

World Wide Internet

Changing Societies, Economies and Cultures

Edited by
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22 Comparing Addictive Behavior on the Internet in the Czech Republic, Chile and Sweden

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and Sergio Godoy-Etcheverry*

Introduction

Many reports of addictive behavior on the Internet first appeared in popular press, citing anecdotal evidence (Rheingold, 1993; O'Neill, 1995). The phenomenon of addictive behavior was mentioned in the clinical context for the first time by American clinical psychologist Kimberly Young in 1996 (Young, 1998a). From that time on, many experts, particularly in the US (e.g. Scherer, 1997; Suler, 1999; Beard, 2005) and Asia, such as Taiwan and South Korea (e.g. Chou et al., 2005; Chen & Hsiao, 2000; Kim et al, 2008), have been focusing their attention on this topic. Until today there remain many unanswered questions regarding this phenomenon - the concept of addictive behavior on the Internet has not been fully developed, and perhaps is still in its infancy (Yang & Tung, 2007). The open question persists as to whether addictive behavior on the Internet is a disorder itself or whether it is a manifestation of another mental disorder (Grohol, 2005; Mitchell, 2000; Yang & Tung, 2007). In fact, it has been proven by many experts that excessive Internet use can negatively affect an individual's life and result in physical, psychological and other problems (Morahan-Martin & Schumacher, 2003; Young, 2007). After a series of 10 pulmonary-related deaths in Internet cafés and a murder related

to online games, South Korea has come to even regard addictive behavior on the Internet as one of their most serious public health issues (Block, 2008). China is also greatly concerned about this type of addictive behavior, which has resulted in the ratification of a law that discourages more than 3 hours of daily computer game use (“The more they play, the more they lose”, 2007).

The issue of addictive behavior on the Internet is also new within the World Internet Project (WIP), the first questions on this topic having been asked in the Czech Republic in 2007. This article reports on the results of a second questionnaire from 2008. The purpose here is to present a comparison of two symptoms of addictive behavior on the Internet in Sweden, Chile and the Czech Republic. The two symptoms are, namely, conflict (when Internet use causes serious problems between individuals) and mood change (when Internet use leads to significant mood changes). The second task is to show the current prevalence of addictive behavior on the Internet in the Czech Republic. This was assessed based on the general symptoms for addictive behavior as described in the Diagnostic and Statistical Manual of Mental Disorders (DSM- IV revision), adjusted for the specifics of the Internet environment.

Theoretical Background

Terminology and definition of the addictive behavior on the Internet.

Over the brief academic history of addictive behavior on the Internet, one of the most challenging tasks has been to arrive at a comprehensive definition of this phenomenon. Different terms to describe this are used in literature, such as “Internet addiction” (Chou & Hsiao, 2000; Young, 1998a), “Internet pathological use” (Morahan-Martin & Schumacker, 2000; Davis, 2001), “compulsive Internet use” (Black et al., 1999), “Internet addiction disorder” (Chou et al., 2005) and “addictive behavior on the Internet” (Li & Chung, 2006). Each of these terms reflects a different understanding of the nature of excessive or problematic use of the Internet. In

this text we are going to refer to this phenomenon as “addictive behavior on the Internet”. The reason is that this type of behavior was not included in DSM-IV (the fourth revision of the Diagnostic and Statistical Manual of Mental Disorders) and is not going to be included in DSM-V either. Therefore, it is not regarded as a real mental disorder (Grohol, 2007). On the other hand, we agree with Griffiths (2000) who assumes technological addictions to be a subset of behavioral addictions that feature the core components of addiction (salience, mood modification, tolerance, withdrawal, conflict and relapse).

Many definitions are available for this phenomenon. Beard & Wolf (2001) define “problematic use of Internet” broadly as use of the Internet that creates psychological, social, school and work difficulties in a person’s life. Shapira et al. (2000) characterize “problematic Internet use” as an individual’s inability to control his or her use of the Internet, which leads to distress or/and functional impairment. Mitchel (2000) describes “Internet addiction disorder” as the compulsive overuse of the Internet and irritable or moody behavior when the individual is deprived of it. According to Young (1998a), addictive behavior on the Internet is a broad term covering the following five basic subtypes: cybersexual addiction (compulsive viewing or downloading of online pornography), cyber-relational addiction (over involvement in online relationships), net compulsions (obsessive online gambling or shopping), information overload (excessive web surfing and database searches) and computer addiction (compulsive playing of computer games). If we look at current research on addictive behavior on the Internet, it covers three main areas: (i) online gaming – mainly research on multi-user virtual worlds (“MMORPG”), and (ii) excessive online communication – online relationship and cybersex activity overload (Šmahel et al., 2009).

Why does addictive behavior on the Internet deserve attention?

Although addictive behavior on the Internet does not cause the same type of serious physical problems as do other addictions such

as alcohol and drug abuse, it has started to attract the attention of many experts from the mental health area due to the similarity in social consequences. Case studies and results of surveys have uncovered the negative ramifications of addictive behavior on the Internet and can be divided into three basic areas:

a) Academic and occupational impairments

Among the serious consequences of addictive behavior on the Internet, concerning mainly students' learning difficulties resulting in poor grades, missed classes, and problems staying attentive during classes because of sleep deprivation (Chen & Peng, 2008; Wainer et al., 2008; Douglas et al., 2008). Addictive behavior on the Internet in the case of working people can be reflected in lower efficiency that can result in job losses for some individuals (Young, 1998a). In the context of other financial losses, often mentioned were perpetual computer upgrades and phone bills related to fees for Internet services (Douglas et al., 2008; Young, 1998a). An example of how addictive behavior on the Internet has a negative influence on academic performance can be illustrated in the case of a 16-year-old girl who began to isolate herself after the divorce of her parents in her room to join chat groups with other teenagers whose parents had divorced. Gradually she began spending most of her available time with her online friends. Her online time escalated to the point where her schoolwork was affected and she began failing in three subjects (Hall & Parsons, 2001).

b) Psychosocial impairments

The most common psychological impairments associated with addictive behavior on the Internet include depression, loneliness and social isolation (Young & Rogers, 1997; Chen & Peng, 2008). Some surveys have confirmed that addictive behavior on the Internet could negatively impact relationships in that some individuals spend less time with people in their lives, thereby resulting in impatience, arguments and strains on the relationships (Yang & Tung, 2007; Lin & Tsai, 2002). As a case study in this context, there is the example of a 15-year-old boy who, according

to his mother, had always had problems socially and had suffered from an inferiority complex and a lack of confidence when dealing with peers, which led to a depressed mood. His behavior worsened upon getting his own computer, as he started to spend his time on the computer at the expense of family and friends (Griffiths, 2000).

c) Physical impairments

Addictive behavior on the Internet can affect the physical state of the user. Chou (2001), in his online interview study with college students, reports that the major physical complaints stemming from students' Internet use were eyesight deterioration and sleep deprivation. Among others, the college students mentioned sore shoulders, backs, hands and fingers, and fatigue. Suhail and Bargees (2006) focused on the effects of excessive Internet use in their study and found out that students most frequently mentioned physical problems such as migraine/headache, less sleep and backaches because of Internet use. Rotunda et al. (2003) adds to these negative consequences disrupted sleep.

Addictive behavior on the Internet in the context of mental health

Among those who encountered addictive behavior on the Internet are professionals in mental health care dealing with this problem in the treatment of their clients. Reacting to this new phenomenon, some of these professionals have tried proposing diagnostic criteria for the behavior by modifying the DSM-IV-TR criteria for pathological gambling or based on the symptoms of impulse control disorders (Young, 1998b; Beard & Wolf, 2001; Shapira et al., 2003). Nevertheless, none of the diagnostic criteria for addictive behavior have been recommended for inclusion into the DSM-V (Grohol, 2007).

Griffiths (2000, 1996) uses the six core components of addictive behavior defined by Brown and transforms them for addictive behavior on the Internet. To be classified as addictive behavior on the Internet, all of the following must be present in the individual.

a) **Salience** happens when the particular activity turns out to be the most important activity in the person's life and governs his or her thinking (preoccupations and cognitive distortions), feelings (cravings), and behavior (e.g. decline of socialized behavior).

b) **Mood modification** is subjective experience influenced by the pursued activity

c) **Tolerance** is the process whereby increasing amounts of the particular activity are required to achieve the former effects.

d) **Withdrawal symptoms** are defined as unpleasant feeling states and/or physical effects (e.g. the shakes, moodiness, irritability) that come about when the particular activity is discontinued or suddenly limited.

e) **Conflict** refers to the disagreements between the addict and those around them (interpersonal conflict) or from within the individuals themselves (intrapsychic conflict) that is associated with the particular activity.

f) **Relapse** is the tendency for repeated decline of earlier patterns of the particular activity, and for even the most extreme patterns typical at the height of the addiction to be quickly restored after a period of relative control.

These components and earlier mentioned diagnostic criteria were used by experts in the construction of assessment methods for addictive behavior on the Internet. The first one, IAT (Internet Addiction Test) was designed by Young (1998). From that time on a limited number of standardized tests have been developed (e.g. CIAS - The Chen Internet Addiction Scale, OCS – Online Cognition scale) for assessing addictive behavior on the Internet (Ko et al., 2005; Davis et al., 2002).

Who is endangered by addictive behavior on the Internet?

Internet users are not a homogeneous group. Soule et al. (2003) stated several groups of Internet users who were more vulnerable to addictive behavior on the Internet, such as young males, singles, college students, middle-aged females, gays and the less educated. Yang and Tung (2007) discovered that students with psychological characteristics such as low self-esteem, dependence, extreme shyness and depression had a greater tendency to develop addictive behavior on the Internet. Cheng and Peng (2008) report that heavy Internet users were more likely than non-heavy users to be depressed, physically ill, lonely, and introverted. Ceyhan and Ceyhan (2008) arrived at a similar result, and have added computer self-efficacy to the list. Shapira et al. (2000), on the basis of his evaluation study of 20 individuals with problematic Internet use, concluded that the onset of this type of behavior is associated with subjective distress and psychopathology.

Why do people tend to be addicted to the online world?

The cause of addictive behavior on the Internet is still not clear. Experts have been trying to answer this question from two different perspectives – from the character of the Internet itself and from the nature of its users.

Regarding the topic of addictive potential of the Internet, they have speculated that the source of addictive behavior on the Internet could stem from some aspects of Internet use such as speed, accessibility, and the intensity of information accessed online (Greenfield, 1999). Lin and Tsai (2002) reported that college students particularly appreciate the anonymity that encourages verbal disinhibition, lack of face-to-face contact, content (e.g. pornography) and online social activities (e.g. chat rooms, e-mail, multiplayer games). In particular, applications that allow for two-way communication, such as the mentioned MMOGs, e-mail or chat rooms, are the ones that have been determined as the most likely to be abused (Tsai & Lin, 2003; Young, 1998a).

While contemplating the question as to why some people tend to develop addictive behavior on the Internet, experts have focused particularly on a psychological explanation. Davis (2001) proposes that addictive behavior on the Internet is the result of distal and proximal contributory causes. Distal causes contribute to the origin of addictive behavior on the Internet. Among them, Davis places psychopathology of the user, the Internet itself and situational cues like, for example, positive reinforcement of the Internet behavior. Maladaptive cognitions, social isolation and lack of social support are defined by Davis as proximal contributory causes that lead to the exacerbation of addictive behavior on the Internet. Caplan (2005) integrated research on social skills and self-representation into the previously mentioned Davis model. He states that computer-mediated communication is less risky, easier and gives people greater flexibility in self-presentation than face-to-face communication, which is particularly attractive to lonely and depressed individuals who hold a negative view of their social competence. The consequences of online interpersonal interaction preference for these individuals are excessive and compulsive online interactions, which, at the same time, decrease their social competence and affect problems at home, school or employment. Liu and Kuo (2007), in their explanation of the origin of addictive behavior on the Internet, proposed that a negative relationship with parents positively correlates with an individual's interpersonal relationships with peers and that complicated relationships with peers lead to an increased level of social anxiety which facilitates the origin and maintenance of addictive behavior on the Internet.

Prevalence

Up to now, several surveys focusing on the prevalence of addictive behavior on the Internet have been done. Prevalence rates vary widely from study to study (see Table 22.1). In order to find out prevalence, community surveys and online surveys were employed. The disadvantages of these surveys are the low uniformity of the definitions employed, assessment methods used and number of

subjects in the study. The prevalence estimates of online surveys are considered to have lower validity because of the limited representation of the population. All these facts strongly affect prevalence estimates.

A significant part of the studies has been centered on the younger generations, particularly college students (e.g. Zhang et al., 2008; Cao & Su, 2006). A possible explanation for this may be the assumption that addictive behavior on the Internet is primarily a problem affecting young people, as well as the fact that students are the most available group for researchers. Prevalence estimates range from 0.3% (Aboujaoude et al., 2006) to 5.7 % (Greenfield, 1996) in the general population and from 1.6% (Kim et al., 2006) to 38% (Leung, 2004) in the population aged 16 – 24 years. An online survey in the general population of S. Korea produced an estimate 3.5% (Whang et al., 2003). The most methodologically rigorous study was carried out by Aboujaoude and his colleagues (2006) in the US. This study involved a random telephone survey of 2,513 adults aged 18 years and older. The prevalence ranged from 0.3% to 0.7%. Until now, not many prevalence studies on the international level have been carried out. Zhang et al. (2008) conducted a comparative study of addictive behavior on the Internet among 314 college students in the US and China. The results indicate that Chinese students experience a higher rate of Internet addiction (14% heavily addicted, 64% slightly addicted) than their US counterparts (4% heavily addicted, 23% slightly addicted).

Addictive behavior on the Internet appears to be more common among men than women (e.g. Niemz et al., 2005; Johansson & Gotestam, 2004). Morahan-Martin and Schumacker (2000) explain the preponderance of men by the fact that men are most likely to express interest in information technologies in general and further express interest in Internet applications with addictive potential, as is with games, pornography and gambling. Among prevalence surveys, just a few have focused on the general population (Bakken et al., 2009; Aboujaoude et al., 2006). As was mentioned previously, regarding age, the highest prevalence of addictive behavior on the Internet is among the younger population, aged 16–29 years in particular (Bakken et al., 2009).

Table 22.1

Review of surveys on the prevalence of addictive behavior on the Internet.

Survey	Year	Location	Sample	Prevalence (%)
Greenfield	1996	US	Online, 17, 251 respondents aged 8 – 85 years	5.7
Scherer	1997	US	531 college students	13
Morahan-Martin & Schumacker	2000	US	227 college students	8.1
Chou & Hsiao	2000	Taiwan	910 college students	5.9
Wang et al.	2003	S. Korea	Online, 13 588 respondents	3.5
Leung	2004	China	699 respondents aged 16 – 24 years	38
Johansson & Gotestam	2004	Norway	3237 respondents aged 12 – 18 years	2
Simkova & Cincera	2004	Czech Republic	341 college students	6
Niemz et al.	2005	UK	Online, 371 students	18
Kim et al.	2006	S. Korea	1573 students	1.6
Aboujaoude et al.	2006	US	2513 respondents aged 18 or over	0.3 – 0.7
Pallanti et al.	2006	Italy	275 students	5.4
Cao & Su	2006	China	2620 students aged 12 – 18 years	2.4
Zhang et al.	2008	China	143 college students	14
		US	171 college students	4
Park et al.	2008	S. Korea	903 adolescents	10.7
Bakken et al.	2009	Norway	3,399 respondents aged 16–74 years	1

Country profiles

To give the reader a basic overview of the countries in the form of a presented comparison, we show a table of country profiles. See Table 22.2:

Table 22.2

Country profiles of three countries for comparison.

	Chile ¹	Czech Republic	Sweden
Land Area	756,096 sq km ²	77,276 sq km ²	450,295 sq km ²
Population	15,116,435	10,235,455	9,259,828 ³
Density per sq km	19.9	132.4	22.4
GDP Growth rate	3.2% ⁴	-0.1%	-4.9% ⁵
Ethnicity/race	Original ethnic groups (Mapuche, Rapa nui, Aimara, other). 4.6% Mixed, European: 95.4%	Czech 90.4%, Moravian 3.7%, Slovak 1.9%, other 4%	Not defined for Sweden ⁶
GDP per capita	\$12,997	\$18,100	\$37,526 ⁷

Sweden is a rich Scandinavian country traditionally open to new technologies. The Internet first appeared in the beginning of the 1990s. The fastest growth of Internet users took place in 1998. By 2000, Internet penetration in Sweden had reached 50%.

The Czech Republic is a post-communist country that reached independence in 1989. In the 1990s, the Internet was restricted to

¹Sources for Chile: National Statistical Institute (www.ine.cl), based on the 2002 census. Economic data from Banco Central de Chile, UNDP, America Economia. Geographical information excludes the Antarctic territory (1,250,000 sq km). GNP per capita figures at 2006 purchasing power parity values.

²www.norden.org

³www.scb.se (31 January 2009)

⁴GDP growth 2008.

⁵www.scb.se (quarter 4 2007 – quarter 4 2008)

⁶Ethnicity is not defined in the statistics on Sweden. While there are statistics on how many people are born outside of Sweden, ethnicity is difficult to define. The minority group in Sweden is the Sami people - the native people of Sweden. There are about 17 000 Sami people in Sweden.

⁷www.sv.wikipedia.org; www.riksbank.com (1 USD = 6.4173 SEK (January 2008) 1 USD = .1064 SEK (January 2009)

academic use and computer-related industry. In 2000, only 10% of the population used the Internet, but the rate expanded rapidly in the following years. By 2005, 50% of the population was connected to the Internet.

Chile is a developed South American country where 40% of the population live in the capital Santiago de Chile. The number of Internet users has been growing slowly.. In 2000, 26% of the population used the Internet; in 2008, that figure rose to 48%.

Methods

The survey was part of the World Internet Project (WIP), organized by the Center for the Digital Future at USC Annenberg in the US and comparing over 20 countries. The data were obtained in 2008 via face-to-face interviews from Chile and the Czech Republic and via telephone interviews and Internet surveys in Sweden, in which the interviewers marked their answers on a prepared questionnaire. The basic set of WIP questions was supplemented with questions related to addictive behavior on the Internet. The data analyzed in this paper were collected and are owned by the following institutes:

- (1) Chile: The survey was executed by Universidad Catolica de Chile's Division of Sociological Studies (DESUC) by request from the WIP/BIT-Chile team (composed of the schools of Communications, Sociology and Engineering).
- (2) Czech Republic: Institute of Children, Youth and Family Research, Faculty of Social Studies, Masaryk University, Brno.
- (3) Sweden: World Internet Institute.

We developed a 10 a 10-item scale (see Table 22.3) evaluating the following dimensions of excessive Internet use: cognitive and behavioral salience, tolerance, withdrawal symptoms, conflicts, and problems with limiting time online. Our scale is based mainly on the research of Beard and Wolf (2001), who have modified DSM- IV criteria for Internet use, and from Griffiths (1996, 2000),

who has defined the basic dimensions of addictive behavior on the Internet. 1 of the six criteria were included with two small changes - withdrawal symptoms fell within mood modifications (3rd question) and relapse within time restrictions (9th question). This instrument measured addictive behavior on the Internet on a 4-point Likert scale (1- Never to 4- Very often).

Table 22.3

Factors of addictive behavior on the Internet.

Salience	Do you ever neglect your needs (like eating, sleeping) because of the Internet?
	Do you ever imagine you are online when you are not?
Mood modification	Do you feel unsettled or irritated when you cannot be online?
	Do you feel happier and more cheerful when you finally get to go online?
Tolerance	Do you feel like you are spending ever more time online?
	Do you ever catch yourself surfing without being really interested?
Conflicts	Do you ever argue with your close ones (family, friends, partners) because of the time you spend online?
	Do your family, friends, job or hobbies suffer because of the time you spend online?
Time restrictions	Have you ever tried unsuccessfully to limit time spent online?
	Does it happen to you that you stay online for a longer time than originally planned?

All 10 questions were used only in the Czech Republic, and we demonstrate the use of the whole instrument in Chapter 6 “Revealing dimensions of addictive behavior on the Internet: the Czech Republic”. Six questions were used in Chile and only two of these items were used in Sweden. All three countries have two common questions, one on conflict dimension and one on mood modification. Because we wanted to compare all three countries,

the relevant results are given in Chapter 5 “Two dimensions of addictive behavior on the Internet: Comparing Chile, the Czech Republic and Sweden”.

Sample description

Samples of comparison data among the Czech Republic, Chile and Sweden

We present data on population samples aged 16 and up; samples in Sweden and the Czech Republic are representative of each country. For Chile, the sample represents the population of the capital, Santiago (5.8 million inhabitants, 38% of the country’s population), aged 12 - 60 years. Table 4 shows more information about each data sample:

Table 22.4

Basic information about sample and data collection in the three countries.

Country	No. of all respondents aged 16+	Data collection	Method	Representativeness
Chile	592	September- November 2008	Face- to- face interviews, probabilistic	Representative for: sex, education, age, income level, and the size of the respondent’s domicile in Santiago.
Czech Republic	1381	September 2008	Face-to-face interviews	Representative for: sex, education, age, region, and the size of the re- spondent’s domicile
Sweden	2057	February- April 2008	Telephone interviews and Internet surveys	Representative for: sex, age, education, region and the size of the re- spondent’s domicile

Table 22.5 shows the numbers of respondents in three samples concerning gender and age.

Table 22.5

Sample description.

	All 16+ years (N)	Males (N)	Females (N)	16-19 years (N)	20-29 years (N)	30-45 years (N)	46 and older (N)
Chile	592	237	355	87	140	179	186
Czech Repub- lic	1381	669	711	125	204	389	663
Sweden	2057	1011	1046	150	325	577	1005

Age groups reflect the following developmental stages in life: (i) Adolescents: 16-19 years old; (ii) Young adults: 20-29; (iii) Middle adults: 30-45; and (iv) Middle and late adulthood: 46 and older. We could not create a group of older respondents (such as 60 and older) because there are not enough Internet users in Czech and Chile.

Table 22.6 presents percentages of Internet users in the relevant groups of samples.

Table 22.6

Percentages of Internet users in the relevant sample groups.

	All 16+ years	Males	Females	16-19 years	20-29 years	30-45 years	46 and older
Chile	63.5%	75.1%	55.8%	87.4%	87.9%	60.9%	36.6%
Czech Republic	52.4%	53.1%	51.8%	89.6%	72.1%	67.4%	30.5%

Sweden 80.2% 82.3% 78.2% 97.3% 96.3% 92.7% 65.3%

While the proportions of Internet users in Chile and in the Czech Republic regarding age are similar, Sweden shows a much higher percentage of Internet users for all age groups. One interpretation of this difference could be the slowed digital development in Chile and the Czech, explained by their overall degree of socioeconomic development measured in terms of income per capita. By this measure, more similarity was found between Czech and Chile than between Czech and Sweden even though the latter two are both European countries.

In Table 22.7, we present the average hours spent weekly online at home on a wired computer in relevant groups. We show only the average hours weekly at home (not hours from work or school) because home Internet use seems to be the most important in the context of addictive behavior: the highest correlations exist between hours at home spent weekly online and items on addictive behavior. There are no significant correlations between hours at work and questions on addictive behavior. The dates from the table indicate that compared to Swedes and Chileans, Czechs spend significantly less time weekly at home online.

Table 22.7

Average hours spent weekly online at home on wired computer.

	All 16+ years (hours)	Males (hours)	Females (hours)	16-19 years (hours)	20-29 years (hours)	30-45 years (hours)	46 and older (hours)
Chile	10.0	10.7	9.3	12.7	11.5	8.0	7.2
Czech Republic	7.4	8.1	6.7	11.2	9.5	6.2	5.4
Sweden	10.2	11.2	9.1	15.6	15.5	9.8	6.7

Sample of addictive behavior prevalence in the Czech Republic

In Czech, all together 1,520 respondents took part in the study, all aged 12 or above (including 1,381 aged 16 and older). The sample was representative of the Czech population with respect to gender, age, education, region and place of residence. Additionally, data on 695 respondents aged 12-30 were gathered later, and this sample was also representative with respect to this age group. Overall, the study covered 2,215 respondents. But data on addiction were only extracted from Internet users in the sample (N=1,470). We present data on prevalence of addictive behavior in the Czech Republic on this full sample of 2,215 respondents because we want to point out an important difference in the 12-15 years age group and also show the most accurate results.

Two dimensions of addictive behavior on the Internet: comparing Chile, the Czech Republic and Sweden

As stated earlier, we will examine results on two dimensions of addictive behavior on the Internet: conflict and mood change.

Conflict dimension

The conflict dimension was measured by the question “Do you ever argue with your close ones (family, friends, partners) because of the time you spend online?” In Table 22.8, percentages of individual responses according to country are given.

Table 22.8

Do you ever argue with your close ones (family, friends, partners) because of the time you spend online?

	Never	Rarely	Often	Very often	
Chile	69.4%	21.1%	7.9%	1.6%	100.0%
Czech Republic	62.9%	27.8%	6.8%	2.5%	100.0%
Sweden	85.8%	11.8%	1.9%	0.5%	100.0%

It can be seen that the conflict caused by Internet use is lowest in Sweden. About 10% of Czech or Chile Internet users experience conflict “often” or “very often” as opposed to only 2.4% of Internet users in Sweden. What could the reason be for such a difference? If we look at the proportion of Internet users in Sweden, we find it is much higher than that in either Czech or Chile. We suspect that the Swedish sample of Internet users contains more “low Internet users” because there is a higher share of older and also less-educated people. This difference may be the reason for the reported less Internet use-related conflict among Swedes. If we look at average hours spent on the Internet among age categories (Table 22.7), however, Swedes of all ages are the most intense Internet users compared with their counterparts in the other two countries except in the oldest age group. Furthermore, when we tested answers on relevant questions only for heavy Internet users, Swedes again reported the least experience of conflict or mood change (see the next chapter).

Figure 22.1 depicts conflict with family, friends or partners according to age. Differences between countries are significant not only among adolescents ($p = .61$), but for people of all age groups ($p < .001$). Figure 22.2 gives a picture of the distribution of conflict with family, friends or partners according to the gender of the respondent. Men and women do not differ significantly, except in Chile, which is interesting because the biggest gender gap in Internet use is also found in this country. But the main gender differences in Czech and Sweden are in the answer “rarely”, which is not usually considered as problematic with relation to addictive behavior. Country differences are significant in all cases – Swedish men and women reported experiencing less conflict than other countries.

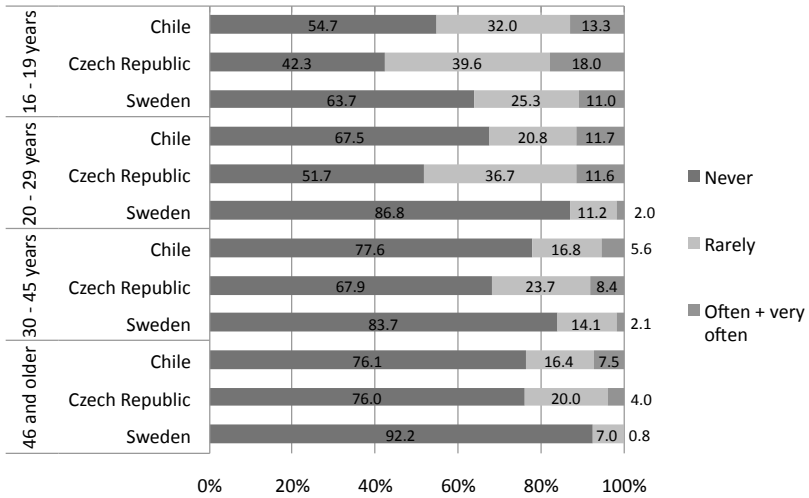


Figure 22.1

Conflict with family, friends or partners according to the age.

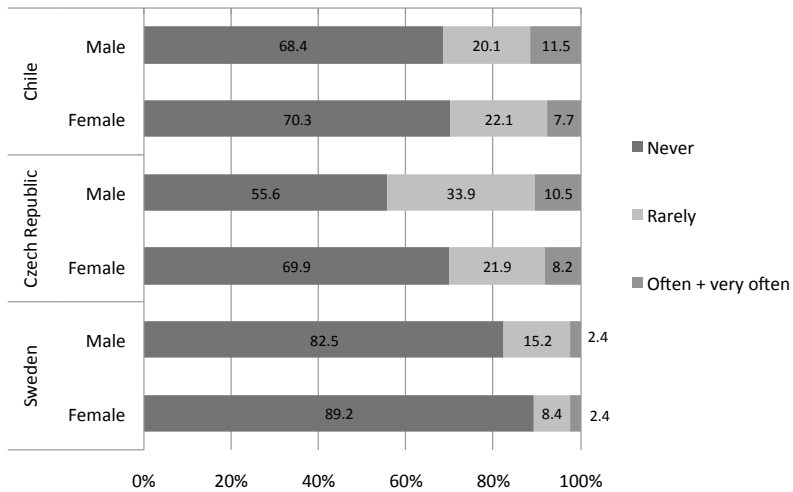


Figure 22.2

Conflict with family, friends or partners according to the gender.

Mood change dimension

The dimension of mood change was measured by the question “Do you feel unsettled or irritated when you cannot be online?” Table 22.9 shows the proportions of responses in the three countries. We note again that Internet users in Sweden reported much less unsettled or irritated feelings than their counterparts in Czech or Chile.

Table 22.9

Do you feel unsettled or irritated when you cannot be online?

	Never	Rarely	Often	Very often	
Chile	60.9%	22.1%	11.3%	5.7%	100.0%
Czech Republic	64.4%	27.5%	6.4%	1.7%	100.0%
Sweden	86.3%	11.7%	1.7%	.2%	100.0%

Figure 22.3 displays mood change according to age. All differences in terms of age among countries are significant. Congruently, with the results in the previous dimension, in comparison to other countries, Swedes feel less unsettled or irritated when they cannot be online.

Figure 22.4 illustrates the distribution of mood change according to gender. Gender differences are significant only in the Czech Republic ($p = .036$). It is observed that gender difference is less obvious in terms of mood change compared to the conflict dimension.

Now we will look more closely into the possible reasons for Swedes to score lower than in Czechs and Chileans in conflict and mood change dimensions. We will also present the possible risky applications that exist in the context of addictive behavior on the Internet.

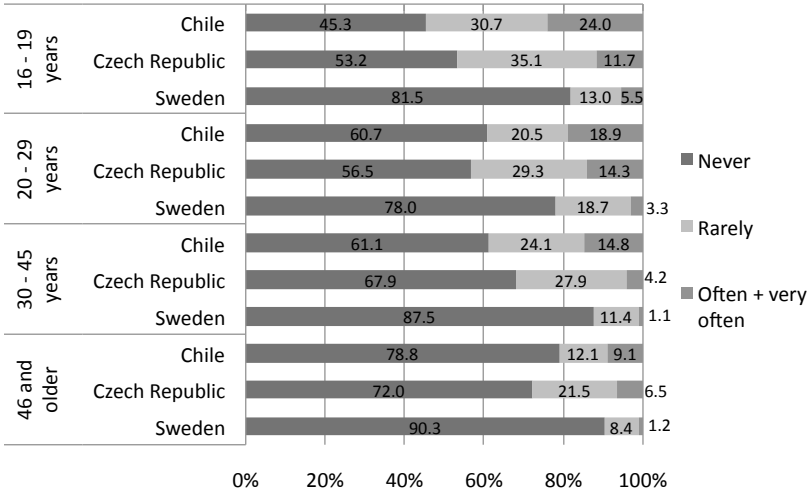


Figure 22.3
Mood modification due to impossibility to be online.

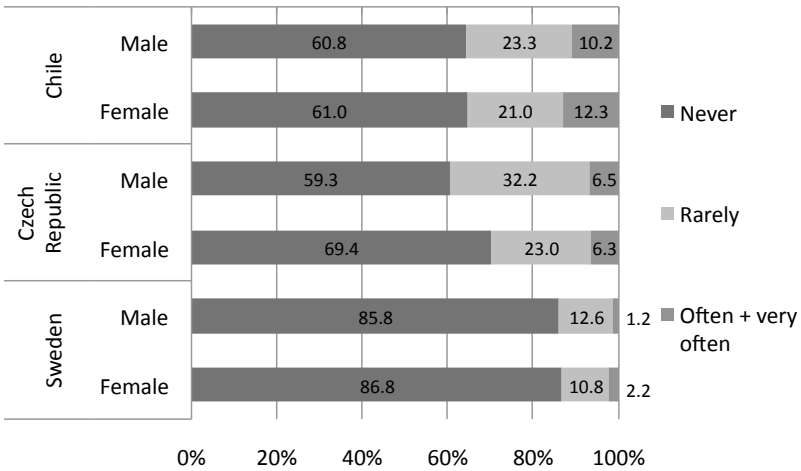


Figure 22.4
Mood modification due to impossibility to be online.

Dangerous activities online

We further examined which activities on the Internet bear the highest correlations with the sum of the presented two questions – this sum can be perceived as a simple addiction score. The highest (Pearson) correlations with the addiction score were found in the following activities on the Internet: chat rooms ($r = .18$ in Chile, $.35$ in Czech, $.22$ in Sweden), instant messaging ($r = .19-.25$) and online games ($r = .35$ in Chile, $.34$ in Czech, $.22$ in Sweden). These results correspond to theoretical assumptions that online addiction is mainly created in environments for communication and also in online games (Tsai & Lin, 2003; Young, 1996b). Two surprising activities showing high correlations with online addiction in all three countries are: “downloading / listening music” and “downloading / watching videos” ($r = .22-.30$). Both activities show similar results in all three countries. This leaves a question for future research and analysis to answer: what causes one of the highest correlations between downloading music/video and proneness to addictive behavior. These connections have been demonstrated in our earlier research (Šmahel et al., 2009) and are now validated in the three-country comparison. It should also be noted that the correlations between online activities and addiction scores were similar in all three countries – therefore, it cannot be said that one country differs much from the others. It seems that addictive behavior on the Internet is very likely associated with similar behaviors and use of applications on the Internet in different countries.

In Figure 22.5 shows the frequency of use for each of the most “addictive” applications and two “practical” applications on the Internet. We can see that all four applications with the highest correlations to addictive behavior are least used in Sweden. Fifty percent of Swedes reported not instant messaging, 88% not visiting chat rooms, and 63% not playing online games. It is highly likely that the reason for Swedes to score low in the two dimensions of online addictive behavior lies in their infrequent use of “addictive applications”. On the other hand, two practical online activities - using online banking services and shopping online - are most used in Sweden. It seems that Swedes tend to access the Internet more

for everyday activities and less for entertainment. Nevertheless, such hypotheses should be confirmed in more detailed analysis of patterns of Internet use in the three countries, which would be beyond the scope of this study.

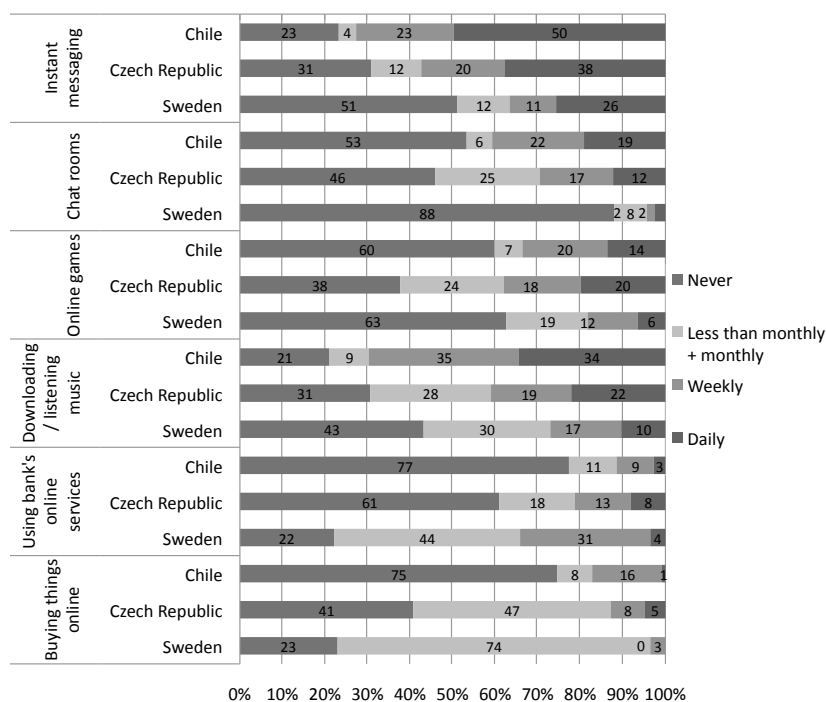


Figure 22.5

Dangerous and practical activities online in compared countries.

Revealing dimensions of addictive behavior on the Internet: The case of Czech

This chapter concentrates on the prevalence of addictive behavior on the Internet in the Czech Republic. First, Figure 6 shows the frequencies of the 10 questions used regarding the phenomenon. The number of affirmative responses increases for questions arranged from top to bottom in the figure.

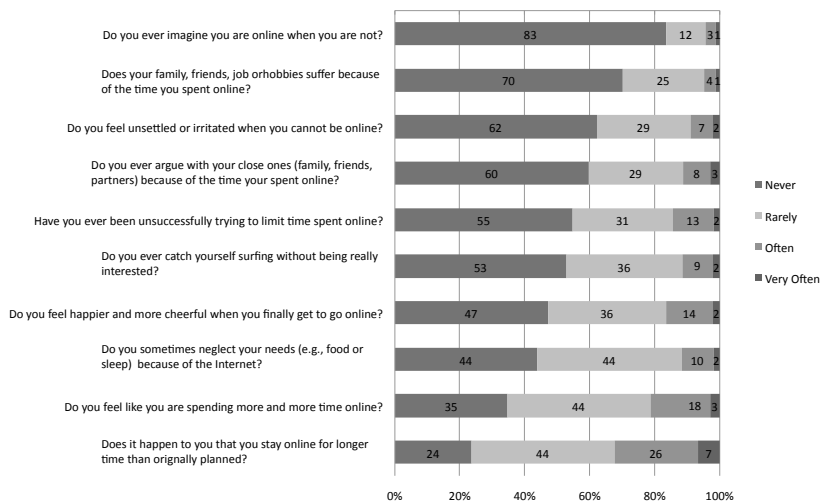


Figure 22.6

Frequencies of items on addictive behavior on the Internet.

Most Czech Internet users agreed that they stay online more often than they had originally intended (in sum 33% answered “often” or “very often”). About 16% of Internet users agreed that they “often” or “very often” feel happier and more cheerful when they get online. On the other hand, only 4% stated that they “often” or “very often” imagine they are online and 5% agreed that their family, friends or jobs suffer because of time spent online.

Figure 7 shows the prevalence of five dimensions representing addictive behavior on the Internet. We described earlier (in the Method section) how the 10 questions measure the five dimensions. A dimension is present if the respondent answered “often” or “very often” to at least one question for the dimension.

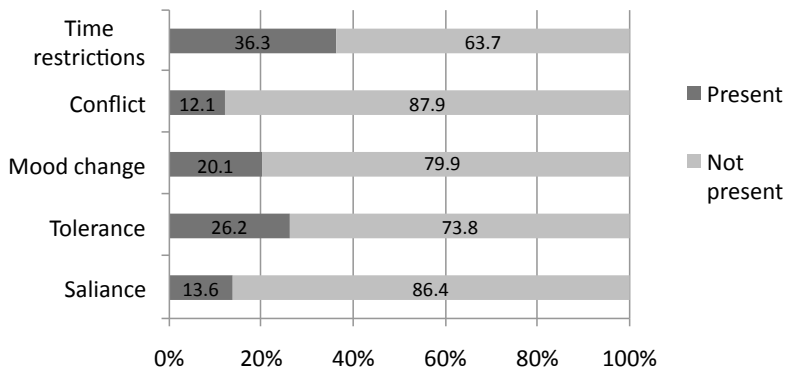


Figure 22.7

Prevalence of dimensions of addictive behavior on the Internet.

The most frequently present dimension is “time restriction”, which probably least represents the phenomenon of addictive behavior on the Internet. As we saw in the previous figure, every third Internet user agreed that he or she has “often” stayed on the Internet longer than originally intended. “Tolerance” is also found to be highly prevalent – an overwhelmingly large portion of Internet users said that they spent increasing amount of time online. The least present dimension is “conflict” – 12% of Internet users experience conflicts with their close social environment due to the use of the Internet. However, as Beard and Wolf (2001) also stated, conflict is probably the most important dimension of addictive behavior on the Internet.

Next, we look at the prevalence of addictive behavior on the Internet among Czechs. We label an Internet user as exhibiting “addictive behavior” if all dimensions of online addiction are present (the Internet user scored high in all five dimensions). We label Internet users as “endangered by addictive behavior” if conflict plus at least three dimensions are present (that means that one dimension, excluding conflict, can be missing). The prevalence of addictive behavior on the Internet among Czech Internet users is 3.4% - this percentage of users scored in all dimensions of addictive behavior. In addition, 7.1% of Internet users are endangered by

online addictive behavior as they scored high in conflict and in at least three dimensions. The difference between men and women is not significant in terms of tendency towards addictive behavior on the Internet or being “endangered users”.

In Figure 22.8, we present the proportions of Internet users with “addictive behavior” and groups “endangered by addictive behavior” according to age.

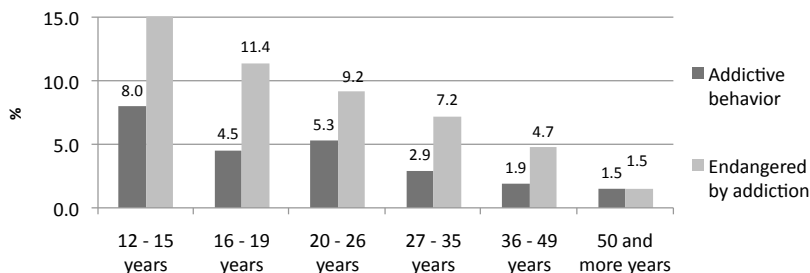


Figure 22.8
Prevalence of addictive behavior on the Internet.

Younger adolescents (12-15 years) constitute the biggest group of users with addictive behavior, with 8% of younger adolescents demonstrating all symptoms of addictive behavior. Additionally, 15% in this youngest group are endangered by addiction as they scored high in conflict plus at least three other dimensions. The shares of Internet users prone to addiction are lower in older groups, with 4.5-5.3% users showing all symptoms of addictive behavior for groups between 16 and 26 years, and the percentage decreases as age increases. Least prone to addictive behavior on the Internet are the oldest age group, 50 years and older.

Discussion and Conclusions

The current study sought to investigate the incidence of two dimensions of addictive behavior on the Internet (conflict and mood change) among the general population of Chile, the Czech

Republic and Sweden and to examine the prevalence of addictive behavior on the Internet in a sample of the Czech population.

When comparing these dimensions of addictive behavior on the Internet in Chile, Czech and Sweden, we came across some interesting findings. First, respondents in Czech and Chile showed similarity in their responses to the two questions concerning conflict and mood change, but Swedes appeared to be quite different. Second, Swedes showed a lower incidence of dangerous activities online. What can explain the uniqueness of Swedes? We found that certain Internet applications are more closely associated with symptoms of addictive behavior than others. There are moderate correlations between the symptoms and frequency of visiting chat rooms, playing online games, using IM and downloading music and videos. Internet users in Sweden access these risky activities (with respect to addictive behavior) less often than their counterparts in Chile or Czech. At the same time, the Internet in Sweden is used for more mundane affairs like Internet banking, shopping, and making reservations. Therefore, we can assume that Internet usage has been integrated more into everyday life in Sweden than in Chile or Czech, which is in part due to the slower digital development of the latter two, as can be partially explained by the lower degree of socioeconomic development in these two countries compared to Sweden. The proportion of Internet users in the population 16 years and older is lower in Czech (52.4%) and Chile (63.5%), and the Internet is used more by younger individuals (16-29 years of age) in these two countries. Youngsters are generally more attracted to risky activities (e.g. chatrooms, online gaming) and therefore are generally more susceptible to addictive behavior on the Internet (Bakken et al., 2009; Cao & Su, 2006). Furthermore, we can speculate that adult Internet users in Chile and Czech outside of this study are more likely to be fans of Internet use and thus are more endangered by addictive behavior on the Internet as well, in comparison to their counterparts in Sweden. Another explanation to this, though one that's hard to verify, is cultural difference, particularly the mentality of each nation, which differs in all three countries due to their different geographic locations, cultural

traditions and social norms. Unfortunately, this explanation is beyond the scope of the current study and would call for further investigation.

Gender difference regarding conflict dimensions in both Czech and Sweden is significant and slightly higher in favor of males. This distinction could be explained by the assumption that men have a higher proclivity towards conflicts in general and therefore score higher (e.g. Noakes & Rinaldi, 2006). On the other hand, it is also possible that men are more often endangered by addictive behavior on the Internet as they spend more hours in front of computers and therefore have more conflicts with their families or partners. It is also a question for further research.

Regarding age differences in the case of all three countries, the results in both dimensions correlate negatively with age. The highest scoring respondents were 16-19 years old and the ones aged 46 and above showed the lowest score. When we suppose that scores in these two dimensions correlate with addictive behavior on the Internet, these findings confirm the results from previous research in that the highest prevalence of addictive behavior on the Internet is among the younger population (Soule et al., 2003; Widyanto & Griffiths, 2006; Bakken et al., 2009). Compared with the dimension of mood change, the conflict dimension score is slightly higher for respondents aged 16-19 years in Czech and Sweden. This may be partly due to the fact that a higher tendency towards conflict behavior is an integral part of the adolescent period (Macek, 2003). It has been also reported that the presence of computers in families increases family tensions between generations (Mesch, 2006 a,b), so the conflict criterion might be overestimated and is not necessarily indicative of addictive behavior. We can also speculate that conflict between adolescents and parents is in general higher in modern Euro-American culture than in more traditional cultures such as Latin American.

The findings in the Czech Republic showed that only 43% of the population 12 years and older did not use the Internet (in September 2008), 3.7% of Internet users were at risk for addictive behavior on the Internet and a total of 3.4% could be described as having

developed addictive behavior, making a total of 7.1% - a quite high number of risky Internet users. In comparison to other surveys (see Table 22.1), the prevalence of addictive behavior on the Internet in Czech in the general population is somewhat higher. This may be due to the methodological inconsistency of the definition and the criteria used to measure addictive behavior on the Internet, which is typical for this phenomenon as was mentioned in the theoretical background (Yang & Tung, 2007). International research on common questions of addictive behavior on the Internet is needed and WIP could be such an opportunity to evaluate and compare this phenomenon worldwide.

As we have mentioned in the theoretical background, the highest prevalence of addictive behavior on the Internet is among the younger population, particularly students (Soule et al., 2003; Widyanto & Griffiths, 2006; Bakken et al., 2009) and findings from this study confirm this. In our research, the lowest age group, which included young adolescents aged 12 – 15 years, showed the highest incidence of Internet users endangered by addictive behavior (7%) as well as of individuals with developed addictive behavior on the Internet (8%). In contrast, the prevalence of addictive behavior in the oldest group in this research (respondents aged 50 or over) was lowest (1.4%). This confirms our previous finding that addictive behavior on the Internet is negatively correlated with age. The question remains as to what the results for even the younger individuals would be. The higher incidence of addictive behavior on the Internet in the adolescent group can be explained by the fact that they belong to the first generations which experienced the boom of the Internet, along with the greater availability the development of applications with addictive potential (e.g. chat rooms, downloading, online games) and social networking sites which are used mainly by this age group. The attraction of the above mentioned applications for this age group can be partly explained by the adolescent developmental period. This period is typified by the search and formation of a new identity (Erickson, 2002) separate from family, and the creation of interpersonal relationships and the first romantic and sexual relationships. For example, using chat

rooms and instant messaging allows users to create interpersonal and sexual relationships with their peers and therefore facilitate the process of separation from family, particularly from parents. On the other hand, the higher prevalence figure could have been distorted by the fact that conflict, particularly with parents, is an integral part of this developmental stage (Macek, 2003) and that using computers in families leads to more parent-child conflicts in general (Mesch, 2006a,b), as already touched upon. A special questionnaire distinguishing the type of conflict should be developed for adolescents in future research.

This study has focused on the prevalence of conflict and mood change dimensions of addictive behavior on the Internet in the Chile, Czech Republic and Sweden. Several limitations should be considered in this study: first, we compared only two questions of two dimensions, which cannot provide the entire picture of addictive behavior prevalence in all three countries. In future research, utilization of all questions would provide more information concerning this topic. Such data would be the first to provide comparable data on general populations across more countries considering the fact that it is very difficult to compare results of already carried-out prevalence studies due to inconsistent methodology. Second, the questionnaire we used has not been standardized and furthermore, the phenomenon of addictive behavior on the Internet needs to be refined to improve the reliability and validity of the questionnaire. Third, the methodology of this study doesn't provide information how different online applications connected with addictive behavior really are – simple correlations do not answer this question. Further research should answer the question as to how the use of exact applications influences addictive behavior on the Internet. We, for example, repeatedly found high correlations between addictive behavior on the Internet and downloading or listening or watching music and videos online, but we do not know if downloading is an application which truly implicates addictive behavior or if it is just a characteristic which many heavy users exhibit.

The presented research also revealed enormous differences

between countries in proneness to addictive behavior on the Internet. It cannot be simply said that heavier and longer use of the Internet generates a higher share of users endangered by addictive behavior, as is shown in the case of Sweden. The proneness to addictive behavior seems to be closely adherent to applications and patterns of Internet use in different countries. In the case of Sweden, a longer tradition of Internet use seems to create highly developed connections between daily life and Internet use (such as paying bills). These interconnections lead to an increase in the number of hours spent on the Internet by Swedes, yet they seem to have very little relation to addictive behavior on the Internet. As already mentioned, we have introduced the results only on two dimensions of addictive behavior. Further research is needed across more countries.

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This book addresses the role of Internet adoption and use in the context of social, economic and cultural transition in more than 20 countries and regions. Topics and themes range from Internet as a media to its political dimensions; from digital literacy to the use of Internet in daily routines; and from addiction and sociabilities to online content creation and sharing. This book takes readers on a national and cross-national journey of analysis of Internet use in five continents. Contributors, each in his or her own way, develop new hypotheses and theories about the impact of the Internet on everyday life at the micro-level and social development at the macro-level, using data gathered by the World Internet Project (WIP) in the last decade.

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