



Cyberaddiction: Fundamentals and Perspectives

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by

Pierre Vaugeois, Ph.D.



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Table of Contents

Introduction	1
1. Cyberaddiction as a Field of Study	2
2. Problems Associated with Internet Use.....	3
3. Studies on Internet Use	6
3.1 Prevalence of Internet Use	6
3.2 Amount of Time Spent Using the Internet.....	8
4. Cyberaddiction and Mental Disorders	10
5. Negative Consequences of Cyberaddiction	11
6. Personal Characteristics of Problematic Internet Users.....	12
7. Diagnosing Cyberaddiction.....	13
8. Tests for Cyberaddiction.....	18
9. Studies on Prevalence of Cyberaddiction.....	24
10. Treatments for Cyberaddiction.....	25
11. Discussion	26
References	28

Introduction

This paper is an exploratory study that attempts to shed some light on the overall subject of cyberaddiction by answering the following questions about it:

- How should cyberaddiction as a field of study be defined?
- What findings have emerged from past studies on cyberaddiction?
- Is cyberaddiction a new kind of mental disorder?
- What negative consequences does cyberaddiction have on those who use the technologies concerned?
- What are the personal characteristics of individuals whose use of these technologies is problematic?
- How can cyberaddiction be diagnosed?
- Are there any tests for cyberaddiction?
- Are the studies on the prevalence of this new form of addiction accurate?
- Are there any treatments for cyberaddiction?

1. Cyberaddiction as a Field of Study

In this section, we first attempt to determine whether Internet addiction is the only form of cyberaddiction. We then go on to examine how cyberaddiction as a field of study should be defined.

Almost all of the existing literature on cyberaddiction is in English, and these English-language studies actually do not use the more general term “cyberaddiction”. Instead, they use terms that refer specifically to the Internet. On the one hand, we see references to “Internet addiction” (e.g., Young, 1996)¹ or “Internet dependency” (e.g., Scherer, 1997).² On the other, we see expressions such as “pathological Internet use” (e.g., Davis, 2001³; Morahan-Martin and Schumacher, 2000⁴) and “problematic Internet use” (e.g., Caplan, 2002).⁵ So, the first question that arises is whether Internet addiction is the only form of cyberaddiction.

There have already been a number of studies of dependencies on video games that are played on computers or gaming consoles without an Internet connection (Keepers, 1990⁶; Shotton, 1991⁷; Griffiths, 1992⁸; Tejeiro Salguero and Bersabé Morán, 2002⁹). A symposium on whether video gaming is a disease was even held in Paris in the Spring of 2006, and in June 2006, the first video gaming detox clinic was opened in Amsterdam.

The worldwide video game industry is truly tremendous. In 2002, its profits totalled \$20 billion, surpassing those of the film industry (Bartholow *et al.*, 2005)¹⁰. In 1999, nearly three-quarters of all U.S. families with a child age 2 to 18 had a video game console (Lachlan *et al.*, 2005)¹¹. A U.S. study done in 2002 (Pew Internet and American Life Project, 2003)¹² showed that 71% of all U.S. college and university students had played video games on computers and 56% had done so online, compared with 59% who had done so on dedicated video game consoles. This study also found that 65% of these students played these games either regularly or occasionally. As regards the amount of time spent playing video games, a study done in 2000 (Gentile *et al.*, 2004)¹³ showed that Americans age 2 to 17 played video games an average of 7 hours per week (13 hours for boys, and 5 hours for girls).

More recently, an AP-AOL survey (2006)¹⁴ revealed that 40% of American adults play video games on their computers or video game consoles. The proportion of players who play on line is 45%; the remaining 55% play only locally (that is, offline). Online players spend more time playing than offline players: 42% of online players play for four hours or more per week, compared with only 26% of those who play offline.

Thus, the problematic use of video games is a real phenomenon. But a distinction must be made between online games, which involve using the Internet, and offline games, which are played locally on personal computers or game consoles and do not involve such use.

At this stage of our study, we therefore suggest that the field of study of cyberaddiction be defined to include two distinct types of cyberaddiction:

- Type I cyberaddiction, or *online cyberaddiction* (problems associated with the use of the Internet);
- Type II cyberaddiction, or *offline cyberaddiction* (problems associated with the use of electronic devices not involving the Internet).

Given that almost all of the existing literature deals with the problems associated with Internet use, we will now attempt to more closely define the field of Type I cyberaddiction or online cyberaddiction.

2. Problems Associated with Internet Use

Young (1999)¹⁵ distinguishes three major types of problems associated with Internet use, or, to use her terminology, three major types of Internet addiction:

- The most common type, according to Young, consists of addictions related to *sexuality*, such as being addicted to cyberpornography (looking at, downloading, or purchasing pornography in-line) or cybersexuality (participating in activities of a sexual nature online, through “chat” facilities or web-cam based videoconferencing);
- Next most common are addictions related to the *interactive* aspect of the Internet, such as chat rooms, e-mail, and online gaming;
- Last come addictions of a *monetary* nature, such as online auctions (eBay), online gambling, and online shopping.

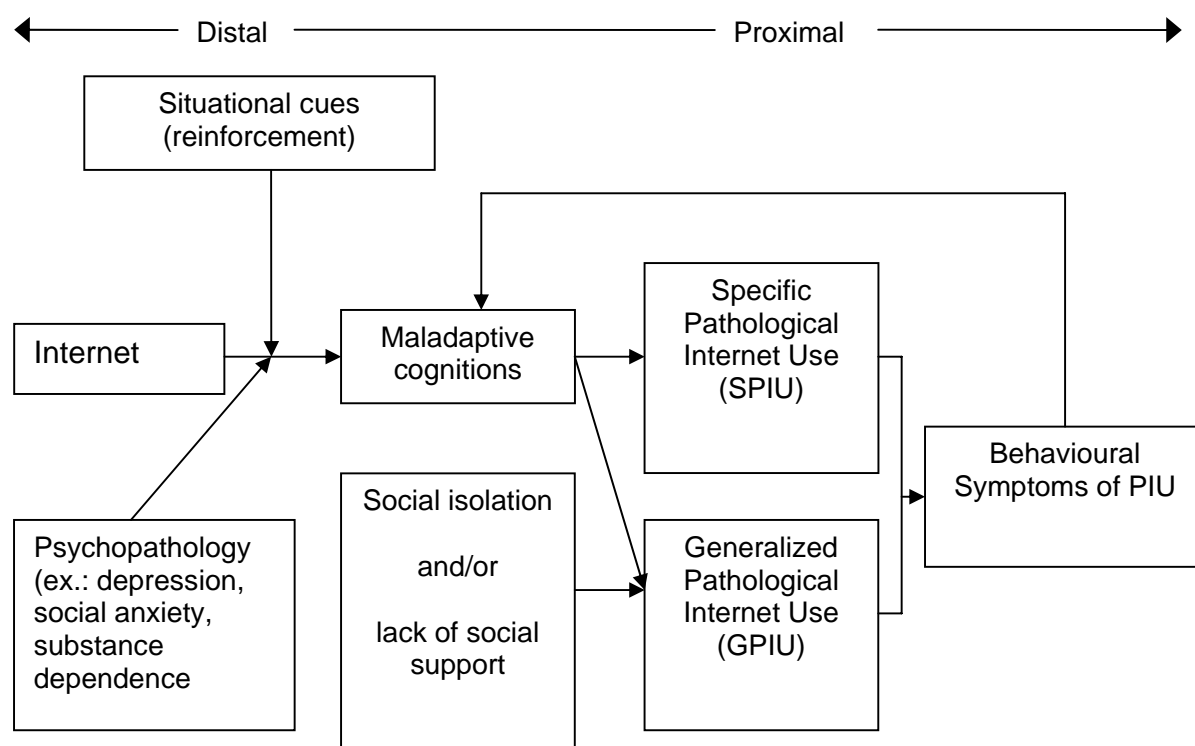
In contrast, the only theoretical model that we have found of the problems associated with Internet use—Davis’s (2001)³ cognitive-behavioural model of pathological Internet use—makes a different set of distinctions, between specific and generalized pathological Internet use:

- In specific pathological Internet use (SPIU), the problems are content-specific (for example, online sex or online gambling), would exist even in the absence of the Internet, and therefore do not constitute true cases of problems associated with Internet use.
- In generalized pathological Internet use (GPIU), the problems are not content-specific, would not exist in the absence of the Internet (for example, problematic use of online chat or e-mail), and therefore constitute the only true cases of problems associated with Internet use.

We will now examine Davis's (2001)³ cognitive-behavioural model of pathological Internet use in more detail.

Davis (2001)³ avoids the term "Internet addiction", seeing "addiction" as referring to dependence on psychoactive substances. Instead, Davis prefers the term *pathological Internet use* (PIU), applying "pathological" in the same sense as in "pathological gambling". In Davis's model, one of the etiological factors for PIU is the presence of a psychopathology. According to Davis, previous studies focused only on maladaptive behaviours (for example, the negative consequences caused by compulsive Internet use). In contrast, Davis's model also focuses on maladaptive cognitions (for example, having greater self-confidence online than offline). The originality of this model is that it distinguishes between cases of specific PIU and generalized PIU, as described above (see Figure 1).

**Figure 1. The Cognitive-Behavioural Model of Pathological Internet Use
Davis (2001)**



Caplan (2002)⁵ tested Davis's (2001)³ cognitive-behavioural model of PIU. Caplan's results were not inconsistent with Davis's model but suggested that social isolation plays a greater role in the behavioural symptoms of PIU than does the presence of psychopathologies. Consequently, Caplan suggests replacing the term "*pathological Internet use*" with "*problematic Internet use*".

On the basis of Davis's (2001)³ model and Caplan's (2002)⁵ research, at this stage of our study, we draw the following conclusions :

- *Specific problematic Internet uses* (SPIUs), such as cyberpornography, cybersex, online auctions (eBay), online gambling, and online shopping, should not be regarded as problems associated with Internet use, because they are associated with very specific types of content and would exist even if the Internet did not;
- *Generalized problematic Internet uses* (GPIUs), such as online chat, e-mail, and online video games, that are not associated with a specific type of content and would not exist if the Internet did not, in fact constitute the only true forms of problems associated with Internet use that can be classified as online cyberaddiction.

This distinction between generalized and specific problematic uses can also be applied to offline forms of cyberaddiction. Thus, on the one hand, there are *specific problematic offline uses*, such as the problematic use of a game of solitaire on a PC, that are associated with very specific content, such as a particular card game, that would exist even in the absence of electronic devices, and that therefore do not constitute cyberaddiction. On the other hand, there are *generalized problematic offline uses*, such as the problematic use of various multiplayer video games, that are not content-specific and would not exist in the absence of electronic devices, and that therefore do constitute offline cyberaddiction.

In classifying various forms of cyberaddiction, however, yet another distinction must be kept in mind. Whether at home, at school, or in the workplace, the use of computers and the Internet continues to expand so much and offers so many advantages that people are now practically obliged to use these technologies in their daily lives. It is therefore important to distinguish, as Scherer (1997)² and Widyanto and McMurrin (2004)¹⁶ have done, between those Internet uses that are essential or *professional*, such as Internet use for work or school, and those that are non-essential or *personal*. In our view, professional uses do not fall within our field of study, which comprises *generalized problematic uses of the Internet*. Personal uses, on the other hand, may remain recreational but may also become excessive and have negative consequences. When they do, we can rightly speak of *generalized problematic uses of the Internet*, which do fall under the heading of online cyberaddiction.

We can apply this distinction between personal and professional uses to offline cyberaddiction as well. Thus, on the one hand, there are personal offline uses such as video games which can fall within the field of offline cyberaddiction, and on the other, there are professional offline uses of software such as Word or Excel for work or school, which do not fall within the field of cyberaddiction.

In conclusion, we suggest that the field of cyberaddiction should be defined to include the following two types of cyberaddiction:

- Type I cyberaddiction, or *online cyberaddiction*, as defined by *generalized problematic personal Internet uses* (GPPIU);
- Type II cyberaddiction, or *offline cyberaddiction*, as defined by *generalized problematic personal uses of electronic devices* (GPPUED).

3. Studies on Internet Use

Studies have shown that the more people there are who consume alcohol or who gamble, the more people there will be who develop a dependence on alcohol or gambling. It follows logically that the more people there are who use the Internet, the more people there will be who develop a dependence on it. We will therefore now review the available statistics on the prevalence of Internet use (as measured by percentages of people owning computers and numbers of Internet users) and the findings regarding the amount of time that people spend using the Internet.

3.1 Prevalence of Internet Use

A) Percentages of Computer Ownership

In Canada, in 2004, 94% of the households with the highest incomes and 39% of those with the lowest incomes owned a computer (Statistics Canada, 2005).¹⁷

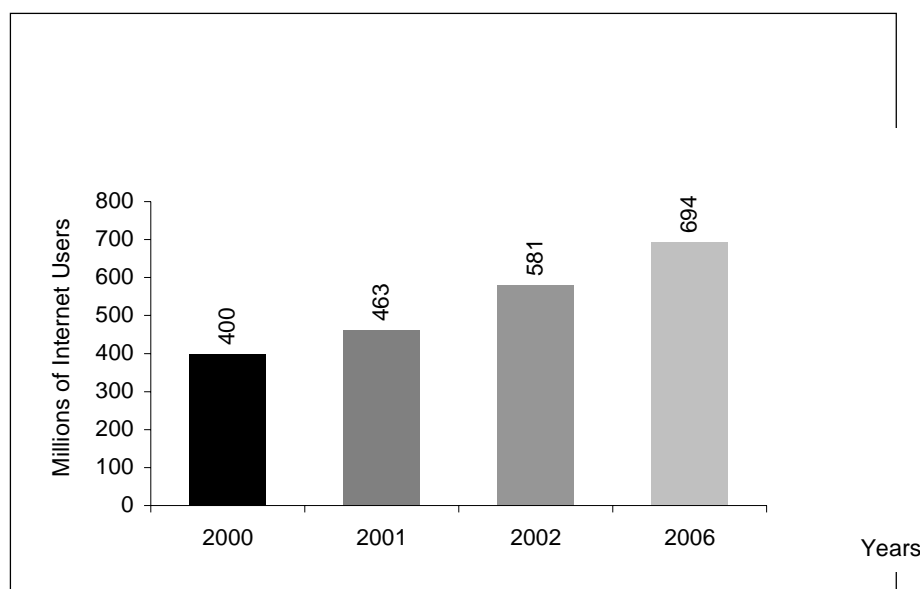
In 2005, nearly 4 out of 10 Canadians age 9 to 17 (37%) owned their own computers (Media Awareness Network, 2005).¹⁸

In Quebec, in 2005, 74% of all adults owned a computer (CEFRIQ, 2006a).¹⁹

B) Numbers of Internet Users

a) Worldwide

Figure 2. Number of Internet Users Worldwide



As Figure 2 shows, the number of Internet users throughout the world nearly doubled in the space of 6 years, from 400 million in 2000 to 694 million in 2006. At the end of the year 2000, there were about 400 million people in the world who surfed the Internet (Ipsos-Reid, 2001).²⁰ In 2001, there were 463 million Internet users. This number rose to 581 million in 2002 (Nua Internet Surveys, 2002),²¹ and reached 694 million Internet users age 15 and over in 2006 (comScore Networks, 2006).²²

b) Canada

In 2004, Canada was the second most “wired” country in the world, after the United States. In that year, nearly three-quarters (72%) of the Canadian population age 18 or older used the Internet at home or elsewhere, compared with 76% of the comparable U.S. population (Canadian Internet Project, 2005).²³

In 2005, 7.9 million Canadian households (61%) had an Internet connection. About 16.8 million Canadians age 18 or older (68%) used the Internet for personal non-business reasons during the year preceding the survey (Statistics Canada, 2006).²⁴

In 2006, according to a survey by comScore Networks (2006).²² Canada had nearly 19 million (18,996,000) Internet users age 15 or older (72%).

In 2005, 94% of Canadians age 9 to 17 used the Internet at home (Media Awareness Network, 2005),¹⁸ and Internet use at school had become extremely widespread.

c) Quebec

In 2005, according to one survey (CEFRIQ, 2006a),¹⁹ 64% of adults in Quebec had surfed the Web. According to another survey conducted that same year, (Canada Online!, 2005),²³ 68% of the Quebec population age 18 or older were Internet users. This figure was one of the lowest in Canada. The figure was 72% for the country as a whole, 67% in the Maritimes, and highest in Alberta, where more than three-quarters (76%) of the population used the Internet.

3.2 Amount of Time Spent Using the Internet

Revoy (2005)²⁵ cites Marc Valleur as stating that cyberaddiction is a genuine disorder, characterized by the individual's inability to control the amount of time that he or she spends on the Web, despite all efforts (the amount of time spent is not a criterion).

Costa *et al.* (2000)²⁶ take a more nuanced position. They state that the number of hours spent on the Internet each day gives little information about the degree of dependence. They add that it is not how much time people spend on the Internet that matters, but rather what they use it for.

The amount of time spent online is not in itself a criterion for cyberaddiction (for that matter, there are no official criteria, since cyberaddiction is not included in any of the international manuals that classify diseases). But according to Scherer (1997), the amount of time is certainly the best warning sign: in her study of students who used the Internet, those who were Internet-dependent spent twice as much time on personal online activities as those who were not.

Similarly, Nalwa and Anand (2003),²⁷ who studied cyberaddiction among students age 16 to 19 in India, concluded that excessive Internet use can be a characteristic of Internet addicts. Among the students whom they placed in this category, 33% used the Internet more than 2 hours per day, compared with only 10% among the other students. About the same amount of Internet use (10 to 14 hours per week) was found among pathological Internet users in a study of British university students by Niemz *et al.* (2005).²⁸

Lastly, it should be kept in mind that when people first discover the Internet, they almost always are fascinated with it and spend a lot of time exploring its various features. After a while, however, most people tend to focus on one or more particular features and appreciably reduce the amount of time they spend online, but Internet addicts do not (Grohol, 2005).²⁹

Given that excessive use of the Internet is the best warning sign of online cyberaddiction and is characteristic of cyberaddicts, we will now review the most recent data concerning the amount of time that Canadians and Quebecers spend using the Internet.

A) Time Canadians Spend Using the Internet

According to the Canada Online study (2005)²³ of Canadians age 18 or older, the majority of Canadian Internet users (56%) are heavy users, spending seven or more hours per week online from all access locations combined, while 45.4% spend 10 hours or more per week online. On average, Canadian Internet users spend 13.5 hours per week online, distributed as follows: 7.12 hours at home, 4.98 hours at work, 0.75 hours at school, 0.32 hours at friends' or relatives' homes, and 0.29 hours at public locations.

According to this same study,²³ among Canadians age 18 or older, age group 18 to 24 has the highest percentage of Internet users: 90.3%. This same group also spends the most time per week on the Internet, averaging 17.6 hours, divided as follows: 9.56 hours at home, 3.65 hours at work, 3.00 hours at school, 0.94 hours at friends' or relatives' homes, and 0.47 hours at public locations.

Younger Canadians (age 9 to 17) who owned their own computers in 2005 spent an average of twice as much time on the Internet as those who did not own their own computers (Media Awareness Network, 2005).¹⁸

B) Time Quebecers Spend Using the Internet

In Quebec in 2005, a telephone survey on Internet use was conducted monthly with a very large sample. A total of 12 000 of Quebecers age 18 and older were interviewed. This survey showed that the proportion of Internet users who reported having used the Internet during the week preceding the survey was highest (88.3%) in age group 18 to 24 (CEFRIQ, 2006a).¹⁹

In 2006, Quebecers age 15 or older spent an average of 11.8 hours per week online (comScore Networks, 2006).²²

As regards rates of Internet use by region within Quebec, over the period January 2004 to December 2005, the top two regions were the Outaouais (68.9%) and Montreal (68.6%). The Gaspésie/Magdalen Islands region came in last, with a rate of 44.2% (CEFRIQ, 2006b).³⁰

The following list summarizes some of the most important findings of studies on Internet use in Canada and Quebec.

1. Nearly three-quarters of all adults in Quebec own a computer.
2. The Internet is one of the most popular applications for computers, and the number of Internet users is growing exponentially. There are now 694 million Internet users worldwide, of whom 19 million are Canadians age 15 or older.
3. In Canada and Quebec, practically all adults age 18 to 24 use the Internet (90.3% in Canada as a whole, 88.3% in Quebec).
4. Canadian young adults (age 18 to 24) spend an average of 17.6 hours per week on the Internet, of which 11 hours are spent neither at work nor at school. (Personal use is regarded as excessive when it totals 14 hours or more per week.)

4. Cyberaddiction and Mental Disorders

Cyberaddiction is not listed (or at least, not yet listed) in international manuals that classify diseases, such as the International Classification of Diseases (ICD-10) published by the World Health Organization³¹ or the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) published by the American Psychiatric Association (APA).³² In the strict sense, cyberaddiction is therefore not officially considered a mental disorder.

The author who is regarded as a pioneer in this new field of research is Kimberly Young, an American psychologist who made a first presentation on Internet addiction at the 1996 conference of the American Psychological Association (APA), in Toronto. Subsequently, Young established a clinic, the *Center for On-Line Addictions*, where she offers a wide variety of services, including tests and online treatments for various types of online addiction, as well as several publications.

Initially, Young (1996)¹ basically borrowed the diagnostic criteria for substance addiction and transposed them to apply to Internet use, which is why she used the term "Internet addiction". Later, she revised her thinking and instead adopted the criteria used to diagnose pathological gambling (Young, 1996)¹. Through a simple adaptation of the terminology, she was able to define Internet addiction and develop a list of its symptoms.

In DSM-IV-TR,³² pathological gambling is classified under Impulse-Control Disorders Not Elsewhere Classified. (Disorders that are classified elsewhere in DSM-IV-TR³² and that may have features involving problems of impulse control include Paraphilias, Antisocial Personality Disorder, Schizophrenia, Mood Disorders, and Substance-Related Disorders.)

In addition to pathological gambling, the other Impulse-Control Disorders Not Elsewhere Classified are Intermittent Explosive Disorder, Kleptomania, Pyromania, Trichotillomania, and Impulse-Control Disorder Not Otherwise Specified (such as picking or piercing one's skin). The list of disorders that could be included under Impulse-Control Disorder Not Otherwise Specified is theoretically infinite, ranging from compulsive shopping addiction to sports and physical exercise, to sex addiction, to pathological working, to compulsive criminal behaviour, and so on.

Shapira *et al.* (2003) prefer the term "problematic Internet use" rather than "Internet addiction". Given that problematic Internet use is the type of dependency that has grown the most rapidly in North America in recent years (Holden, 2001),³³ Shapira *et al.* (2003) speculate that it will come to be included under Impulse-Control Disorders Not Elsewhere Classified in the next edition of DSM (the Fifth Edition), which is due to come out in 2011.

In conclusion, in response to the question whether cyberaddiction is a new form of mental disorder, we offer the following observations:

1. Cyberaddiction is not included, or at least not yet included, in the international disease-classification manuals.
2. Cyberaddiction may conceivably be included under Impulse-Control Disorders Not Elsewhere Classified in the next edition of DSM (the Fifth Edition), which is due to come out in 2011.

5. Negative Consequences of Cyberaddiction

Abuse of electronic devices (offline cyberaddiction) and/or of the Internet (online cyberaddiction) can have various negative consequences for the cyberaddict. The types of negative consequences measured in the Internet addiction tests that we shall examine later on, are as follows:

According to Young, 1999¹⁵ and Beard and Wolf, 2001:³⁴

- jeopardizing or losing a significant relationship, a job, or an educational or career opportunity because of the Internet;
- lying to one's family members, therapist, or others to conceal the extent of one's involvement with the Internet;
- using the Internet as a way of escaping from problems or of relieving a dysphoric mood (ex.: feelings of helplessness, guilt, anxiety, depression).

According to Ko *et al.* (2005):³⁵

- failure to fulfil role obligations at school and at home because of recurrent Internet use;

- impairment of social relationships;
- violating school rules or laws because of Internet use.

According to Caplan, 2002:⁵

- missing classes or work because of Internet use;
- getting into trouble at work or school because of Internet use.

The very real negative consequences of cyberaddiction have led health-care professionals in various parts of the world to begin offering treatments for this problem. In Paris, France, for example, the Marmottan Hospital has had specialized cyberaddiction units since 2002 and is already treating 200 patients per year, while the Montevideo de Boulogne-Billancourt clinic also offers treatment for cyberaddiction (Revoy, 2005).²⁵ The Kaohsiung Medical University Hospital in Kaohsiung, Taiwan has a clinic that specializes in treating problematic Internet use (Ko *et al.*, 2005)³⁵. Lastly, as mentioned earlier, the first detoxification clinic for video gaming addiction has just opened in Amsterdam, in the Netherlands.

Closer to home, the Quebec Ministry of Health and Social Services offers a program called *Dépendances* [dependencies] which replaces an earlier program known as *Alcoolisme et toxicomanie* [alcoholism and drug abuse]. The name change reflects a broader view of dependency problems, whatever their cause, and the adoption of a more comprehensive approach to dealing with them. This program addresses problems of alcoholism, drug abuse, pathological gambling, and cyberaddiction (MSSS, 2004).³⁶

To sum up, cyberaddiction is a very real phenomenon and has very real negative consequences, which makes it a problem that must be addressed, following the example set by Quebec's health and social services ministry.

6. Personal Characteristics of Problematic Internet Users

Before the concept of Internet addiction or cyberaddiction was ever formulated, the first study that attempted to sketch a picture of computer addicts was Shotton's (1991).⁷ Shotton described computer addicts as males who were educated, interested in technology, introverted, and not very sociable.

In her pioneering study of Internet addiction, however, Young (1996)¹ presented a totally different picture. According to Young, Internet addicts were mostly middle-aged women who used the Internet at home. It should be noted, though, that women were overrepresented in Young's sample (61% of all respondents), which was therefore biased.

More recently, Morahan-Martin and Schumacher (2000)⁴ developed a profile of pathological Internet users that was fairly similar to Shotton's (1991)⁷ description of

computer addicts: Morahan-Martin and Schumacher (2000)⁴ describe the typical pathological Internet user as a lonely male who is socially disinhibited when online.

Davis (2001)³ subsequently developed a model according to which one of the precursors of pathological Internet use is the presence of a psychopathology such as depression, social anxiety, or substance dependence, while another precursor is social isolation and/or lack of social support. As mentioned earlier, after testing Davis's model, Caplan (2002)⁵ suggested that social isolation plays a greater role in pathological Internet use than does the presence of psychopathologies.

A recent study by Whang *et al.* (2003)³⁷ attempted to develop a psychological profile of Korean Internet addicts. The authors found that these persons were socially isolated, depressed, and compulsive, and that they used the Internet as a way to escape from reality when they were stressed by work or simply depressed.

Lastly, it is important to note that according to Nalwa and Anand (2003),²⁷ students are especially vulnerable to Internet addiction. These authors studied Internet addiction in students age 16 to 19 in India and concluded that those who were addicted to the Internet were socially isolated.

A study by Niemz *et al.* (2005)²⁸ also dealt with university students, this time in the United Kingdom. The results showed that those students who were pathological Internet users had low self-esteem and were socially disinhibited when online. But the authors also stressed that they did not know whether the low self-esteem was a cause or an effect of the pathological Internet use. In our view, this same uncertainty applies to the psychopathologies cited in Davis (2001),³ and the only way to settle this question is to conduct longitudinal studies for this purpose.

In summary, what we term online cyberaddiction seems to be more prevalent among young men who are socially isolated but who become socially disinhibited when online.

7. Diagnosing Cyberaddiction

The idea that true addictions can exist even when no psychotropic substance is involved (behavioural addictions) was popularized by Peele (1975).³⁸ According to Peele, what addicts are addicted to is a particular experience, of which reactions to a particular chemical substance are only one example. Many authors, including Holden, 2001³³ and Valleur and Velea, 2002³⁹, have debated whether cyberaddiction falls into this category of behavioural addictions and have concluded that it does.

Building on Peele's (1975)³⁸ ideas, some authors have developed diagnostic criteria for behavioural addictions (including addiction to the Internet or to video games). The first to do so was Goodman (1990)⁴⁰ (see Table 1). Subsequently, Griffiths (1996)⁴¹ also set out criteria for behavioural addictions (see Table 2).

**Table 1. Diagnostic Criteria for Behavioural Addictions
Goodman (1990)**

A. Recurrent failure to resist impulses to engage in a specified behaviour.
B. Increasing sense of tension immediately prior to initiating the behaviour.
C. Pleasure or relief at the time of engaging in the behaviour.
D. A feeling of lack of control while engaging in the behaviour.
E. At least five of the following nine criteria: <ol style="list-style-type: none"> 1. Frequent preoccupation with the behaviour or with activity that is preparatory to the behaviour. 2. Frequent engaging in the behaviour to a greater extent or over a longer period than intended. 3. Repeated efforts to reduce, control or stop the behaviour. 4. A great deal of time spent in activities necessary for the behaviour, engaging in the behaviour, or recovering from its effects. 5. Frequent engaging in the behaviour when expected to fulfill occupational, academic, domestic or social obligations. 6. Important social, occupational or recreational activities given up or reduced because of the behaviour. 7. Continuation of the behaviour despite knowledge of having a persistent or recurrent social, financial, psychological or physical problem that is caused or exacerbated by the behaviour. 8. Tolerance: need to increase the intensity or frequency of the behaviour in order to achieve the desired effect or diminished effect with continued behaviour of the same intensity. 9. Restlessness or irritability if unable to engage in the behaviour.
F. Some symptoms of the disturbance have persisted for at least 1 month, or have occurred repeatedly over a longer period of time.

**Table 2. Diagnostic Criteria for Behavioural Addiction
Griffiths (1996)**

1. Salience: when the particular activity becomes the most important activity in people's lives and dominates their thinking (preoccupations and cognitive distortions), feelings (cravings) and behaviour (deterioration of socialized behaviour).
2. Mood modification: a consequence (such as an arousing "buzz" or "high" or a feeling of escape) of engaging in the particular activity; can be seen as a coping strategy.
3. Tolerance: increasing amounts of the particular activity are required to achieve satisfaction.
4. Withdrawal symptoms: Unpleasant feeling states (such as moodiness or irritability) and/or physical effects (such as "the shakes").
5. Conflict: Interpersonal conflicts between addicts and those around them or intrapsychic conflict within the addicted individual (between the psychological need to engage in the activity and the desire not to give in to the tensions caused by addiction to the activity).
6. Relapse: the tendency to revert to earlier patterns of the particular activity after a period of abstinence or control over the addictive behaviour.

It should be noted that though behavioural addictions are not listed in the international disease-classification manuals, the diagnostic criteria for these addictions have nevertheless been used both in research (e.g., Nichols and Nicki , 2004)⁴² and in treatment (e.g., Valleur and Velea, 2002³⁹).

Another set of diagnostic criteria for cyberaddiction are based on those for pathological gambling. Young (1996)¹ took seven of the criteria for pathological gambling listed in DSM-IV⁴³ and adapted them to Internet addiction (the criteria that she omitted were those that dealt specifically with money). She also added one new criterion (criterion 5 in Table 3 below: staying online longer than intended).

Young (1996)¹ stated that in order to consider someone to be addicted to the Internet, they must present at least five of the symptoms listed below (the same number as required to diagnose pathological gambling). Note that with the same number of symptoms, the ratio is higher for Internet addiction (five symptoms out of eight, or 63%) than for pathological gambling (five symptoms out of ten, or 50%).

**Table 3. Diagnostic Criteria for Internet Addiction
Young (1996)**

Must present five or more of the following symptoms:	
1.	Feels preoccupied with the Internet (for example, thinks about previous online activity or anticipates next online session)
2.	Feels the need to use the Internet with increasing amounts of time in order to achieve satisfaction
3.	Has repeatedly made unsuccessful efforts to control, cut back, or stop Internet use
4.	Feels restless, moody, depressed, or irritable when attempting to cut down or stop Internet use
5.	Stays online longer than originally intended
6.	Has jeopardized or risked the loss of a significant relationship, job, educational or career opportunity because of the Internet
7.	Has lied to family members, therapist, or others to conceal the extent of involvement with the Internet
8.	Uses the Internet as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)

Young set the diagnostic threshold at five symptoms simply because this was the number already used to diagnose pathological gambling. But according to Grohol (2005)²⁹, one of the pioneers of psychology on the Internet and Past President of the International Society for Mental Health Online (ISMHO), the researchers who have applied these criteria to Internet addiction do not seem to have cared that it has little in common with pathological gambling. Grohol finds it absurd and absolutely unscientific that Young (1996)¹ created the concept of Internet addiction by simply copying the criteria for pathological gambling.

Another researcher, Greenfield (1999),⁴⁴ conducted a survey in which he, like Young (1996)¹, used 5 symptoms adapted from the definition of pathological gambling.

Our review of the literature shows that the problem of diagnosing Internet addiction persists to the present day. For example, like Shapira *et al.* (2000),⁴⁵ who introduced the concept of “problematic Internet use”, Beard and Wolf (2001)³⁴ prefer this term to the expression “Internet addiction”. They justify their choice, first of all, by pointing out that in problematic Internet use, there are no physical withdrawal symptoms such as can occur with substance addiction. Second, these authors note that in comparing excessive Internet use with pathological gambling, Young (1996)¹ classified it under Impulse-Control Disorders Not Elsewhere Classified rather than as an addiction, something with which they agree.

The criteria that Beard and Wolf (2001)³⁴ give for diagnosing problematic Internet use are presented in Table 4. It is important to note that these authors suggest that for a diagnosis of Internet addiction to be made, at least six, rather than five, of the symptoms identified by Young (1996)¹ should be present: all five of the first five symptoms listed by Young, plus at least one of symptoms 6, 7, and 8.

**Table 4. Diagnostic Criteria for problematic Internet use
Beard and Wolf (2001)**

A. Must present all five of the following symptoms:	
1.	Is preoccupied with the Internet (think about previous online activity or anticipate next online session)
2.	Needs to use the Internet with increased amounts of time in order to achieve satisfaction
3.	Has made unsuccessful efforts to control, cut back, or stop Internet use
4.	Is restless, moody, depressed, or irritable when attempting to cut down or stop Internet use
5.	Has stayed online longer than originally intended
B. Must present at least one of the following symptoms:	
6.	Has jeopardized or risked the loss of a significant relationship, job, educational or career opportunity because of the Internet
7.	Has lied to family members, therapist, or others to conceal the extent of involvement with the Internet
8.	Uses the Internet as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)

In a recent article, Beard (2005)⁴⁶ concludes that given the limitations of the current instruments that assess for Internet addiction, and given that problems of addiction are often accompanied by other problems, the clinical interview should be the primary method of diagnosing problematic Internet use. According to her, this interview should be based on a biopsychosocial model of addiction and should use as diagnostic criteria the presence of six symptoms as described above. She also presents a list of 72 sample questions for a screening interview.

Like Beard and Wolf (2001)³⁴, Shapira *et al.* (2003)⁴⁷ propose diagnostic criteria for problematic Internet use (see Table 5). These criteria are more general, and these authors go further, by suggesting that they be included in the next edition of DSM.

**Table 5. Diagnostic Criteria for Problematic Internet Use
Shapira *et al.* (2003)**

A. Maladaptive preoccupation with Internet use, as indicated by at least one of the following: <ol style="list-style-type: none"> 1. Preoccupations with use of the Internet that are experienced as irresistible. 2. Excessive use of the Internet for periods of time longer than planned.
B. The use of the Internet or the preoccupation with its use causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
C. The excessive Internet use does not occur exclusively during periods of hypomania or mania and is not better accounted for by other DSM-IV-TR Axis I disorders.

Recently, Ko *et al.* (2005)³⁵ have proposed criteria for diagnosing Internet addiction in adolescents (see Table 6). They conclude that in order to make a diagnosis of Internet addiction, at least seven symptoms must be present: at least six of the nine proposed criteria listed under A. below, and at least one of the three functional impairments due to Internet use that are listed under B. below.

**Table 6. Diagnostic Criteria for Internet Addiction in Adolescents
Ko *et al.* (2005)**

A. Six (or more) of the following symptoms have been present:
1. Preoccupation with Internet activities
2. Recurrent failure to resist the impulse to use the Internet
3. Tolerance: a marked increase in the duration of Internet use needed to achieve satisfaction
4. Withdrawal, as manifested by either of the following: <ol style="list-style-type: none"> i. Symptoms of dysphoric mood, anxiety, irritability, and boredom after several days without Internet activity ii. Use of Internet to relieve or avoid withdrawal symptoms
5. Use of Internet for a period of time longer than intended
6. Persistent desire and/or unsuccessful attempts to cut down or reduce Internet use
7. Excessive time spent on Internet activities and leaving the Internet
8. Excessive effort spent on activities necessary to obtain access to the Internet
9. Continued heavy Internet use despite knowledge of having a persistent or recurrent physical or psychological problem likely to have been caused or exacerbated by Internet use
B. Functional impairment: one (or more) of the following symptoms have been present:
1. Recurrent Internet use resulting in a failure to fulfill major role obligations at school and home
2. Impairment of social relationships
3. Behaviour violating school rules or laws due to Internet use
C. The Internet addictive behaviour is not better accounted for by psychotic disorder or bipolar I disorder.

In the same vein as Beard and Wolf (2001)³⁴, Ko *et al.* (2005)³⁵ explain that the number of symptoms must be higher to diagnose Internet addiction (seven symptoms) than to diagnose substance dependence (three symptoms) or pathological gambling (five symptoms), because Internet use is a more socially acceptable and easily available behaviour. Like Shapira *et al.* (2003)⁴⁷, they also emphasize that for these same

reasons, in addition to six of the nine symptoms listed in A. above, there also be at least one functional impairment caused by use of the Internet.

To summarize, with regard to diagnosing cyberaddiction, we make the following observations.

1. All of the diagnostic criteria presented for cyberaddiction to date deal exclusively with Type I cyberaddiction or online cyberaddiction (what the studies in question call “Internet addiction” or “problematic Internet use”).
2. Researchers seem to want to see online cyberaddiction classified in DSM under the heading of Impulse-Control Disorders Not Elsewhere Classified.
3. The number of symptoms required to diagnose someone as suffering from online cyberaddiction seems to have trended upward over time, from five symptoms in 1998, to six in 2001, and to seven in 2005.
4. Researchers now say that in order to make a diagnosis of online cyberaddiction, functional impairments must be present at work, in social relationships, or in other spheres.
5. The reason for requiring the presence of more symptoms and functional impairments is that Internet use is becoming more and more widespread (694 million users worldwide as of 2006) and constitutes a socially acceptable behaviour.
6. In order to diagnose online cyberaddiction, the behaviour in question must not be better accounted for by some other psychological disorder.
7. The diagnostic criteria for online cyberaddiction are not yet well established, and research on them is ongoing.

8. Tests for Cyberaddiction

According to Costa *et al.* (2000)²⁶, many self-tests for online cyberaddiction are available on the Internet itself, but they are generally rather simplistic questionnaires whose psychometric validity is questionable.

The first true test for online cyberaddiction was the *Internet Addiction Test* (IAT) published by Young (1998)⁴⁸ (see Table 7). But this test left something to be desired, because it had not been psychometrically validated. Young (1998)⁴⁸ based her diagnosis on 20 questions that measured eight symptoms of Internet addiction. According to Costa *et al.* (2000)²⁶, this approach is questionable, because the observation of common symptoms is not sufficient to make two “mental disorders” comparable.

**Table 7. Internet Addiction Test (IAT)
Young (1998)**

Answer the following questions using this scale:

1 = Rarely; 2 = Occasionally; 3 = Frequently; 4 = Often; 5 = Always.

1. How often do you find that you stay on-line longer than you intended?
2. How often do you neglect household chores to spend more time on-line?
3. How often do you prefer the excitement of the Internet to intimacy with your partner?
4. How often do you form new relationships with fellow on-line users?
5. How often do others in your life complain to you about the amount of time you spend on-line?
6. How often do your grades or school work suffer because of the amount of time you spend on-line?
7. How often do you check your e-mail before something else that you need to do?
8. How often does your job performance or productivity suffer because of the Internet?
9. How often do you become defensive or secretive when anyone asks you what you do on-line?
10. How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?
11. How often do you find yourself anticipating when you will go on-line again?
12. How often do you fear that life without the Internet would be boring, empty, and joyless?
13. How often do you snap, yell, or act annoyed if someone bothers you while you are on-line?
14. How often do you lose sleep due to late-night log-ins?
15. How often do you feel preoccupied with the Internet when off-line, or fantasize about being on-line?
16. How often do you find yourself saying "just a few more minutes" when on-line?
17. How often do you try to cut down the amount of time you spend on-line and fail?
18. How often do you try to hide how long you've been on-line?
19. How often do you choose to spend more time on-line over going out with others?
20. How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back on-line?

Some authors, such as Greenfield (1999)⁴⁴, have adopted the IAT exactly as presented by Young (1998)⁴⁸. Other authors have adapted it, such as Whang *et al.* (2003),³⁷ who attempted to develop a psychological profile for Korean Internet addicts. Closer to home, at the Université de Moncton in New Brunswick, Canada, Ferron and Duguay (2004)⁴⁹ administered an unvalidated French translation of the IAT to a sample of 61 adolescents, none of whom presented any serious problems of Internet addiction.

Because the IAT was not originally subjected to psychometric validation, authors such as Widyanto and McMurrin (2004)¹⁶ have tackled this task. Their factor analysis of the IAT revealed six factors. The most important of these was "salience", which explained 35.8% of the variance. According to Griffiths (1996),⁴¹ salience is present when a

particular activity (in this case, Internet use) becomes the most important activity in people's lives and dominates their thinking (preoccupations and cognitive distortions), feelings (cravings), and behaviour (deterioration of socialized behaviour). Widyanto and McMurrans (2004)¹⁶ results also showed a positive correlation between Internet addiction and hours per week of personal Internet use. This correlation has also been shown in other studies (e.g. Scherer, 1997²; Costa *et al.*, 2000²⁶; Nalwa and Anand, 2003²⁷). Lastly, Widyanto and McMurrans (2004)¹⁶ acknowledge some methodological weaknesses in their study: they used a sample of convenience, their subjects being recruited via the Internet and thus self-selected. Their sample size was also very small (only 86 respondents). The authors therefore do not conclude that the IAT is valid, but only that it shows potential to be a good basis for developing a valid instrument. One virtue of this study was that, like Scherer (1997)², the authors made the distinction between hours per week of personal (non-essential) Internet use and hours per week of work-related (essential) Internet use.

Once again in Canada, Nichols and Nicki (2004)⁴² of the University of New Brunswick at Fredericton developed an instrument called the *Internet Addiction Scale* (IAS; see Table 8). The IAS is based mainly on the 7 diagnostic criteria for substance dependence in DSM-IV⁴³ and on 2 of the 6 criteria that Griffiths (1996)⁴¹ recommends for defining behaviour as addictive (salience and mood modification; see Table 2). To analyze the psychometric properties of the IAS, Nichols and Nicki administered it to a sample of 207 respondents. The distribution of the resulting scores was severely skewed: only two of the respondents (less than 1%) had mean scores higher than the mid-point on the Likert scale used and could thus be considered Internet-addicted. The authors therefore applied a log transformation to the scores before conducting a principal-components analysis. This analysis found that 46.5% of the variance was accounted for by a single factor that was interpreted as reflecting the negative consequences of excessive Internet use. The authors also established the IAS's construct validity (how accurately it measures the theoretical construct that it is supposed to measure) by showing the association between IAS scores and measures of family loneliness and social loneliness.

It is surprising that the IAS was based mainly on the 7 DSM-IV⁴³ diagnostic criteria for substance dependence, because Young (1996)¹ herself rejected this concept after having adopted it, and because most authors (e.g., Shapira et al, 2000⁴⁵; Beard et Wolf, 2001³⁴; Davis, 2001³) now agree that Internet addiction should be classified under Impulse-Control Disorders not Elsewhere Classified.

**Table 8. Internet Addiction Scale (IAS)
Nichols and Nicki (2004)**

Indicate the extent to which each statement applies to you by circling the number that best reflects the strength of your response. Internet use refers to anything you do online (e.g., email, world wide web, chat rooms, games, cybersex, cyberporn, newsgroups, multi-user dungeons, listserves, Internet Relay Chat etc.).

	1	2	3	4	5
	Never	Rarely	Sometimes	Frequently	Always
1.					
2.					
3.					
4.					
5.					
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The only cyberaddiction test we know of that is based on an actual theory is the *Generalized Problematic Internet Use Scale* (GPIUS). This scale is based on Davis's (2001)³ cognitive-behavioural model of pathological Internet use, which, as discussed earlier, distinguishes between generalized and specific pathological Internet use. As its name indicates, the GPIUS deals only with generalized problematic Internet use, which in our view is the only one of these two categories of problems associated with Internet use that can rightly be classified as a form of cyberaddiction.

When Caplan (2002)⁵ administered the GPIUS to a sample of undergraduate students and performed a factor analysis on the results, he found that this scale comprised seven factors that explained 68% of the variance. Six of these factors were related to generalized problematic Internet use cognitions and behaviours, while the seventh factor represented the negative consequences resulting from Internet use. Caplan's results suggest that Davis's theory is incomplete and that more details could therefore be included in the future definition of generalized problematic Internet use.

**Table 9. Generalized Problematic Internet Use Scale (GPIUS)
Caplan (2002)**

Rate the extent to which you agree or disagree with each statement, on a scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

1. Use Internet to talk with others when I feel isolated
2. Seek others online when I feel isolated
3. Use Internet to make myself feel better when I'm down
4. Go online to make myself feel better when I'm down
5. Treated better online than in face-to-face relationships
6. Feel safer relating to others online rather than face-to-face
7. More confident socializing online than offline
8. More comfortable with computers than people
9. Treated better online than offline
10. Got in trouble work/school b/c online
11. Missed class or work because I was online
12. I feel worthless offline, but I am someone online
13. Missed social event because of being online
14. Unsuccessful attempts to control use
15. Unable to reduce time online
16. Guilt about time online
17. Tried to stop using Internet for long periods of time
18. Lose track of time online
19. I use the Internet for longer time than I expect to
20. Spent a good deal of time online
21. Go online for longer time than I intended
22. Preoccupied with Internet if I can't connect for some time
23. Miss being online if I can't go on it
24. When not online, I wonder what is happening online
25. I feel lost if can't go online
26. Hard to stop thinking about what is waiting for me online
27. Don't worry about how I look when socializing online
28. Don't worry about relationship commitment when socializing online
29. Have control over how others perceive me online

The only test dealing with problems associated with the playing of all types of video games is the Problem Video Game Playing (PVP) scale developed by Tejeiro Salguero and Bersabé Morán (2002)⁹ (see Table 10).

**Table 10. Problem Video Game Playing (PVP)
Tejeiro Salguero and Bersabé Morán (2002)**

1. When I am not playing with the video games, I keep thinking about them, i.e., remembering games, planning the next game, etc.)
2. I spend an increasing amount of time playing video games
3. I have tried to control, cut back or stop playing, or I usually play with the video games over a longer period than I intended
4. When I can't use the video games I get restless or irritable
5. When I feel bad, e.g. nervous, sad, or angry, or when I have problems, I use the video games more often
6. When I lose in a game or I have not obtained the desired results, I need to play again to achieve my target
7. Sometimes I conceal my video game playing to the others, this is, my parents, friends, teachers...)
8. In order to play video games I have skipped classes or work, or lied, or stolen, or had an argument or a fight with someone
9. Because of the video game playing, I have reduced my homework, or schoolwork, or I have not eaten, or I have gone to bed late, or I spent less time with my friends and family

Tejeiro Salguero and Bersabé Morán (2002)⁹ developed the PVP from DSM-IV criteria for substance dependence and for pathological gambling and applied this test without distinguishing between online and offline games. The authors' results confirmed that the excessive use of video games is associated with a number of problems that resemble a dependence syndrome.

Below we summarize our findings regarding the existing test instruments for various forms of cyberaddiction.

1. The existing tests deal almost exclusively with online cyberaddiction, except for the PVP scale, which does not distinguish between online and offline video games.
2. There are many tests for online cyberaddiction that are self-administered online and have no psychometric value.
3. Most of the other tests have been developed solely on the basis of diagnostic criteria which are atheoretical by definition.
4. Only a few tests for cyberaddiction have been subjected to psychometric validation studies, and these studies have had some major methodological shortcomings.

9. Studies on Prevalence of Cyberaddiction

One frequently hears that about 6% of all Internet users are believed to suffer from cyberaddiction. The reason this figure is cited so often is that it comes from a study by Greenfield (1999)⁴⁴ that received a lot of attention because so many subjects (over 17 000) responded to his questionnaire on the Internet.

A review of the literature, however, shows that the prevalence rates reported for cyberaddiction among Internet users vary widely. In descending order, the rates cited in various studies are as follows: Young (1996)¹, 58%; Niemi *et al.* 2005,²⁸ 18.3%; Scherer (1997)², 13%; Morahan-Martin and Schumacher (2000),⁴ 8%; Greenfield (1999),⁴⁴ 6%; Nichols and Nicki, (2004),⁴² 2%; Ferron and Duguay (2004),⁴⁹ 0%.

Part of the explanation for this great variability is that the test instruments used by the authors were not psychometrically validated. But the main reason is the very poor methodology with which the surveys were conducted, especially as regards the selection of samples.

For example, the subjects who responded to Greenfield's (1999)⁴⁴ questionnaire were recruited in a fairly unusual way. Following a television news story about Internet addiction, Internet users were invited to visit *ABCNews.com* to respond to this questionnaire. This method of selecting research subjects raises some serious concerns. The people who took an interest in the television story were more likely to be concerned about cyberaddiction than the majority of people. Moreover, the people who took the time to go to the *ABCNews* Web site to answer the questionnaire had a greater than average interest in this issue and may have represented the group that spends the most time on the Internet. Even more recently, most surveys on cyberaddiction (e.g., Nalwa and Anand, 2003²⁷; Whang *et al.*, 2003³⁷; Ng and Wiemer-Hastings, 2005⁵⁰) continue to be conducted via the Internet, which makes their results not very reliable.

To sum up, the existing studies on the prevalence of cyberaddiction deal only with on-line cyberaddiction. They do not distinguish between specific and generalized problematic use, nor between personal and professional problematic use. They also do not consider the users' amount of experience (novices versus experts). Lastly, the prevalence rates cited vary far too widely, because of the lack of rigour in not only in the studies' survey methodologies, but also in their definition of cyberaddiction.

10. Treatments for Cyberaddiction

Most of the treatments for cyberaddiction are offered by clinics that also present information on and test for this condition. These clinics offer a wide range of professional services to meet various needs: they consult to private industry and provide on-site treatment programs, individual consultations, workshops, treatment in virtual clinics, online support groups, spousal support groups, and professional supervision via the Internet. They also put out a variety of publications. According to Niemi *et al.* (2005),²⁸ the treatments offered by these clinics consist in helping people to develop effective strategies to modify their dependent behaviours with regard to the Internet. According to Costa *et al.* (2000)²⁶, these virtual clinics are driven by the profit motive, because they offer online assistance to Internet addicts on a paid basis and sell their publications about cyberaddiction via the Internet. The treatments they offer are based essentially on the methods used to treat alcoholism and drug addiction.

More recently, some hospitals have opened specialized units to treat cyberaddiction—for example, at the Marmottan Hospital and the Montevideo de Boulogne-Billancourt Clinic in Paris, France (Revoy, 2005)²⁵ and at the Kaohsiung Medical University Hospital in Kaohsiung, Taiwan (Ko *et al.*, 2005).³⁵ The treatments offered are various forms of psychotherapy (Revoy, 2005).²⁵ Shapira *et al.* (2003) note that treatment of individuals with problematic Internet use requires a broad approach including such therapies as cognitive behavioural therapy targeted to the Internet overuse.

So are there in fact one or more treatments for cyberaddiction?

1. There are various kinds of treatments for cyberaddiction, such as helping patients to develop coping strategies and offering them various forms of psychotherapy and cognitive-behavioural therapy.
2. Most of the treatments for cyberaddiction are delivered online and are therefore of dubious quality.
3. More recently, some treatment has been offered in hospital settings, but to our knowledge only in France, Taiwan, and the Netherlands.

In conclusion, the treatment of cyberaddiction should be approached with caution, because there is not yet any well supported theory on the etiology of this condition, nor are there any well established criteria for diagnosing it. With these issues in mind, we will now discuss various aspects of our study in further detail.

11. Discussion

This study has identified several problems with the current state of knowledge regarding cyberaddiction. In this section, we offer some suggestions for future research in this field. We present these suggestions in the chronological order in which we believe this research should be carried out.

Step one should be to develop one or more explanatory theories of cyberaddiction (e.g. Grohol, 2005)²⁹ that are of sufficiently high quality. Before we can develop appropriate tests for cyberaddiction and assess their psychometric validity, we need to develop a robust theory of cyberaddiction. All we have now is a hypothetical construct that cannot be validated without a clear, explicit definition, which in turn requires a high-quality theory. According to Vaugeois (2006),⁵¹ the process of validating a construct involves more than just the quality of the measure used; it also involves the quality of the underlying theoretical structure. In fact, to our knowledge, at present there is only one theory of cyberaddiction—Davis's model (2001)³—which in our opinion and in the opinion of Caplan (2002)⁵ needs to be improved.

Any future theory should first of all define the boundaries of the field of cyberaddiction, something that, surprisingly, has not yet been done, to the best of our knowledge. To this end, we suggest that cyberaddiction be subdivided into the following two types:

- Type I cyberaddiction, or *online cyberaddiction*, as defined by *generalized problematic personal Internet use* (GPPIU);
- Type II cyberaddiction, or *offline cyberaddiction*, as defined by *generalized problematic personal use of electronic devices* (GPPUED).

Step two should be to create one or more tests based on the theory or theories developed in step one. These tests should, of course, be subjected to rigorous psychometric validation, and the subjects included in the samples used for this purpose should not be selected solely via the Internet.

Once these validated tests are available, step three should be to conduct epidemiological studies on cyberaddiction, again with particular attention to methodological rigour, and not solely via the Internet. The purpose of these studies should be to test the theory or theories of cyberaddiction developed previously, to investigate the etiology of this condition, and to obtain data on the prevalence and the negative consequences of cyberaddiction. In order to achieve these goals, we strongly recommend that longitudinal studies be conducted, something that has never been done before in the field of cyberaddiction.

Once the results of these epidemiological studies are available, it will be time for step 4: a serious examination of the diagnostic criteria for cyberaddiction. We recommend that future studies on such criteria distinguish between:

- Online cyberaddiction and offline cyberaddiction;
- Specific problematic Internet or offline use, which does not constitute cyberaddiction, and generalized problematic Internet or offline use, which does;
- Problematic professional Internet or offline use, which does not constitute cyberaddiction, and problematic personal Internet or offline use, which does;
- Excessive time spent on use by beginners, which does not constitute cyberaddiction, and excessive time spent on use by experts, which does.

In conclusion, cyberaddiction is a field of study that is still poorly defined. It involves a set of problems that are still poorly understood and whose impacts are still poorly documented. The way that cyberaddiction is currently diagnosed is not entirely satisfactory, neither from the standpoint of the diagnostic criteria applied nor from that of the psychometric validity of the test instruments used. The prevalence rates found for cyberaddiction vary greatly with the quality of the studies concerned (as regards selection of diagnostic criteria, test instruments, and samples), which on the whole still leaves much to be desired.

The fact remains that the negative effects of cyberaddiction are already being felt and will be felt even more strongly in the future, given the phenomenal growth in the use of the Internet and video games, especially among people age 18 to 24. Though the task may be daunting, it is essential to study this problem scientifically so that we can prevent it, detect it, and offer effective treatments for it.

Lastly, studies are needed that deal specifically with cyberaddiction in Quebec, because no such studies have been conducted to date. The objectives of these Quebec-specific studies should be to better define the field of study of cyberaddiction and to better understand its etiology, its negative effects, and methods of treating it, especially in young people. As regards young people in particular, steps should be taken to identify at-risk individuals, to determine when individuals have a cyberaddiction problem, to establish cyberaddiction prevention programs, and to train and equip the professionals who deliver such programs, so that they can help young people to develop more adaptive behaviours with regard to their use of the Internet, video games, and other electronic devices.

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