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Use of information and communications technology, academic performance and psychosocial distress in university students

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ABSTRACT

This study analyzed the use of information and communication technology (ICT) made by students of a Spanish university for study-related and leisure purposes. It also explored the effects of its use on students' academic activities and their performance, as well as on their psychosocial adjustment. The results revealed that 14% of students made excessive use of ICT for their studies (more than 4 h per day). In terms of leisure activities, the figure for excessive use rose to 18.6%. There were no differences by sex or subject area. It was found that the younger the students, the higher the use of ICT, and the higher this use, the poorer the academic performance (objective and subjective) and the greater the psychosocial maladjustment.

1. Introduction

One of the most important sociocultural phenomena of the 21st century is the increasing use of Information and Communication Technology (ICT). As more and more new tools emerge, people have adapted to them and have seen how their everyday life has been transformed. In the case of university students, ICT have entered their lives in two ways: on the one hand, their use is considered a general competence included in all study syllabuses and necessary for proper compliance with them; on the other, ICT is for leisure purposes and as a new form of communicating with peers.

A recent study carried out by the Spanish National Observatory for Telecommunication and Information Society (ONTSI, 2015), showed that 97.2% of those aged 16 to 24 had connected to Internet in a month and 96.2% connected weekly, university students presenting practically universal weekly Internet use patterns (95.6%). Other studies carried out with university students in Spain showed that 52.5% used Internet 0–2 h per day, 27.6% 3–6 h per day, and the rest for longer periods (Muñoz-Rivas, Navarro, & Ortega, 2003). García del Castillo et al. (2008) found that 80.5% of students spend between 30 min and 2 h per day connected to the Internet and 7.9% spend more than 2 h.

By sex, although previous studies indicated greater use on the part of male university students (Li & Kirkup, 2007; Muñoz-Rivas et al., 2003), the ONTSI report (2015) showed that among internauts aged 16 to 24, weekly frequency of Internet use was 49.5 in men and 50.5 in women. University students also seem to make different use of Internet depending on the knowledge area of their studies. Laguna (2013) observed that 93% of students used Internet (in all knowledge areas), but that there were differences with the frequency of daily connection and duration of that connection. Technology students connected to the Internet more frequently (85.5%) than Health Sciences students (77.5%) and Education Sciences students (36.2%). Moreover, over a third of Social and Legal Sciences, Education and Arts and Humanities students were connected for 1–2 h per day.

Students usually display a positive attitude when using Internet in general and social networks in particular, both for leisure and educational use (Gómez, Roses, & Farias, 2012). In a study carried

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out with British and Chinese students, Li and Kirkup (2007) observed that British students made use of computers more for academic purposes. They observed that in line with the results of other studies (Laguna, 2013; Selwyn, 2008), women used Internet more for educational purposes, while men used it more for leisure. Bologna, Maccagno, Somazzi, Oehlenschager, and Esbry (2014) also showed that 95% of Argentine university students used Internet for educational purposes. A study by the Foundation BBVA (2008) revealed that 86% of university students had downloaded documents related to their studies in a period of three months. In terms of subject areas, the authors showed that students of Experimental Sciences and Health Sciences used the web most for their studies. This finding coincides with those of a study by Laguna (2013), who observed that Health Sciences students made greater use of Internet for academic purposes (with the aim of clarifying doubts and following online sessions) than students of other subjects. 62.5% of these declared that Internet had contributed to furthering personal relationships between peers and staff, as opposed to 29.3% of Education Sciences students, who approved of Internet for facilitating speedy access to new content. In addition, this study showed that 58.9% of university students downloaded MP3 files and 55.9% got news or read newspapers online, with more men using the Internet for leisure.

Another aspect of interest is whether the kind of use that students make of ICT influences their academic performance. Some authors have found a negative and statistically significant relationship between the number of online leisure hours and academic achievement, which suggests that the potential of Internet to distract exceed its productive potential (Derbyshire et al., 2013; Englander, Terregrossa, & Wang, 2010; Lin, Ko, & Wu, 2011; Paul, Baker, & Cochran, 2012). Not all studies, however, found such results and some noted the importance of Internet and social networks as meeting places, where friends and people with similar interests can communicate (Flores, 2009; Hamat, Amin Embi, & Abu Hassan, 2012). Another study also reported that Internet-competent students benefitted most from its use, thereby improving their academic results (Castaño-Muñoz, 2010; Cejudo & Almenara, 2013). Hamat, Amin Embi, and Abu Hassan (2013) found that students with better academic results displayed similar patterns of behaviour to other students in terms of social network use. Nevertheless, by sex, there appear to be differences not only in patterns of online use but also in how those patterns affected academic achievement. In a study at three universities (two Spanish and one Mexican), García-Valcárcel et al. (2010) observed that while men claimed ICT helped them optimize their study time management, women stated that the use of ICT helped them in their search for resources. Other research has shown a greater impact on the performance of male compared to female students (Chen & Fu, 2009; Li & Kirkup, 2007).

In most cases, ICT are reported to have contributed to improving people's quality of life (Labrador & Villadangos, 2009). However, many authors have drawn attention to the negative effects that may come from their use (Carbonell, Fúster, Chamarro, & Oberst, 2012), and their addictive potential is the most worrying, especially among minors, the age group using them most (Echeburúa & de Corral, 2010; Labrador & Villadangos, 2010). The excessive use of Internet among university students has been analyzed in a variety of studies, although the use of different instruments with different definitions of “excessive” makes comparison among them difficult. Despite this, different studies overlap in noting a prevalence of around 10% of excessive Internet use among university students (Canan, Ataoglu, Ozcetin, & Icmeli, 2012; Derbyshire et al., 2013; Park, Hong, Park, Ha, & Yoo, 2013), with men displaying significantly higher levels of addiction than women (Canan et al., 2012; Huang et al., 2009; Morahan-Martin & Schumacher, 2000). The male sex, higher age, university education and a satisfactory standard of living are the factors positively associated with problematic Internet use (Bakken, Wenzel, Götestam, Johansson, & Øren, 2009).

Excessive ICT use is also reported to can have a negative impact on psychological health (González & Orgaz, 2014), although the causal mechanisms are unknown (Thomé, Eklöf, Gustafsson, Nilsson, & Hagberg, 2007). Some studies have found that Internet addiction correlates positively with being male, impulsive and with insecure attachments (Lin et al., 2011). The immoderate use of Internet is also associated with greater symptoms of depression (Bakken et al., 2009; Derbyshire et al., 2013; Huang et al., 2009; Park et al., 2013) dissociative symptoms (Canan et al., 2012) and psychological distress (Beranuy, Oberst, Carbonell, & Chamarro, 2009). Park et al. (2013) found that problematic Internet use predicted depressive symptomatology and suicidal thinking; while the inverse was also true, with depressive symptomatology and suicidal thinking predicting problematic Internet use. Nevertheless, not all of those using excessively Internet presented depression symptoms (Huang et al., 2009). Other variables associated with more frequent Internet use have been associated to higher scores for perceived stress (Derbyshire et al., 2013), isolation, self-pity (Iskender & Akin, 2011), loneliness (Morahan-Martin, 1999) greater substance abuse and increased anxiety (Bakken et al., 2009). Most studies reported that it is men who used Internet abusively (Bakken et al., 2009; Canan et al., 2012; Huang et al., 2009; Morahan-Martin & Schumacher, 2000), which would lead to believe that they might present greater psychological problems. Some studies on adolescents, however, have not found significant differences in terms of psychological effects either by sex or age (Park et al., 2013).

These studies undoubtedly have helped to clarify the picture regarding the use of ICT among students, for whom its use has been considered a general competence. Nevertheless, the rapid changes taking place in society in the use of ICT (with a universal acceptance among 16–24 years old) have meant that the psychological services of universities continue to analyze these changes and their consequences in order to promote policies aimed at establishing adequate and sensible use of ICT among students. Toward this end, the present study had four objectives: 1) To analyze the use of ICT among university students; 2) To examine the impact of ICT use on university activities and academic achievement; 3) To explore the relationship between ICT use and the psychosocial adjustment of students and; 4) To test the fit of a model that suggests that the younger the students the higher the use of ICT, and the higher this use the poorer the academic performance (objective and subjective) and the greater the psychosocial maladjustment. For the first three objectives, differences were analyzed by sex, group of age and subject area.

2. Materials and methods

2.1. Participants

Selection of the sample was done by means of a two-stage sampling. In the first phase a stratified, proportional and random sampling technique was used, taking into account the proportion of faculties in each Campus of a large university in Spain and the balance between different conditions. In the second phase, participation was voluntary. As a result, the sample was made up of 4799 students, with an average age of 22.3 years and a standard deviation of 4.9; the mode was 19 years. The characteristics of the sample are shown in Table 1.