Exploring the effects of demographic factors, Internet usage and personality traits on Internet addiction in a sample of Italian university students

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ABSTRACT

Despite increasing interest in Internet addiction disorder, especially among high school students, few investigations have been oriented towards exploring the potential risks associated with an overuse of the Internet for the university population. A sample of 190 Italian university students was selected to investigate the effects of demographic profile, Internet usage and the Big Five personality traits on Internet addiction. Results indicated that none of the enrolled students showed a high level of addiction, although moderate behavioural disorder was found. The multiple linear regression findings displayed that males were more inclined to use the Internet than females, and some students' behaviours were predictors of Internet addiction. Moreover, personality traits such as Agreeableness and Extraversion were negatively related to Internet addiction, whereas Openness was positively associated. These results highlight that several factors may predispose university students to developing problematic behaviour connected with an excessive use of the Internet.

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1. Introduction

Since the early period of Internet use, its traditional tools have improved enormously in terms of the quality of digital services (e.g., emails, chat rooms, forums, blogs, instant messaging, file sharing, and web 2.0), and these have become an essential part of people's lives, facilitating diverse activities, such as leisure, entertainment and in general creating new and more articulated social and educational settings (Brunetti & Servidio, 2010; Costabile & Spears, 2012; Gámez-Guadix, Villa-George, & Calvete, 2012; Park, Song, & Teng, 2011; Sorathia & Servidio, 2012). In parallel to the growth of Internet features in recent years we have seen the development of new kinds of web-based applications, especially social network services (e.g., Facebook, Twitter, MySpace, and LinkedIn), providing people with a sense of stable connection. The strong integration between social networking and the Internet represents a new Copernican revolution for net users and most of them choose to use social media platforms for regulating their personal and interpersonal relationships, communications and sociability with peers (Hawi, 2012; Kalkan, 2012; Çelik & Odaci, 2013).

With the development of the Internet, seen as an innovative social and cultural virtual environment, researchers have been interested in investigating not only the diffusion of a new class of technological services, but also in exploring whether maladaptive patterns of Internet use could generate behavioural addiction in users of the web. Initially, web users' behaviour was measured through a modified version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) adopted for pathological gambling criteria (Young, 1996). Thus, Young designed the first version of the Internet Addiction Test (IAT) questionnaire, subsequently discovering that numerous subjects manifested symptoms of addiction (Widyanto & Griffiths, 2006; Young, 1998). Later, a complete version of IAT became available and this was applied to different subject samples (Young, 1999).

Although the IAT was developed 14 years ago, it is still employed today in studies aimed at investigating Internet addiction risks and its negative effects on subjects' behaviour (Ngai, 2007). In past years, IAT has been criticised (Beard & Wolf, 2001) and it has been recently revised by some researchers (Panayides & Walker, 2012), while other studies have been devoted to generating and validating new versions of it (Chang & Law, 2008; Ferraro, Caci, D'Amico, & Di Blasi, 2007; Pawlikowski, Altstötter-Gleich, & Brand, 2013). Previous research also suggests that IAT has demonstrated strong overall reliability values measured by applying Cronbach's alpha statistical coefficient (Panayides & Walker, 2012; Widyanto & McMurran, 2004). The relevant literature on Internet addiction also states that IAT is one of the most important

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questionnaires used to measure the risk of Internet overuse and some researchers have attempted to examine its dimensionality structures (Chang & Law, 2008; Watters, Keefer, Kloosterman, Summerfeldt, & Parker, 2013; Widyanto & McMurran, 2004). Moreover, new studies across cultures and academic disciplines have focused on understanding this new clinical and social phenomenon (Israelashvili, Kim, & Bukobza, 2012; Junghyun, LaRose, & Wei, 2009).

As the problem of Internet addiction has become widespread, recent studies have examined this field, exploring the relationships among heavy Internet use, social-psychological factors, and computer-related matters (Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011; Lin, Ko, & Wu, 2011; Roy, 2009; Young, 2004). Thus, extensive literature has accumulated on Internet addiction, providing the theoretical frameworks to assist in understanding the etiologic models or causal factors associated with this behavioural disorder (Price, 2011). The problem of Internet addiction has been investigated also in Italy recently, but current findings are still few in number and unsystematic, so it is important to increase and refine these scientific efforts in order to better understand the patterns of Internet usage among Italian subjects, in particular students (Coniglio, Sidoti, Pignato, Giammanco, & Marranzano, 2012; Ferraro, Caci, D'Amico, & Di Blasi, 2007).

Although there is no standardised definition of Internet addiction, researchers acknowledge and affirm that the phenomenon does exist, and it "can be defined as an impulse-control disorder which does not involve an intoxicant" (Young, 1998, p. 238). It is also difficult to provide standard diagnostic criteria to clearly identify individuals with Internet addiction disorder, since it takes hold in many different forms and may depend upon diverse factors (Price, 2011; Young, 2009). To cover this gap, researchers have adopted different strategies aimed at studying how Internet overuse may have a negative impact on the way people develop behavioural addiction (Huang, 2010). In effect, many terms have been proposed in the literature to better describe Internet addiction problems, such as "compulsive computer use" (Caplan, 2005), "problematic computer use" (Caplan, 2005) and/or "pathological Internet use" (Lei & Wu, 2007), "pathological computer use" (Young, 2009) and the traditional "Internet addiction" (Davis, 2001; Widyanto & Griffiths, 2006). In this study, was used the term Internet addiction in line with the IAT measure tool. Moreover, personality traits, parenting and familial influence, alcohol use, and social anxiety are considered to be predictive factors of Internet addiction disorder (Ko, Yen, Yen, Chen, & Chen, 2012).

Currently, the potential negative impact of the Internet on people has been extended to the student population, examining how the ease of usage of modern technologies can predispose them to engage in disruptive behaviour (Igarashi, Motoyoshi, Takai, & Yoshida, 2008; Yang & Tung, 2007; Çelik & Odaci, 2013). Technologies are ubiquitous and several educational institutions, especially universities, provide their students with free Internet access (Niculović, Živković, Manasijević, & Štrbac, 2012). University students, in particular, have a natural predisposition towards technological applications and their related skills are used to achieve academic goals but also for purposes of enjoyment (Leung & Lee, 2012). Therefore, several investigations have examined the diffusion of Internet addiction among university students, since they are considered as the most vulnerable subjects (Hawi, 2012; Iskender & Akin, 2010; Kalkan, 2012; Rouis, 2012).

The behaviour of the typical university student who lives on campus can be linked to a reduced level of parental control, unlimited access to the Internet using Wi-Fi hotspots, the availability of free time and his/her freedom to decide how to spend it (Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013; Milani, Osualdella, & Di Blasio, 2009). According to Widyanto and Griffiths (2006),

studies on Internet addiction should focus on particular Internet activities carried out by students, because it is not the medium that influences the subject's behaviour but rather the behaviour that they engage in online in digital environments. Moreover, another important aspect concerns the intrinsic motivations that trigger subjects to establish an Internet connection. It appears that all these aspects may be predictive of Internet addiction, yet few investigations have been conducted to analyse them in a single model (Buckner, Castille, & Sheets, 2012). Given the rapid growth of the Internet and its applications, there is a need for new analyses that consider a multiplicity of factors, providing a holistic view of how several issues may lead students to develop Internet addiction disorder (Iacovelli & Valenti, 2009).

The exponential use of the Internet has stimulated debate on examining how personality traits impact on the use of technologies, particularly the Internet, social networking, virtual environments, online and offline games, and so on. Thus, rather than investigate only the relationships between Internet overuse and subjects' behaviour, current research work is interested in exploring the influence of personality traits on Internet addiction risks (Buckner et al., 2012; Landers & Lounsbury, 2006; Ryan & Xenos, 2011).

Personality not only defines the subjects' behavioural style but also represents relatively enduring characteristics of subjects, and it refers to all aspects of individuality. Human activities and types of behaviour are consistent with specific traits of personality. One way to study the relationship between subjects' personality traits and the use of the Internet is to apply specific conceptual frameworks, such as the Big Five factor model (Buckner et al., 2012; Montag, Jurkiewicz, & Reutera, 2010). The Big Five is an assessment tool that describes the most comprehensive personality traits based on five broad dimensions: Extraversion, Agreeableness, Conscientiousness, Emotional stability, and Openness (Goldberg, 1990; McCrae & Costa, 2008). Several empirical tests across different methods and cultures have demonstrated the reliability of the Big Five (Lounsbury & Gibson, 2009; McCrae & Costa, 2008; McCrae & John, 1992). Consistent with the Big Five factor model, past studies indicate that a variety of personality characteristics can be applied for describing the Internet user's profile (Ryan & Xenos, 2011; Tosun & Lajunen, 2010). Following the advances in research, previous investigations established a strong connection between personality traits and Internet addiction (Chang & Law, 2008; Correa, Hinsley, & Gil De Zúñiga, 2010; Landers & Lounsbury, 2006; Rice & Markey, 2009).

Personality has a psychological impact on how subjects interact with information technologies. Charlton and Danforth (2010) found that the scores of addicted subjects increased with low values for Extraversion, Agreeableness and Emotional stability. Extraversion and Openness are related to use of social networking (Correa et al., 2010; Ko et al., 2010). Other research has identified that subjects who manifest high values in neuroticism (the inverse of Emotional stability) tend to use the Internet to avoid loneliness (Butt & Phillips, 2008). Yang and Liu (2006) found that Conscientiousness is negatively related to Internet addiction. Lastly, in regard to the effect of the Big Five personality traits on Internet addiction risks, different results can be encountered and hence further investigation is needed. According to Amichai-Hamburger (2002), these studies are decisive because personality traits are relevant factors in determining subjects' behaviour when using Internet technologies.

The study is expected to provide a contribution to the understanding of Internet addiction among Italian university students and in particular to generate awareness regarding this problem. Educators and computer experts alike play an important role in shaping how Internet services can affect student behaviour. Therefore, the knowledge of appropriate student personality and