Korean adolescents, researchers found that family environment was a strong predictor of problematic Internet use [58]. Similarly,

in a study of 13,413 elementary school students, researchers found a positive relationship between problematic Internet use and lack of clear boundaries or rules at home, absent parent-child interactions, and no close friends [148]. In a study of 180 male adolescents, authoritarian parenting style predicted problematic Internet use [128]. Adolescents who were exposed to parental marital violence and/or were victims of abuse were at greater risk of being addicted to the Internet than those with non-violent home lives.

EXPOSURE TO A STRESSFUL EVENT

In a study of 100 Internet users of all ages, stress vulnerability was a powerful predictor of problematic Internet use [59]. In addition, adolescents who have experienced a recent event that led them to feel very stressed are 10 times more likely to display signs of Internet misuse compared to those who have not experienced a stressful event [36].

LACK OF SOCIAL SKILLS

There is some speculation that loneliness, lack of social skills, and social anxiety might be risk factors for problematic Internet use [157]. In a study of 311 university students, social self-efficacy, which was defined as the belief in one's capability in initiating and maintaining social interactions or successfully performing in social situations, negatively predicted problematic Internet use; as students' level of social self-efficacy decreased, their levels of problematic Internet use increased [60]. In a study of 3,557 university students in China, homesickness and social anxiety were found of be predictors of Internet misuse [61]. As discussed, students who use the Internet for entertainment purposes and to seek social relationships are more likely to experience problematic Internet use, but it is unclear if these students lack the social skills to successfully socialize off-line or if another factor is at play [62].

PERSONALITY

Individuals' personality traits may influence how they use the Internet and how misuse manifests. The progression from daily Internet use to compulsive Internet usage is related to low levels of extraversion, agreeableness, and emotional stability [63]. In a three-year longitudinal study with 1,365 adolescents, the personality traits of low agreeableness, low conscientiousness, high openness, and high neuroticism were correlated with initial problematic Internet use [129].

UNDERLYING PSYCHOPATHOLOGY

Comorbidity with other psychiatric disorders is perhaps the greatest risk factor, although there is some controversy regarding causation (i.e., which factor preceded). Studies have linked problematic Internet use with diagnoses of bipolar disorder, schizoaffective disorder, depression, and obsessive-compulsive symptoms [64; 65; 119; 158]. There is also a link between problematic Internet use and future smoking and alcohol consumption [99]. In one study, the relationship between problematic Internet use and depressive symptoms remained even after controlling for variables like temperament [65]. It has been speculated the Internet may be used to cope with negative emotions [119].

FEAR OF MISSING OUT

Fear of missing out has two components. First, there is a cognitive element, whereby the individual believes he/she is going to miss out on some sort of rewarding experience. The individual then engages in a behavior element to alleviate this fear (the second component) [159]. In the context of problematic Internet use, checking text messages and social media ensures that one is not missing out on fun, rewarding, or bonding experiences [6].

DIAGNOSIS

As discussed, the question of whether Internet addiction, online dependency, or problematic Internet use exists as a unique entity has become controversial [26]. When Ivan Goldberg first introduced the concept of Internet addiction or overuse, he based it on existing criteria for substance use disorder [160]. Even in 2023, it remains unclear if problematic Internet use should be a distinct and separate disorder, if it is better categorized under a larger behavioral syndrome, or if it is a symptom of another underlying disorder [131]. Some believe that problematic Internet use is a valid diagnostic classification and should be included in the DSM [66]. According to this perspective, problematic Internet use is specific diagnosis that may be categorized as either an impulse control disorder or process addiction. However, this leads back to the questions of how addiction and pathology are defined, what criteria should be used, and whether the same criteria for substance abuse or process addictions can be applied to the concept of "Internet addiction."

Alternatively, it has been posited that problematic Internet use is not a separate diagnostic category, but instead problematic or excessive Internet use is a symptom of another pre-existing mental health condition, such as depression, anxiety, or obsessive-compulsive disorder [67]. Some believe that the Internet may become a medium for the manifestation of other addictions [68]. For example, a pathologic shopper may use the Internet as a vehicle to make purchases. Studies indicate that individuals with problematic Internet use also tend to have personality disorders, including borderline personality disorder, avoidant personality disorder, and obsessive-compulsive disorder. Persons with poor impulse control and addictive disorders may be more vulnerable to problematic Internet behaviors [66]. One of the main arguments against problematic Internet use being considered a distinct psychiatric condition is that the majority of those displaying problematic Internet behaviors already have a diagnosis of a least one psychiatric disorder [69; 161]. Furthermore, the question of causality remains [161].

Along these lines, problematic Internet use could be a set of maladaptive coping behaviors used to compensate for other areas of difficulty [70]. In these cases, the behaviors may be better termed Internet behavior dependence, which is not necessarily pathologic. These patients would benefit from problem-solving and coping skills training.

As noted, the DSM-5 does not specifically include Internet addiction as a diagnostic entity, although Internet gaming disorder is included, as are behavioral addictions [99; 130]. Instead, "Internet use disorder" is listed among conditions recommended for further study.

SIGNS OF PROBLEMATIC INTERNET USE

The following symptoms and signs have been associated with problematic Internet use [29; 30; 33; 71; 154; 162]:

- Preoccupation with online activities and continuing to think about being online while not on the Internet
- A need to spend more time online in order to feel satisfied
- Euphoria when online
- Inability to control Internet usage
- Irritability or anxiety when Internet usage is reduced or ceased
- Depressive symptoms
- Being online longer than anticipated or scheduled
- Using the Internet to escape problems or to feel better
- The Internet gets in the way of other activities
- Lying to family and/or friends about how much time is spent on the Internet
- Decreasing the amount of time spent on physical or off-line activities

- Repetitive motion and carpal tunnel syndrome, including numbness and pain in the wrists, fingers, neck, shoulder, or hands

- Amount of Internet usage begins to be a detriment to work, family, and/or social life

- Feeling bored and that life is empty

- Continuing on the Internet even when spending too much on fees for various online activities

- Minimizing or justifying the negative effects of Internet use

- Blaming other factors for overusing the Internet

- Excusing the behavior

It is important to remember that most Internet use is healthy. Healthy Internet use occurs when a reasonable time is spent on the Internet and it does not produce any behavioral or cognitive discomfort or distress; however, no limit has been established to define a "reasonable" amount of time [51]. The main litmus test is that the individual can differentiate between the real world and the virtual world and the individual's social, psychological, and occupational functioning is not negatively affected [51].

ASSESSING PROBLEMATIC INTERNET USE

ASSESSMENT INSTRUMENTS

Several instruments have been created to assess problematic Internet use. Many of these screening tools are substance dependence scales adapted to be used for patients with problematic Internet use [27]. The following sections will outline some of the most commonly used instruments.

Young's Internet Addiction Test

Possibly the most widely used instrument, the IAT was developed in 1998 and consists of 20 questions focusing on various types and frequency of Internet-related behaviors [33; 160]. Points are assigned based on the frequency of behaviors, with 0 points for not applicable behaviors, and 5 points for activities that the user "always" engages in. A score of 80 or more indicates problematic Internet use. The IAT has been the most widely utilized instrument in empirical studies, having been validated in the United States and other countries [163]. In a review of empirical studies conducted between 1991 and 2016, 30% used the IAT [164]. A copy of the IAT is available at https://www.iitk.ac.in/counsel/resources/IATManual.pdf.

The IAT was subsequently revised and named the Young Internet Addiction Questionnaire (YDGI) [131]. The YDGI is an eight-item instrument based on symptoms of pathologic gambling: preoccupation, loss of control, tolerance, withdrawal, denial, staying on the Internet longer than anticipated, and adverse consequences [131]. Individuals scoring five or more are classified as having pathologic Internet behavior [131].

The Compulsive Internet Use Scale

The Compulsive Internet Use Scale (CIUS) consists of 14 closed-ended items addressing the frequency of potentially problematic online behaviors and their impact on daily life [72]. It is primarily based on the criteria of obsessive-compulsive disorder and substance use disorder [160]. This scale has shown good stability between subjects and subsamples, and it is considered to be a valid screening tool. However, no clear cutoff has been established to define addiction/misuse. Additional English-language evaluation of the scale is also necessary, as initial testing was completed in the Netherlands.

The Chen Internet Addiction Scale

The CIAS consists of 26 questions answered using a four-point Likert scale to indicate frequency of behaviors. It assesses the domains of compulsive use, tolerance, negative consequences with interpersonal relationships, and time management after withdrawal [131]. The clinical cutoff point is 64, with higher scores indicative of problematic Internet use [73; 131].

The Problematic Internet Use Questionnaire

Using some of the question items from Young's Internet Addiction Test, the Problematic Internet Use Questionnaire (PIUQ) consists of 18 items that assess for problems that arise from misusing the Internet. It consists of three domains: the obsessive scale (e.g., thinking about the Internet, anxiety and depression when not using the Internet), the neglect scale (e.g., neglecting daily activities), and the control disorder scale (e.g., difficulty controlling the amount of time spent on the Internet) [74]. No cutoff score has been established.

Because of the concern of survey fatigue, there is a short version of the PIUQ consisting of nine items. This shorter questionnaire has been shown to have good validity and reliability and has been used in educational and clinical settings and various languages [132]. The nine-item version was then reduced to six question items [160].

Pathological Use Scale

The 13-item Pathological Use Scale was developed to measure problems that stem from overuse of the Internet, including mood changes, withdrawal symptoms, and interpersonal, social, occupational, and family problems [43]. Individuals are asked the extent of their agreement to questions in each of these domains. It has demonstrated good internal reliability.

Internet-Related Problem Scale

Created in 2000, the Internet-Related Problem Scale (IRPS) consists of items based on the DSM-IV substance abuse criteria [75; 160]. The questions are organized into nine categories believed to contribute to problematic Internet use: tolerance, escape from other problems, reduced activities, loss of control, related activities, negative effects, withdrawal, craving, and introversion. A higher score (out of 200) is considered more indicative of problematic Internet use.

IN-DEPTH CLINICAL ASSESSMENT

Screening instruments can be very helpful to rapidly assess clients at risk for Internet abuse. However, in some cases, a more in-depth clinical assessment is necessary to fully understand the context. One way of approaching this is to ask about environmental factors, usage frequency and content, and dual diagnosis issues [76].

Environmental Factors

There may be certain environmental cues, precursors, or triggers that cause clients to seek the Internet or engage in excessive usage [76]. Questions that explore these factors include:

- How does using the Internet help to alleviate stress?
- How does using the Internet make you feel good?
- How does using the Internet make you feel less isolated?
- What changes, if any, happen when you spend an excessive amount of time on the Internet?

Internet Usage and Content

It is important for practitioners to inquire as to why a client uses the Internet the way they do [76]. Consider asking the following questions [30; 76]:

- What Internet applications do you use most frequently?
- How many hours per week do you spend on the Internet?

- How important are each of the Internet applications to you?

- What is it about each of the Internet applications that you find attractive and makes you come back for more?

Dual Diagnosis

As discussed, there is a relationship between Internet misuse and other mental disorders, such as depression and anxiety. Therefore, it is important to assess all persons presenting with signs of problematic Internet use for symptoms of mood, anxiety, and obsessive-compulsive disorders [76].

Biopsychosocial Assessment

Another approach is to use a biopsychosocial perspective when assessing for potential Internet misuse. In addition to the psychosocial and practical issues, this perspective takes into account biologic factors (e.g., genetics, biochemical influences), the family system, and cultural variables. The questions asked can be organized into three categories: biologic, psychological, and social [77].

Biologic Factors

- Are you experiencing any health concerns?

- How have these health concerns been impacted by your Internet use?

- What treatment have you received for these health concerns?

- Does Internet use interfere with your sleep? How many hours do you typically sleep each night?

- Does your Internet use interfere with eating regularly?

- How many meals per day do you typically eat?

- Have you recently gained or lost any weight?

- What exercise patterns do you engage in?

- What nonprescription drug(s) do you take? How much? How often?

- What prescription medication(s) do you take? How much? How often?

- What substances or behaviors do you or others feel you have been addicted to in the past?

- What kind of alcohol do you currently use? How much? How often?

- In the past, what kind of alcohol did you use? How much? How often?

- What illicit drugs do you currently use? How much? How often?

- In the past, what illicit drugs did you use? How much? How often?

- Is there a history of addiction in your family? If so, who and what?

Psychological Factors

- How do you feel before using the Internet?

- What are your thoughts before using the Internet?

- Have you ever used the Internet to help improve your mood or change your thoughts?

- What is your environment like before using the Internet?

- How do you feel while using the Internet?

- What are your thoughts while using the Internet?

- What is your environment like while using the Internet?

- How do you feel after using the Internet?

- What are your thoughts after using the Internet?

- What is your environment like after using the Internet?

- Have you ever felt anxious, depressed, or isolated when off-line?

- How well do you think you cope with various events in your life?

Social Factors

- Has your Internet use caused problems or concerns within your family?

- What psychological/psychiatric illnesses have members of your family experienced?

- What is your overall degree of satisfaction with your family?

- Has your Internet use caused problems or concerns with your significant other?

- What is your overall degree of satisfaction with your significant other?

- Has your Internet use caused problems or concerns with your child/children?

- What is your overall degree of satisfaction with your child/children?

- Has using the Internet caused problems or concerns with your social activities and friendships?

- What is your overall degree of satisfaction with your friendships?

- How do others in your life use the Internet (e.g., email, instant message)?

- What is your overall degree of satisfaction with school/work?

- How has using the Internet interfered with your performance at school or work?

- Have you ever been in trouble with the authorities because of your Internet use?

- What are your social/leisure/hobby activities?

- How would you rate your social skills?

- How would you rate your communication skills?

CONSEQUENCES OF PROBLEMATIC INTERNET USE

HEALTH AND PHYSICAL EFFECTS

Problematic Internet use is most commonly characterized by excessive use, with single sessions lasting many hours and adding up to 40 to 80 hours per week [29; 30]. In addition, users often continue late into the night or awake from sleep to satisfy an urge to log on. Not surprisingly, those with moderate or severe Internet misuse are more likely to have sleep disturbances or deficits compared to those with mild or no Internet misuse [133; 134; 165; 166]. Long sessions and sleep deprivation can result in physical effects such as eye strain, back pain, carpal tunnel syndrome, and other consequences of lack of physical exercise, including obesity [29; 30]. In a study examining gradients of Internet addiction, respondents identified as problematic Internet users also rated their general health as poor [166]. Symptoms of repetitive motion injuries in the hands, wrists, shoulders, or fingers are commonplace [71]. Sleep deprivation causes daytime fatigue, with implications for decreased productivity and performance in school or the workplace [78]. Accidental injuries (e.g., car accidents) are also a major concern.

PSYCHOLOGICAL AND SOCIAL CONSEQUENCES

Many studies have linked excessive Internet use to negative psychological well-being, particularly increases in depressive symptoms. A quantitative study with 673 young adults (18 to 25 years of age) found that psychological well-being decreased as Internet addiction levels increased [167]. A study of Spanish college students found that individuals who were considered Internet and cell phone over-users were more likely to experience symptoms of insomnia, anxiety, and depression than those who used the Internet less [79]. Other studies have supported these findings. Not only are depression and other psychological disorders often present in persons with excessive Internet use in general, rates of psychological disorders (e.g., depression, obsessive-

compulsive disorder) increase with the amount of time spent online [44]. Problematic Internet use is also associated with an increased risk for suicide and substance use and addiction (including opioids, club drugs, and hallucinogens) [135; 168].

Others indicate that real-time online communication may have more negative ramifications on adolescents' psychosocial well-being than other Internet applications [55]. Over time, there appears to be a relationship between instant messaging use and level of depression, with levels of depression increasing among those who use instant messaging excessively. Various explanations for this correlation have been proposed, but perhaps the most common is that ties to off-line family and friends weaken due to users' excessive focus on instant messaging. Although online bonds may increase, these relationships are frequently not very strong and do not offer long-term social and affective results.

Excessive Internet use can impact work and school productivity, which can also influence self-esteem. Students' involvement with extracurricular activities, homework completion, and school attendance are negatively affected by problematic Internet use, and chronic truancy may become an issue [80; 99]. In a longitudinal study with 1,301 middle school students, researchers found that problematic Internet use was correlated with school burnout and academic decline across three years [169]. A study of high school students found that those with symptoms of problematic Internet use scored lower on the comprehension section of an IQ test, which indicated poor ethical judgment and reality awareness [81]. In addition, surveys indicate that the majority of office Internet use is not directly related to employees' work responsibilities; Internet misuse is a significant cause of job loss [82; 90].

There are many ways in which Internet use and psychosocial well-being may interact, and these pathways are not completely understood. It is possible the motivations or reasons for Internet use influence the relationship [83]. One study indicated individuals whose usage patterns were motivated by information, service, or goods acquisition tended to foster positive psychological well-being. However, when excessive Internet use was motivated by meeting new people, looking for relationships or romance, and developing social networks, this was associated with a negative impact on individuals' psychological well-being.

INTERVENTIONS FOR PROBLEMATIC INTERNET USE

COGNITIVE-BEHAVIORAL THERAPY

Cognitive-behavioral therapy (CBT) is based on the premise that cognitions or belief systems dictate behavior. Individuals with problematic Internet use tend to display signs of overgeneralizations, rigid thinking, cognitive distortions, and other maladaptive thought processes that contribute to using the Internet to cope or escape [84; 85]. Cognitive restructuring and specific activities to monitor and limit Internet use may therefore be effective. This would consist of identifying the client's maladaptive beliefs, challenging them, and developing self-talks to restructure the existing belief systems. Concrete, structured, and measurable techniques are required to help diminish the negative behavior (i.e., overuse of the Internet). These interventions include [85; 136]:

- Implementing external stoppers (e.g., timing Internet usage and setting limits)
- Identifying specific tasks for Internet use
- Posting physical reminders regarding the negative effects of Internet overuse and the benefits of reducing Internet use (e.g., notes on the computer)

- Identifying alternative activities to substitute for Internet activities

- Implementing behaviors that would disrupt normally scheduled Internet activities to assist in establishing new patterns and habits. For example, if a client checks e-mail upon waking, instruct him/her to eat breakfast first, after which he/she can check e-mail.

- Moving the computer or using a device or tablet only in the presence of other people to develop accountability.

- Keeping a diary documenting Internet use.

Studies have demonstrated the efficacy of cognitive-behavioral interventions for adolescents with Internet use disorders [86; 87; 170]. These interventions may be delivered in private or group formats and should involve a psychoeducational component. This education would include information regarding the warning signs of problematic Internet use and problem-solving skills for users and their family and friends. Successful interventions with these components show improved impulsivity control, emotional stability, and reduced problematic Internet behaviors.

In a 2017 study, CBT, group counseling, and sports interventions were each helpful in different ways to address various facets of Internet addiction [137]. CBT was effective in reducing depression, somatization, anxiety, and other psychiatric symptoms and in identifying triggers to the addictive behavior. Group counseling was associated with improvements in social participation, time management, and health issues. Sports interventions were found to be beneficial for withdrawal symptoms [137]. This suggests that more than one therapeutic intervention may be effective for Internet addiction, and it is important to specifically identify problematic behaviors.

REALITY THERAPY

Reality therapy (also called choice therapy) has been used for clients with addictive disorders to help them focus on identifying specific behaviors they can control and to make new choices in their lives. The emphasis with this type of intervention is on clients assuming responsibility for their actions, thoughts, and feelings [88; 136]. Instead of only addressing the Internet abuse behaviors, the client's decision-making skills, coping, and ownership of responsibility are explored. This can be facilitated with the following questions [88; 136]:

- What are you doing now?

- What did you actually do this past week or month?

- What stopped you from doing what you want to do?

- What will you do tomorrow or in the future?

PSYCHOPHARMACOLOGY

Referral to a physician or psychiatrist for an evaluation and possible prescription medication to address underlying psychopathology, such as depression, anxiety, or obsessive-compulsive disorder, may be warranted, as these disorders frequently coexist [71; 171]. However, no medication is approved specifically for the treatment of problematic Internet use. Prior to a formal diagnosis and medication prescription, clinicians should ask youths and their parents to go through a process of weaning and unplugging from all devices, tablets, and computers [138]. After a four-week technology holiday, the situation should be reassessed.

FAMILY-BASED INTERVENTIONS

Studies indicate that individuals who are dissatisfied with their family life are more likely to engage in problematic use of the Internet. Because the family environment plays a role in problematic Internet use, family-based interventions should be a component of the treatment [89]. This would include parent training to assist in helping improve communication between them and their children (for younger abusers), developing skills to promote healthy family

interactions, family therapy, psychosocial support, and a focus on developing positive self-esteem and identity [171].

EDUCATION

Education is a vital component of prevention of Internet misuse. All persons should be educated on the signs of problematic Internet use and its consequences. Some parents may benefit from help to develop guidelines about Internet usage at home and how to implement boundaries and limits [130]. Eliminating Internet and technology usage is not the goal; instead, developing healthy limits is the objective [130]. A quantitative study with 532 college students in China evaluated the effectiveness of a health education intervention, which involved seven two-hour sessions providing education and skills to promote healthy and positive behaviors [172]. Those who participated in the intervention reported reduced screen time and Internet addiction measures.

CONCLUSION

Research about Internet abuse is still in its infancy, and questions remain about the best terminology to use, definitions of the term or label, whether the phenomenon is a distinct disorder, factors that predict the onset of the misuse, and possible psychological, social, and health effects. Problematic Internet use can have significant negative impact on personal relationships, families, and psychological health, and inappropriate Internet use at work undermines productivity and efficiency, which has financial implications for companies. The addiction model has been proposed by many to conceptualize this "problem," but this has sparked controversy. Without a consensus on terminology and definitions, the development of assessments and treatments/interventions is challenging. As the Internet technology applications become more sophisticated and widespread, use and abuse will continue to grow.

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