

Internet Addiction and Its Cognitive Behavioral Therapy

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1. Introduction

Internet addiction or problematic internet use is one of the newest areas of interest in psychiatry. The internet which was developed to increase communication and facilitate information exchange has grown beyond expectations making some users unable to control their internet use and thus experience problems in their functioning at work and in social and private spheres (Young 1999). The reasons for the internet becoming so widespread in such a short time have been the subject of many studies. To explain the increase in internet use for sexual pursuits, Cooper has defined a 'Triple A Engine' (Access, Affordability and Anonymity). Access is the ease of having access to the internet anywhere and anytime and finding whatever is sought in the internet where there is no refusal. Affordability is the ease of having access to the rich content of the internet especially in on-line sexuality in return for an affordable price. Anonymity is the secrecy of an individual's both real and perceived identity (Cooper 1998). These popularizing and facilitating factors may enable us to understand the increase in using the internet in all other areas.

Such a big increase in internet use resulted in problematic use and even addiction for some individuals. Problems relating to excessive and abusive use of the internet have been defined as excessive cognitive involvement associated with the use of the internet, recurring thoughts about limiting and controlling the use, inability to cease craving for access, persistence in using the internet in spite of impaired functioning at various levels, spending increasingly more time in the internet and longing and craving behaviors when there is no possibility of using it (Young 1999).

Although such abuse of the internet is not included in DSM-IV-TR, the classification system of the American Psychiatric Association, there is a tendency to call it 'internet addiction'. There are proposals to include internet addiction as a disorder in the new DSM-V to be prepared (Block 2008). Various names were given to the uncontrolled use of the internet such as 'computer addiction', 'online addiction', 'cyber addiction', 'pathological internet use', 'excessive internet use', 'internet addiction disorder', 'net addiction', 'cyberspace addiction', 'problematic internet use', 'technologic addiction', 'compulsive internet use' and 'internet behavior addiction' (Hall and Parsons 2001; Caplan 2002; Davis et al. 2002; Whang et al. 2003; Lee and Shin 2004; Hur 2006; Widianto and Griffiths 2007).

2. Background of the definition of internet addiction

Although internet addiction is a subject attracting extensive attention, debates on its existence are still continuing (Korkeila et al. 2009). The person who defined 'internet addiction' and tried to identify the diagnosis criteria for the first time is Goldberg. To criticize the rigidity of the DSM system Goldberg jokingly adapted the substance addiction criteria in DSM-IV to uncontrolled internet use and published them in his own website. Such criteria include fantasies and dreams about internet use as well as voluntary and involuntary finger movements (Goldberg 1995). Young, on the other hand, concluded that the disorder closest to internet addiction in DSM-IV was 'pathological gambling' under the heading 'impulse control disorders' because the non-intoxicant behavioral addictions were considered as impulse control disorders in DSM-IV and specified the criteria for internet addiction on the basis of such pathological gambling criteria. Although there were 10 criteria for pathological gambling, two of them were excluded for being inadaptable to internet use and 8 criteria in total were included in the diagnosis criteria. Young found at least 5 or more answers of yes to these 8 criteria sufficient for internet addiction (Table 1) (Young 1998).

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1. Do you feel preoccupied with the Internet (think about previous on-line activity or anticipate next on-line session)?
 2. Do you feel the need to use the Internet with increasing amounts of time in order to achieve satisfaction?
 3. Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use?
 4. Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?
 5. Do you stay on-line longer than originally intended?
 6. Have you jeopardized or risked the loss of significant relationship, job, educational or career opportunity because of the Internet?
 7. Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?
 8. Do you use the Internet as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)?
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Table 1. Young's Criteria for Internet Addiction.

Beard and Wolf stated that the first five criteria defined by Young could be met without any loss of functioning in a person and thus at least one of the last three criteria (criterion 6, 7 or 8), which are directly related to functioning, should also be met (Beard and Wolf 2001). Like Young, Beard and Wolf, Shapira and associates also considered internet addiction as a impulse control disorder and pointed out that the exclusion criteria which is excessive internet use does not occur exclusively during periods of hypomania or mania and is not better accounted for by other Axis 1 disorders should especially be taken into account among the diagnosis criteria they devised (Shapira et al. 2003). Brenner defined internet addiction by adapting DSM-IV substance addiction criteria in 32 items of right or wrong and Anderson in 7 items of right or wrong (Brenner 1997; Anderson 2001). Aboujaoude and associates combined the impulse control disorders, obsessive compulsive disorder, substance abuse and the abovementioned internet addiction criteria and developed their four-step diagnosis criteria (Aboujaoude et al. 2006).

More studies in different fields are being carried out in recent years towards understanding the etiologic roots of internet addiction. In a genetic study where internet addicts were compared to a control group to identify the biologic origin of the disorder, the group consisting of internet addicts was found to have markedly shorter alleles in their serotonin-carrying genes and higher scores of harm avoidance and depression (Lee et al. 2008). In another study of brain imaging made on internet addicts, the addicts had less concentrations of grey matter in their left anterior cingulate cortex, left posterior cingulate cortex, left insula and left lingual gyrus as compared to the control group (Zhou et al. 2009). In an electro-physiologic trial on internet addiction, the addicted group was observed to make more cognitive effort to complete their assignments and to have lower efficiency in processing information and less impulse control as compared to the control group (Dong et al. 2010). It was reported in a neuro-cognitive study of internet addiction that the findings of internet addiction did not resemble those of substance addiction or pathological gambling in spite of all those efforts to diagnose internet addiction within the DSM system (Ko et al. 2010).

3. Epidemiology

The prevalence of internet addiction was reported to be between 1.5% and 8.2% (Peterson 2009). We can give 3 examples of studies from 3 different cultures where different scales were used: The prevalence of internet addiction was found to be 1.98% in a study made in Norway on 3237 adolescents between 12 and 18 years of age who used and did not use the internet by employing Young's 'Diagnostic Questionnaire for Internet Addiction - YDQ' (Johansson and Götestam 2004). The prevalence of pathological internet use was found to be 8.1% in a study carried out in the USA on 277 collage students including six participants who had not previously used the internet by employing a 'Pathological Internet Use Scale - PIUS' (Morahan-Martin and Schumacher 2000). The prevalence of internet addiction was observed to be 17.9% in another study made in Taiwan on 4710 university freshmen who agreed to take part in the study by employing the 'Chinese Internet Addiction Scale-Revision - CIAS-R' (Tsai et al. 2009).

Considering the gender difference, clinical samplings as well as society-based and online studies revealed that internet addiction was more in men. Although studies show that internet addiction starts in late 20's and early 30's, the natural trend of internet addiction is not fully known yet (Shaw and Black 2008).

The studies made on internet addiction may have produced inconsistent results for reasons such as the scales used in such studies, scales being used failing to measure the intensity of addiction, scales not having time dimension, inclination of some individuals to minimize their problems in self-reporting scales, most of the studies tending to exaggerate the problem and failing to differentiate for what reason the internet is being used (it may be for the purpose of work or communicating with some distant associate), invalid and unreliable research methods, target population and differences in cultural and social structures (Widyanto and Griffiths 2007; Tsai et al. 2009; Huang et al. 2010).

4. Comorbidity

Block stated that in 86% of those diagnosed as having internet addiction had also another DSM-IV diagnosis and pointing out that an average of 1.5 additional diagnoses were found

per person per study he said the problem became increasingly complicated in comorbid diseases (Block 2008). The studies made in this area reported that comorbid situations encountered in internet addiction included social phobia, depression, anxiety disorders, shyness, introversion, loneliness, personality disorders, substance addiction, sexual compulsivity and attention deficit and hyperactivity disorder (ADHD) (Robin-Marie Shepherd et al. 2005; Kratzer et al. 2008; Saunders et al. 2008; Ebeling-Witte et al. 2007; Yoo et al. 2004; Kraut et al. 1998; Cooper et al. 1999; Morahan-Martin and Schumacher 2000; Shapira et al. 2000). It was reported that excessive use of technology during adolescence (as in mailing) might relate to the risk of increased smoking and use of alcohol and this risk was more especially for those children having alcohol addicted parents (Ohannessian 2009). In a study made on 1204 male and 910 female students with ages ranging from 15 to 23 (mean 16.26), it was reported that attention deficit and hyperactivity disorder (ADHD), depression, social phobia and hostility accompanied internet addiction more frequently in boys whereas ADHD and depression were seen more often together with internet addiction in girls (Yen et al. 2007).

Comorbidity of two disorders does not determine the etiologic explanation. Since there are a limited number of studies on internet abuse, it may be more meaningful to accept the coexistence of internet abuse and other psycho-pathologies without considering one as the cause or symptom of the other (Morahan-Martin 2005).

5. Materials used in diagnoses and studies

There are no diagnosis criteria for internet addiction. A large number of scales were developed and used for internet addiction in studies. Examples of such scales include Young's 'Internet Addiction Test - IAT' (Young 1998b), 'Diagnostic Questionnaire for Internet Addiction - YDQ' (Petersen et al. 2009), 'Pathological Internet Use Scale - PIUS' (Johansson and Götestam 2004), 'Chinese Internet Addiction Scale-Revision - CIAS-R' (Tsai et al. 2009) and 'Distinguishing Characteristics of Internet Addiction - DC-IA-C' (Ko et al. 2009). In a trial systematically investigating the psychometric aspects of the Internet Addiction Test - IAT, 6 factors came to the fore, which are salience, excessive use, neglecting work, anticipation, lack of control and neglecting social life. These factors were found to have good validity and internal consistency, salience being the most reliable item (Widyanto and McMurran 2004). It was demonstrated that the Internet Addiction Test - IAT was also valid in different cultures (Korkeila et al. 2009).

6. Subtypes of internet addiction

Some investigators report that uncontrolled internet users are not really internet addicts but addicts of material such as gambling, chatting, shopping and gaming they can get from the internet. Therefore, it is important to differentiate the real internet addicts from those who satisfy their other addictions through the internet (Griffiths 2000; Li and Chung 2006).

As a result of her study on 35 people, Young divided internet addiction into 5 subtypes. These are cybersex addiction, cyber-relationship addiction, net compulsions, information overload and computer addiction. Cybersex addiction typically involves watching, downloading, online porno exchange or role plays of sexual fantasies in chat rooms. Cyber-relationship addiction may relate to establishment of excessive online relationships or

virtual sex. Online relationships come to get more important than those in real life. Net Compulsions involves a broad category of subtype behaviors including online gambling, shopping and trading. It may result in large amounts of financial loss. Information Overload relates to spending of excessive time for searching for, gathering and organizing information (compulsive web surfing or database search). Computer addiction is addiction to the games loaded in the computer (e.g. doom, myst or solitaire). Employees tend to spend their working hours on these games rather than on their work (Young et al. 1999; Shaw and Black 2008).

Like Young, Davis also preferred the term pathological internet use to describe uncontrolled/excessive internet use. Davis divided the internet into two as 'specific' and 'generalized' according to the purpose of using it (Table 2) (Davis 2001).

Specific	Generalized
<ul style="list-style-type: none"> • They are addicted to a specific function of the internet among its many functions • It involves online sexual material/services, online auction services, online stock trading, and online gambling • It is assumed to be the result of a previously developed psycho-pathology • It continues in the absence of the internet because it is content-specific • Internet use for addicts is nothing but an expression of devotion to various stimuli 	<ul style="list-style-type: none"> • It involves general and multi-purpose use of the internet • It relates to the social aspect of the internet • It emerges particularly as a result of a lack of social support from the family or friends, or a social isolation • It involves pastime such as online chats and e-mails with no definite purpose • The social contact and support occurring online result in an intense desire to remain in such artificial social life • Those with intense internet addiction use the internet to postpone their responsibilities • There is no way for them to express their anxiety, the internet is the connection of the individual with the outer world

Table 2. Subtypes of Internet Addiction.

7. Models proposed for etiology of internet addiction

In order to develop effective methods in treating internet addiction, the underlying mechanisms should be understood very well. One of the most comprehensive studies made towards this end is the cognitive behavioral model designed by Davis. This model places maladaptive cognitions in the center of pathologic internet use. While the scope of the behavior and the negative effects of this behavior on daily life were emphasized in the previous internet addiction studies, this model also focuses on maladaptive cognitions (Davis 2001).

The cognitive behavioral model of internet addiction defines the healthy use of the internet as a manner of using the internet for a clear purpose for a period of time that can be considered reasonable under the conditions specific to the user and in recognition of the

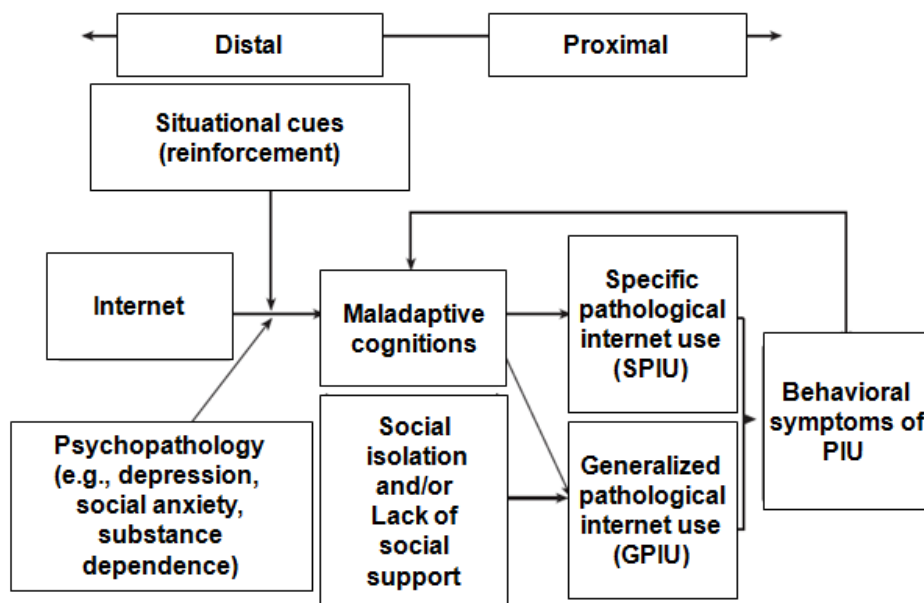
differences between the real communication and the communication through the internet without assuming a different personality (Davis 2001).

Some basic concepts need to be understood before explaining the cognitive theory of pathological internet use (PIU). In his cognitive behavioral theory, Davis initially used some basic concepts described by Abramson and associates to define the factors contributing to PIU. The factors inducing the behavior were classified as 'necessary', 'sufficient' and 'contributory'. A necessary factor is the etiologic factor that should exist for the symptoms to appear. A necessary etiologic factor is necessary in the context of development of a set of symptoms, but existence of such etiologic factors may not necessarily produce the symptoms. In other words, these factors are necessary but not sufficient in occurrence of pathology. Sufficient factors are etiologic causes, the existence of which guarantees occurrence of the symptoms. A contributory factor is an etiologic cause, the existence of which greatly increases occurrence of various symptoms, but is not necessary or sufficient for occurrence of pathology. Abramson et al. divided the causes into two as proximal and distal depending on the closeness of the pathological behavior to the segment where it occurred along the etiologic chain that results in a set of symptoms. They stated that in the etiologic chain that results in a set of symptoms, some causes were lie towards the end of the chain (proximal) and others close to beginning of the chain but at a point distant from the symptom (distal). If we were to exemplify these concepts using occurrence of anxiety symptoms such as increase in the heart rate, sweating and dryness in the mouth, we can give stress, danger or other fear-inducing situations as examples of proximal causes. Examples of distal causes may include sleeplessness, cardiac arrhythmia and paranoia caused by drugs. Thus, sleeplessness can be considered as a contributory cause distant to the anxiety symptoms for both being insufficient to be a cause of the symptoms and not being closely attributable to the anxiety symptoms under the name of 'etiology'. By contrast, a life-threatening situation may be a proximal and sufficient cause of the anxiety symptoms, because it is sufficient to create anxiety by itself. In other words, it is closely associated with the physical symptoms of an autonomic stimulation and thus with anxiety (Davis 2001).

7.1 Distal causes

Distal contributory causes of PIU have been explained within the framework of a diathesis-stress model. The cognitive-behavioral model of PIU (Figure 1) asserts that psychopathology is a distal necessary cause of PIU symptoms, meaning that psychopathology is 'definitely necessary' for PIU symptoms. It should be noted that the underlying psychopathology alone does not result in PIU symptoms, but may be the necessary cause in etiology. The stressor in this model is the introduction of the internet or of some new technologies in the internet. Such first encounter may be the discovery of pornography in the internet, a first-time e-chat, first-time shopping in the internet or online trading in the stock exchange. Exposure to such technologies is a distal necessary cause for PIU symptoms. The key incidence in experiencing the internet and the related technologies is the positive experience attained by the individual from that event. In other words, if the response to experiencing a new function of the internet is positive, it reinforces the continuity of activity. This operant conditioning continues until the person finds new technologies to have similar physiologic response. During the normal course of this conditioning, another conditioning towards associated stimuli may also occur. According to the principles of operant conditioning, any

stimulus that is associated with the original conditioning stimulus may produce the same reactions through a secondary reinforcement. For example, stimuli such as the sound of a computer connecting to the internet, the sensation of touching when typing on the keyboard and the scent of the room may produce the same satisfaction through conditioned responses. The secondary reinforcements are the factors that help develop and sustain situational cues which reinforce occurrence of PIU symptoms (Davis 2001).



*Davis RA. 'A cognitive-behavioral model of pathological Internet use.' *Comput Hum Behav* 2001; 17:187-195.

Fig. 1. The cognitive behavior model used by Davis to describe Internet addiction*.

7.2 Proximal causes

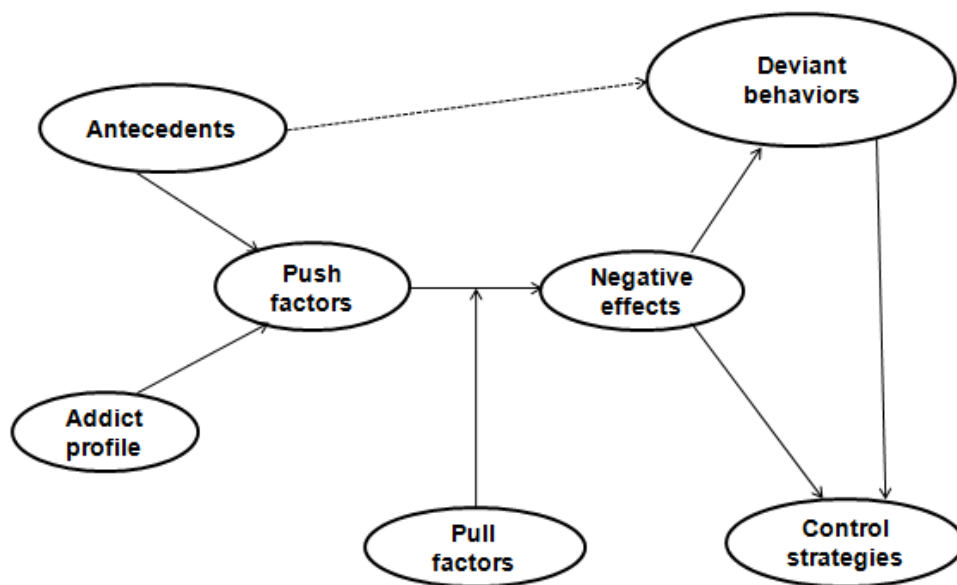
The most fundamental component of PIU are the non-functional ruminative cognitions of self. Ruminations relate to a person's thinking in a way to repeat the problems in internet use rather than directing his/her attention to the other events in his/her life. A person's constant efforts to understand why he/she uses the internet in an excessive way involve thoughts and behaviors such as reading about PIU or talking to friends about excessive use of the internet. It delays the interpersonal problem solving behavior and causes a stronger recall of the person's internet-related memories by preventing effective behavior such as taking action for implementing a plan. In this way, it causes the vicious circle within PIU to prevail in an aggravated way. These individuals have a negative point of view about themselves and use the internet to get positive responses from other people without taking a risk. They usually have 'excessive generalizations' and 'all-or-nothing' type of thought patterns about themselves and the outer world. They tend to have automatic thoughts about themselves such as 'I am good only at internet', 'I am useless when I am not in the internet,

but I am an important person in the internet' and 'I am a failure when I am not in the internet' and about the outer world such as 'The only place where I am respected is the internet', 'Nobody likes me when I am not in the internet', 'The internet is my only friend' and 'People treat me badly outside the internet environment' (Davis 2001). The addicts are more inclined towards catastrophizing and anxiety than other people. Young argued that the avoidance of real and perceived consequences of catastrophizing also contributes to compulsive use of the internet (Young 2007).

Based on the extensive use of PIU concept proposed by the Davis model, Caplan has made studies on university students using the 'Generalized Problematic Internet Use Scale' he developed. The study results revealed that people with low self-esteem were alone, they preferred to establish social relationships through the internet instead of face-to-face communication and this played a role in the etiology, development and outcomes of extensive pathologic internet use (Caplan 2002).

Douglas and associates have reviewed the articles published between 1996 and 2006 by way of meta-synthesis and proposed a conceptual internet addiction model. According to this model, excessive internet use is determined by mostly internal requirements and the individual's motivation (push factors such as ability to conceal identity, distress relieving and relaxing effect and meeting social needs). However, personal inclination is also important (antecedents such as being in environments allowing internet use like student hostels, internet use for many years and feeling of being misunderstood by others, and addict profiles such as refusal of excessive internet use as being a problem and having very little or no social life and/or self-confidence). The model mentions that the perceived attractive aspects of the environment (pull factors such as online gambling, access to addictive applications like games and chat, easy access to the internet and to information through the internet, ease of social interaction and idea exchange and easier communication through the internet as compared to other media) and the push factors ease the relationship between the excessive use of internet and the severity of the negative effects. Besides academic, social, economic and occupational effects and physical effects such as changes in sleeping patterns, the negative effects of internet addiction may also involve deviant behaviors (online porno, online stock exchange, virtual sex instead of normal relations and social activities for those with extreme shyness). The individual's awareness of the problem of internet addiction may facilitate use of control strategies to prevent the addiction. Some individuals are more likely to adopt behaviors deviated from the normal than others, thus a direct connection was proposed between the antecedents and the behaviors deviated from the normal (Figure 2) (Douglas et al. 2008).

Spada and associates investigated meta-cognitions as the mediator of the relationship between PIU and negative feelings (boredom, depression, anxiety) in university students using the internet. As a result, a positive and significant relationship was found between problematic internet use and the entire five dimensions of the Meta-cognitions Questionnaire-MCQ used in the trial, namely 'positive beliefs', 'cognitive confidence', 'uncontrollability and danger', 'cognitive awareness' and 'need of control' and the negative feelings. These results support the assumption that the relationship between PIU and negative feelings is entirely mediated by meta-cognitions (Spada et al. 2008; Wells and Cartwright-Hatton 2004).



*Douglas A, Mills J, Niang M, Stepchenkova S, Byun S, Ruffini C, et al., 'Internet addiction: Meta-synthesis of qualitative research for the decade 1996-2006.' *Comput Human Behav* 2008; 24:3027-3044.

Fig. 2. The conceptual Internet addiction model*.

8. Treatment

Since internet addiction is a relatively new concept, there are a limited number of generally accepted and empirical treatment methods for it. The methods proposed for treatment of internet addiction consist of primarily psychotherapy and some pharmacologic interventions.

Although the underlying basic psychopathology may produce internet addiction symptoms according to the cognitive behavioral model of internet addiction, internet addiction symptoms are specific to internet addiction and basic psychopathology and internet addiction should be investigated and targeted separately (Davis 2001). Young, on the other hand, argued that some people are in depression or in depressive episode of a bipolar disorder and if the cognitions that result in addicted internet use can be detected in such people, these cases should be treated using the basic psychopathology and it should be monitored whether or not the internet use has improved after that therapy (Young 1999).

The efforts to treat internet addiction through pharmacologic therapy are limited to a few trials made in recent years. In a trial investigating the efficacy of escitalopram on internet addiction, all of the 19 participants were administered escitalopram in the first 10-week open-label phase of the trial and then they were given escitalopram and placebo in a random and double-blind way for 9 weeks during the cut-off phase. The entire group was

found to have benefited from the medication treatment at the first stage, but there was no significant difference between the groups taking placebo and escitalopram at the cut-off phase (Dell'Osso et al. 2008). After over a 3-year monitoring, a serious recovery was achieved by administering naltrexone, which is an opiate antagonist inhibiting dopamine release increasing effects of opiates, to an internet sex addict who had been euphorically compulsive due to the role of the center of reward and dopamine in the addiction and whose functioning had been adversely affected (Bostwick and Bucci 2008). Craving for playing games in the internet, total gaming time and cue induced brain activity in dorsolateral prefrontal cortex decreased in 11 online gaming addicts who were administered medication therapy with Bupropion SR for 6 weeks. It was pointed out that Bupropion, which is a dopamine and norepinephrine reuptake inhibitor, was able to achieve these changes in a similar manner as in individuals with substance abuse or addiction (Han et al. 2010). In a 12-week double-blind trial involving an 8-week active treatment phase and a following 4-week post-treatment monitoring period, the effects of Bupropion and placebo were compared in 50 males with comorbid depression and online gaming addiction after administering randomized Bupropion + training to use internet or placebo + training to use internet to the participants. It was found in the trial that depression scores dropped during the active treatment, playing online games decreased and this improvement continued during the 4-week post-treatment follow-up period (Han and Renshaw 2011). Although pharmacologic studies on internet addiction are limited in number, it can be stated according to the available data that a distinct benefit from medication can be in the specific group, but psychotherapeutic interventions should be considered first in the generalized usage which relates to the social aspect of the internet.

Multi-modality therapy applications have usually been used in psychotherapy of internet addiction. The most important study that provides an idea on the effectiveness of a cognitive behavioral therapy on internet addiction and its prognosis is the study of Young where 114 internet addicts were administered only a cognitive behavioral therapy. In that study, patient motivation, online time management, improvement in social relationships, improvement in sexual functioning, ability to engage in activities outside the internet, and ability to avoid problematic applications were assessed in the 3rd, 8th and 12th sessions and in the 6th month. Clinical recovery started in most of the cases from the third session onwards and an apparent clinical improvement was achieved at the end of the 8th session. The subjects maintained their improvements during the 6-month follow-up period. The most effective improvement was in online time management in the early periods of the therapy. Social problems such as revival of non-internet relationships and engagement in non-internet activities were solved in the later periods of the therapy, generally during the 12th session. Success was the least in non-internet sexual functioning. Many patients could keep away from sexual chats and online pornography, but they reported problems in their matrimonial relationships. During the 6-month follow-up period, 5 patients got divorced for not being able to revive a satisfactory sexual relation with their partners (Young 2007).

In a 16-week study involving a cognitive behavioral group therapy, readiness-to-change, motivational interviewing and cognitive behavioral therapy interventions were used on 35 males who used the internet for sexual pursuits. Although improvements were observed in the quality of life and depression scores, a significant improvement was not seen in internet usage. In this study the addicts were also divided into 3 categories, namely 'anxiety',

'attention deficit hyperactivity' and 'mood' to investigate the effect of comorbidity on the results of the treatment and the best results were obtained in the 'anxiety' group, whereas the 'mood' group gave relative response and the 'attention deficit hyperactivity' group did not give a distinct response (Orzack et al. 2006).

In a literature-based study conducted in China on 59 adolescents employing an 'indigenous multi-level counseling program' which involved the intervention techniques and strategies in the fields of substance abuse, family counseling and peer support groups, the problem of internet addiction was reduced after joining the program and there were positive changes in the perceived parenting of the users. A subjective assessment showed that the participants found the program useful (Shek et al. 2009).

Reality therapy encourages the clients to discover their behaviors and assess how effectively they achieve their wishes. The following questions are asked to the clients: What are you doing right now? What did you really do last month and last week? What holds you back from doing what you want? What will you do tomorrow or in the future? Kim made a study on 13 undergraduates and a 12-person control group using a group reality therapy of two sessions a week lasting 5 weeks. The control group did not receive any treatment in the study and the level of internet addiction markedly decreased in the group treated and their self-esteem increased significantly as compared to the control group (Kim 2008).

Two randomized groups were included in a study investigating the effectiveness of a cognitive behavioral group therapy in internet addiction; one of the groups had 32 subjects aged between 12 and 17 who had active treatment and the other group consisted of 24 individuals who did not have any treatment. The participants were assessed at the baseline, immediately after the school-based group CBT of 8 sessions and in the 6th month. Although internet use decreased in both groups, the multimedia school-based group had apparent improvements in time management skills as well as in emotional, cognitive and behavioral symptoms after the CBT (Du et al. 2010).

The Acceptance and Commitment Therapy (ACT) is another therapy emerged within the framework of cognitive behavioral therapy. It targets internal experiences (thoughts, emotions and bodily sensations), uses behavior changing strategies and focuses on the current problems. 6 adult men with problematic internet pornography viewing were assessed before an ACT of 8 sessions each lasting 1.5 hours and in weekly and quarterly monitoring after the therapy. The result was a marked decrease in viewing that continued during the follow-up period. Psychological flexibility measurements showed a large decline whereas thought-action fusion and thought-control measurements had a minor decline. Although the study had limitations, it was the first ACT interference that was tested for internet pornography viewing adhering to the treatment template proposed by Hayes and associates.

Although multi-modality therapy interventions produce positive results in internet addiction, it is difficult to distinguish in these studies which therapy is more effective and which is less effective.

The cognitive behavioral therapy approach, which was derived from the therapies applied to alcohol addiction and substance abuse, seems to be an effective method in treating internet addiction even though it has no empirical evidences (Young 2007).

Many close associates of patients with internet addiction seek help to find ways of treating the addiction and consult to various institutions in despair. Surprisingly, many internet addicts are not in pursue of a treatment in spite of their impaired family, work and social lives and show little awareness of their problems. As supported by study results (Orzack et al. 2006; Shek et al. 2009) along with our clinical observations, the first stage in treating internet addiction can be the use of motivational interview techniques.

Motivational interviewing is a directive and client oriented approach that is used to help discover the ambivalence of behaviors and analyze them and finally achieve changing of the behavior. Motivational interviewing is not a therapy, but an interviewing technique where a set of strategies are used to enable initiation of further therapeutic interventions (Miller and Rollnick 2002). While some patients seek treatment themselves, others may have been 'compelled to come in' by their relatives. Treating internet addiction requires a change. Different approaches should be employed according to the stage in which the individual is in the process of changing. The trans-theoretic model of behavior introduced by Prochaska and DiClemente (Figure 3), which involves the stages of pre-contemplation, contemplation, decision, action, maintenance and relapse, may help view individuals at different stages and make interventions according to those stages. Since an individual is not aware of the existence of a problem at the pre-contemplation stage, he/she may not even attempt to defend him/herself; at this stage, the therapist should strive to deal with the denial and to move on to the next stage. Information is given at this stage about healthy internet use to create a possibility of change. The advantages (Pros) and disadvantages (Cons) of computer use may be evaluated. At contemplation phase, the client agrees to change, but does not have enough desire for changing. The patient has ambivalence and the motivational interviewing techniques are useful at this stage (Christensen et al. 2001, Miller and Rollnick 2002).

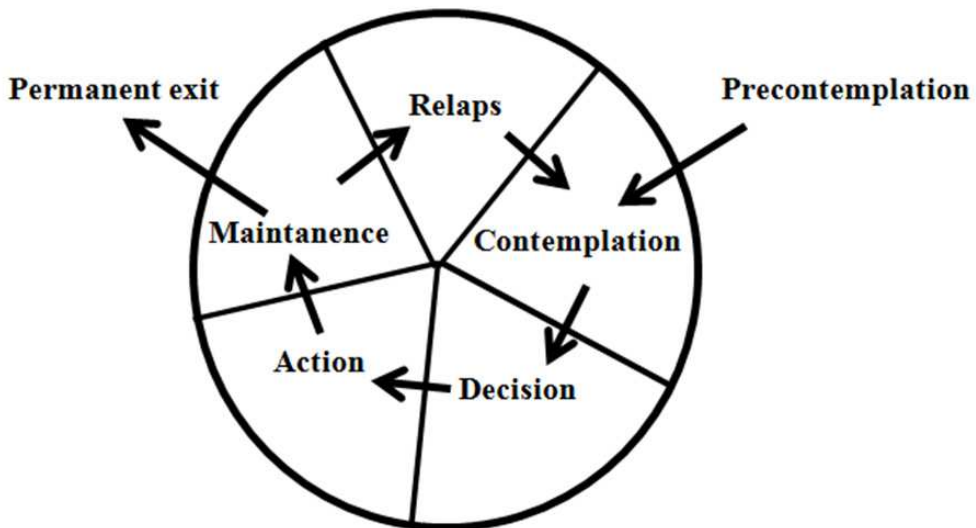


Fig. 3. Transtheoretical model of change.

It is helpful to know how the individual perceive 'importance' and 'confidence' in understanding his/her ambivalence. We can evaluate these dimensions using an importance and confidence scale with a rating from zero to ten.

How important would you say is for you to regulate your computer usage habits on a scale rated from 0 to 10 where 0 is not important at all and 10 is very important?

0	1	2	3	4	5	6	7	8	9	10
Not at all					Extremely					
important/confident					important/confident					

And if you decided to regulate your computer usage habits, how self-confident would you say you would be to do this on the same scale rated from 0 to 10 where 0 is I am not confident at all and 10 is I am very confident?

Although it is also possible not to show the patient a scale and explain the situation verbally, it may be more useful to discuss the issue by showing a scale or by making drawings in front of the patient. It is the best to accept ambiguity if the patient's answers add up to a very low figure. In such a situation, it may be appropriate to give information about the issue in a passive way. If the person did not give a very low figure, then he/she is asked why he/she did not give a lower figure. The answers help assess the condition in which the person is (I did not say 1 because I can succeed if I continue to ...; I did not say 1 because I cannot continue like this). What will result in a higher rating is found in a reverse way (What can raise you from 4 to 7? Why did you say 4 and not 7?). It is notable that this importance and confidence application also reveals the treatment target (Miller and Rollnick 2002; Rollnick et al. 1999).

Some internet addicts may develop physical symptoms such as back stain, eye stain, impairment in sleeping pattern, carpal tunnel syndrome and weight gain associated with inactivity (Young 1998). Such physical symptoms may be used as an excuse to design collective treatment targets in individuals who deny internet addiction. For example, an adult who had basketball as his hobby and who met the internet addiction criteria could not play basketball because his index finger did not heal due to typing on the keyboard. The treatment target for this patient was set out as 'correction of his computer usage habits to the extent his broken index finger is healed and he is able to play basketball again'.

Another difference of internet addiction from substance/alcohol abuse, addiction or pathologic gambling is that the relatives of patients also lack awareness like in the pre-contemplation and contemplation phases. If a risk of substance abuse or gambling is acknowledged by the families, the parents/spouse take an alert position. They try to prevent starting doing these or if already started stopping them at an early stage. We often hear from some patients who resort to personal therapy: 'My spouse changed a lot in the last 2 years, he/she does not look at my and my child's face', 'I cannot know my child anymore, his/her lessons went upside down in the last 3 months'. The internet, which is considered to be a must in modern life, may not be recognized as a problem initially by the relatives of the addicts as lack of it is not even imagined. When the history of such individuals is questioned, it can be realized that the changes in their relatives has started after uncontrolled use of the internet. In such situations, it will be necessary to inform the

family about the healthy use of internet and to encourage the internet addicts to participate in the treatment together with the family.

Since computers have important functions in daily life, treatment models that require complete avoidance of the internet are not practical. Unlike other addictions, the therapy here should involve goal-oriented techniques that encourage orderly and controlled internet use and alternative activities that keep one away from the internet (Young 2007; Young 2004). In the CBT (cognitive behavioral therapy) developed by Young, the cognitive behavioral therapy of internet addiction is limited by time as in other cognitive behavioral therapies and it usually lasts three months or 12 sessions (Young 2007). It may be advisable to make behavioral interventions during the early stages of a CBT of internet addiction.

During the therapy, a behavioral analysis is made and the case is formulated. As in other addiction types, internet use behavior is fully defined with all its aspects bearing in mind the possibility of the individual's hiding and reducing his/her complaints (especially in online sex users). In order to collect information about the internet use habits of the individual, the clinician seeks answers to the following questions: "On what days do you typically get connected to the internet? What time of the day do you usually sign in to the internet? How long do you usually stay connected in a typical login? Where do you usually use the computer?". Besides these, it should also be investigated whether the users are dependent on a specific function of the internet, because constant and frequent use of a particular function may trigger internet addiction and it can also serve as an indication for the interventions (Is it a specific internet addiction or a general one?) we intend to make during the therapy. To do this, the answers to the following questions are evaluated: "What functions of the internet are you using? How many hours on average do you allocate for each function in a week? Can you list the functions you use from the most important one to the least important one? What aspect of each function do you like the most?" (Young 1999) Other useful questions include "What do you think your problem exactly is, how do you interpret it? What are the effects of internet addiction on your living environments? What will you do that you cannot do now when you solve your internet addiction problem? (reasons directing the individual to treatment and treatment targets) Why did you come for treatment at this moment? (at his/her own will, directed by his/her relatives, changed social roles, coincidence) How long can you keep away from getting connected to the internet when you feel the desire/urge to get connected to it? (how long he/she can tolerate boredom) How did your internet addiction problem start and continue? (may have started after a loss) What are the factors affecting the continuity of your internet addiction? (alcohol, substance use, presence of others)

Behavioral interventions take precedence in the cognitive behavioral therapy of internet addiction. Simple but effective behavioral techniques are used in internet addiction on the basis of the experiences of therapists applying internet addiction therapies in private centers and the studies made on other addictions. When trying to regulate uncontrolled internet use, patients should be informed that they will experience hardship at the beginning. This is normal and should be expected. These people have had great pleasure from the internet for a long time and they will crave to get connected to the internet more frequently after the deprivation they experienced. If the time span in which a person who decided to regulate his/her internet use will be connected to the internet is left uncertain, most of the attempts

to limit internet use will fail. In order to prevent relapse, the patient should be administered a reasonably structured program for 'setting goals'. The new program to be devised should be frequent but short in time to reduce craving and withdrawal. For example, a 40-hour weekly use is first reduced to 20 hours. This 20-hour period may be arranged by dividing it into specific periods of time such as between 20:00 and 22:00 hours during the week and between 13:00 and 18:00 hours at weekend. A 10-hour program can be employed between 20:00 and 23:00 hours two nights during the week and between 8:30 and 12:30 am on Sunday. A logical arrangement will make the patient feel that he/she has the control over the internet not vice versa (Young 1999).

Internet use may be regulated by 'practicing the opposite' to help the individual break through the daily routine and abandon his/her virtual habit. If the person enters the internet first thing in the morning, the clinician may propose that he/she takes a shower first; if he/she enters the internet immediately after he/she comes home in the evening, sporting after work and waiting until dinner or evening news may be proposed; if he/she uses it during the week, weekend may be proposed and vice versa; if he/she uses it without a break, having a break in 30-minute intervals may be proposed; if he/she enters the internet at a certain point of the apartment, changing the place of the computer may be proposed. To interfere with internet use, 'external stoppers' such as a thing the individual has to do at that moment or a place he/she has to go may be used. For example, if the person is supposed to leave home at 7:30, entering the internet at 6:30 is proposed. In this way, he/she will have only an hour before logging out. Setting an alarm clock near the computer may be proposed against the risk of the person's negligence of natural alerts. Patients tend to exaggerate problems they experience and overlook the ways of solving them due to their thinking disorders. 'Reminder Cards' may be used to help the patient achieve his/her target of reducing internet use. The patient sincerely writes down 5 basic problems arising from internet use and 5 basic benefits he/she will have by leaving internet use in a detailed way. They look at these cards which they may be carrying in their pockets, wallets or purses to remind themselves what they wish to avoid and what they wish to do for themselves at the point of decision making when they are attracted to internet use rather than doing something more productive and healthy (Young 1999). In order to regulate their own internet use, patients may use the filtering programs that are used by parents to protect their children from having access to sexual content of the internet or by employers to increase efficiency at workplaces. A filtering program can be arranged to automatically shut itself down when the person attempts to have access to applications such as porno sites, online chat and gaming sites. Most of the internet addicts call this experience as a 'cold shower' (Young 2004). If the patient is a specific internet addict and his/her internet use cannot be regulated, he/she is made to keep away from the specific functions of the internet he/she is addicted to. The patient should stop all his/her activities related to that function. However, the patient may use other internet functions he/she uses functionally. Abstinence is employed for those patients who have a history of addiction such as alcohol or substance use and who replaced their addictions with the internet as a physically 'safe addiction' (Young 1999). Another important point to remember when making behavioral arrangements is to replace the internet with new activities even if they may not be equally pleasurable when restricting internet use which is almost the most pleasurable thing in life for the patient at that moment. If the therapist assumes the role of a technician who applies certain

behavioral techniques, the patient may show symptoms similar to grief reactions and even have a depression attack in later periods even if his/her internet use is decreased. To avoid this, the strong sides of the patient should be identified during the formulation. For example, a patient who was identified to have strong social traits and to enjoy being charitable may be proposed to assume an active role in charity associations by making use of this strong trait. It should be remembered as a general rule that reinforcing weak traits alone creates a patient population having uniform standards and resembling each other.

Behavioral exercises, behavior rehearsals, coaching, desensitization, relaxation techniques, self-management and attaining new social skills are the major techniques used in internet addiction therapy (Young 2007).

During further sessions, more importance is attached to cognitive presuppositions and errors (Young 2007). The person is kept away from internet to test his/her negative and non-functional thoughts coming to mind due to not being in the internet. His/her feelings before and after accessing the internet are noted. He/she is made to come across with the internet many times during this process to observe his/her cognitive reactions. His/her automatic thoughts, changes in his/her feelings and the progress in the therapy are recorded in daily observation tables (Davis 2001). Another error often made when making cognitive exercises with patients is the set of homework assigned to the patient before he/she understands the rationale behind such homework in order to have a fast improvement or treatment. Behavioral interventions have an important role in the early sessions of cognitive behavioral therapy of internet addiction. In that period, some patients are given exercises only to identify and define their emotions and then the feelings they had before and after they enter the internet, then they are made to recognize the changes in their emotions and then comes the stage of cognitive challenging which is our main goal. All of these stages are very valuable and enhance our understanding of stimulus-thought-emotion-behavior cycle and help us learn the method enabling us to interfere with this vicious cycle.

Personal therapy is not very effective in online sex addicts in regulating their sexual functioning outside the internet or rearranging the partner relationship after internet infidelity. Similar to the findings of Young in her study of cognitive behavioral therapy in internet addiction where the success was the least in non-internet sexual functioning, the patients had problems in their marriages and some got even divorced, it was found in another study that almost half of the couples got divorced and the other half lost confidence in their relationships (Young 2007; Whitty and Carr 2005). Establishing a cause and effect relationship between partnership problems and uncontrolled internet use is difficult and having a definite judgment about the cause and the effect may produce unfavorable results in the partner relationship and individually in the patient's health. Reasons such as soothing of a person involved in a problematic relationship by telling the problems arising between the couple to the third parties through the internet, ease of expressing the negative feelings about a partner and the person being validated as a response, and monotony of the sexual life between couples may urge individuals to seek sex or infidelity in the internet (Young et al. 1999; Mileham 2007); sex or infidelity in the internet may also be seen as a result of internet addiction. In conclusion, therapies conducted by clinicians specialized in couple therapy and sexual therapy with the participation of the partner may be more useful in regulating sexual functioning of internet addicts outside the internet or regulating the couple relationship after an internet infidelity.

As in all addictions, the phases of maintenance and relapse are critical also in internet addiction. It may be useful if towards the end of a therapy the patient makes a record of the techniques that have been most beneficial for him/her during the cognitive behavioral therapy sessions and prepares his/her reminder cards and use them in future when he/she has the desire of using the internet. If small deviations occur in the newly formed internet routine, patient's relatives should be tolerant and constantly give positive feedback to the smallest effort and success of the patient towards the future. Although it may be difficult for the patient's relatives to control themselves, it is risky in terms of relapse to say things such as 'all the family suffered from your internet addiction' which reminds the patient only of his/her past bad experiences or to blame him/her for his/her past behavior while trying to give positive messages by saying for example 'it is wonderful that you are not an internet addict like you used to be, why hadn't you done it before if you were able to control your internet use?'

The 12-step support groups give an opportunity to minimize the risk of relapse. Support groups help internet addicts strengthen their social support systems, improve their relationships outside the internet and cope with the attraction of the internet in the course of recovery (Young 2004).

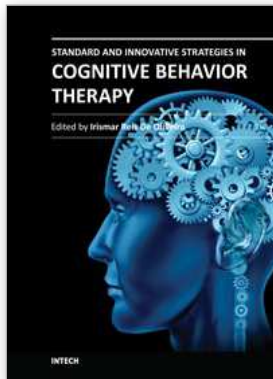
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Cognitive-behavioral therapy (CBT) is the fastest growing and the best empirically validated psychotherapeutic approach. Written by international experts, this book intends to bring CBT to as many mental health professionals as possible. Section 1 introduces basic and conceptual aspects. The reader is informed on how to assess and restructure cognitions, focusing on automatic thoughts and underlying assumptions as well as the main techniques developed to modify core beliefs. Section 2 of this book covers the cognitive therapy of some important psychiatric disorders, providing reviews of the recent developments of CBT for depression, bipolar disorder and obsessive-compulsive disorder. It also provides the latest advances in the CBT for somatoform disorders as well as a new learning model of body dysmorphic disorder. Two chapters on addiction close this book, providing a thorough review of the recent phenomenon of Internet addiction and its treatment, concluding with the CBT for substance abuse.

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