Computers in Human Behavior 39 (2014) 78–87

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Study of pathological Internet use, behavior and attitudes among students population at Technical Faculty Bor, University of Belgrade

Milica Niculović [a], Dragana Živković [b,*], Dragan Manasijević [b], Nada Štrbac [b]

[a] Library of Technical Faculty in Bor, University of Belgrade, VJ 12, 19210 Bor, Serbia
[b] Metallurgical Engineering Division, Technical Faculty in Bor, University of Belgrade, VJ 12, 19210 Bor, Serbia

ARTICLE INFO

Article history:

Keywords:
Internet addiction
Pathological Internet use
Internet behavior and attitudes scale

ABSTRACT

"Pathological Internet use" (PIU) has been defined as Internet use which causes a specified number of symptoms, including mood-altering use of the Internet, failure to fulfill major role obligations, guilt, and craving. The current study deals with PIU in order to describe disturbed patterns of Internet use, behavior and attitudes among students population of the Technical Faculty in Bor, University of Belgrade. It surveyed students – Internet users, a population which is considered to be a high risk for pathological Internet use. It was obtained that 6% of the total number of respondents reported no symptoms, 46.4% of respondents reported limited symptoms of addiction, while 47.6% of respondents reported pathological symptoms. Factor analysis was applied to identify main constructs of Internet behavior and attitudes scale used in the present study. Further, the differences in Internet behavior and attitudes between the genders were studied using Mann–Whitney U test, while Kruskal–Wallis H test was applied to study differences between three groups of students with different degree of pathological Internet use. Obtained results reveal that the strongest differences between pathological users and others students exist in respect to the relationship and personality issues.

1. Introduction

New technologies have become part of our everyday lives. The introduction of the Internet has contributed to raising the general knowledge and computer culture, and connected people in a specific brand new way. Changes have taken place in the broader, social level, but also at the personal level of each individual (Chang & Man Law, 2008). Constant exposure to the Internet has become something that implies; the great "sine qua non" of nowadays. But, do we overreact it and how much we do it to the Internet use? Do we become addicted to the global network? Can that fun or beneficial use of the Internet become a source of trouble – can it cause harmful effects, change behavior, influence to inadequate social respond, or lead to the general decline in ability? (Chang & Man Law, 2008; Chen, Tarn, & Han, 2004; Morahan-Martin & Schumacher, 2000; Stanton, 2002; Young, 2004).

The correct answer to the above questions has become an imperative of our time, aiming to the balance between the natural, social and technological aspects of man's character, necessary for the normal and healthy development of each individual. For this reason, the research problem or Internet-addiction "disease" started with the earliest use of the Internet in nineties last century (Anderson, 1998; Brenner, 1997; Egger, 1996; Scherer, 1997; Thompson, 1996; Young, 1996; Young, 1997a; Young, 1997b; Young & Rodgers, 1998).

Different terms have been used to describe such behavior caused by excessive dependence on the Internet (Yellowlees & Marks, 2007), such as: "pathological Internet use" (Davis, 2001), "problematic Internet use" (Davis, Flett, & Besser, 2002), "Internet addiction" (Bai, Lin, & Chen, 2001; Mitchell, 2000; Shapira, Goldsmith, Keck, Khosla, & McElroy, 2000; Young, 1998), as well as a syndrome of intense preoccupation with using the Internet, which has been discussed by many scientists (Chou, 2001; Kraut et al., 1998; Nalwa & Anand, 2003; Treuer, Fabian, & Furedi, 2001; Whang, Lee, & Chang, 2003).

Also, different tests were developed for this investigation topic, like Goldberg's (1995) Internet addiction disorder diagnostic criteria (IADDC), Brenner's (1997) Internet-Related Addictive Behavior Inventory (IRABI), Scherer's (1997) Clinical Symptoms of Internet Dependency (CSID), and Young (1998a) Internet Addiction Test (IAT). Some researchers tried to apply cognitive-behaviorist model (Davis, 2001), taken from psychopathology. So, Davis et al. (2002) introduced the Online Cognitive Scale (OCS) while Griffiths (1998) suggested the use of Addiction Components Criteria developed from case studies, experts' opinions or published literature on

* Corresponding author. Tel./fax: +381 30 424 555/421 078.
E-mail address: dzivkovic@tf.bor.ac.rs (D. Živković).

http://dx.doi.org/10.1016/j.chb.2014.06.020
0747-5632/

Internet addiction. According to Morahan-Martin and Schumacher (2000), "pathological Internet use (PIU) is not a function of time online, but of disturbances in one's life as a result of Internet use", which led to the development of one important test in this field – the pathological Internet use scale (Morahan-Martin & Schumacher, 2000).

There are several purposes that motivate people to communicate online: entertainment, social inclusion, maintaining relationships, meeting new people, and social compensation (Peter, Valkenburg, & Schouten, 2006). Internet addiction disorder is often followed by loneliness (Engelberg & Sjoberg, 2004; Morahan-Martin, 1999; Turkle, 2011), shyness (Eroğlu, Pamuk, & Pamuk, 2013), depression (Wang et al., 2013; Yen, Ko, Yen, Wu, & Yang, 2007a; Yen, Yen, Chen, Chen, & Ko, 2007b), anxiety (Dalbudak & Evren, 2013) and the lack of self-clarity (Israelashvili, Kim, & Bukobza, 2012). It is important to emphasize that self-esteem is determining risk factor for Internet dependency and that individuals with low self-esteem spend more time online (Armstrong, Phillips, & Saling, 2000). Some researchers consider that adolescents group is at the highest risk of becoming Internet addicted (Mossbarger, 2008; Yen et al., 2007b). Several studies have reported that students with low self-esteem have a high probability of Internet dependence (Odaci & Çikrikçi, 2014; Yang & Tung, 2007), especially those who have bad parental relations which resulted in loneliness and low social support (Odaci & Çikrikçi, 2014; Sanders, Field, Diego, & Kaplan, 2000). Aydn and Sar (2011) found that social self-esteem and home-family self esteem are very significant predictors of Internet addiction, thus it is important to point out the family's role on their children's self esteem and its possible relationship with Internet addiction.

Colley and Maltby (2008) found difference between genders in using Internet and concluded that Internet had brought significant changes into their real lives. Some Internet tools, such as Web blogs or personal home pages, can be used as outlets for self expression and self-advertisement (Piazza & Bering, 2009). The time spent in social interaction has been replaced by Internet usage (Nie, Hillygus, & Erbring, 2002). Internet has created a fundamental shift in how people communicate, especially when we consider the introduction of Social Networking Sites – SNSs (Ross et al., 2009). In comparison with males, females self-disclose more on SNSs (Bond, 2009), spend more time on SNSs (Acar, 2008), have more friends (Pempek, Yermolayeva, & Calvert, 2009) and have more interest in managing their photo impression or theirs' family photos (McAndrew & Jeong, 2012; Tifferet & Vilnai-Yavetz, 2014). Males' approach to SNSs was more centered on individual goals, existing relationships (Moreno, Mikulec, Koff, Lederer, & Carnes, 2011) and playing games (Tan & Yang, 2014), making them more vulnerable to Internet addiction (Kim & Davis, 2009). Males are more interested in latest information technology (Livingstone, 2002), but females are engaged more in searching for health knowledge on the Internet (Rice, 2006). No difference between gender and Internet usage on social interaction and information seeking were found (Lai & Gwung, 2013).

Bearing in mind that Internet addiction has become a new disease of the twenty first century, many researchers from different countries (Fig. 1) investigated their compatriots in order to understand better the cause and the effect or to find cure to this new kind of disease. Even though problematic Internet use has been parallel observed in different cultures (Cao & Su, 2007), some researchers lately tried to join their forces in a cross-cultural comparison studies of Internet addicts (Amichai-Hamburger & Hayat, 2011; Sariyska et al., 2014), which only proves the severity of this issue.

As can be seen in presented review of published literature (Fig. 1), there are data for West Balkan countries, but they are not numerous. Therefore, the current study deals with an investigation of students as Internet addicts, since they are considered to be a high risk population for pathological Internet use. The results of investigation of pathological Internet use, behavior and attitudes among students at Technical Faculty Bor, University in Belgrade by applying PIU scale test (Morahan-Martin & Schumacher, 2000) are presented in this paper. Obtained results were then compared with the results of a survey done at the same sample of respondents, but examined according to another type of test – Young Internet Addiction Test, IAT (Niculović, Živković, Manasijević, & Štrbac, 2012). These data are among first results of that type among student population in Serbia, where rapid growth of wireless Internet have already led to initial symptoms of Internet addiction of some users. Though Serbian Internet users at the moment contribute with only 0.8% of total Europian Internet users (http://www.internetworldstats.com/stats4.htm), it is important to pay attention to described new 'technology disease' in this particular region.

1.1. The aim of the study

This study conducted theory testing (TT) based on PIU model by Morahan-Martin and Schumacher (2000). Their model predicted that "pathological Internet users would differ from non-pathological users in purposes of using Internet", such as Internet usage "recreationally (relaxing, gambling, playing games, wasting time, using adult-only resources, for virtual reality), socially with non-real-life contacts (meeting new people, talking to others with same interests, sharing ideas or fantasies) and for emotional support", but with no differences in school and work-related Internet use (required course work, course research, work, job search) between these two category of Internet users. That model also examined Internet behaviors and attitudes. "It predicted that pathological Internet users would feel more competent and comfortable online than others would, and that pathological users would more enjoy the anonymity available online and become disinhibited socially" (Morahan-Martin & Schumacher, 2000).

The goal of the current study was: (i) to identify groups with different levels of disturbed Internet usage among the students of Technical Faculty in Bor, University of Belgrade, (ii) to explore main differences in Internet behavior and attitudes between them and (iii) to compare obtained results with literature and with the results done by the same group of authors (Niculović et al., 2012), but using another test – Young's Internet Addiction Test. In order to conduct such investigation in this paper, explorative factor analysis (EFA) was applied firstly to obtain factor structure or main constraints of used measurement scale, while special tests were done accordingly to identify main differences between pathological Internet users and other categories.

2. Methodology of investigation

2.1. Participants and procedure

The students of Technical Faculty in Bor, University of Belgrade – including students of engineering management, mining, metallurgy and technology, participated in the investigation. Data collection was done in a period of five weeks, when paper-based questionnaires were evenly distributed to 270 participants, recruited in faculty halls, library, canteen, computer center and mainly, student hostel. All investigated students agreed to participate in the survey, when they were given about 30 min to fill the questionnaires by themselves.

The students were chosen because they are generally Internet users. Pathological Internet use scale developed by Morahan-Martin and Schumacher (2000) was used for the identification