

# Internet addiction, smoke, drugs and alcohol: a research among German adolescents and young people

## Uzależnienie od Internetu, palenie tytoniu, narkotyki i alkohol: badania wśród niemieckich nastolatków i młodych ludzi

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**Wprowadzenie.** Różne instytucje krajowe i międzynarodowe potwierdzają powszechne korzystanie z Internetu, zwłaszcza wśród młodzieży. W artykule odniesiono się do niektórych autorów niemieckich i międzynarodowych, którzy zarówno zajmują się prezentowaną tematyką jak i prowadzą badania na ten temat.

**Cel badań.** W niniejszym artykule przedmiotem zainteresowania jest uzależnienie młodych ludzi od Internetu w Niemczech. W tym artykule, dokonano przeglądu ostatnich badań przeprowadzonych w Niemczech, w celu ukazania jak powszechne jest to zjawisko.

**Materiał.** Prezentowane badania zostały przeprowadzone na próbie 144 młodzieży, w wieku od 15 do 29. Wszyscy uczestnicy mieszkają w centrum kształcenia zawodowego.

**Wyniki.** Na podstawie przeprowadzonych badań, przy zastosowaniu IAT i CIUS, odkryto wysoki odsetek zagrożonych użytkowników Internetu (49,3%), jak również znaczny procent użytkowników (53,5%), którzy, zgodnie z wynikami CIUS, wykorzystują Internet w sposób problematyczny.

**Wniosek.** Według obu testów, zjawisko ryzyka uzależnień od Internetu dotyczy głównie osób płci męskiej.

**Słowa kluczowe:** Internet, uzależnienie, młodzież

**Introduction.** Various national and international institutes attest to a widespread use of the Internet, particularly among the youth. In the article, reference has been made to different German and international authors, who have both dealt with and conducted research on the subject.

**Aim.** This article addresses the subject of Internet Addiction in Germany and introduces a review of various studies carried out in Germany, with the aim of measuring the dimension of the phenomenon.

**Material.** At the same time, a research on a sample composed of 144 adolescents and young people aged 15 to 29 years was carried out. All participants lived in a professional training institute.

**Results.** Based on the IAT and CIUS surveys, a high percentage of Internet at-risk users (49,3%) came to light, as well as a substantial percentage of users (53,5%) who, according to CIUS, use the Internet in a problematic way.

**Conclusion.** According to both tests, the Internet-addiction risk phenomenon mainly affects male individuals.

**Key words:** Internet, addiction, young people

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### Introduction

During the last years, the use of the Internet has increased more than ever; according to a Eurostat statistic dated 2012, 65% of the German population daily access the Internet ("Internet access: daily") [1]. The percentage is far higher when it comes to the youth sector: 89% of German young people aged 16 to 24 years use the Internet daily. In both cases, the statistics on the German population are higher if compared to the European average (total population: 58% – young people aged 16-24 years: 84%) [1].

Every year, the *Medienpädagogischer Forschungsverbund Südwest* draws up a report called "JIM" [2] about how young people (aged 12 to 19) use the media.

Naturally, we will keep here within the lines of the Internet-related data, while the following statistics will be inferred from the 2012 report.

As far as the Internet access frequency is concerned, the report highlights the following: 79% of young people affirm that they use the Internet daily/several times per week, 4% once per week/once every other week, 4% once per month, 13% never. As con-

cerns the activities carried out on the Internet, 45% of young people report that they mainly use the Internet to communicate, 16% to play games, 15% to search for information and 25% to watch videos, listen to music and look at pictures [2].

The Internet obviously has many positive aspects, like for example allowing instant communication with anyone anywhere in the world; but according to different authors, an excessive use might lead to an out-and-out Internet addiction, in the same way as some people are drug- and alcohol-addicted, with different consequences on social, school and working life [3-7]. Different words can be used to refer to this problematic behaviour, even though in Germany they speak about “*Computer-und Internet-Abhängigkeit*” [8].

Also, it is important to point out that ‘Internet Addiction’ has been included in the appendix of the new Diagnostic and Statistical Manual of Mental Disorders (DSM-V), recommending further research on this subject area (American Psychiatric Association, 2013).

### The spreading of Internet Addiction and possible consequences on real life

As far as the spreading of this phenomenon in Germany is concerned, different surveys can be quoted; Table I shows the most relevant research conducted from 2000 until 2012, as well as their respective percentages of problematic use of Internet/Internet addiction. It is important to clarify that the tests used in the different studies vary from research to research.

Table I. Research in Germany

Source	% Problematic use /Internet Addiction
Hahn & Jerusalem, 2001	3.2%
Grüsser, Thalemann, Albrecht, Thalemann, 2005	9.3%
Grüsser, Thalemann, Griffiths, 2007	11.9%
Rehbein, Kleimann, Mößle, 2007	5%
Petersen, 2008	0.4%
Quandt & Wimmer, 2008	5%
Wölfling, Thalemann, Grüsser, 2008	6.3%
Batthyány, Müller, Benker, Wölfling, 2009	2.7%
Meixner, 2010	1.4%
Rumpf, Meyer, Kreuzer, John, 2011	3.8%
Müller, Koch, Beutel, et al., 2012	4.2%
Müller, Ammerschläger, Freisleder, Beutel, Wölfling, 2012	11.3%
Kammerl, Hirschhäuser, Rosenkranz, et al., 2012	12.5%

The majority of the research carried out in Germany was based on the *Compulsive Internet Use Scale* (CIUS) test [9], which was used for this survey as well. In addition to the CIUS test, in the present study the *Internet Addiction Test* (IAT) [10] was employed too,

which is the most commonly used test at the international level.

In order to have a basis for comparison, it is useful to quote other research conducted in other countries. The list might be longer, given the large number of studies; in this context, however, we will merely report some of the most recent ones, particularly those based on the use of either the IAT or the CIUS test (Table II).

Table II. International Research

Source	Country	Test	% of Addiction
Meerkerk, et al., 2009	Netherlands	CIUS	7.4%
Formella & Nicoli, 2013	Italy	IAT, UADI-III	4.0%
Derbyshire & Lust, 2013	U.S.A.	IAT	5.3%

From the research reported in both tables, it stands out that the percentage of Internet-addicted users can vary a lot: from a minimum 0.4% on Petersen’s research (2008) to a maximum 12.5% on Kammerl and Hirschhäuser’s research (2012) [11].

Many researchers have analysed the possible consequences on connections among a problematic use of Internet and other interpersonal or intrapersonal troubles, as well as with disorders of other kinds. In the following list, some of the most investigated correlations are reported:

- Internet excessive use and interpersonal problems (a decrease in social relations quantity, increased loneliness, increased isolation). See: Nicoli (2013) [12]; Oktuğ (2012) [13]; Te Wildt, Putzig, Vukicevic, Wedegärtner (2011) [14]; Deniz (2010) [15]; Odaci & Kalkan (2010) [16]; Wichian & Sanwong (2010) [17]; Kim, LaRose, Peng (2009) [18]; Van der Aa, Overbeek, Engels et. al. (2009) [19]; Young (2009) [20]; Hu (2009) [21]; Matsuba (2006) [22]; Morahan-Martin (2005) [23]; Caplan (2003) [24]; Whang, Lee, Chang (2003) [25]; Lin & Tsai (2002) [26]; Moody (2001) [27]; Young (1999) [28]; Kraut, Patterson, Lundmark et al. (1998) [29].
- Internet excessive use and mood disorders (e.g. depression). See: Schuhler (2013) [30]; Carli, Durkee, Wasserman, et al. (2013) [31]; Adalier & Balkan (2012) [32]; Te Wildt, Putzig, Vukicevic, Wedegärtner (2011) [14]; Achab, Nicolier, Mauny, et al., (2011) [33]; Müller & Wölfling (2010) [34]; Van Rooij, Schoenmakers, Vermulst, et al. (2010) [35]; Mitchell, Sabina, Finkelhor, Wells (2009) [36]; Petersen (2008) [37]; Morahan-Martin (2005) [23]; Caplan (2003) [24]; Kraut et al. (1998) [29].
- Internet excessive use and self-esteem decrease. See: Formella, Nicoli, Szadejko (2013) [38]; Young (2009) [20].

The abovementioned studies suggest that Internet addiction is a subject which should not be underestimated, and, as a consequence, in the last years numerous researchers have been studying it thoroughly.

### Methodology

Various tests and questionnaires were submitted in the period from November 4 to November 20, 2013; paper tests were submitted at first, and afterwards processed by the SPSS software.

The participation in the study was voluntary and all participants were informed that the whole questionnaire would be anonymous.

### Sample

For this research, around 260 adolescents and young people with mental or physical disorders, living in a professional training institute were contacted.

Among these, 144 participants aged 15 to 29 years filled in the questionnaire (mean: 19.5; SD: 2.6), divided by gender (“Männlich”, Male; “Weiblich”, Female), as follows (Table III).

Depending on age, the sample of 144 adolescents/young people was distributed in the following way (Fig. 1):

### Instruments

The submitted questionnaire was anonymous. The instruments used for the present research were the *Internet Addiction Test* (IAT) [10] and the *Compulsive Internet Use Scale* (CIUS) [9]. Furthermore, an eleven-question questionnaire was submitted, to assess the sociological constituents (gender, age, activities done on the Internet, and so on); questions relating to cigarettes, alcohol and drugs consumption were included.

IAT is composed of 20 items (Likert scale 1-5), subdivided into 6 factors (Salience, Excess use, Neglect work, Anticipation, Lack of control, Neglect social life). In Young’s opinion (the test’s author) it is possible to classify the use of the Internet on three levels:

- Internet normal use (test score between 20 and 39 points);
- Internet at-risk use (test score between 40 and 69 points);
- Internet addiction (test score between 70 and 100 points) [10].

CIUS is made up of 14 items (Likert scale 0-4), subdivided into 5 factors (Loss of control, Preoccupation, Withdrawal symptoms, Coping or mood modification, Conflict interpersonal/intrapersonal). In the authors’ opinion, the Internet use classification envisages two levels: normal use and problematic use.

The cut-off between the levels corresponds to a total score of 28 [9].

### Results

Before mentioning the Internet use-related data obtained through both tests (IAT and CIUS), the statistics concerning the activities mostly carried out on the Internet by the youth will be reported, together with the answers to the three questions about smoking and alcohol and drugs use.

#### Activities on the Internet

The possible options presented by the question were: “Kontakte in sozialen Netzen” (Contacts on social networks), “Musik hören” (Listening to music), “Online spielen” (Playing online games), “Videos anschauen” (Watching videos) and “Informationen suchen” (Search for information) (Table IV). It was possible to answer this question selecting one or more options.

#### Smoke, alcohol, drugs

As specified in the paragraph about instruments, in the sociological questionnaire there was a question

Table III. Gender differences

	Frequencies	%
Valid Male/Männlich	102	70.8
Valid Female/Weiblich	42	29.2
Total	144	100.0

Table IV. Activities on the Internet

Activities	Frequencies	%
“Kontakte in sozialen Netzen”	92	63.8%
“Musik hören”	46	31.9%
“Online spielen”	32	22.2%
“Videos anschauen”	34	23.6%
“Informationen suchen”	47	32.6%

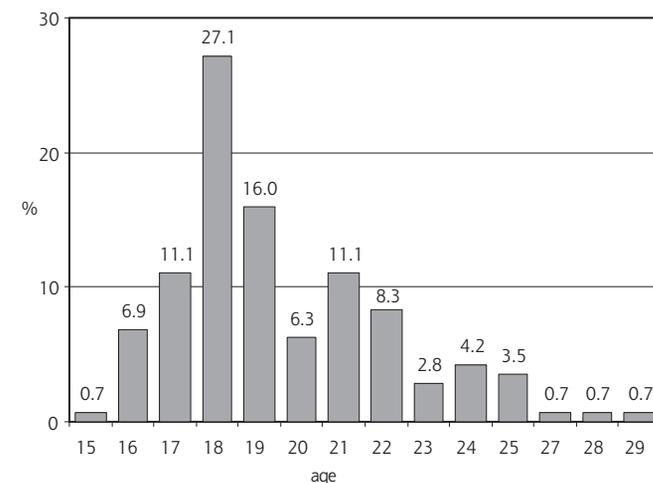


Fig. 1. Age distribution

related to smoking frequency, one related to alcohol use frequency and, finally, one related to drugs use frequency. One question cannot of course represent a reliable value, even though it can surely provide some information. It is important to remember that the questionnaire was anonymous and that only one answer could be given.

As concerns smoking, the possible answers were “*Nein*” (No), “*Manchmal*” (Sometimes), “*Täglich*” (Daily) (Fig. 2).

As concerns alcohol, the possible answers were four: “*Nein*” (No), “*Manchmal*” (Sometimes), “*Täglich*” (Daily) and “*Öfter mit einem Rausch*” (I’m often drunk) (Fig. 3).

Finally, as regards the use of drugs, the possible answers were the following: “*Nein*” (No), “*Manchmal*” (Sometimes), “*Mehrmals pro Woche*” (Many times per week) (Table VII; Fig. 6).

**Internet use according to IAT and CIUS**

Once considered the statistics regarding the most commonly carried out activities on the Internet, as well as the use of cigarettes alcohol and drugs, the statistics concerning the use of the Internet as classified by both IAT and CIUS will be now introduced.

It is worth remembering that, in accordance with IAT, the Internet use can be classified on three levels: normal use (“*Normale – Nutzung*”), at-risk use (“*Risiko – Nutzung*”) and Internet-addicted use (“*Internet – Abhängigkeit*”) (Table V; Fig. 5).

Here follow the results of gender difference as reported by IAT (Table VI).

Unlike IAT, CIUS categorizes the use of the Internet on two levels only: normal use (“*Normale – Nutzung*”) and problematic use (“*Problematisch Nutzung*”) (Table VII; Fig. 6).

Table V. Levels according to IAT

Levels	Frequencies	%
“Normale – Nutzung”	69	47.9%
“Risiko – Nutzung”	71	49.3%
“Internet – Abhängigkeit”	4	2.8%

Table VI. Gender differences (IAT)

	Male	Female
“Normale Nutzung”	41.2%	64.3%
“Risiko Nutzung”	55.9%	33.3%
“Internet – Abhängigkeit”	2.9%	2.4%

Table VII. Levels according to CIUS

Levels	Frequencies	%
“Normale Nutzung”	67	46,5%
“Problematisch Nutzung”	77	53,5%

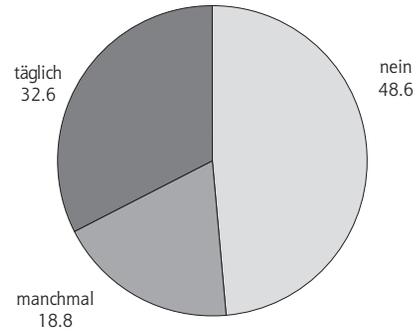


Fig. 2. Smoking

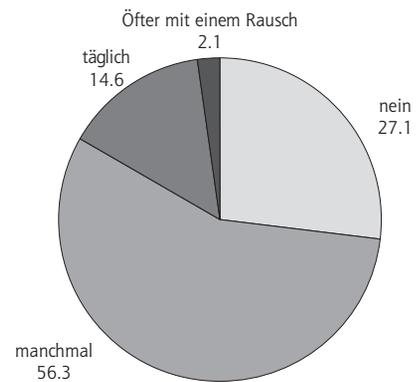


Fig. 3. Alcohol

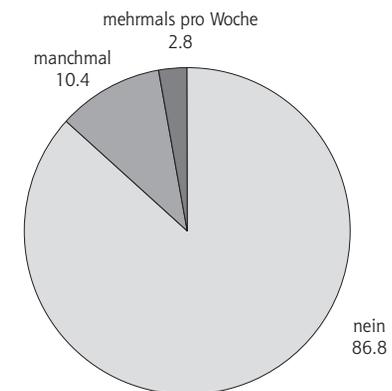


Fig. 4. Use of drugs

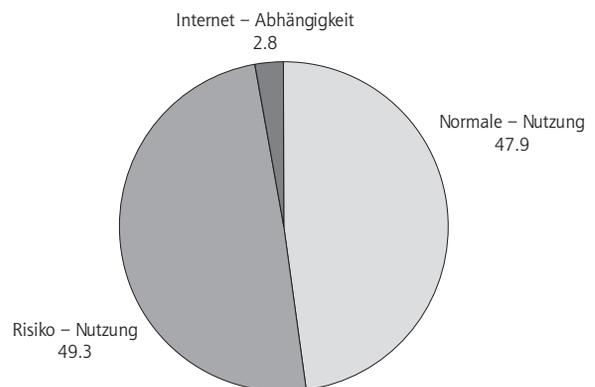


Fig. 5. Internet use according to IAT

Here follow the results of gender difference as reported by CIUS (Table VIII).

**Statistical analysis**

A possible correlations among different observed variables and factors have been investigated through a Parametric bivariate correlational analysis (Pearson’s R). The only statistically significant correlation was found between the total score on IAT and the total score on CIUS (Pearson’s  $R = .60$ ;  $p < 0.01$ ).

In terms of statistical differences the scores reported to IAT and CIUS were analysed as dependent variables, in relation with the sociological variables investigated in the questionnaire (gender, age, activities, smoke, alcohol, drugs, etc.).

Through an analysis of variance, a statistically significant difference was found that there is the excessive use of the Internet (according to IAT) (Table IX; Fig. 7) in relation between *Männlich* (Male) and *Weiblich* (Female).

In addition, as there were too few subjects pertaining to the third level of IAT, the second and third levels of IAT were merged into an unique “problematic” category. Problematic and not-problematic subject were compared in relation to demographic and sociological variables: (males/females, smokers/non-smokers, alcohol consumers/non-consumers drug users/non-users). The chi-square analysis showed a significant difference between males and females [ $\chi^2$ , 1 df=6.37  $p=0.012$ ; OR=2.57 (1.22; 5.42 c.i.)] and between

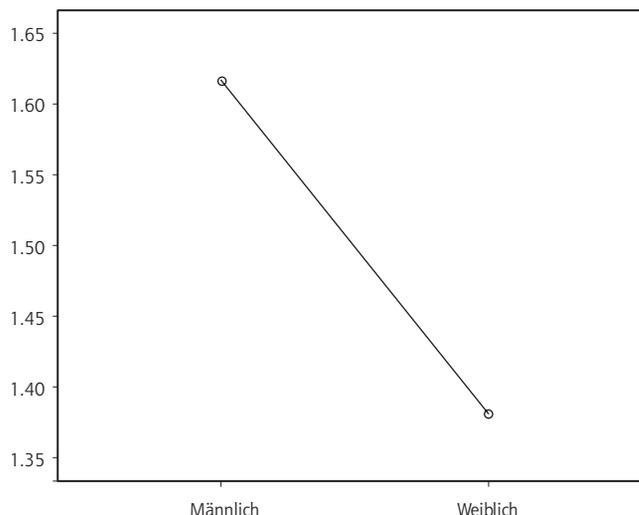


Fig. 7. mean IAT scores according to gender

alcohol consumers and non-consumers [ $\chi^2$ , 1 df=3,98  $p=0.046$ ; OR=2.13 (1.01; 4.52 c.i.)] in the use of excessive Internet according to IAT.

**Discussions and Conclusions**

In the first paragraphs, the spreading of the Internet in Germany was dealt with; statistics provided by the Eurostat were reported, according to which 65% of the German population daily use the Internet. This percentage is far higher as far as the age range 16-24 years is concerned: 89% (Eurostat, Individuals – frequency of Internet use, <http://appsso.eurostat.ec.europa.eu>) [1].

Other statistical data were provided by the “JIM” (*Jugend Information Multi-Media*) according to which 79% of young people aged between 12 and 19 years daily use the Internet. In addition, thanks to the JIM report, it can be deduced that the most widespread activity on the Internet is communicating (through social networks, and so on): 45% of young people actually maintain how this activity is the most widely conducted one on the Internet [2, 39-52].

Further on, both the concept and spreading of Internet addiction were addressed; different studies carried out in Germany were presented, and the average addiction percentage amounts to 6.0%.

Beyond the spreading, the possible consequences and correlations between an Internet problematic use and other disorders of various kind. With the passing of years, numerous authors have dealt with these aspects: from the abovementioned studies, it clearly comes out how the observed correlations and possible consequences mainly refer to a decrease in the quantity and quality of interpersonal relations, and an increase in loneliness and isolation. In parallel, a particularly investigated correlation is the one with mood disorders.

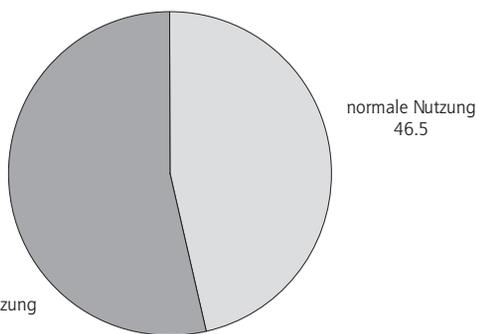


Fig. 6. Internet use according to CIUS

Table VIII. Gender differences (CIUS)

	Male	Female
“Normale Nutzung”	43.1%	54.8%
“Problematisch Nutzung”	56.9%	45.2%

Table IX. Anova levels of IAT according to gender

	SS	df	MS	F	Sig.
Between groups	1.667	1	1.667	5.636	.019
Within groups	41.993	142	.296		
Total	43.660	143			

In our study, these factors have not been analysed, but we aimed to investigate the excessive use of the Internet in relation to other behaviours likely to become compulsive like tobacco smoking, use of alcohol and drugs. Indeed these possible connections have been poorly investigated in the literature with respect to the excessive use of the Internet other than the link with other variables like interpersonal problems, mood disorders and self-esteem. In the specific instance, analysing the research carried out for this study, a questionnaire composed of two tests was submitted: IAT, which is widely widespread at the international level, and CIUS, mainly spread in Northern European countries (Germany, the Netherlands, and so on). In addition to the tests, an eleven-question questionnaire was submitted, with the aim of inquiring into sociological variables such as gender, age, smoking, activities, alcohol and drugs consumption.

As far as the activities are concerned, according to our research too, the activity mostly done on the Internet is the use of Social Networks (63.8%, N=92).

As regards smoking, it came out that 48.6% (N=70) did not use cigarettes, 18.8% (N=27) smoked sometimes, 32.6% (N=47) smoked daily. As a consequence, it emerged how the smokers exceeded half of the investigated sample, with 32.6% smoking cigarettes daily.

Concerning the use of alcohol, 27.1% (N=39) did not drink alcohol, 56.3% (N=81) drank alcohol sometimes, 14.6% (N=21) drank alcohol daily and finally 2.1% (N=3) drank alcohol and often got drunk. The greater part of the sample, therefore, drank alcohol sometimes.

As regards the use of drugs, it came out that 86.6% (N=125) did not use drugs, 10.4% (N=15) used drugs sometimes and finally 2.8% (N=4) answered "many times per week". The greater part of the sample, therefore, did not use drugs.

From IAT, it results that 47.9% (N=69) of young people normally use the Internet, whereas a high percentage of young people who are at risk of Internet addiction was noticed (49.3%, N= 71), as well as a low percentage of Internet addiction (2.8%, N=4).

As a consequence, the low percentage of Internet addicted users can be clearly pointed out (2.8%); but, on the contrary, the high percentage of Internet addiction at-risk users is worrying and leads to reflection: 49.3% practically half of the sample. 50% is exceeded, if the users who were registered to be Internet addicted people are added to this share.

The data concerning the high percentage of at-risk users should not be overlooked, while taking preventive action for this share of the sample would be beneficial.

From an analysis of gender differences, there is no big difference when it comes to the Internet addicted users' percentage; on the contrary, observing the normal and at-risk use percentages, it can be pointed out that the Internet at-risk use is mainly typical of male individuals.

Based on CIUS (cut-off 28), a similar percentage related to normal Internet use was highlighted (46.5%, N=67), although a high percentage show a problematic Internet use (53.5%, N=77).

According to CIUS, in this case too, an Internet problematic use mainly characterises male individuals (56.9%).

Finally, the results of both tests underline that the phenomenon of Internet addiction generally affects male individuals: according to IAT, a slight difference is reported between both genders as concerns the percentages of Internet addicted users (M: 2.9%; F: 2.4%); on the other hand, there is a noticeable difference between the at-risk use percentages: male users 55.9%; female users 33.3%. According to CIUS too, a difference can be noticed between both genders as concerns Internet problematic use: male 56.9%; female 45.2%.

Various studies conducted in Germany reported that a percentage varying between 0.4 and 12.5% of Internet users were problematic users or internet-addicted. Our research shows that, according to IAT, the percentage of internet-addicted is approximately in line with the findings of other studies (2.8%). However, according to CIUS, 53.5% of our sample resulted in a problematic user. This difference may be due to several factors; mainly to the differences in scaling between IAT, that distinguishes between three levels of Internet use/abuse and CIUS, which divides subjects into problematic and non-problematic in relation to an only cut-off score. However, if problematic groups from IAT are merged together, also the IAT scale identifies a large number of people at risk (49.3%+2.8%=52.1%). This might mean that probably both tests detect the same percentage of Internet problematic users, even though, according to IAT, the majority is considered 'at risk' and not Internet problematic users (as it is for CIUS). Indeed, from the correlational analysis, a strong positive correlation was found between the IAT and the CIUS results ( $p=.060$ ). This fact confirms that there is a good correlation between the two tests (IAT and CIUS) with regard to construct to be measured.

In addition, the results of this study may have been influenced by the characteristics of the sample: as we stated in the methodological section, the study population consisted of adolescents and young men and women with physical or mental disabilities. To our knowledge, this is the first study that deals with

evaluating this aspect in a population of young people with disabilities. Our results therefore bring to light a greater risk for this type of subjects to become internet-addicted.

Moreover the univariate anova and chi-square analyses showed that males have a more than double risk (O.R.=2.57) than females to be problematic Internet users (according to IAT). Moreover, through the chi-square analysis, it was found that those who drink

alcohol have a 2.13 greater risk than non-drinkers to develop Internet addiction (according to IAT).

In conclusion, we have to reiterate how important it is, especially in the most vulnerable groups of the population, not to underestimate the phenomenon of Internet addiction and its possible relationship to other behaviours of addiction such as alcohol consumption, as well as to take preventive actions considering the high percentage of at-risk users.

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