PREVALENCE OF INTERNET ADDICTION: A PILOT STUDY IN A GROUP
OF ITALIAN HIGH-SCHOOL STUDENTS

Mario Campanella, Federico Mucci, Stefano Baroni, Lucia Nardi, Donatella Marazziti

Abstract

Objective: The present study aimed at exploring the prevalence of Internet Addiction (IA) amongst a group of high-school students living in Southern Italy.

Method: 560 hundred students of both sexes of a "Liceo Classico" who volenteered for the study were included. They completed a smaller version of a specific questionnaire for IA developed by us.

Results: 500, out of the total of 560 questionnaires that were returned, were correctly completed and could be analyzed. The main findings were that almost all students used the smartphone to access Internet. About 16% of them used it for a time ranging between 90 and 120 minutes a day, and the remaining less than one hour. The most used applications were Facebook and Whatsup.

Fifty percent of the students owned a videogame console, and dedicated less than two hours a day on videogames. The ensuing data were presented to the students and a debate was promoted amongst them.

Conclusions: Internet and related technology are now part of the everyday life especially of adolescents. The benefits and limits of them should be underlined. On the same time, an incresead awareness on the possibility of developing an excessive use until a real addiction should be promoted amongst younger generations.

Key words: behavioral addictions, new technology, internet addiction, Italy, high-schools

Mario Campanella[1], Federico Mucci, Stefano Baroni, Lucia Nardi[2], Donatella Marazziti
Dipartimento di Medicina Clinica e Sperimentale, Section of Psychiatry, Pisa University, Italy
[1]Freelance journalist and [2]psychologist, Cosenza

Corresponding author

Dr Federico Mucci
Dipartimento di Medicina Clinica e Sperimentale, Section of Psichiatry, Pisa University
via Roma, 67, I-56100 Pisa, Italy - ph: +39 050 2219768, fax: +39 050 2219787
federicomucci@gmail.com

The constantly increasing number of Internet users and the wide spreading of the Internet services during the last decades established Internet as an essential element of modern life, although, on the same time, led towards to a growing concern about its increasing percentage of excessive, and often useless, use (Kuss and Griffiths 2012). It is about 20 years since when, for the first time, Ivan Goldberg proposed the ironic and provocative definition of a new addictive syndrome called "Internet addictive disorder" (IAD) (Goldberg 1995).

Currently, Internet addiction (IA) is considered part of the so-called "new technologies addiction" group, along with TV, social networks and video games addiction, that in its turn belongs to a wider, novel group of abnormal behaviors defined "new addictive syndromes" or "no-drug addictions" or "behavioral addictions". Within the "new" behavioral addiction category, other conditions are included, in particular pathological gambling, compulsive shopping, workaholism, overtraining-syndrome, orthorexia, sex and emotional relationship dependence. Recently, this category attracted increasing attention for its relevant social impact (Marazziti et al. 2014).

At variance with substance use disorders, none of these syndromes are characterized by chemical or substance intake, although it has been described that excessive Internet use may show withdrawal symptoms and tolerance (Holden 2001, Sanfey et al. 2003, Goudriaan et al. 2004, Dong et al. 2013a, Sun et al. 2014). A large part of the symptoms of the so-called new technologies addiction syndromes are vague, unspecific and, therefore, underestimated and includes alterations of sleep–wake rhythm, chronic fatigue (due to the common preference for nighttime Web connection), reduced efficiency of immune system, abnormal appetite, reduced self-care, headache, visual problems, back pain, carpal tunnel syndrome (due to prolonged mouse utilization) and, in some predisposed patients, seizures (due the continuous visual stimulation of computer screens). However, the use of the Internet begins to be considered pathological when most of a person's time and energies are spent in the Internet use or related activities, and provokes personal, relational, emotional, familial, or school maladjustment with adverse consequences to psychological, social and/or work functioning aspects. (Young 1996, Dong et al. 2013b, Marazziti et al. 2014).

Although no specific chapters about the so-called "behavioral addictions" were published in the final version of the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5), IA has been included in Section 3, to underline that this type of disorder still requires further investigation and research to become formally considered a "full disorder" (APA 2013,

Marazziti et al. 2014, Lin et al. 2015). Moreover, the DSM-5 notes that brain reward system may be altered in both drugs abuse and behavioral addictions (APA 2013).

Both substances and behavioral addictions share different features, such as pleasure and relief restricted to the initial periods of substance use or of the implementation of behavior; dominance of the thinking (main ideation), with inability to resist the impulse to take the drug or perform the behavior experienced in a compulsive manner; craving and sense of tension before taking the substance or implementing the behavior to avoid the discomfort connected to its withdrawal; mood instability initially limited to the beginning of substance intake or behavioral implementation and then increasingly generalized and extended to all aspects of existence; tolerance and loss of control; abstinence with psychological and physical distress experienced when the substance intake or the period dedicated to behavior is reduced or stopped; conflict as a consequence of chronic use of the drug or behavior, leading to impairment of familial, social, educational and work adjustment; persistence of the substance use or behavior implementation despite the negative consequences related to it; polydrug abuse and cross-addiction, which seems to be a very important phenomenon occurring between substance and no-drug addiction; similarity in risk factors, that are impulsivity, sensation seeking, cognitive styles, inadequate and disturbed parental environment (Marazziti et al. 2014). Five different subtypes of IA were described by Young: cyber-sexual addiction (compulsive need to access virtual sex and pornographic Web sites), cyber-relational addiction (excessive involvement in relations arising in the network), Net-compulsion (compulsive behaviors related to online activities such as gambling, shopping, and e-trade), information overload (obsessive search for news on the Web), and computer addiction (tendency to excessive involvement in virtual games such as multi-user dimensions and role playing games) (Young 1996).

Nowadays, two subtypes of IA individuals have been described. The first group of patients show comorbid psychopathological disorders (most frequently mood, anxiety, eating, conduct, impulse control, but also personality and psychotic disorders), which would represent facilitating factors towards the onset of Internet, new technologies and other types of addiction. On the other hand, subjects belonging to the second type never presented any psychopathological disorder at least apparently, but the first contacts with the "substance" (ie, the Internet) could trigger the need to maintain and intensify its "intake" (ie, Web connection) (Marazziti 2014).

It is also necessary to mention that mobile phones have recently become the most used technological tools to access to the Internet. Therefore, there is the risk to develop a full-fledged addiction to mobile phones especially in young people, who are the major users of this tool, which may rapidly develop and worsen displaying symptoms like craving, tolerance and habituation similarly to substance addiction. Moreover the continuous Web access, sms and e-mail control at any place and time would lead to an increased worsening of stress and generalized anxiety levels. (Marazziti 2014)

In any case, the constant increase of behavioral addiction has broadened the concept of pathological addiction that is usually considered, according to the World Health Organization (WHO), the "psychic, and sometimes even physical, condition arising from the interaction between a living organism and an exogenous substance, characterized by behavioral responses and other reactions that always include a compulsive need to take the substance continuously or periodically, in order to get its psychic effects and/or to avoid the distress related to its withdrawal" (WHO 1994).

The aim of this paper is to examine the current pattern of Internet use and eventually of IA, as well as their main characteristics, in a group of high-school students from Calabria, a Southern Italian region.

Subjects and Methods

The sample was composed by 500 students (37% boys, 63% girls, aged between 14 and 19, mean SD ± 15.96 years) from a Liceo Classico in the province of Catanzaro (Calabria, Southern Italy), who volunteered for the study. A specific questionnaire was built following others implemented in student populations of different countries. In particular, it consisted of a smaller version of one developed by us (Marazziti et al, in preparation). The questionnaire was composed by 45 items with 5 possible answers ranging between "never" and "very often" on a Likert scale. The questionnaire was distributed to 560 students and 500 returned correctly fulfilled so that they could be analyzed. It was well accepted and there were only 60 refusals to complete it. The questionnaire took an average period of 15 minutes to be completed.

Results

The answers to the questionnaire have been summarized by using graphs and were expressed in percentages (table 1, 2). Most of the subjects referred that most of their free time was devoted to TV, music, sport with slightly less time spent on the computer. The group referred to be very satisfied with the social life and relationships with friends. About 80% of the group had used Internet for more than four years and almost all for at least one year. Such data confirms a daily presence, and a certain stability over time of an Internet connection.

By analyzing time spent on the Internet, our findings show that the group distributed their time in a homogeneous way. It is noted that the percentage was the same for all times. The group used the internet heterogeneously. There was an increase in the use of Internet by time. Most of the subjects, indeed, increased their time spent online as compared with the beginning, up to 50%. A high percentage (82%) never postponed an appointment when online, while 13% did it. Therefore, it seems that Internet, social networks and video games do not appear to interfere too much in young people in relation to their own social activities and commitments. About 75% of the students did not forget their problems when online, 25% did, and the remaining seldom. Therefore, the Internet doesn't seem to represent a distraction, nor a mean to shift attention from one's problems.

Data on the interaction between sport and Internet use showed that the majority of the students (84%) who replied "never", did not refuse to play any kind of sport in favor of the Internet.

Regarding the possible change of identity on the web, if the general trend was negative, nevertheless a minority (4%) did it "very often". The reason, although unexplored in this analysis, could be due to the possibility of entering an online game or participating on a chat line or, more probably, wanting to be anonymous.

Anxiety or sadness did not appear to be present, in absence of an Internet connection, although a small number of students reported them rarely.

The smartphone resulted as being the major

technology used by teenagers to access Internet. About 70% of the students reported to spend less than 30 minutes on it, but about 16% use it in a time ranging between 90 and 120 minutes. WhatsApp and Facebook messenger appear to be the most used instant messaging applications, probably because it is possible to use them with a smartphone. Almost the entire group appears to be part of a social network. One out of two students owned a videogame console, and the larger part of the group reported to dedicate less than two hours a day on videogames. Such data is not a significant result, but nevertheless shows a high use, in terms of time, towards playing games.

Finally, the majority of the students reported that the questionnaire to evaluate IA was useful.

Discussion

The result of this preliminary study showed that most of the young subjects interviewed owned a smartphone with Internet, and claimed to spend more time online

than when they had started. Therefore, the time passed online appears to be increasing by time, and this frequency could be partially determined by the diffusion of smartphones. As being a new technological device, the smartphones permit to access Internet, potentially anywhere and at any time, so that the constant presence of this opportunity might cause growing abnormal behavioral tendencies.

The data emerging from this research reveals that almost all the participants possessed an active account to at least one of the social networks, the more preferred being Facebook and Instagram. In the same way, nearly everybody use instant messaging applications as new form of communication, which have been growing particularly with the wide spreading of smartphones.

Amongst the answers expressed by the young people, no particular emotional problems were found in relation to the approach with Internet and the different virtual possibilities of social interaction. Specifically, it would appear that those interviewed did not withdraw from social relationships and other forms of aggregation and were still interested in sport.

Table 1. *Details about use of the Internet*

	IU1	IU2	IU3	IU4	IU5	IU6	IU7	IU8	IU9	IU10	IU11	IU12
Never	33%	27%	45%	82%	10%	34%	50%	35%	51%	45%	25%	17%
Rarely	30%	35%	31%	13%	22%	21%	24%	18%	32%	29%	25%	32%
Sometimes	23%	18%	14%	2%	38%	22%	18%	23%	11%	16%	32%	30%
Often	13%	15%	9%	2%	23%	13%	5%	19%	4%	7%	14%	17%
Very often	1%	4%	2%	0%	7%	10%	4%	5%	2%	2%	4%	4%

	IU13	IU14	IU15	IU16	IU17	IU18	IU19	IU20	IU21	IU22	IU23	IU24
Never	84%	26%	58%	39%	90%	48%	19%	66%	63%	28%	33%	82%
Rarely	6%	29%	21%	15%	5%	21%	31%	18%	21%	28%	24%	11%
Sometimes	5%	21%	11%	21%	0%	17%	32%	7%	13%	17%	24%	5%
Often	4%	14%	5%	17%	1%	10%	13%	7%	1%	16%	13%	1%
Very often	1%	10%	5%	8%	4%	5%	5%	2%	2%	11%	5%	2%

Legend**:**
IU1: You spend more time online than how you would.
IU2: When offline, you are looking forward to log in.
IU3: You feel back or eye pain because of the time spent in front of the monitor.
IU4: You postponed or cancelled an appointment because you were online.
IU5: You use internet essentially for studying.
IU6: Your family and friends become nervous because of your Internet use.
IU7: When online you forget your concerns.
IU8: You got to know interesting people through the Internet.
IU9: When online it feels like entering in another dimension which estranges you from daily routine.
IU10: You spend much time online because you do not find easily what are you looking for.
IU11: You spend much time online because when searching you find contents which interest you, although not related to your initial search.
IU12: You spend much time online because when searching you find many more informations than what you expected to find.
IU13: You give up to take exercise because you were doing something important online.
IU14: If for some reason you had to disconnect, you were looking forward to log in again.
IU15: Sometimes you experienced discomfort, malaise, feelings of emptiness and loneliness if you couldn't login to the Internet or have been online less time than you wanted to.
IU16: You have established new relationships with people met online.
IU17: When online, you change identity.
IU18: Your study performance is adversely affected by the time spent online.
IU19: Your study performance has improved thanks to the information you find online.
IU20: You encounter difficulties in falling asleep after being online till late night.
IU21: When not online, you think about what you are going to do as soon as you will be online again.
IU22: When online for a long time, it happens to tell yourself: "just a few minutes more, then I get off".
IU23: You prefer to spend time online than with friends.
IU24: When not online you feel depressed, anxious or nervous.

Table 2. *Details about use of social networks*

	SN1	SN2	SN3	SN4	SN5	SN6	SN7	SN8	SN9
Never	35%	57%	56%	18%	52%	76%	40%	53%	50%
Rarely	26%	20%	25%	23%	22%	14%	26%	20%	34%
Sometimes	18%	7%	9%	21%	18%	5%	16%	13%	12%
Often	12%	7%	5%	21%	4%	3%	11%	6%	2%
Very often	9%	10%	5%	17%	5%	3%	7%	8%	3%

Legend**:**
SN1: You check Facebook before doing anything else.
SN2: You check Facebook within 15 minutes from waking up.
SN3: You check Facebook while having lunch or dinner.
SN4: You check Facebook before sleeping.
SN5: When posting on Facebook, you feel excited thinking about the comments you will receive.
SN6: When posting on Facebook, you feel excited thinking about a possible sharing of your post.
SN7: When posting on Facebook, you feel excited thinking about how many "likes" you will receive.
SN8: You feel disappointed if your post does not get any comment or is not shared or does not receive any "like".
SN9: How often do you share your friend's posts on Facebook?

Conclusions

The students involved in the research showed a high standard of collaboration with a deep interest during the survey. None of them refused to fulfill the questionnaire. At the end of the research, it was provided a comparison, through a debate, with the students participating on the topic of non-chemical addiction. From the discussion, the main part of the topics raised concerned:
- what is the difference between chemical and non-chemical addiction?
- what are the possibilities of therapeutic interventions with respect to Internet Addiction?
- how to support a friend who faces a difficult situation, caused by this form of addiction?
- what consequences can derive, in the long term, from an Internet Addiction?
- what role could the school and family play in terms of prevention?

The findings of this study suffer from the limitation that the research was carried out in a small group of students that were quite homogenous, as belonging to the same area and with similar life-style. In addition, their high school was the same and peculiar: the Italian "Liceo Classico" is one of the best high-schools that attracts the most skilled students. For these reason our findings cannot be considered representative of the total high-school population. In any case, they underline the need of further studies in different students' populations. Internet use in everyday life and the use of social networks are contributing to radically modifying the structure and content of communication requiring intervention on psychological and social management of new informatics applications for their impact on single individual and on the community.

The school and the families are the main educational agencies that should be involved in increasing awareness on the possible dangers related to excessive Internet use, but also politicians should make their part. It would appear, therefore, very important to implement educational programs related to behavioral addictions, in order to prevent the onset of psychiatric disorders in childhood and adolescents. Teenagers could become motivated to understanding the phenomenon by seminars and/or meetings involving also parents and teachers with the support of psychologists and psychiatrists who should prepare guidelines to approach new technology use, by exploring cognitive, emotional, behavioral and social factors related to it.

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