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Computer anxiety and attitudes towards the computer and the internet with Romanian high-school and university students

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ABSTRACT

The access of the general public and of the Romanian students to the use of the computer and the internet has been possible only since the middle of the 90's, research on the topic having no object up to that date. The variety of results obtained by studies conducted on different samples or at different time spans support the usefulness of the research in other cultural contexts than the ones in the Western countries. The current study examines the relationships between computer and internet anxiety, computer self-efficacy and other personal characteristics in a Romanian context. A full mediated model was tested. According to our findings, low computer self-efficacy predicts anxiety, the previous education in the field of computer science has direct negative effects on computer anxiety and on the negative attitudes towards the internet. The results show that there are no significant differences between the male and the female participants concerning computer anxiety, self-efficacy and the negative attitudes towards the internet. Significant differences between participants enrolled at different education levels and study programs, Science and Humanities, are obtained.

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1. Introduction

Some studies in the field of education and psychology have highlighted the prevalence of anxiety in the collection of emotions which are associated to the learning process and to the low academic achievement (e.g., Linnenbrink-Garcia & Pekrun, 2011; Shakir, 2014). The importance of anxiety is underlined by the introduction of the umbrella-concept of academic anxiety, defined as a collection of anxieties lived by the students in the pre-university and university environment, or related to it, such as: math anxiety, science anxiety, foreign language anxiety (Cassady, 2010). Computer and internet anxiety can be added to these due to the need, specific to the contemporary age, to effectively use the computer and the internet as a learning means.

In Western countries, the study of the attitudes towards the computer and the internet has been fostered in the last two decades of the 20th century, due to the proliferation of the

Information Technologies equipment in the academic environment, at work and at home (Chua, Chen, & Wong, 1999; Powell, 2013). Research concerning the attitudes towards the computer and the internet reported that some adults, as well as a part of the teenagers and youngsters rate computers negatively, avoid using them or are less confident in their capacity to use them and make progress. They anticipate catastrophic consequences of their errors and experience feelings of discomfort, frustration and stress (e.g. Chua et al., 1999; Heinssen, Glass, & Knight, 1987). Internet anxiety is not a myth either, but rather a reality. Its sources are represented by the possible negative impact of the internet on inter-personal relations, well-being and on the users' personality. The anxiety towards the computer and the dehumanizing aspects of using it can be sources of negative attitudes towards the internet (e.g. Kalwar, Heikkinen, & Porras, 2013). Conversely, the confidence in oneself, in the Information Technologies and in their positive influence on the well-being of people and society decrease the anxiety towards the internet or computers (e.g. Thatcher, Loughry, Lim, & McKnight, 2007; Torkzadeh & Koufteros, 1994).

The proliferation of personal computers and of the internet has been impressive over the last ten years, resulting in the fact that in 2013 more than half of the total number of households in Romania

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(55.8%) were equipped with a personal computer, the percentage being higher in the urban area (69.8%), according to the studies conducted by the National Institute of Statistics (2013a). 60.3% of the people aged 16 to 74 have used a computer at least once, the number of male users being higher than the one of female users: 61.8% as compared to 58.8%. Young people were at an advantage: 90% of the people aged 16 to 34 have used a computer. As far as the internet access is concerned, the National Institute of Statistics has concluded that a little more than half of the households (52.9%) are connected to it, most of the households (73.2%) pertaining to the urban area (2013b).

A study conducted in the same year shows that, in Romania, the people who hold a higher-education diploma spend 38 min of their spare time in front of the computer, on average. Men spend 50 min on average while women spend 27 min on the average. Pre-university and university students spend more than an hour in front of the computer on a daily basis, almost equally shared: female students spend an average of 58 min in front of the computer, while male students register an average of 67 min (2013a). In conclusion, the main differences regarding the use of computers and the internet in Romania are introduced by gender, age and level of education.

In this context of divergent results from other countries and based on the data regarding the use of the internet and computers in our country, this study aims to identify the attitudes towards the computer and the internet that appeared much later, as compared to western countries.

Our study addresses the following research questions:

1. Does computer anxiety mediate the relationship between personality aspects, such as core self-evaluation, computer self-efficacy and attitudes towards the use of internet?
2. Are there associations between computer anxiety, internet anxiety, computer self-efficacy and experience in using computers?
3. Are there any differences regarding computer anxiety, internet anxiety, computer self-efficacy and experience in using computers between the participants with different education levels, different academic performances and who study in different domains (Science and Humanities)?

To address the research questions, we designed a quantitative study.

1.1. Literature review

In today's world, the computer and the internet are used in different settings: work, services, learning, communication and socialization etc. They represent a means to get online education, facilitating the access to various types of knowledge and its sharing, and the access to experiences with classmates in virtual classes or virtual work groups (Zhang, de Pablos, & Xu, 2014; Zhang, de Pablos, & Zhang, 2012).

Research concerning the attitudes towards the computer and computer anxiety was based on their relationships to gender, age, experience, ownership of a computer, geographic area and cultural context, as well as to some personality features. Longitudinal or follow-up studies are also present. The results are divergent and seem to depend on the decade when the research was conducted or on the samples used (Powell, 2013).

1.1.1. Gender

The research based on the gender variable identifies negative emotions and perceptions concerning the use of the computer and of the internet, which are stronger in the case of female students as

compared to male ones (Chua et al., 1999; Durndell & Thomson, 1997; Kannan, Muthumanickam, & Chandrasekaran, 2012; Mikkelsen, Ogaard, Lindoe, & Olsen, 2002; Sam, Othman, & Nordin, 2005). The results are not surprising, as other studies focusing on academic anxiety have reported that female students register a higher level of anxiety as compared to male students. This is explained by the higher level of the females' emotional response, by their perceptions of threat in evaluative situations (Cassady, 2010) or by the roles associated with the two genders (Venkatesh, Morris, Sykes, & Ackerman, 2004). Nonetheless, contrary results were also reported: (i) male students have higher levels of anxiety or attitudes which are more negative towards the use of the computer and of the internet (e.g. Bao, Xiong, Hu, & Kibelloh, 2013; Brosnan & Lee, 1998; Cocoradă, 2015) or (ii) females use social networks and the internet for communication purposes more than males (Joiner et al., 2012; Kalwar et al., 2013). Very recent results concerning gender differences in using location-based social network services show that females pay more attention to hedonic benefits (intrinsic motivations), while males pay more attention to utilitarian benefits (extrinsic motivation) than females (Sun, Wang, Shen, & Zhang, 2015).

However, a number of studies signal the absence of gender differences among the investigated participants (e.g. Heinszen et al., 1987; Hong & Koh, 2002; Madu, Otuka, & Adebayo, 2011). Studied centered on gender differences related to the attitudes towards the computer and the internet used this construct as either a biological or psychological one. The results show that the psychological gender would predict computer anxiety and technology acceptance, while the biological gender would not, because the psychological gender for some women is masculine or androgynous, this modifying the results (Powell, 2013; Venkatesh et al., 2004).

1.1.2. Age and experience in using the computer

Some researchers have found that the analyses based on the age criterion show that lower levels of anxiety are present in the case of young people (Chua et al., 1999; Kubiato, Haláková, Nagyová, & Nagy, 2011; Parasuraman & Igarria, 1990), but other studies have not found a relationship between age and computer anxiety in the case of university students. We also found the idea that the adults' difficulty of learning using the computer is rather a myth supported by daily life anecdotes and not by empirical evidence (Yan & Fischer, 2004).

The students who have various years of experience in using a computer and who own a PC have a more positive view on the social and personal effects of using the computer and the internet (e.g. Liaw & Huang, 2006; Orr, Allen, & Poindexter, 2001). A study from 2006 indicated that it was not computer experience or the use of computers that had the largest significant relationship with computer anxiety, but self-efficacy beliefs (Wilfong, 2006).

1.1.3. Self-efficacy

Self-efficacy is a good predictor of the perception regarding the ease of computer use. According to the social role theory, some studies report that male students experience more favorable feelings and a higher degree of self-confidence when it comes to activities involving the computer and the internet, as compared to female students (Gibbs, 2013; Torkzadeh & Koufteros, 1994).

The masculine specificity of gender roles, not the biological sex, was proposed as a source of these differences (Huffman, Whetten, & Huffman, 2013; Venkatesh et al., 2004). Contrasting research argues that there are no gender differences as far as the internet attitude or self-efficacy scores are concerned (e.g. Joyce & Kirakowski, 2013; Zhou, 2014) or identifies a negative connection between computer anxiety and computer self-efficacy (e.g. Scott &

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