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How technology addiction affects social anxiety in adolescent girls? A sample of Turkey's southeast

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Abstract

The purpose of this study was to determine the how technology addiction affects social anxiety in adolescent girls. Sample of this correlational descriptive study was conducted with 635 female students determined by power analysis in five high schools located in a province. The data were collected using the Descriptive Characteristics Form, Social Anxiety Scale for Adolescents, and Technology Addiction Scale. Total mean score of the adolescent girls was found to be 50.52 ± 20.47 for technology addiction and 41.98 ± 13.71 for social anxiety. It was determined that technology addiction and social anxiety of the adolescent girls were moderate. There was a positive correlation between total mean score of technology addiction and total mean score of social anxiety ($p=0.00$, $r=0.20$). In the study, it can be said that as social anxiety increases, technology addiction increases, or as technology addiction increases, social anxiety also increases. It can be recommended for psychiatric nurses to provide necessary trainings to reduce technology addiction and social anxiety and to develop methods for coping with social anxiety in secondary education institutions.

Keywords: Adolescent, girls, social anxiety, technology addiction

Introduction

Adolescence period, in which physical and psycho-social changes occur abruptly and rapidly and personality traits develop on a large scale, is accepted to be a very important and critical period in terms of development. It is indicated that the most common psychiatric disorders among mental health problems encountered in this period are anxiety disorders and depression. An adolescent, who refuses to have actively face-to-face communication with persons such as her/his friends or parents in conditions such as anxiety and introversion, may use the technology more [1-3].

Technology addiction is caused by a number of factors and it is possible to assert that adolescents' needs which periodically arise depending on their developmental characteristics are among the most important reasons of addiction [1,2]. In the study conducted by Chek and Leung, it was determined that shy people used the internet more often [4]. In a study in which the data were collected

from 337 students to measure the effects of excessive internet and phone use on health, it was found that intense internet use was related with high anxiety [5]. It was also concluded that excessive phone use was associated with sleeplessness and also high anxiety. Many studies have revealed that technology use gradually increases today and becomes widespread especially among the youth [1-6]. Misuse of technology may reduce social relations and cause loneliness and anxiety in adolescents.

Social anxiety is characterized by shaking of hands, sweating, blushing and fearing to feel humiliated while sitting and talking in a community [7]. Just like many other anxiety disorders, social phobia frequently starts in childhood and adolescence period. In their study, Faravelli et al., revealed that initial symptoms of social phobia usually started around the age of 15.5 on average [8]. Most studies on this subject have shown that average onset age coincides with adolescence. The studies have shown that social anxiety is a common condition in adolescence period and is accompanied by many problems [9-11].

Spread of technology use in the world and in Turkey keeps this subject up-to-date. This original study is expected to contribute to psychiatric nursing in terms of approaches and applications for individuals, who are affected by technology addiction and social anxiety. The purpose of this study was to determine the how

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technology addiction affects social anxiety in adolescent girls.

In the study, an answer was sought to the following question:

Is there a correlation between technology addiction and social anxiety in adolescent girls?

Materials and Methods

Type of the study

This study was conducted as a correlational descriptive trial.

Time and place of the study

This study was carried out with female students receiving education in five high schools (Mardin Anatolian High School, Sakir Nuhoglu Imam Hatip High School, Mardin Science High School, 75. Yil Vocational School of Health and Hatuniye Technical and Vocational High School), which provide secondary education in affiliation with the Ministry of National Education in the city center of Mardin, between January 2019 and June 2019.

Population and sample of the study

The population of this study consisted of 2052 female students receiving education in five high schools, which were determined among 22 high schools in the city center of Mardin by lot according to number of students. The sample of the study consisted of 635 students who were determined by power analysis with 0.05 level of significance, confidence interval of 0.95, effect size of 0.3 and ability to represent population of 0.95. While selecting the samples from the population, students were listed according to their school numbers and determined using simple random sampling method.

Inclusion criteria: Being open to communication and collaboration

Exclusion criteria: Having any mental or physical health problem that may hinder communication

Data collection tools

The data were collected using the descriptive characteristics form, technology addiction scale, and social anxiety scale for adolescents.

Descriptive characteristics form: The descriptive characteristics form includes a total of six questions about socio-demographic characteristics of adolescents (age, mother's and father's educational level, mother's and father's occupation, and perception of income status).

Technology addiction scale: Developed in the thesis supervised by Prof. Dr. Nurettin SIMSEK from Ankara University, Institute of Educational Sciences and prepared by Fatih AYDIN in 2017, the TAS includes four subscales. They are Social Network Addiction Subscale (SNAS), Instant Messaging Addiction Subscale (IMAS), Online Gaming Addiction Subscale (OGAS), and Web Site Addiction Subscale (WSAS). The Cronbach's Alpha coefficients for the subscales were calculated as 0.806 for IMAS, 0.786 for SNAS, 0.897 for OGAS, and 0.861 for WSAS, respectively [2]. According to the data acquired from the sample group of this study, the Cronbach's Alpha internal consistency reliability coefficient was calculated as 0.93 for the overall scale, 0.79 for social network

use, 0.80 for instant messaging, 0.86 for online gaming, and 0.88 for web site use.

Social anxiety scale for adolescents (SASA): Including 22 items and originally named as SASR-R (Social Anxiety Scale for Children-Revised), this scale was adapted into Turkish by Aydın and Tekinsav Sütçü in 2007. The SASA consists of 18 items and three subscales. The highest and lowest scores to be obtained from the scale are 90 and 18, respectively. Higher scores signify higher level of social anxiety. The Cronbach's Alpha coefficient of the scale was found to be 0.88 [7]. According to the data acquired from this study, the Cronbach's Alpha coefficient of the scale was found to be 0.83.

Data collection

The researcher collected the data by conducting face-to-face interviews with students in the classroom environment between January 2019 and March 2019. The data collection tools were delivered to the students and then they were asked to complete the tools. It took averagely 10-15 minutes for each student to complete the questionnaires.

Data analysis

(SPSS) 22.0 program was used to analyze the data. In assessment of the data, percentage distribution to compare descriptive characteristics of the adolescents, mean to compare mean scores of the scales, independent samples t-test to compare age groups, gender and mean scores of the scales, analysis of variance to compare mother's and father's educational level, mother's and father's occupation, level of income and mean scores of the scales, Kruskal-Wallis to compare mean scores of the scales, advanced analysis tukey to evaluate the difference between the groups and correlation analysis to determine how the scales affected each other were used. In the study, $p < 0.05$ was considered as significant.

Ethical considerations

An approval from Inonu University Health Sciences Scientific Research and Publication Ethics Committee and permission from the Directorate of National Education were obtained for this study. In the study, as high school students were under the age of 18, their parents were informed about the study purpose and their written consent was obtained. The students were notified that they could withdraw from the study at any time.

Results

In the study, it was observed that ages of 35.9% of the adolescents ranged from 13 to 15 years, 64.1% ranged from 16 to 18 years, mothers of 33.5% were primary school graduate, fathers of 28.7% were secondary school graduate, mothers of 92.1% were housewife, fathers of 48.7% had self-employed, and 90.6% had a good level of income (Table 1).

It was found that mean scores of the adolescents were 12.82 ± 5.7 for social network addiction, 13.76 ± 6.14 for instant messaging, 10.31 ± 5.66 for online gaming, and 13.61 ± 6.86 for web site addiction. Total mean score of technology addiction was 50.52 ± 20.47 . Considering total mean score of the scale, it was determined that technology addiction of adolescents was moderate (Table 2).

Table 1. Distribution of adolescent girls according to their descriptive characteristics (n=635)

Descriptive Characteristics	n	%
Age Groups		
13-15 years	228	35.9
16-18 years	407	64.1
Mother's Educational Level		
Illiterate	164	25.8
Primary School	213	33.5
Secondary School	139	21.9
High School	119	18.7
Father's Educational Level		
Primary School	158	24.9
Secondary School	182	28.7
High School	175	27.6
Associate Degree and above	120	18.9
Mother's Occupation		
Housewife	585	92.1
Civil Servant	50	7.9
Father's Occupation		
Unemployed	51	8.0
Civil Servant	165	26.0
Worker	110	17.3
Self-employed	309	48.7
Perception of Income Status		
Good	575	90.6
Bad	60	9.4

Table 2. Total mean scores of the technology addiction scale

Scale	Min-Max Score	Mean±SD
Social Network Addiction	6-30	12.82±5.79
Instant Messaging	6-30	13.76±6.14
Online Gaming	6-30	10.31±5.66
Web Site Addiction	6-30	13.61±6.86
Total Score	24-120	50.52±20.47

Social anxiety level mean score of the adolescent girls was 41.98±13.71. Accordingly, their social anxiety was found to be moderate (Table 3).

Table 3. Total mean scores of the social anxiety scale

Scale	Min-Max Score	Mean±SD
Social Anxiety	18-90	41.98±13.71

When comparing the technology addiction subscale and total mean scores of the adolescent girls with father's occupation, it was seen that there was a statistically significant difference between web site addiction subscale and total mean scores and father's occupation ($p<.05$). This difference between the groups was caused by those whose father was unemployed. When comparing the technology addiction subscale and total mean scores of the adolescent girls with their perception of income status, it was observed that there was a statistically significant difference between social network

addiction subscale and perception of income status ($p<.05$). Those with a higher level of income had a higher level of social network use (Table 4).

When comparing descriptive characteristics of the adolescent girls and their total mean scores of the Social Anxiety Scale, it was found that there was no statistically significant difference between age groups and total scores of the Social Anxiety Scale ($p>.05$). The difference between mother's educational level and total scores of the Social Anxiety Scale was found to be statistically significant ($p<.05$). Those, whose mother was not literate, had a higher level of social anxiety. It was determined that there was a statistically significant difference between father's educational level and total scores of the Social Anxiety Scale ($p<.05$). Those, whose father was primary school graduate, had a higher level of social anxiety. The difference between mother's and father's occupation and total scores of the social anxiety scale was not statistically significant ($p>.05$). The difference between perception of income status and total scores of the social anxiety scale was statistically significant ($p<.05$). Those, who had a bad perception of income status, had a higher level of social anxiety (Table 5).

A positive correlation was observed between adolescents' subscale and total mean scores of the Technology Addiction Scale and total mean scores of the Social Anxiety Scale ($p<.05$). In the study, it can be said that as social anxiety increases, technology addiction increases, or as technology addiction increases, social anxiety also increases (Table 6).

Table 4. The comparison of technology addiction subscale and total mean scores of the scale according to descriptive characteristics of adolescent girls

Descriptive Characteristics				Social network addiction	Instant messaging	Online gaming	Web site addiction	Total score
				n	%			
Age Groups	13-15 years	228	35.9	13.33±5.44	14.14±5.90	10.99±5.67	14.25±6.65	52.72±19.35
	16-18 years	407	64.1	12.54±5.97	13.54±6.26	9.93±5.62	13.26±6.95	49.28±20.99
	Test Value		18.1	t=1.641	t=1.180	t=2.274	t=1.742	t=2.032
	Significance		42.5	p=0.09	p=0.23	p=0.02	p=0.07	p=0.03
Mother's Educational level	Illiterate	164	25.8	12.62±5.38	13.15±6.02	10.93±5.38	13.44±6.78	49.62±14.20
	Primary School	213	33.5	12.92±6.07	14.15±6.35	10.41±5.89	14.19±7.04	42.59±14.47
	Secondary School	139	21.9	13.02±6.21	14.17±6.42	10.53±5.89	13.10±6.84	38.82±11.72
	High School	119	18.7	12.70±5.35	13.41±5.53	9.76±5.36	13.42±6.66	38.90±12.20
	Test Value			F=0.164	F=1.149	F=0.476	F=0.825	F=0.485
	Significance			p=0.92	p=0.32	p=0.69	p=0.48	p=0.69
Father's Educational level	Primary School	158	24.9	12.15±5.49	13.22±6.00	10.36±5.82	13.39±6.88	49.13±20.21
	Secondary School	182	28.7	13.25±6.20	14.07±6.43	10.71±5.64	13.73±6.96	51.76±21.57
	High School	175	27.6	13.16±5.90	14.26±6.11	10.22±5.78	13.97±7.11	51.63±20.91
	Associate Degree and Above	120	18.9	12.58±5.33	13.25±5.87	9.78±5.30	13.21±6.33	48.83±18.35
	Test Value			F=1.301	F=1.229	F=0.672	F=0.369	F=0.909
	Significance			p=0.27	p=0.29	p=0.56	p=0.77	p=0.43
Mother's Occupation	Housewife	585	92.1	12.85±5.84	13.85±6.18	10.36±5.67	13.63±6.90	50.71±20.70
	Civil Servant	50	7.9	12.52±5.27	12.60±5.45	9.78±5.54	13.36±6.31	48.26±17.52
	Test Value			t=0.394	t=1.394	t=0.69	t=0.276	t=0.814
	Significance			p=0.69	p=0.16	p=0.48	p=0.78	p=0.41
*Father's Occupation	Unemployed	51	8.0	8.0	15.35±6.70	11.92±6.44	16.11±7.14	58.25±21.55
	Civil Servant	165	26.0	26.0	13.38±6.08	9.63±5.33	12.90±6.19	48.44±17.98
	Worker	110	17.3	17.3	13.75±6.28	10.19±5.32	13.50±6.73	50.43±20.48
	Self-employed	309	48.7	48.7	13.69±6.00	10.45±5.77	13.62±7.13	50.38±21.31
	Test Value			F=2.445	F=1.359	F=2.253	F=2.889	F=3.023
	Significance			p=0.06	p=0.25	p=0.08	p=0.03	p=0.02
Perception of Income Status	Good	575	90.6	13.93±6.08	12.92±5.77	10.31±5.60	13.72±6.77	50.89±20.11
	Bad	60	9.4	12.11±6.42	11.91±5.96	10.35±6.24	12.56±7.63	46.95±23.50
	Test Value			t=2.186	t=1.284	t=0.050	t=1.247	t=1.422
	Significance			p=0.04	p=0.21	p=0.96	p=0.26	p=0.21

*Tukey

Table 5. The comparison of total mean scores of the social anxiety scale according to descriptive characteristics of the adolescent girls

Descriptive Characteristics			Total Score of Social Anxiety	
		n	%	
Age Groups	13-15 years	228	35.9	42.84±13.54
	16-18 years	407	64.1	41.50±13.80
	Test Value			t=1.173
	Significance			p=0.23
Mother's Educational Level	Illiterate	164	25.8	46.06±14.20
	Primary School	213	33.5	42.59±14.47
	Secondary School	139	21.9	38.82±11.72
	High School	119	18.7	38.90±12.20
	Test Value			F=9.763
	Significance			p=0.00
Father's Educational Level	Primary School	158	24.9	44.31±14.76
	Secondary School	182	28.7	42.66±13.83
	High School Associate	175	27.6	40.65±11.72
	Degree and Above	120	18.9	39.82±14.36
	Test Value			F=3.225
	Significance			p=0.00
Mother's Occupation	Housewife	585	92.1	41.88±13.79
	Civil Servant	50	7.9	43.22±12.86
	Test Value			t=-0.662
	Significance			p=0.50
Father's Occupation	Unemployed	51	8.0	44.31±13.77
	Civil Servant	165	26.0	40.09±14.21
	Worker	110	17.3	42.48±13.17
	Self-employed	309	48.7	42.43±13.57
	Test Value			F=1.688
	Significance			p=0.61
Perception of Income Status	Good	575	90.6	41.39±13.30
	Bad	60	9.4	47.66±16.23
	Test Value			t=-3.400
	Significance			p=0.00

Table 6. The correlation between subscale and total mean scores of the technology addiction scale and total mean scores of the social anxiety scale

Technology Addiction		Social Anxiety
Social Network Addiction	r	0.190**
	p	0.00
Instant Messaging	r	0.156**
	p	0.00
Online Gaming	r	0.193**
	p	0.00
Web Site Addiction	r	0.163**
	p	0.00
Total Score	r	0.209**
	p	0.00

Discussion

The results acquired from this study, which was conducted to determine the correlation between technology addiction and social anxiety in adolescent girls, were discussed in line with the literature.

In the study, adolescents' total mean score of the technology addiction scale was found to be 50.52 ± 20.47 . When considering total mean score of the scale, it was determined that technology addiction of the adolescents was moderate. In the study by Yucens and Uzer, internet addiction level was indicated to be moderate [10]. In their study, Kumar et al., determined that students' total mean score of internet addiction was mild [11]. Also, in the study conducted by Javaeed et al. with medical students, they found that there was a high rate of moderate and severe internet addiction among individuals who participated in the questionnaire [12]. In the study by Eva and Bertil, it was indicated that as the youth had no problems like time and place in terms of having access to cell phones, their cell phone addiction increased [13]. The studies have revealed that conditions like active use of technology such as smart phone use, internet use, and digital gaming have been widespread in adolescents and thus their rates of addiction gradually have increased. This difference in the study is thought to be associated with access to internet and technology at early ages in Turkey as well, gradual decrease of the age of using smart phones and presence of internet and computer in almost every house.

In the study, adolescent girls' mean score of social anxiety scale was found to be 41.98 ± 13.71 . According to this scoring result, social anxiety in adolescent girls was determined to be moderate. In the study conducted by Yildirim et al., to examine social anxiety in terms of genders, they found that social anxiety level was lower in male students and higher in female students [14]. In their study, Ozyurek and Demiray stated that male students had a lower trait anxiety level than female students [15]. According to this result, it is possible to suggest that this difference between genders was caused by the fact that parents in our society raise boys more freely and confidently; whereas, girls are raised with a more oppressive and authoritarian behavior model in certain patterns. The study results are in agreement with the literature.

In the study, comparing the technology addiction subscale and total mean scores of adolescent girls with their age groups, it was found that there was a statistically significant difference between age groups and online gaming subscale and technology addiction total mean scores ($p < .05$). The level of online gaming was higher in the age range of 13-15 years. In the study conducted by Gentile et al., with primary school students, they stated that there was an undeniable number of students who were game addicts [16]. In the study conducted by Ustinavičienė et al., with adolescents, they stated that 10.6% of male students and 7.7% of female students were internet addicts and there was a significant correlation between internet addiction and online gaming [17]. The study results are compatible with the literature, which may indicate that digital media is used by children and adolescents mainly for fun.

In the study, it was determined that there was a statistically significant difference between web site addiction subscale and technology addiction total mean scores and father's occupation ($p < .05$). Web site use and technology addiction level were found to be higher

in those whose father was unemployed. In their study, Jamir et al., stated that technology addiction was correlated with father's occupation [18]. In the study conducted by Uneri and Tanidir with high school students, they stated that parents' occupation did not affect internet addiction [19]. There are different results in the literature concerning the correlation between mother's and father's occupation and technology addiction, which suggests that different factors other than socio-demographic characteristics may also be effective in technology addiction.

In the study, it was seen that there was a statistically significant difference between social network addiction subscale and perception of income status ($p < .05$). Those with a high level of income had a higher level of social network use. In their study, Ekinci et al., stated that students with better financial possibilities had higher levels of digital gaming addiction, compared to students with limited financial possibilities [20]. In their study, Batigun and Kilic stated that students with a high level of monthly income had higher rates of internet addiction, compared to students with a moderate level of income [21]. The studies support the present study. As the level of income increases, it becomes easier to have access to internet, smart phones, and computers. The youth can use these technological devices at home or in internet cafes easily and whenever they desire to, which may consequently increase their risk of addiction.

In the study, it was found that there was a statistically significant difference between mother's educational level and total score of the social anxiety scale ($p < .05$). Social anxiety level was higher in those whose mother was illiterate. There was a statistically significant difference between father's educational level and total score of the social anxiety scale ($p < .05$). Social anxiety level was higher in those whose father was primary school graduate. It is possible to think that low educational level of parents causes them to not know how to treat their children according to the features of their developmental period, to have problems with establishing communication, conflict with their children and thus, have anxiety.

In the study, it was seen that there was a statistically significant difference between perception of income status and total scores of social anxiety scale ($p < .05$). Social anxiety level was found to be higher in those who had a bad perception of income status. In their study, Akgün et al., determined that there was no statistically significant difference between family's economic level and social anxiety [22]. In their study, Caglar et al., determined that anxiety level was higher in students who had a high and moderate level of income. It is thought that low level of income may cause the anxiety in the youth, due to failure of meeting their needs and demands adequately [23].

In the study, it was seen that there was a positive correlation between subscale and total mean scores of the technology addiction scale and total mean scores of the social anxiety scale ($p < .05$). In the study, it can be said that as social anxiety increases, technology addiction increases, or as technology addiction increases, social anxiety also increases. As a result of the study conducted by Saikia et al., they indicated that there was a significant correlation between internet addiction and stress, depression and anxiety [24]. It is stated that in Taiwan, the symptoms of social anxiety are as severe as computer game addiction among computer video game addicts, because the games provide gamers an alternative virtual

reality enabling them to escape from society and real life [25]. In the study by Weinstein et al., a moderately positive correlation was found between internet addiction and social anxiety [26]. In another study, it was determined that individuals with a high social anxiety level had a higher possibility of using cell phones to communicate with others [27]. In their study, Darcin et al., reported that cell phone addiction was higher in those who felt anxious about communicating with others [28]. In the study by Yang, it was indicated that Korean adolescents, who were more sensitive in interpersonal relations, had higher rates of internet addiction [29]. The study result is compatible with many studies in the literature. The literature reviews also reveal that spreading use of technology leads to many negative consequences.

Limitation of the study

The study has no limitations. The results acquired can be generalized to the entire population.

Conclusion and recommendation

In this study conducted to determine the correlation between technology addiction and social anxiety in adolescent girls, it was found that technology addiction and social anxiety of adolescent girls were moderate and as their technology addiction increased, their social anxiety also increased. It can be recommended to provide trainings to parents and adolescents for the proper use of technology in adolescents, provide necessary trainings in schools explaining advantages, disadvantages and proper use of technology, arrange social activities in schools and at home to keep the youth away from technology, conduct studies measuring social anxiety and technology addiction levels of students with the cooperation of counseling units in schools and community mental health centers and take necessary precautions, and conduct similar studies examining the correlation between technology addiction and social anxiety level in adolescents with larger sample groups.

Conflict of interests

I (we) certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript..

Financial Disclosure

All authors declare no financial support.

Ethical approval

Permission was obtained from the scientific research and publication ethics committee of Inonu University (2019/01-18).

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