Cognitive-Behavioral Treatments for "Internet Addiction"

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Abstract: During the last years, Internet misuse was increasingly described as a possible "Internet addiction". Based on some similarities with well known addictive behaviors, it was hypothesized that several cognitive, behavioral and emotional patterns are involved in the maintenance of problematic Internet use. The present paper summarizes the motivational and cognitive behavioral approaches used during the treatment of "Internet addiction". A limited number of preliminary studies evaluated these treatments and conclude to the usefulness of these approaches. Due to the several limitations of these previous studies, further works including controlled design are highly warranted.

INTRODUCTION

During the last 10 years, internet misuse was increasingly described as a possible "Internet addiction" [1]. The proposed diagnostic criteria [2] include the following core symptoms: preoccupation (obsessive thoughts about the Internet), loss of control (internet usage more than intended, Internet use regardless of the negative consequences), tolerance and withdrawal symptoms. In particular, persons with "Internet addiction" are unable to deal with essential parts of their lives because of their web-related activities and preoccupations. They may abandon off-line connections in favor of some online applications (*i.e.* pornography, games, chatting, gambling…).

In several studies, "Internet addiction" seems to be associated with depression [3-5], anxiety [5], social phobia [6], loneliness [7], low self-esteem [8, 9], hostility [9, 10], substance use [11], harmful alcohol use [12], as well as lower frustration discomfort [13] and higher impulsivity levels [14].

This trouble seems also associated with negative consequences in various domains of real-life such as time management, sexual life, marriage, family, work, finance and academic activities [15-17].

In fact, Internet is more a vehicle than a unique application. So, the word "Internet addiction" may probably refer to a wide variety of addictive behaviors such as: gambling, gaming, chatting, cybersex...

This consideration led Davis [18] to make a clear distinction between two distinct types of pathological Internet use: a generalized one and a specific one, assuming that the specific ones (such as online gambling) would exist even in the absence of the Internet. So, the specific form of internet misuse is assumed to be the result of pre-existing psychopathology [18], which becomes associated with online activity. Whereas the generalized one refers to a multidimensional overuse mostly related to the social aspect of the Internet.

COGNITIVE BEHAVIORAL HYPOTHESES ON INTERNET ADDICTION

While earlier research has focused on the behavioral components, negative consequences, measure and severity of excessive internet use as well as possible psychiatric co morbidities, less data are collected on the cognitive and behavioral factors influencing the addiction.

Despite few recent exceptions [19], available publications on this field are mostly the results of authors' hypotheses and observations than the conclusions of specific studies. The "addictive-like" conception of the disorder led also authors to include several aspects of the hypothesized cognitive and behavioral components of the behavior in scales aiming to asses its severity such as the "Internet addiction test" (IAT) [16, 20] already translated in several language such as Italian [21] and French [22] and the "compulsive Internet use scale"[23].

In fine the following cognitive, emotional and behavioral patterns are described as possibly involved in "Internet addiction":

Cognitions

a. Time distortion: This symptom is commonly observed during on-line activities [17].

b. Excessive worry: Young [16] suggested that "catastrophic thinking" about real-life might contribute to a compulsive internet use due to the potential of "psychological escape" of Internet activities.

c. Internet-related ruminations: Davis [18] hypothesized that concerns about problems associated with the individual's Internet life (related to the virtual life or

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to consequences in real life) may contribute to "Internet addiction".

d.　Depression-related cognitions: Based on the Beck's cognitive theories of depression [24], Davis [18] hypothesized that a depression-like cognitive style (feelings of self-consciousness, low self-worth, low self-esteem, low self-efficacy, negative self-appraisal) are sufficient causes of pathological internet use. Several cognitions may include contents related to the Internet such as, ``I am only good on the Internet'' or ``The Internet is the only place I am respected''.

e.　Denial: Young [16] reported several cognitions related to denial such as: Minimizing internet use; blaming "It's not the internet, it's the stress in my life"; excusing "It's been a long day, the internet helps me", attacking (*i.e.* Question 9 of the IAT [16, 20]: "Do you become defensive… when someone asks what you do online?").

f.　Expectancies: On a large sample of college Taiwanese students [19], it was found that positive outcome expectancy and negative outcome expectancy were significantly and positively correlated with "Internet addiction". So, in one hand, as observed in alcohol dependence [25], positive expectancies related to Internet use may contribute to the maintenance of the addiction. In the other hand, people aware of negative expectancies (possibly due to their presence in their life) seem to be, probably, already involved in an addictive behavior which persists despite acknowledged negative consequences. Some of the expectancies are indirectly (questions not explicitly related to cognitions) included in questionnaires assessing the severity of the Internet addiction such as the IAT [16] (*i.e.* Question 10: "Do you block disturbing thoughts about your life with soothing thoughts of the internet?"; *i.e.* question 11: "Do you find yourself anticipating when you go online again?").

g.　Self-efficacy: Based on Bandura's social cognitive theory, the study of Lin *et al*. [19] examined the contribution of refusal self-efficacy of Internet use to "Internet addiction" among college students. The results showed that refusal self-efficacy of Internet use was significantly and negatively related to "Internet addiction".

h.　Obsessive preoccupations-related to the Internet: These obsessions were considered as a key element of the disorder and were included in measures such as the IAT [16] and the "Compulsive Internet use scale"[23].

i.　Rejection sensitivity in social situation: Anticipation of rejection in social situation was previously associated to excessive Internet use and to the use of Internet for social comfort as measured by the "online cognition scale" (OCS) [26] (*i.e.* "I feel safest when I am on the Internet"; "People accept me for who I am online"; "Online relationships can be more fulfilling than offline ones"). This is possibly associated to the use of the Internet as a way of escapism from real-life social relationships.

Behavior

a.　Escape (behavior avoidance): Escape was presented by Young [16] as "the drug of the Internet". In fact, when facing stressful events, Internet use offers immediate reinforcements from a virtual interactive world. This behavior could be particularly frequent in the case of frustration intolerance [13]. The "distraction subscale" of the OCS refers to this concept (*i.e.* "I often use the Internet to avoid doing unpleasant things"; "When I am online, I don't need to think about offline problems") [26].

b.　A deficit in "natural" behavior experiments: Many adolescents experience the Internet early in life. It was then hypothesized that, avoidant adolescents, may lack experimentations of adequate coping in real life when facing stressful life events [13]. This may conduct to maintenance of Internet misuse.

c.　Operant conditioning: A fundamental factor in the practice of the Internet is the reinforcement an individual obtains from its usage [18]. When a person tests a new Internet application, he is reinforced by the quasi-immediate consequent response. This response may give a positive reinforcement (excitation, pleasure, arousal, curiosity, immersion in the virtual world, attractive fantasy, guild affiliation feeling, virtual social interaction...) or a negative reinforcement (escape from a negative mood state, reduction of anxiety…). If the response is positive, the person is reinforced to continue the activity and, then conditioned to repeat the behavior more often in order to reach the same response.

d.　Pavlovian conditioning: Every stimulus associated with the primary conditioned stimulus is susceptible to secondary reinforcement. Therefore, as suggested by Davis [18]; stimuli such as the sound of a computer or a place associated with Internet use may result in a conditioned response. Situational cues may then contribute to the maintenance of the behavior. As previously suggested in addictive disorders [27], the behaviors may be automatically activated or mediated by craving, desires or cognitions related to Internet usage.

e.　Impulsivity (lack of control): Impulsivity was previously associated with addictive behaviors. Preliminary data seem to corroborate a possible association between "Internet addiction" and impulsivity [14]. Lack of control on the behavior was also included in scales such as the IAT [16] and the CIUS [23] (*i.e.* question 17 of the IAT: Do you try to cut down the amount of time you spend online and fail?; *i.e.* question 2 of the CIUS: "How often do you continue to use the Internet despite your intention to stop?") and appeared as one of the dimension of the IAT in several [20] but not all factorial analysis (one unique dimension for the French language study) [22].

f.　Loneliness-related behaviors: Behaviors associated with loneliness (*i.e.* item 4 of the CIUS: "How often do you prefer to use the Internet instead of spending time with others…?") may contribute to increase the

risk of "Internet addiction" [28]. Excessive internet use may consecutively contribute to the maintenance or the development of loneliness leading to the aggravation of Internet addiction.

Emotion

a.   Emotional relief: It has been repeatedly suggested that people with "Internet addiction" turn to the computer to get relief from mental tension and stressful events in their real lives [16] [29]. In a study of Greenfield and colleagues reported by Young [17], more than 29% of persons with Internet addiction have reported to use the Internet to improve their mood or escape on a regular basis. Emotional relief seems to constitute the negative reinforcement which may enhance the escape behavior. Questions related to this aspect are included in several "Internet addiction" scales such as the "Compulsive Internet use scale" (CIUS) (*i.e.* question 13: How often do you go on the Internet to escape from your sorrows or get relief from negative feelings?).

b.   Craving: It was reported that craving is one of the components of the "Internet-addiction" related behavior [30, 31].

c.   Withdrawal: Symptoms of withdrawal may contribute to internet use in order to relieve these symptoms. Questions-related to withdrawal were included in several questionnaires aiming to measure the "Internet addiction" such as the IAT [16] (*i.e.* question 20: "Do you feel depressed, moody, or nervous when you are offline, which goes away once you are back online?") and the CIUS (*i.e.* question 14: "How often do you feel restless, frustrated or irritated when you cannot use the Internet?").

d.   Feeling of guilt: Guilt about on-line use was considered as a possible enhancer of Internet misuse [18], probably, by a reinforcement of escape-related processes.

e.   Emotional disturbance related to specific psychopathology: David's [18] proposed an etiological model which probably go ahead the pure cognitive behavioral conceptualization. In this model, psychopathology was presented as a necessary etiologic factor for "pathological Internet use".

COGNITIVE BEHAVIORAL TREATMENTS

Cognitive behavior therapy (CBT) has been shown to be an effective treatment for disorders such as pathological gambling [32] and substance abuse [33]. Their use in the context of "Internet addiction" appeared then as a potentially useful strategy.

As proposed on CBT of substance use disorders, clients are trained to monitor their thoughts and identify affective and situational triggers linked with their Internet behavior. Alternative coping skills were trained as possible ways to prevent relapse and enhance the quality of their off-line life. Life activities that do not involve Internet are assessed in order to engage patients in those activities or to treat or relief specific difficulties (*i.e.* a social phobia interfering with social life). As reported by Young, counseling also pay attention on underlying factors which may contribute to Internet misuse, for example: job, academic or marital problems [17].

Of great importance, one of the main characteristic of "Internet addiction" treatment is a double focus on "off-line" as well as on "on-line" life, cognitions and behaviors.

Treatment Goal

Abstinence recovery models are not usually adequate because computers have become a salient part of daily professional and occupational lives [17, 34]. Therefore, there is a general agreement that moderated and controlled use of the Internet is more suitable. A primary goal of abstinence from a given problematic application is however proposed when its controlled usage seems to be too difficult or problematic even as while-parallel with preserving moderated Internet use for other functions.

The main cognitive behavioral and motivational components of the treatment of "Internet addiction" proposed by Young [16] as a number of "recovery strategies" were summarized in Table **1** and described below. These strategies were regrouped according to their aims. The "Young's" strategies related to the detection of the disorder by the relatives were not presented in the present paper.

Treatment Strategies

Acknowledgement of the Problem

Among the strategies listed by Young [16], the first one "recognize what you're missing", the 6th "carry positive reminders cards" and the 8th "listen to the voice of denial" aim to help individuals to acknowledge the importance of their "Internet addiction" related costs (time with partner family or friends, daily chores, sleep, sex, hobbies, work problems…) and the potential benefits when changing the behavior. So, people were invited to recognize what are the important lost activities? What are the costs of the problematic Internet behaviors? What are the major benefits of behavior change?

Clients are invited to identify their "voice of denials" such as permissive cognitions related to Internet misuse (*i.e.* "It's been a long day and the internet helps me relax").

A parallel was made with alcohol dependence by the introduction of the word and concept of "on-lineaholics" underlying the *addictive aspects* of the Internet misuse.

Auto Observation

People are invited to assess their on-line activities (recovery strategy 2) through a detailed auto-observation of the activities (their daily internet log) and as well as the time spent in these activities and then to identify specific triggers (with emphasis on emotional triggers) (recovery strategy 5). Links between this use, emotional triggers and escape were then made. "Escape", was presented as "the drug of Internet".

Time Management

Behavioral strategies aiming to manage time are proposed and trained. Those strategies (recovery strategy 3) involve: the development of alternative activities; the identification of the usual pattern of usage and a training to

Table 1. **Main Cognitive Behavioral and Motivational Components of the Treatment of "Internet Addiction" Proposed by Young [16]**

Recovery Strategy	Main Content	Aim
Recognize what you're missing	Rate you're lost activities/ Motivational interviewing	Acknowledgement of the problem
Carry positive reminders cards	List the 5 major problems caused by "internet addiction".List the 5 major benefits of cutting down your internet addiction.	
Listen to the voices of denial	Identify cognitions related to the denial of internet problematic behvior/ cognitive restructuring	
Profiles of On-lineaholics	Psychoeducation on alcohol dependence with comparison to internet addiction	
Assess your On-line time	Detailed assessment of online activities and time	Auto-observation
Recognize your addictive triggers	Identify triggers and particularly emotions associated with the initiation of internet use	
Escape, the drug of the Internet	Link between emotional trigger and the use of internet to escape /psychoeducation-cognitive restructuring	
Use time management techniques	Use external stoppers of internet use; planned internet usage, planify alternative activities, practice the opposite	Time-management
Take concrete steps to address problems	problem solving	Development of off-line activities
Confront your loneliness.	Explore facors leading to loneliness; limiting social-life on internet; Move to social-life real situations	
Find support in the real world	Psychological, medical, social support	
Consider the benefits of recovery	Identification of the benefits of the recovery process and the long term consequences of relapse	Relapse prevention
Tips for the journey of recovery	Identification of the relpapse triggers	
	Use alternative behavior	

practice the opposite (*i.e.* change the time of on-line connections, the place of the computer...); the introduction of external stoppers (off-line meeting with others…); planned internet time into weekly schedule with progressive and attainable goals.

Development of Off-Line Activities

Social interventions and problem solving were applied in order to address real-life problems (*i.e.* unemployment) (recovery strategy 7) to reduce loneliness (recovery strategy 9) and to explore, treat and resolve difficulties, assertive problems or other psychopathological problems linked to inability to develop several aspects of off-line activities. In this field, social, psychological or medical supports on the real life (recovery strategy 4) were encouraged.

Relapse Prevention

Relapse prevention is based on several motivational aspects such as the importance of the maintenance of moderation or abstinence (consider the long term consequences: recovery strategy 18) and the identification of signs of recovery (recovery strategy 20).

Furthermore clients are trained to identify potential relapse triggers and to develop alternative behaviors (recovery strategy 19).

Treatment Setting and Specificities

Young [17] used an individual setting involving the process described upper. Orzack *et al*. [35] used a group setting for internet-enabled sexual behavior. This latter was

chosen by the authors as one of the most effective for problematic sexual behavior. In this context, a group setting may be particularly important to help the members to decrease shame, guilt and loneliness related to their behaviors. Their treatment was proposed as a semi-structured 16 sessions group which combines psychodynamic, motivational interviewing and CBT. The main topics addressed and trained during the sessions were the following ones: stage of changes; connections between situations, feelings and thoughts; current stresses; family tree form; all or nothing thinking; denial; self-control triad; assertiveness training; relapse prevention strategies; coping strategies; discussion about feelings and change process during the treatments. Specific aspects linked to Internet and cybersex-related behaviors are not explicitly described in their report.

Effectiveness Studies

There are few reports on the effectiveness of these treatments. Two open label uncontrolled studies were identified [17, 35].

In the Orzack report [35], 35 men involved in problematic internet enabled sexual behavior attended the group treatment previously described. Participants were assessed before treatment, at session 8 and 16 with the Orzack time intensity survey (OTIS: a measure of on-line duration activities), the Beck depression inventory and a measure of quality of life.

The study shows a statistical increase in quality of life and a decrease in severity of depression but no change on the Internet-related behavior as measure by the OTIS.

Unfortunately no data about specific sexual internet use were assessed (OTIS does not measure the participants' specific activities on the Internet). The drop-out rate was high. So for OTIS, data are available for less than five patients after the session 8. It seems then difficult to drawn a clear conclusion from this study.

Young [17] reported data on 114 clients (42% women) seen through the "Center for Online Addiction" and screened using the IAT [16]. Patients who exhibited high risk behaviors such as histories of psychological trauma, sexual abuse and axis II pathology were excluded from the study and referred to other therapists. Most reported problematic Internet use applications were the following ones: Sexual chat (30% women, 10% males), pornography (30% males, 0% women), gambling (10% males-0% females) and gaming (2% women, 8% males). Time management was the most reported problems (96%) followed by relationships (85%), sexual (75%); work (71%) and financial (42%) difficulties. The treatment strategy was an individual treatment in accordance with the main components reported upper and in Table **1**.

Clients were assessed using the "Client outcome questionnaire" (a questionnaire designed for the purpose of the study) who assessed ability to abstain from problematic Internet use, motivation to quit problematic Internet use, engagement in offline activities, improved relationship functioning, improved offline sexual activities. Questions were rated with a Likert scale (0=not at all, 5=extremely helpful). The quality of the counseling relationship was also assessed with questions such as "Rate the overall quality of the counseling environment". Clients were administrated the "Client outcome questionnaire" after the 3rd, the 8th and the 12th session as well as at 6-month follow-up.

The quality of the counseling environment seems to be very good as rated by the patients: 4.55 (0.75) at the 12th session.

Client's ability to engage in offline activities improve from 2.67 (0.89) at 3rd session, to 4.66 (0.52) at the 12th session. Client's ability to control their computer use improved along a mean of 3.95 (SD=1.21) by the 3rd session to 4.33 (SD=0.58) by the 12th session and remains good at 6-month follow-up 4.22 (SD=0.75). The ability to abstain from sexually explicit online material improved along a mean of 2.15 (SD=0.91) by the 3rd session to 3.26 (SD=1.02) at the 12th session.

Unfortunately the results were reported without more statistical analysis (it was not clear if the results are statistically significant or not) and the data of the client outcome questionnaire were not available before the third session. Furthermore the mean IAT scores were not reported. In addition, the "client's ability to control their computer use" is already 3.95 about 5, at the third session. The score seems already high for an "Internet addiction" considered as a disorder involving loss of control on Internet-related behaviors. This astonishing data is possibly explained by some improvements between the first and the third session or by some particularities of the sample or possibly, by a problem with the measure itself. The measure is possibly not sufficiently precise. The session three mean score of a more explicit measure: "the ability to abstain from sexually explicit online material" [2.15 (SD=0.91)] is more conform to the presence of lack of control.

The number of drop-outs was not reported and the study lack control group. In spite of these limitations the author concludes that that most clients showed continuous improvement by the 3rd session. It seems possibly true, in the presented sample, view the results presented (if statistically significant). So the proposed treatment is probably helpful. It seems however very difficult to drawn more general conclusion on the effectiveness of the treatment due to the limitations cited above.

CONCLUSIONS

As for other impulse control disorders and addictive behaviors, treatments involving motivational interviewing and cognitive and behavior therapies were proposed for "Internet addiction". These treatments were described in several papers and books [1, 16, 17, 34, 35] and seem potentially useful. These treatments lack however experimental evidence. Further studies should use more appropriate measures and control groups. More attention should be paid on the cognitive and behavioral processes involved in the initiation and persistence of Internet (or more probably) specific –Internet applications-related addictive behaviors. The cognitive behavioral conceptualization of the trouble (proposed in 2001) [18] could be revisited in the light of current knowledge.

As suggested by Young [17], further studies are also warranted on the cognitive behavioral specificities of the various "Internet addiction"-related applications (cybersex, gambling, gaming…).

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CONFLICT OF INTEREST

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