INVESTIGATION OF VOCATIONAL HIGH-SCHOOL STUDENTS' COMPUTER ANXIETY

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ABSTRACT
With the advent of the computer technologies, we are increasingly encountering these technologies in every field of life. The fact that the computer technology is so much interwoven with the daily life makes it necessary to investigate certain psychological attitudes of those working with computers towards computers. As this study is limited to the impact of technology on education, anxiety, out of certain psychological attitudes, was investigated within it. The investigation was on the vocational high-school students' computer-related anxiety, and as a data collection instrument, the Computer Anxiety Scale was used. The Computer Anxiety Scale was conducted on 265 students receiving education at various departments in the Tunceli Vocational School of Tunceli University. It was observed as a result that gender is a variable that did not make any meaningful difference for the computer anxiety, while the type of education received, grade, receiving computer education and having a computer may mean meaningful differences in terms of various sub-factors and the whole scale itself. It is necessary to determine the level of computer anxiety, and keep it under control while receiving computer education or while learning with computers.
Keywords: Undergraduate study, Computer anxiety, learning with computers, Vocational High-school students

INTRODUCTION

With the advent of the computer technologies, we are increasingly encountering these technologies in every field of life. The fact that the computer technology is so much interwoven with the daily life makes it necessary to investigate certain psychological attitudes of those working with computers towards computers. One of these psychological attitudes is computer anxiety. Howard and Smith (1986) define the computer anxiety as "*the tendency of a person to experience a level of uneasiness over his or her impending use of a computer*". According to another definition, computer anxiety is a behavior of avoiding interaction with the information processors (Weinberg, 1983). According to Cambre and Cook (1985), computer anxiety is a result of forcing to social change emerging from the rapid nature of the new technology.

In the relevant literature, the anxiety is mentioned together with such behaviors as keeping off computers, abstaining from computers and computer phobias. The computer anxiety is classified as a special kind of anxiety, and such various types of it as sense of frustration, possibility of shame, disappointment and experiencing fear of obscurity are mentioned (Orr, 2009). Moreover, such findings as that the computer anxiety leads to decrease in success and in effort for success (Phelps and Ellis, 2009) seem to have been obtained. Keen (1998) mentions the existence of a social dimension for the computer anxiety, and states that such expressions during learning as "*you cannot do it*", "*you cannot be successful*" are effective on the computer anxiety. Saade and Kira (2009) emphasize that feelings like disappointment, frustration, worry, etc. will affect not only the interaction with computers but also productivity, learning social relations and individual welfare in general. In addition, Çakıroğlu (2009) dwells on the computer anxiety in terms of human physiology, and claims that the computer anxiety has some symptoms like sweating, dampening of hands, stomachache, difficulty in breathing or feeling of suffocation, palpitation and strain of lips. Other than the computer anxiety, frustration, regret, disappointment and feeling of panic are said to be other affective hinders that computer instructors encounter (Burkett, Compton and Burkett, 2001). The studies done by the following names can be given as examples for computer anxiety Gordon (1995), Burkett (1993), Tobias (1979), Bohlin (1999), Agbatogun (2010), Mahar, Henderson and Deane (1997), Sam, Othman and Nordin (2005), Beckers, Wicherts and Schmidt (2007), Maloumiyan, Akbari and Rastegar (2011) and Olatoye (2009).

All of the above-mentioned research findings clearly show that the computer anxiety should be taken into account in learning activities conducted with computers. In this study, the computer anxiety was dealt with in terms of the students of Vocational school. Thus, the general aim of the study can said to be the investigation of the Vocational school students' computer anxiety. In accordance with this aim, the Vocational school students' opinions about the computer anxiety were compared in terms of such variables as gender, type of education received, grade, experience of computer education and having a computer.

METHOD

The design of this study can said to be a survey model. As Karasar (2009:76) puts it, it is aimed to describe past or present situations in the survey model. The survey model is resorted to in the case of larger samples differently from other research designs (Büyüköztürk et al., 2008:177).

The sample of the study consists of 265 students receiving education at various departments of the Tunceli Vocational School of Tunceli University. 200 of these students are females (75.5 %), and 65 of them are males (24.5 %). 160 of the students are in the first year (60.5 %), while 105 of them (39.5 %) are in the second year of their study. The students are from 7 different programs. The ages of the students range from 16 to 28, and the age mean is 22.13.

The data collection instrument used in the study is the Computer Anxiety Scale developed by Heinssen, Glass and Knight (1987), and adapted by Tuncer (2012). As a result of the adaptation of the scale, it was observed that the scale is made up of 13 items and three dimensions. Altogether with this three-factor structure of the scale, 56.045 % of the total variance is explained. The scale is made up of these three factors: anxiety due to lack of learning, anxiety due to fear of making mistakes and uncertainty-based anxiety. The Cronbach's alpha coefficient for the whole scale is .75.

FINDINGS

The student's opinions gathered with the application of the Computer Anxiety Scale were compared in terms of such variables as gender, type of education received, grade, experience of computer education and having a computer. The independent groups t-test results of the students' opinions about the computer anxiety in terms of gender variable are given in Table 1 below.

Table 1. Comparison of the Opinions about Computer Anxiety in terms of Gender

					Levene's test			T test	
Dimension	Gender	n	$\bar{X}$	SS	F	p	df	T	p
Anxiety due to lack of learning	Female	200	4,02	,85	1,433	,232	263	1,068	,286
	Male	65	3,90	,80					
Anxiety due to fear of making mistakes	Female	200	2,87	1,09	,105	,746	263	-,789	,431
	Male	65	2,99	1,07					
Uncertainty-based anxiety	Female	200	3,09	,93	,359	,550	263	-,685	,494
	Male	65	3,18	,92					
The Whole Scale	Female	200	3,45	,62	,774	,380	263	,005	,996
	Male	65	3,45	,56					

As it is seen in Table 1, the opinions about the computer anxiety were compared in terms of the gender variable, and no meaningful difference was observed in any dimension of the scale and in the whole scale itself.

Another variable that was investigated within the study is the type of education received. There are two groups of students in this regard: the students attending school in daytime (Normal education) and those ones, which entered the school with relatively lower exam-marks, attending school in the evening (Evening education). The results of the independent groups t-test, by which the students' opinions were compared, and of the Mann Whitney U test, which is resorted to when the distribution is not homogenous, are summarized in Table 2 below.

Table 2. Comparison of the Opinions about Computer Anxiety in terms of the Type of Education

					Levene's test			T test	
Dimension	Education type	n	$\bar{X}$	SS	F	p	df	t	p
Anxiety due to lack of learning	Normal ed.	172	4,10	,77	5,311	,022*	263	U=6931,50	
	Evening ed	93	3,79	,92				p=,008*	
Anxiety due to fear of making mistakes	Normal ed.	172	2,90	1,09	,000	,988	263	,032	,972
	Evening ed	93	2,89	1,07					
Uncertainty-based anxiety	Normal ed.	172	3,12	,89	,948	,331	263	,031	,975
	Evening ed	93	3,11	,99					
The Whole Scale	Normal ed.	172	3,50	,55	5,684	,018*	263	U=7790,00	
	Evening ed	93	3,36	,69				p= ,205	

*p<.05

According to Table 2, there is only a meaningful difference of opinions, in terms of the education type, in the "anxiety due to lack of learning" factor of the scale in favor of the students of normal education (U=6931.50, p<.05). No other meaningful differences were observed in other dimensions of the scale in terms of the education type variable.

The grade of study was determined to be another variable that should be investigated within this research study. For, it was aimed to investigate the state of computer anxiety of both those who had just started receiving undergraduate study and taking information technologies courses, and those who would be graduated in a short time with a relatively more informed mind in this sense. The results of the independent groups t-test which compares these students' opinions about the computer anxiety in terms of the grade variable are given in Table 3 below.

Table 3. Comparison of the Opinions about Computer Anxiety in terms of Grade

					Levene's test			T test	
Dimension	Grade	n	$\bar{X}$	SS	F	p	df	t	p
Anxiety due to lack of learning	1st Year	160	4,07	,811	,778	,379	263	1,818	,070
	2nd Year	105	3,88	,871					
Anxiety due to fear of making mistakes	1st Year	160	2,98	1,05	,927	,336	263	1,453	,147
	2nd Year	105	2,78	1,12					
Uncertainty-based anxiety	1st Year	160	3,00	,88	,994	,320	263	-2,447	,015*
	2nd Year	105	3,28	,97					
The Whole Scale	1st Year	160	3,49	,61	,003	,956	263	1,091	,276
	2nd Year	105	3,40	,61					

As a result of the analyses, there is only a meaningful difference of opinions in the "uncertainty-based anxiety" dimension of the scale in favor of the second-year students (t(263)=-2,447, p<.05). No other meaningful differences were observed in other dimensions of the scale in this regard.

There were also comparisons of those students who had somehow received computer education before and those who had never received any computer education before. Thus, it was thought that there could be an answer for the question "Does having a knowledge of computers affect the computer anxiety?". In the analyses done in this sense, it was observed that there is only a meaningful difference of opinions in the "anxiety due to fear of making mistakes" factor of the scale in favor of those who had not received any computer education before (t(263)= -2,752, p<.05). The results of this analysis are given in Table 4 below.

Table 4. Comparison of the Opinions about Computer Anxiety in terms of Experience of Computer Education

					Levene's test			T test	
Have you received any computer education?		n	$\bar{X}$	SS	F	p	df	t	p
Anxiety due to fear of making mistakes	Yes	140	2,75	1,11	1,688	,195	263	-2,752	,006*
	No	125	3,11	1,01					

The last variable whose effect was investigated within the study is the case of having a computer. The computer anxiety-related opinions of those who have a computer and those who do not have any were compared and summarized in Table 5 below.

Table 5. Comparison of the Opinions about Computer Anxiety in terms of having a Computer

					Levene's test			T test	
Do you have a computer?		n	$\bar{X}$	SS	F	p	df	t	p
Anxiety due to fear of making mistakes	Yes	107	2,58	1,06	,170	,681	263	-3,919	,000*
	No	158	3,10	1,05					
The whole Scale	Yes	107	3,40	,49	8,621	,004*			U=7588,500
	No	158	3,49	,67					P=,035*

The analyses show that there are meaningful differences of opinions in the "anxiety due to fear of making mistakes" dimension of the scale (t(263)=-3,919, p<.05) and in the whole scale itself (U=7588,500, p<.05) in favor of those who do not have a computer.

DISCUSSION

On evaluating the overall findings of the study, it was identified that gender is a variable that did not make any meaningful difference for the computer anxiety, while the other variables may mean meaningful differences in terms of various sub-factors and the whole scale itself. This finding regarding gender is opposite to the findings of the study carried out by Chen (1986). Chen (1986) concludes that males have more positive attitudes towards computers than females, and they have less computer anxiety. This find was also obtained by Çelik (2007) and Meral, Cambaz and Zerayak (2001). On the other hand, Loyd, Loyd and Gressard (1987), Başarmak (2008) and Yılmaz and Eşgi (2011) claim something totally opposite to this idea. Rosen, Sears and Weil (1987), Tuncer (2010), Başarmak and Güyer (2009) and Badagliacco (1990) conclude in parallel with this research that gender is not effective on the computer anxiety.

Upon the comparisons in terms of the grade variable, a meaningful difference was found on behalf of the second-year students in the "uncertainty-based anxiety" dimension of the computer anxiety scale; whereas Tuncer (2010) concludes that there is no any meaningful difference in terms of the computer anxiety according to the grade variable.

Another find of the study is that having experience of computer education is effective on the computer anxiety. There is a meaningful difference of opinions on behalf of those having not received any computer education in the "anxiety due to fear of making mistakes" factor of the scale. According to Chua, Chen and Wong (1999), Harris and Davison (1999), Computer training courses or computer education reduce the computer anxiety temporarily. However, according to Gos (1996), Safford and Worthington (1999), the computer anxiety increases with the increase of skills in this sense. Accordingly, Yılmaz and Eşgi (2011) identified in their study on educational supervisors that the computer anxiety of the supervisors having taken the educational technology course is higher than of those having not taken the course. According to Arıkan (2002) and Akkuş (2004) the computer anxiety decreases with the increase of computer experience. Başarmak and Güyer (2009) found, among the computer anxiety levels of pre-service teachers, a meaningful difference in favour of those having not taken a computer course.

Learning in this sense is negatively affected with the increase in such anxieties as failure to accomplish the learning task, encountering bad situations, inability to achieve the objectives (Başaran 2005: 411). Therefore, while receiving computer education or learning with computers, to determine the level of the computer anxiety and to keep it under control will enhance learning productivity. The researches in the relevant literature concentrate on the fact that with the increase of computer skills, computer anxiety will increase as well. Therefore, the fact that computer users are informed about computer anxiety could help to reduce possible problems they may have during the process. As the computer technology will always evolve, there will always be anxiety of computers or anxiety of the unknown in the general sense. Thus, the technology users should be educated with this conscious.

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