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The Research on the Relationship Between Adolescents' Use of Information Technologies and Their Psychological Needs in Terms of Self-Determination Theory*

Ergenlerin Bilişim Teknolojileri Kullanımı ve Psikolojik İhtiyaçları Arasındaki İlişkinin Öz-Belirleme Kuramı Açısından İncelenmesi

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ABSTRACT

In this study, it was examined whether there is a relationship between adolescents' information technology use and basic psychological needs levels with some demographic characteristics of adolescents and their frequency of social media use. In addition, it was aimed to determine whether adolescents' basic psychological needs predict their use of technology. In this study, relational survey model, one of the quantitative research techniques, was used. Personal Information Form (PIF), Information Technology Use Scale (ITUS) and Need Satisfaction Scale (NSS) were used in the study. The data were collected from 508 adolescents in secondary education institutions in Mamak and Çubuk districts of Ankara province and Tarsus and Yenişehir districts of Mersin province during the 2019-2020 academic year. The relationship between the average scores of the adolescents on the NSS and the ITUS and their ages, number of siblings and grade point averages were analysed. Significant positive and negative relationships were found between the social networks used by adolescents (Facebook, Twitter, Instagram, Youtube, LinkedIn, Snapchat, Tiktok, WhatsApp), basic psychological needs and information technology use. It was determined that the scores obtained from the Information Technologies Usage Scale were predicted by age and basic psychological needs.

Keywords: *information technology, social media usage, psychological needs, self-determination theory, adolescence*

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ÖZ

Bu araştırmada, ergenlerin bilişim teknolojileri kullanım ve temel psikolojik ihtiyaç düzeylerinin, ergenlerin bazı demografik özellikleri ve sosyal medya kullanma sıklıkları ile ilişkisi olup olmadığı incelenmiştir. Ayrıca ergenlerin temel psikolojik ihtiyaçlarının teknoloji kullanmalarını yordayıp yordamadığının belirlenmesi amaçlanmıştır. Bu çalışmada, nicel araştırma tekniklerinden ilişkisel tarama modeli kullanılmıştır. Çalışmada Kişisel Bilgi Formu (KBF), Bilişim Teknolojileri Kullanım Ölçeği (BTKÖ) ve İhtiyaç Doyumu Ölçeği (İDÖ) kullanılmıştır. Veriler, kolay ulaşılabilen örneklem yöntemiyle Ankara ili Mamak ve Çubuk ilçelerindeki, Mersin ili Tarsus ve Yenişehir ilçelerindeki ortaöğretim kurumlarında, 2019-2020 eğitim-öğretim döneminde ulaşılan 508 ergenden toplanmıştır. Ergenlerin İDÖ'den ve BTKÖ'den aldıkları ortalama puanların, yaşları, kardeş sayıları ve genel not ortalamaları ile ilişkisi incelenmiştir. Ergenlerin kullandıkları sosyal ağlar (Facebook, Twitter, Instagram, Youtube, LinkedIn, Snapchat, Tiktok, WhatsApp) ile temel psikolojik ihtiyaçlar ve bilişim teknolojileri kullanımı arasında anlamlı yönde pozitif ve negatif yönlü ilişkiler bulunmuştur. Bilişim Teknolojileri Kullanım Ölçeğinden elde edilen puanların yaş ve temel psikolojik ihtiyaçlar tarafından yordandığı belirlenmiştir.

Anahtar Kelimeler: *bilişim teknolojileri, sosyal medya kullanımı, psikolojik ihtiyaçlar, öz-belirleme kuramı, ergenlik*

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INTRODUCTION

In 2023 Turkey and the world, daily life without using technology it has become almost impossible to sustain. Information and communication technologies, people to communicate with each other, plan their activities and it is a routine that makes it easy for them to manage (Kaba, 2022). The excessive and problematic use of information technology, which has countless advantages and benefits if used correctly, can cause many mental, physical, and cognitive problems (Kaba & Dogan, 2021, 2022b).

As technological devices develop, the relationship of people with technology has become more problematic. "Internet addiction" is the most researched concept related to this subject. As a result, it is clear from the literature that studies on the concept of internet addiction are more frequently conducted (Dinc, 2014, 2015). During this process, the need to use a more generic term has emerged with the increase in the variety of research carried out on the subject and the variety of psychological help being sought within the framework of the concept of internet addiction. Besides this, the only concept of "internet addiction" is an obstacle to seeing the problems that individuals, and especially young people, experience today as a whole, with their causes, processes, and results, in the context of this concept. Because, besides the internet, technological devices such as smart phones and their applications, online games, social media networks, computers, and tablets also exist as seriously addictive risk factors for adolescents (Kaba, 2022; Kaba & Dogan, 2021, 2022a). For these reasons, the use of the concept of "technology addiction" instead of "internet addiction" is considered to be more accurate in terms of scope, and the concepts of "technology addiction" or "use of information technologies" were preferred in the text instead of just "internet addiction."

The number of people using the internet and information technologies is increasing day by day, and while the number of internet users in the world was 900 thousand in 1993, this number increased to 304 million in 2000, 1.35 billion in 2007, 4 billion 200 thousand in 2018, and in 2022, the number of internet users worldwide have reached 4.95 billion, which makes up 62.4% of the world's population (We are Social, 2018, 2022). “The population of Turkey is 84.69 million, and 65.8 million of them are internet users. It is known that 60 million internet users actively use social networks, and the number of mobile device users is 77 million. It is seen that the top five most used social media applications in Turkey are Youtube with a percentage of 94.5%, Instagram with 89.5%, WhatsApp with 87.5%, Facebook with 79%, and Twitter with 72.5%” (Cömlekci & Basol, 2019; We are Social, 2021).

People, especially children and adolescents using mobile devices, have access to the internet at home or almost anywhere and widely use information technology products, especially smart phones. Within this context, information technologies and internet use, as well as digital

games, have become current topics that significantly affect adolescents' daily lives, communication skills, academic success, and psychological health. This is the reason why researchers are interested in this topic and are conducting studies about it. (Kaba, 2022; Kaba & Dogan, 2022b).

It is estimated that problematic technology use and technology addiction impede students' productivity, hinder their success, and have a negative effect on the physical, social, psychological, and mental development of adolescents (Baltacı *et al*., 2021; Caplan, 2002). During the study conducted by Arca (2022) with students of high school, it was determined that the information technology tools that students use are television (96.9%), their own mobile phone (47.1%), and their own computer or tablet (31.3%). It was determined that 26.2% of the students were internet addicted, 17.2% of them were mildly addicted, 7.8% were moderately addicted, and 1.1% were severely addicted.

Demir and Kutlu's (2017) study with adolescents found that there was a significant difference between adolescents' internet addiction levels, academic achievement grades, and average daily internet usage time, and there was a negative correlation between adolescents' internet addiction levels and academic achievement. Leung and Lee (2012) concluded in their study that there is a negative relationship between students' internet addiction levels and their academic success. Huang and Leung (2010), in a study in which students aged 12–19 who used instant messaging programs participated, found that the use of chat and instant messaging addiction levels were positively and significantly related to academic performance decline. In the study conducted by Hauge and Gentile (2003) in which the effect of video game addiction on academic performance of adolescents was examined, it was seen that students with video game addiction had lower academic scores. In the Erdemir's (2021) study, it was found that students' internet addiction levels didn't vary based on how many siblings they had. Akdemir (2013) in his study study found that there was a significant difference between students' Facebook usage and the number of siblings, daily internet usage time, and time spent daily on Facebook. In the study of Üneri and Tanıdır (2011) it was found that the number of siblings didn't have a statistically significant effect on the Internet Addiction Scale score. In Minaz and Bozkurt's (2017) study, no statistically significant difference was found in students' smartphone addiction levels according to the age variable.

In the studies that had been carried out, it was estimated that problematic technology use causes physical, social, and psychological problems such as food addiction, obesity, musculoskeletal pain, a decrease in physical activities, academic procrastination, academic failure, negative school experiences, negative mental health symptoms, and unhealthy family relationships (Arca, 2022; Budak, 2016; Cırak *et al*., 2018; Demir & Kutlu, 2017; Lin *et al*., 2020;

Özcan *et al*., 2020; Peng *et al.,* 2019). But besides all these, healthy use of technology supports children and adolescents in enriching their experiences, helping to increase their communication, accessing information easily, and using their skills such as reading, writing, classifying, and sharing while collecting information (Balıkcı, 2018; Caplan, 2002; Deschamps & McNutt, 2016; Kop & Yiğit, 2017).

It is stated that the use of information technology and the internet helps people meet their psychological needs (Liu *et al.,* 2016; Zolkepli & Kamarulzaman, 2015). The time spent on the internet by individuals who try to meet their basic psychological needs in the virtual environment increases, and therefore problematic technology usage occurs (Karagülle & Caycı, 2014; Liu *et al*., 2015; Zhu *et al*., 2011). According to research (Can & Zeren, 2019; Canoğulları, 2014; Casale & Fioravanti, 2015; Manchiraju & Sadachar, 2018; Özteke-Kozan *et al*., 2019; Şahin & Kesici, 2009; Yu, Li & Zhang, 2015), people who experience problematic technology use are trying to meet their basic psychological needs on the internet, and people who meet their basic psychological needs on the internet and by using technology tend to use the internet and technology more often. (Notley, 2009; Rogers, 2017; Ryan *et al*., 2006; Shen *et al*., 2013).

The tendency toward problematic information technology and internet use or the emergence of technology addiction, which attracts the attention of many researchers, may be related to children's and adolescents' unmet psychological needs. According to research, as the computer and internet use become more common, adeloscent tend to meet some of their psychological needs that they can meet in their daily lives through the information technologies and internet (Shen *et al*., 2013; Şahin & Kesici, 2009). Adolescent who try to meet their needs through internet and computers can intensely experience the feeling of psychological deprivation as a result of unmet needs (Canoğulları, 2014).

Self-Determination Theory (SDT), focusing on basic psychological needs, is based on self-evaluation. This theory focuses on the effects of intrinsic interest and extrinsic rewards on human behavior. In the theory, basic psychological needs and motivational orientation are used to understand emotional, cognitive, and behavioral processes (Deci & Ryan, 1985a, 2000). Self-Determination Theory is based on psychological functions and social dynamics. It is suggested that, by nature, people tend to grow spiritually actively (Vansteenkiste & Ryan, 2013).

Basic psychological needs named “autonomy”, “competence”, and “relatedness” are listed in Self-Determination Theory, and these basic psychological needs are assumed to be innate and universal (Coleman, 2000; Deci & Ryan, 1985b). According to the SDT, meeting these needs is essential for people's growth, development, integration, well-being, and psychological health (Andersen *et al*., 2000). People can experience a sense of choice in environments and places that fulfill the need for autonomy (Deci *et al*., 1989; Williams *et al*., 2000). Aside from that, self-

determination is felt when people choose and initiate their own behaviors and feel less pressure. The degree of autonomy support in each environment varies due to the relationships established and developed in each environment, and environment support for autonomy increases self-determination (Cihangir-Çankaya, 2005). Autonomy is defined as making decisions, being strong-willed, and making choices while initiating and regulating behaviors (Ryan & Deci, 2000). In addition, the need for autonomy is defined as self-management (Ryan & Deci, 2017). The need for competence is the individual's desire to influence his environment with the products he produces autonomously and, in this way, have a positive interaction with his environment (Deci & Ryan, 1985a; Kowal & Fortier, 1999). The need for competence can also be defined as the feeling of being confident and effective in being able to achieve the desired goals and demonstrate one's abilities (Deci & Ryan, 1985a). The need for relatedness is a person's need to interact with other people as a social being. It is the individual's perception of belonging to his environment by taking care of those around him (Kowal & Fortier, 1999). Furthermore, relatedness is expressed as a genuine sense of connection with other people, caring for and being cared for by others (Baumeister & Leary, 1995; Ryan, 1995).

According to SDT, environmental and social factors play an important role in satisfying needs. (Guay *et al*., 2006). The essential point of SDT is the individuals' basic psychological needs (Ryan & Deci, 2000). This situation is closely related to the development and mental health of individuals (Ryan & Deci, 2000). Suler (1999) stated that the reason for problematic internet use is the effort to meet psychological needs that are not satisfied in real life via the internet. Individuals who receive support from the environment to meet their psychological needs for "autonomy", "competence", and "relatedness" decrease their tendency to engage in problematic behaviors such as problematic internet use (Dönder, 2021; Oktan, 2015; Williams *et al*., 1999).

When the literature is examined, it is discovered that adolescents who do not experience psychological need satisfaction in their daily lives use the internet more frequently to satisfy those needs (Can & Zeren, 2019; Canoğulları, 2014; Casale & Fioravanti, 2015; Özteke-Kozan *et al*., 2019; Şahin & Kesici, 2009; Yu, Li *et al*., 2015; Zhang, 2015). In their study, it was determined that adolescents with low levels of problematic internet use have more psychological needs for "autonomy", "competence", and "relatedness" (Canoğulları, 2014). It is inevitable that people who spend more time on the internet to satisfy their needs have higher levels of problematic internet use (Dönder, 2021). Adolescents play online games in order to meet their psychological needs, and they continue to play games because they experience this satisfaction in the game environment. This situation becomes a reason for problematic internet use (Allen & Anderson, 2018; Chiang & Lin, 2010; Rogers, 2017; Ryan *et al*., 2006).

This research was planned because there are few studies (Canoğulları, 2014; Dönder, 2021; Oktan, 2015; Suler, 1999; Williams *et al*., 1999) concerning the use of information technology and the basic psychological needs of adolescents within the framework of SDT, and revealing this relationship will contribute to the field. Starting from this point, our objective was to determine whether adolescents' use of IT and their basic psychological needs are related to some demographic characteristics and social media usage frequencies and whether the basic psychological needs of adolescents predict technology use. The important areas of the study are: what kinds of problems can be caused by using technology problematically and excessively, how to make healthy arrangements without giving up the usage of useful technological developments, and the psycho-social effects of this process. Any research carried out within this framework that contributes to problem-solving is valued. It is expected that this research will contribute to the examination of the effects of the widespread use of information technology.

METHOD

Research Model

The purpose of this study, which is a relational survey model based research project, is to determine whether adolescents' use of information technology and their fundamental psychological needs are related to certain demographic factors (age, siblings, GPA) and social media usage patterns, and whether adolescents' fundamental psychological needs predict technology use.

Study Group

The study group consists of 508 adolescents who have accepted to participate and study in Mamak and Çubuk districts of Ankara Province and Tarsus and Yenişehir districts of Mersin Province, in the second term of the 2019–2020 academic year. Students from various types of secondary education institutions or participants who had graduated from high school within the previous year were included in the study group. Because the coronavirus pandemic made data collection difficult, a convenience sampling method was used to determine the study group. Table 1 shows the frequency and percentage distributions of some demographic characteristics of the study group.

Table 1

Frequency and percentage distributions regarding some demographic characteristics of the study group

Variables		f	%
Sex	**Male**	182	35.8
	Female	326	64.2
Grade	**Grade Preparatory**	6	1.2
	9th Grade	123	24.2
	10th Grade	90	17.7
	11th Grade	101	19.9
	12th Grade	168	33
	Graduate	20	4
High School	**Anatolian İmam Hatip High School**	6	1.2
	Anatolian High School	334	65.7
	Science High School	51	10
	Vocational and Technical Anatolian High School	54	10.6
	Private High School	48	9.4
	Social Studies High School	12	2.4
	Others	3	0.6
Total		508	100

According to the information given in Table 1, 64.2% of the 508 participants were female and 35.8% were male. In addition, it was determined that 33% of the participants were in the 12th grade and 65.7% of the participants were educated at Anatolian High School, and their ages ranged from 13 to 19 (mean = 15.93, standard deviation = 1.44).

Data Collection Tools

Personal Information Form (PIF). Researchers have developed the Personal Information Form (PIF) for collecting demographic information from the adolescents participating in the study. These variables are age, gender, school type, grade levels, academic grade averages, number of siblings, frequency of social network use, and other similar variables.

Information Technologies Usage Scale (ITUS). Information Technologies Usage Scale (ITUS) was developed by Kaba and Doğan (2021) for determining the information technology use level of adolescents. It consists of three factors: "Digital Gaming (DG)" "Usage of Technological Devices and Applications (UTDA)" and "Virtual Life Preference (VLP)" with a total of 50 items. There are nine reversed items in the scale (Kaba & Doğan, 2021). ITUS was designed as a five-point Likert type scale: "1=strongly disagree", "2=disagree", "3=undecided", "4=agree", "5=strongly agree". For the scale items, participants mark the number below the level that they believe best describes them. Straight items are scored as they are, while negative items are scored in reverse. The score range in the first factor of the scale is 18–90; the score range in the second factor is 22–110; and the score range in the third factor is 10–50. The total score can also be calculated in ITUS. The total score range of ITUS is 50–250 (Kaba & Dogan, 2021). A high score on

the "Digital Gaming" factor indicates that adolescents have high levels of online gaming; Getting a high score on the "Use of Technological Devices and Applications" factor means that adolescents have a high level of use of technological devices, the internet, and social media networks; A high "Virtual Life Preference" factor score indicates that adolescents prefer virtual lives and relationships over real relationships and communication. High scores on the scale mean that adolescents have a high level of use of information technologies (Kaba & Dogan, 2021). For 50 items, ITUS has a Cronbach alpha reliability coefficient of .94. The Cronbach Alpha reliability coefficient of the "Digital Gaming" factor is .95; the Cronbach Alpha reliability coefficient of the factor "Use of Technological Devices and Applications" was calculated as .92; and the Cronbach Alpha reliability coefficient of the factor "Virtual Life Preference" was calculated as .86. In this study, the Cronbach's Alpha internal consistency reliability coefficients of ITUS were .93 for "Digital Gaming" factor, .90 for the "Use of Technological Devices and Applications" factor and .82 for "Virtual Life Preference" factor, all scale items' total internal consistency reliability coefficient was calculated to be .91.

Need Satisfaction Scale (NSS). Need Satisfaction Scale (NSS) was developed by Deci and Ryan (1991) to assess the need satisfaction levels of individuals based on the Self-Determination Theory (Cihangir-Çankaya, 2005, cited by Deci & Ryan). NSS was adapted to Turkish by Bacanlı and Cihangir-Çankaya (2003), and they have carried out the validity-reliability studies. The scale, consisting of 21 items in total, has three sub-dimensions: autonomy, competence, and relatedness. The scale was designed as a seven-point Likert scale with options like "0=Not at all true, 7=Very true." Sub-dimension total scores and scale total scores are obtained from the scale. 7-49 for the autonomy sub-dimension; 6-42 for the competence sub-dimension; and 8-56 for the relatedness sub-dimension; scores between 21 and 147 can be obtained for the entire scale. The high scores of the participants indicate that the satisfaction level of basic psychological needs is high; low scores mean a low level of satisfaction of basic psychological needs. In the original adaptation study of the scale, the Cronbach Alpha internal consistency reliability coefficients of the sub-dimensions were calculated as .71 for the autonomy sub-dimension, .60 for the competence sub-dimension, and .74 for the relatedness sub-dimension. The total need satisfaction score was obtained by summing all the items of the NSS. The internal consistency reliability coefficient for the total need score is .83. In this study, the Cronbach Alpha internal consistency reliability coefficients of the NSS were obtained to be .69 for the autonomy sub-dimension, .63 for the competence sub-dimension .71 for the relatedness sub-dimension, and the internal consistency reliability coefficient of total need satisfaction was calculated as .82.

Process

Within the scope of the research, firstly, after obtaining the necessary permission to use the Need Satisfaction Scale, the ethics committee's permission was obtained from the Ethics Committee of Hacettepe University Senate with the decision numbered 35853172-300 in the meeting held on June 25, 2019, and permissions from the relevant District National Education Directorates were obtained. Data collection tools consisting of a Personal Information Form, an Information Technologies Usage Scale, and a Need Satisfaction Scale were both reproduced in print, and online forms of questionnaires and scales were prepared. Participants were selected by convenience sampling and participated in the study voluntarily. After obtaining the necessary permissions from the schools in Ankara/Mamak/Çubuk and the Mersin/Tarsus/Yenişehir district, the participants were informed about the purpose and content of the study, and the study continued after obtaining informed consent from the students. After the participants in the online applications were informed about the purpose of the research, informed consent was obtained from the participants, and data were collected from those who volunteered to participate. Questionnaires and scales used in the research were applied face-to-face and online to a total of 522 adolescents between the ages of 13 and 19. 350 of the sample of 508 people were administered the measurement tool face-to-face and 158 were administered online due to the Covid-19 pandemic and the lockdown. The implementation lasted for about 15–20 minutes.

Data Analysis

For the data analysis collected for the study, the IBM SPSS 18 package program was used. After transferring the data to the electronic environment, extreme values and missing data were checked. Descriptive statistics (minimum and maximum scores, mean and standard deviation scores, etc.) were used to determine the level of adolescents' use of information technology and their basic psychological needs. By using normality tests, kurtosis-skewness values, the identification of multiple extreme values, and the assessment of multicollinearity issues, it was possible to determine whether the data gathered for the study met the requirements of a normal distribution. Spearman and Pearson correlation coefficients were used to determine the relationships between variables. First, assumptions (multiple linearity, homogeneity, and normal distribution) were tested, and multiple hierarchical linear regression analysis were used to determine the predictors of adolescents' technology use levels.

Ethical Approval

Permission was obtained from Hacettepe University Senate Ethics Committee (25 June 2019; 35853172-300) to conduct the study and to start the data collection process.

RESULTS

Descriptive Findings on Need Satisfaction Scale (NSS) and Information Technologies Usage Scale (ITUS) Levels of Adolescents

The analysis results regarding the mean, standard deviation and distribution of NSS and ITUS are presented in Table 2.

Table 2

Descriptive findings regarding the mean, standard deviation and distribution of the variables

Variables	Min.	Max.	X	Ss	Skewness	Kurtosis
NSS – Autonomy	6	42	29.20	6.92	-0.38	0.24
NSS – Competence	6	42	27.76	6.33	-0.17	0.30
NSS – Relatedness	15	63	44.09	10.18	-0.08	-0.58
NSS Total	31	147	101.13	19.77	-0.15	-0.13
ITUS – Digital Gaming	26	78	40.94	10.22	0.79	0.17
ITUS – Use of Technological Devices and Applications	25	100	56.03	16.80	0.19	-0.71
ITUS – Virtual Life Preference	14	41	28.52	3.46	0.69	1.39
ITUS Total	81	211	125.49	23.97	0.18	-0.48

Note. X: Mean, Ss: Standard Deviation, NSS: Need Satisfaction Scale, ITUS: Information Technologies Usage Scale

When we look at Table 2, we see that the skewness values range from -.08 to .79. Kurtosis values between -.13 and 1.39. Since the kurtosis and skewness values are expected to be in the range of ±2 (Cokluk *et al*., 2012), it can be stated that the data do not deviate from the normal distribution.

Findings Related to Correlation Analysis

Pearson Correlation Analysis were used to evaluate the correlation of the mean scores of adolescents in NSS and ITUS with their age, number of siblings, and overall grade point averages. In addition, the correlations between the variables were also evaluated in this analysis, and the results of the analysis are presented in Table 3.

Table 3

Pearson correlation analysis results regarding the relationship between participants' average scores from NSS and ITUS with their age, number of siblings and GPA

	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Number of Siblings	.02	-								
3. GPA	-.32**	-.29**	-							
4. NSS – Autonomy	-.01	-.06	.06	-						
5. NSS – Competence	-.08	-.01	.17**	.62**	-					
6. NSS – Relatedness	-.09*	-.14**	.17**	.54**	.55**	-				
7. NSS Total	-.07	-.09*	.16**	.82**	.82**	.88**	-			
8. ITUS – DG	.05	-.10*	-.04	-.17**	-.15**	-.11*	-.16**	-		
9. ITUS – UTDA	.22**	-.20**	-.01	-.18**	-.21**	.01	-.12**	.37**	-	
10. ITUS – VLP	-.02	.03	-.10*	-.09*	-.12**	-.16**	-.15**	.27**	.25**	-
11. ITUS Total	.17**	-.18**	-.04	-.21**	-.22**	-.06	-.17**	.73**	.90**	.43**

Note: *p<.05, **p<.01, NSS: Need Satisfaction Scale, ITUS: Information Technologies Usage Scale, GPA: Grade Points Average, DG: Digital Gaming, UTDA: Use of Technological Devices and Applications, VLP: Virtual Life Preference

According to Table 3, the average scores of the participants' ages and grade point averages (rp = -.32, p<.05), have a negative correlation with the NSS-Relatness factor (rp = -.09, p<.05); it is also seen that the mean scores from the ITUS-UTDA factor (rp = .22, p<.05) and the mean scores from the ITUS overall (rp = .17, p<.05) are positively and significantly correlated.

The number of siblings of the adolescents and their overall grade point averages (rp = -.29, p<.05), were found to be significantly correlated in the negative direction with the mean scores got from the NSS-Relatedness factor (rp = -.14, p<.05), with the mean scores from the NSS overall (rp = -. 09, p<.05), also with the mean scores got from the ITUS – DG factor (rp = -.10, p<.05), the mean scores from the ITUS – UTDA factor (rp = -.20, p<.05), and the mean scores from the ITUS overall (rp = -. 18, p<.05).

The mean scores of the adolescents' general grades were found to be positively correlated with the mean score on NSS-Competence factor (rp = .17, p<.05), the mean scores of the NSS-Relatedness factor (rp = .17, p<.05), and the mean scores of the NSS-general (rp) = .16, p<.05), and significantly negatively correlated with the mean score (rp = -.09, p<.05) obtained from the ITUS – VLP factor.

The relationship between the mean scores of the adolescents in NSS and ITUS scales and the frequency of social media use was evaluated by Spearman Correlation Analysis, and the results of the analysis are presented in Table 4.

Table 4

The result of the Spearman correlation analysis of the relationship between the average scores of the participants in NSS and ITUS and the frequency of social media use

	Facebook	Twitter	Instagram	Youtube	LinkedIn	Snapchat	Tiktok	WhatsApp
NSS – Autonomy	-.09	.02	-.01	.02	.04	.08	.07	.03
NSS– Competence	-.06	.04	.00	-.02	.02	.09*	.02	.05
NSS– Relatedness	-.08	.04	.10*	-.01	.01	.07	.01	.01
NSS Total	-.10*	.04	.05	-.01	.03	.10*	.04	.03
ITUS – DG	.05	.09*	.14**	.13**	-.17**	-.05	.04	.12**
ITUS – UTDA	.05	.21**	.41**	.13**	-.13**	-.05	.11*	-.02
ITUS – VLP	.02	-.05	.13**	.12**	-.14**	-.05	-.03	.01
ITUS Total	.07	.18**	.36**	.15**	-.16**	-.06	.09*	-.06

Note: *p<.05, **p<.01, NSS: Need Satisfaction Scale, ITUS: Information Technologies Usage Scale, GPA: Grade Points Average, DG: Digital Gaming, UTDA: Use of Technological Devices and Applications, VLP: Virtual Life Preference

As we can see from Table 4, the frequency of use of Facebook by adolescents and the average scores obtained from the NSS overall (rs = -.10, p<.05) are negatively and significantly correlated. Twitter usage was found to be positively and significantly correlated with mean scores from the ITUS-DG factor (rs =.09, p<.05), the ITUS-UTDA factor (rs =.21, p<.05), and the ITUS overall (rs =.18, p<.05). The frequency of Instagram usage was positively significantly correlated with the mean scores from the NSS-Relatedness factor (rs = .10, p<.05), mean scores from the ITUS

– DG factor (rs = .14, p<.05), mean scores from ITUS – UTDA factor (rs = .41, p<.05), mean scores from the ITUS – VLP factor (rs = .13, p<.05), and mean scores from ITUS overall (rs = .36, p<.05). The frequency of Youtube usage was found to be positively and significantly correlated with the mean score from ITUS – DG factor (rs = .13, p<.05), mean scores from the ITUS - UTDA factor (rs = .13, p<.05), mean scores from the ITUS – VLP factor (rs = .12, p<.05), and the mean scores from the ITUS overall (rs = .15, p<.05). The frequency of LinkedIn usage was found to be negatively significantly correlated with the mean score from the ITUS – DG factor (rs =-.17, p<.05), the mean score from the ITUS – UTDA factor (rs = -.13, p<.05), mean score from the ITUS – VLP factor scores (rs = -.14, p<.05) and the mean score from the ITUS overall (rs = -.16, p<.05). We can obserdve that the frequency of Snapchat usage is positively and significantly related with the mean scores from the NSS-Competence factor (rs = .09, p<.05) and from the overall NSS (rs = .10, p<.05). It is seen that the frequency of TikTok usage and the mean scores of ITUS – UTDA factor (rp = .11, p<.05) and the mean scores of ITUS overall (rp = .09, p<.05) are positively and significantly related. It is seen that the frequency of WhatsApp usage and the mean scores obtained from the ITUS-DG factor (rp = .12, p<.05) are positively and significantly correlated.

Findings and Comments on Predictive Analysis

Multiple Linear Hierarchical Regression Analysis were used to assess the predictiveness of the NSS mean scores on the ITUS-DG factor mean scores when controlling the participants' age, GPA, and gender. The analysis results are given in Table 5.

Table 5

ITUS Digital Gaming's Multiple Linear Hierarchical Regression analysis results

Model	Predictive Variables	B	SH	β	*t*	*p*	F	R^2	$R^2\Delta$	F Δ
1	**Constant**	43.76	6.73		6.51	.00	25.81	.13	-	-
	Sex[1]	-7.70	.88	-.36	-8.72	.00				
	Age	.17	.31	.02	.54	.59				
	GPA	-.01	.04	-.01	-.20	.84				
2	**Constant**	53.10	6.79		7.82	.00	18.78	.18	.05	10.29
	Sex[1]	-8.20	.87	-.39	-9.47	.00				
	Age	.17	.30	.02	.55	.58				
	GPA	.02	.04	.02	.39	.70				
	NSS –Autonomy	-.22	.08	-.15	-2.72	.01				
	NSS – Competence	-.19	.09	-.12	-2.11	.04				
	NSS – Relatedness	.02	.05	.02	.30	.77				

Note. [1]: Female is coded as 1 and Male as 0, NSS: Need Satisfaction Scale, GPA: Grade Points Average

According to Table 5, gender, age and GPA variables were added to the model in the first block of the regression analysis. The model explained 13% of the variance F (3,499) = 25.81, p<.05). Gender has a significant contribution to the model (β = -.36, p<.05), but it was determined

that age (β = .02, p>.05) and GPA (β = -.01, p>.05) do not have have significant contributions to the model.

NSS factors were included in the second block of the regression model. The model explained 18% of the variance F (6, 496) = 18.78, p<.05). Autonomy (β = -.15, p<.05) and Competence (β = -.12, p<.05) domains contributed significantly to the model, but Relatedness (β = .02, p>.05) domain didn't contribute significantly to the model. In this model, it is seen that the effect of gender continues.

The predictiveness of the mean scores of the NSS on the mean scores from the ITUS-UTDA factor was evaluated by Multiple Linear Hierarchical Regression Analysis, when participants' age, GPA, and gender were controlled. Analysis results are given in Table 6.

Table 6

ITUS Use of Technological Devices and Applications' Multiple Linear Hierarchical Regression analysis results

Model	Predictive Variables	B	SH	β	*t*	*p*	F	R^2	$R^2\Delta$	F Δ
1	**Constant**	-.12	11.54		-.01	.99	12.33	.07	-	-
	Sex[1]	4.53	1.51	.13	2.99	.00				
	Age	2.86	.53	.25	5.38	.00				
	GPA	.09	.07	.06	1.39	.17				
2	**Constant**	9.45	11.56		.82	.41	13.16	.14	.07	13.09
	Sex1	3.45	1.47	.10	2.34	.02				
	Age	2.92	.51	.25	5.67	.00				
	GPA	.11	.07	.07	1.64	.10				
	NSS – Autonomy	-.37	.14	-.15	-2.68	.01				
	NSS – Competence	-.57	.15	-.21	-3.78	.00				
	NSS – Relatedness	.35	.09	.21	4.06	.00				

Note. [1]: Female is coded as 1 and Male as 0, NSS: Need Satisfaction Scale, GPA: Grade Points Average

According to Table 6, in the first block of the regression analysis gender, age and GPA variables were added to the model. The model explained 7% of the variance F (3,499) = 12.33, p<.05). It was observed that gender (β =.13, p<.05) and age (β = .25, p<.05) contributed significantly to the model, but GPA (β = .06, p>.05) didn't contribute significantly to the model.

NSS factors are included in the second block of the regression model. The model explained 14% of the variance F (6, 496) = 13.16, p<.05). Autonomy (β = -.15, p<.05), Competence (β = -.21, p<.05) and Relatedness (β = .21, p<.05) domains were found to have significant contributions to the model. In this model, it is seen that the effect of gender and age continues.

The predictiveness of the mean scores of the NSS on the mean scores of the ITUS-VLP factor was evaluated by Multiple Linear Hierarchical Regression Analysis, when participants' age, academic mean, and gender were controlled. The analysis results are given in Table 7.

Table 7

ITUS Virtual Life Preference Multiple Linear Hierarchical Regression analysis results

Model	Predictive Variables	B	SH	β	*t*	*p*	F	R^2	$R^2\Delta$	F Δ
1	**Constant**	33.79	2.45		13.79	.00	2.37	.014	-	-
	Sex[1]	-.31	.32	-.04	-.95	.34				
	Age	-.14	.11	-.06	-1.27	.21				
	GPS	-.03	.01	-.11	-2.40	.02				
2	**Constant**	35.88	2.52		14.24	.00	3.22	.04	.023	4.02
	Sex[1]	-.36	.32	-.05	-1.13	.26				
	Age	-.16	.11	-.07	-1.40	.16				
	GPS	-.03	.01	-.08	-1.77	.08				
	NSS – Autonomy	.01	.03	.02	.27	.79				
	NSS – Competence	-.03	.03	-.06	-.94	.35				
	NSS – Relatedness	-.04	.02	-.13	-2.31	.02				

Note. [1]: Female is coded as 1 and Male as 0, NSS: Need Satisfaction Scale, GPA: Grade Points Average

According to Table 7, gender, age, and GPA variables were added to the model in the first block of the regression analysis. The model explained 1% of the variance F (3,499) = 2.37, p<.05). GPA (β = -.11, p<.05) was found to contribute significantly to the model, but gender (β = -.04, p >.05) and age (β = -.06, p >.05) weren't found to contribute significantly.

In the second block of the regression model, ISS factors were included in the model. The model explained 4% of the variance F (6, 496) = 3.22, p<.05). Relatedness (β = -.13, p<.05) domain contributed significantly to the model, but Competence (β = -.06, p>.05) and Autonomy (β = .02, p<.05) variables were not found to contribute significantly.

The predictiveness of the mean scores from ISS on the mean scores from ITUS, when participants' age, academic mean, and gender were controlled, was evaluated by Multiple Linear Hierarchical Regression Analysis. The analysis results are given in Table 8.

Table 8

ITUS Virtual Life Preference Multiple Linear Hierarchical Regression analysis results

Model	Predictive Variables	B	SH	β	*t*	*p*	F	R^2	$R^2\Delta$	F Δ
1	**Constant**	77.43	16.75		4.62	.00	5.84	.03	-	-
	Sex[1]	-3.48	2.20	-.07	-1.58	.11				
	Age	2.89	.77	.17	3.74	.00				
	GPA	.05	.10	.02	.52	.60				
2	**Constant**	98.43	16.75		5.88	.00	10.06	.11	.08	13.83
	Sex[1]	-5.11	2.13	-.10	-2.40	.02				
	Age	2.93	.75	.18	3.93	.00				
	GPA	.10	.09	.05	1.02	.31				
	NSS – Autonomy	-.58	.20	-.17	-2.91	.00				
	NSS – Competence	-.79	.22	-.21	-3.60	.00				
	NSS – Relatedness	.32	.13	.14	2.58	.01				

Note. [1]: Female is coded as 1 and Male as 0, NSS: Need Satisfaction Scale, GPA: Grade Points Average

According to Table 8, gender, age and GPA variables were added to the model in the first block of the regression analysis. The model explained 3% of the variance F (3,499) = 5.84, p<.05). Age was found (β = .17, p<.05) to contribute significantly to the model, but gender (β =-.07, p>.05) and GPA (β = .02, p>.05) weren't found to contribute significantly.

In the second block of the regression model, ISS factors were included in the model. The model explained 11% of the variance F (6, 496) = 10.06, p<.05). Autonomy (β = -.17, p<.05), Competence (β = -.21, p<.05) and Relatedness (β = .14, p<.05) domains were found to have significant contributions to the model. In this model, it is seen that the effect of gender and age continues.

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

The objective of this study was determining whether adolescents' use of information technology and basic psychological needs are related to some demographic characteristics and social media usage frequencies of adolescents, and whether the basic psychological needs of adolescents predict technology use.

Results and discussion on the relationship between adolescents' average NSS, ITUS scores and their age, number of siblings, and overall grade point averages.

The results obtained during this research showed that the ages of the adolescents and their overall grade point average were positively and significantly correlated with the ITUS-UTDA factor and the ITUS overall average scores. It was determined that the number of siblings of the participants and their overall grade point averages are negatively and significantly correlated with the averages got from ITUS-DG and ITUS-UTDA factors and with the average scores obtained from general ITUS. It was found that the GPAs of the participants and the average scores obtained from the ITUS-VLP factor were negatively and significantly correlated. It can be stated that the variables of age, academic achievement, and the number of siblings are factors that affect the information technology use/addiction levels of adolescents.

It can be said that the findings of this study are similar to the findings of many studies in the literature. In the study conducted by Erdemir (2021), when the literature was examined, it was seen that the internet addiction levels of the students differed according to their academic achievement and that there was a negative and significant relationship between the students' internet addiction levels and their GPAs. Demir and Kutlu's (2017) study with adolescents found that there was a significant difference between adolescents' internet addiction levels, academic achievement grades, and average daily internet usage time, and there was a negative correlation between adolescents' internet addiction levels and academic achievement. In Akdemir's (2013) study, a weak correlation was found between students' Facebook attitudes and their academic

averages. Leung and Lee (2012) concluded in their study that there is a negative relationship between students' internet addiction levels and their academic success. In his study conducted with high school students, Toraman (2013) found that as the level of internet addiction increases, the level of academic achievement decreases. Huang and Leung (2010), in a study in which students aged 12–19 who used instant messaging programs participated, found that the use of chat and instant messaging addiction levels were positively and significantly related to academic performance decline. According to Taçyıldız (2010), a high school student's academic GPA is a significant predictor of internet addiction. In the study conducted by Hauge and Gentile (2003) in which the effect of video game addiction on academic performance of adolescents was examined, it was seen that students with video game addiction had lower academic scores. As seen in the findings of the study, it can be said that intensive use of information technologies and academic achievement are inversely proportional. Although there was a negative relationship between the use of information technologies and the number of siblings and a positive relationship between the use of information technologies and the age variable in this study, it was observed that there was no relationship between these variables in the studies in the literature. For example in the Erdemir's (2021) study, it was found that students' internet addiction levels did not vary based on how many siblings they had. Akdemir (2013) in his study study found that there was a significant difference between students' Facebook usage and the number of siblings, daily internet usage time, and time spent daily on Facebook. Tanrıverdi (2012) and Günüç (2009) didn't find a statistically significant difference between the number of siblings and internet addiction levels in high school students in their research. Similarly, in the study of Üneri and Tanıdır (2011) it was found that the number of siblings didn't have a statistically significant effect on the Internet Addiction Scale score. In Minaz and Bozkurt's (2017) study, no statistically significant difference was found in students' smartphone addiction levels according to the age variable. Tutgun-Ünal (2015) also concluded in their study that students' social media addictions do not differ according to age.

There was a negative and significant relationship between the ages of the adolescents, their grade point averages and the mean scores obtained from the NSS-Relatedness factor. It was observed that there was a negative and significant relationship between the number of siblings of the participants, their grade point averages and the average scores obtained from the NSS-Relatedness factor and the NSS in general. A positive and significant relationship was found between the participants' grade point averages and the mean scores obtained from the NSS-Competence and NSS-Relatedness factors and the overall NSS. One of the basic developmental tasks of the adolescent is achieving autonomy and independence (Hortaçsu, 2003). Sibling relationships provide crucial contexts for understanding how children develop in their social, emotional, moral, and cultural worlds. (Volling *et al*., 2010; cited in Aydoğdu & Gürsoy, 2018).

When the literature is examined, as in the study conducted by Doğan and Kesici (2015), a significant difference is found in the sub-dimensions of need for relatedness and need for autonomy. It was determined that the relatedness need levels of the participants who had one sibling, two siblings, or three siblings were significantly higher than those of those who did not have siblings. Additionally, it was found that students with four or more siblings had significantly higher levels of autonomy need than students without siblings. Aydogdu and Gürsoy (2018) discovered a significant difference between the need satisfaction levels of adolescents and the number of siblings as a result of their research. It was determined that the need satisfaction level scores of the adolescents with three or more siblings were statistically significantly higher than those of the adolescents with two or fewer siblings. The average basic psychological needs level of high school students differed significantly in terms of both the whole scale and sub-dimensions in terms of the number of siblings variable, according to the findings of Erden's (2021) study. According to the findings of Doğan and Kesici's (2015) study, a significant difference was found only in the scale's need for autonomy sub-dimension. It has been observed that the autonomy need of students with high academic achievement levels is significantly higher than that of students with medium academic achievement levels. Diseth *et al*. (2012) examined the relationship between need satisfaction, achievement orientation, and academic achievement in their study with adolescents. According to the results of the research, significant relationships were found between autonomy, competence, relatedness needs and learning orientations, and academic achievement. Yiğit (2012) determined that students' basic psychological needs for autonomy and competence differ at a significant level according to age. In Bilir's (2017) study, it was observed that there was a significant difference between the autonomy and competence scores according to the age variable. As a result of their research, Aydoğdu and Gürsoy (2018), found that age did not make a significant difference in the level of need satisfaction among adolescents.

The results and discussion of the relationship between the average scores of adolescents in NSS and ITUS and the frequency of social media use.

It was determined that the frequency of adolescents' Twitter usage and the mean scores of the ITUS-DG and ITUS-UTDA factors and overall UTDA were positively and significantly related. It can be stated that adolescents use Twitter more frequently as their use of digital games, technological devices and applications, and general information technology use increases. It was observed that the frequency of Instagram use was positively and significantly correlated with the mean scores obtained from the ITUS-DG, ITUS-UTDA, and ITUS-VLP factors and the overall UTDA. It can be stated that adolescents use Instagram more frequently as their playing digital games, use of technological devices and applications, virtual life preference and general information

technology use increase. It was found that the frequency of Youtube usage and the mean scores obtained from the ITUS-DG, ITUS-UTDA, and ITUS-VLP factors and the overall UTDA are positively and significantly correlated. In other words, it can be said that adolescents use YouTube more frequently as their digital game playing, use of technological devices and applications, virtual life preferences, and general information technology use increase. It was estimated that the frequency of using LinkedIn and the mean scores obtained from the ITUS-DG, ITUS-UTDA, ITUS-VLP factors and UTDA in general, were negatively and significantly correlated. It can be said that adolescents use LinkedIn less frequently as their digital game playing, use of technological devices and applications, virtual life preferences, and general information technology use increase. It was found that the frequency of TikTok use among adolescents and the mean scores obtained from the ITUS-UTDA factor and the general UTDA were positively and significantly correlated. In other words, it can be said that teenagers use Tiktok more frequently as their use of technological tools and apps and overall information technology increases. It was discovered that there was a positive and significant correlation between how frequently teenagers used WhatsApp and their mean ITUS-DG scores. It can be said that adolescents use WhatsApp more frequently as their level of playing digital games increases.

After the literature is examined, it can be concluded that these results are similar to studies showing that addiction levels increase as the average daily time spent on social media platforms and the Internet increases (Akdemir, 2013; Balcı & Tiryaki, 2014; Tutgun-Ünal, 2015). The results of Özgür's (2013) study showed that there is a significant difference between the frequency of use of social networks variable and social networking site addiction scores. According to Kale's (2019) research with high school students the most frequently used social media platforms that students always use are WhatsApp (57.2%), Instagram (53.7%), and Youtube (26.1%). In Yayla's (2018) study, participants who completed the questionnaire were asked how long they used Instagram each day. It was found that, 40.4 percent spent less than an hour on the platform, 35.1 percent between one and two hours, 19.9 percent between three and five hours, and 4.6 percent more than six hours. In the research conducted by Kırtay (2020), it can be observed that students use WhatsApp most frequently (92.5%), Snapchat (24.5%) is in the second place, and Facebook Messenger (11.7%) in the third place as an instatnt messaging program. This trio is followed by Facetime (3.6%), Skype (3.1%), Instagram (2.4%) and Hangouts (1.9%). In addition, the rate of students who stated that they do not use any instant messaging program is 3.6%. It is possible to state that high school students prefer the use of social media platforms frequently, as their need to be popular and to be informed about events and news is fulfilled by the instant information flow provided by the technological devices they use, especially smart phones.

A negative and significant relationship was observed between the frequency of Facebook use by adolescents and the average scores they got from the NSS general. In other words, as adolescents' use of Facebook increases, their overall need satisfaction levels decrease. It was observed that there was a positive and significant relationship between the frequency of Instagram use and the average scores obtained from the NSS-Relatedness factor. This means that as adolescents' Instagram usage increases, their level of meeting the need for relatedness also increases. There was a positive and significant relationship between the frequency of Snapchat use and the average scores obtained from the NSS-Competence factor and the NSS in general. It can be said that as adolescents' Snapchat use ıncreases, so does their competence and general need satisfaction.

When the literature is examined, although there is no study concerning the frequency of Instagram and Snapchat use together with the basic psychological needs, it is seen that there are studies specific to social media use and Facebook use. For example, in the study conducted by Joo *et al.* (2016), it was found that autonomy and competence needs predict Facebook addiction, and basic psychological needs are the reason of maintaining participants' Facebook use. In the study conducted by Aslan (2020), it was found that social media disorder scores increased as the need for relatedness scores increased. Kürker (2021), on the other hand, found that there is a low-level negative significant relationship between satisfaction of basic psychological needs and social media addiction.

Results and discussion on predictors of Information Technologies Usage Scale.

Gender, age, and GPA variables were added to the model in the first block of the regression analysis. The model explained 13% of the variance. It was determined that gender had a significant contribution to the model, but age and GPA did not have a significant contribution. In the second block of the regression model, NSS factors were included. The model explained 18% of the variance. It was determined that the domains of autonomy and competence contributed significantly to the model, but relatedness did not. It was observed that the effect of gender continued in this model. We can observe that a significant part of the variance consists of the gender, age, and GPA variables. It is seen that needs satisfaction contributes relatively less to the model. Although the autonomy and competence sub-factors significantly contributed to the model, the variance they added was only 5%. As a result, it was found that gender and the basic psychological needs of autonomy and competence predicted the ITUS-DG factor. Besides that, there may be other variables that can explain the dependent variable more strongly.

Gender, age, and GPA variables were added to the model in the first block of the regression analysis. The model explained 7% of the variance. It was determined that gender and age contributed significantly to the model, but GPA did not contribute significantly to the model. In

the second block of the regression model, NSS factors were included in the model. The model explained 14% of the variance. It has been determined that Autonomy, Competence, and Relatedness factors have significant contributions to the model, and it was observed that the effect of gender and age continued in this model. It is observed that a significant part of the variance consists of the gender, age, and GPA variables. It is seen that need satisfaction contributes 50% to the model. Although the factors of "autonomy", "competence", and "relatedness" significantly contributed to the model, the variance they added was only 7%. As a result, it was seen that the ITUS-UTDA factor was predicted by gender, age, and the basic psychological needs for "autonomy", "competence", and "relatedness". In addition, there may be other variables that can explain the dependent variable more strongly.

Gender, age, and GPA variables were added to the model in the first block of the regression analysis. The model explained 1% of the variance. It was determined that GPA contributed significantly to the model, but gender and age did not contribute significantly. In the second block of the regression model, NSS factors are included in the model. The model explained 4% of the variance. It was determined that the Relatedness variable contributed significantly to the model, but the of Competence and Autonomy variables did not contribute significantly. It is seen that some of the variance is formed by the variables of gender, age and GPA and that needs satisfaction contributes to the model relatively more. The Relatedness factor alone makes a significant contribution to the model, and the added variance is 3%. As a result, it was seen that the ITUS-VLP factor was predicted by the GPA and the need for relatedness. In addition, there may be other variables that can explain the dependent variable more strongly.

Gender, age, and GPA variables were added to the model In the first block of the regression analysis. The model explained 3% of the variance. It was found that age had a significant contribution to the model, but gender and GPA didn'nt contribute significantly. In the second block of the regression model, NSS factors are included in the model. The model explained 11% of the variance. It has been determined that Autonomy, Competence, and Relatedness areas have significant contributions to the model. It was noticed that the effect of gender and age continued in this model. It is seen that one part of the variance is formed by the age variable. It is observed that need satisfaction has a very significant contribution to the model. Autonomy, Competence, and Relatedness factors contribute significantly to the model, and the variance they add is 8%. As a result, it was seen that age and the basic psychological needs of "autonomy", "competence", and "relatedness" predicted the Information Technology Usage Scale. In addition, there may be other variables that can explain the dependent variable more strongly.

According to Self-Determination Theory, environmental and social factors play an important role in satisfying needs. (Guay *et al*., 2006). The essential point of SDT is the individuals'

basic psychological needs (Ryan & Deci, 2000). The motivation that people have plays an effective role in reaching the goals they have determined in accordance with their needs (Deci & Ryan, 1985b). It is stated that if psychological needs are obstructed, negative consequences will occur. The environment's support of a person's autonomy plays a role in meeting their psychological needs by allowing them to experience a sense of choice. This situation is closely related to the development and mental health of individuals (Ryan & Deci, 2000).

When basic psychological needs for survival, development, and health are not fulfilled, individuals may experience mental and physiological disorders, their stress levels may increase, and they may become increasingly alienated from life (Kasser & Ryan, 1999; Ryan & Deci, 2000). Suler (1999) stated that the reason for problematic internet use is the effort to meet psychological needs that are not satisfied in real life via the internet. Individuals who receive support from the environment to meet their psychological needs for "autonomy", "competence", and "relatedness" decrease their tendency to engage in problematic behaviors such as problematic internet use (Dönder, 2021; Oktan, 2015; Williams *et al*., 1999).

When the literature is examined, it is discovered that adolescents who do not experience psychological need satisfaction in their daily lives use the internet more frequently to satisfy those needs (Can & Zeren, 2019; Canoğulları, 2014; Casale & Fioravanti, 2015; Özteke-Kozan *et al*., 2019; Şahin & Kesici, 2009; Yu, Li *et al*., 2015; Zhang, 2015). In their study, Zhu *et al.* (2011) stated that individuals with a low psychological need for competence can meet these needs by the opportunities provided by the internet, but spending more time on the internet to meet this need will also have negative effects. In another study, it was determined that adolescents with low levels of problematic internet use have more psychological needs for "autonomy", "competence", and "relatedness" (Canoğulları, 2014). In their study on internet addiction and psychological needs, Eyyüpolu and Özbay (2018) found that psychological needs are predictors of internet use and that there is a negative relationship between internet addiction and psychological need satisfaction. It is inevitable that people who spend more time on the internet to satisfy their needs have higher levels of problematic internet use (Dönder, 2021). Adolescents play online games in order to meet their psychological needs, and they continue to play games because they experience this satisfaction in the game environment. This situation becomes a reason for problematic internet use (Allen & Anderson, 2018; Chiang & Lin, 2010; Rogers, 2017; Ryan *et al*., 2006).

Limitations

The research has some limitations. The participants of the study were limited to secondary school students who were studying in Ankara/Mamak/Çubuk and the Mersin/Tarsus/Yenişehir district in the 2019–2020 academic years and adolescents who graduated from high school not more than one year ago and were reached on a voluntary basis. Therefore, the findings from this

study can be generalized to participants in the same sample and study groups with similar characteristics. Ethics Commission Permission and permission from the relevant District Directorate of National Education were obtained for conductıng the research. Within the framework of this permission, some of the data were collected with printed measurement tools in different types of high schools, which provided convenience for data collection. The remaining part of the data was collected online through digital measurement tools due to the closure of schools because of the COVID-19 pandemic. The information technology usage levels of the participants were limited to the scores they got from the Information Technology Usage Scale (Kaba & Dogan, 2021) and the basic psychological needs levels of the participants were limited to the scores from the Need Satisfaction Scale (Bacanlı & Cihangir-Çankaya, 2003).

Suggestions

In accordance with the results of the research, some suggestions for researchers and school counselors were presented. This research, which was conducted according to the correlational survey model, was performed by obtaining quantitative data in order to determine whether the level of use of information technology and the basic psychological needs of adolescents are related to adolescents' demographic characteristics and the frequency of social media use, and whether the basic psychological needs of adolescents predict technology use. Conducting mixed method, longitudinal and experimental studies may be useful in terms of better understanding the relationships between these variables related to adolescents and their families.

The demographic variables in this study are limited to age, number of siblings and grade point average, and internet usage characteristics are limited to the frequency of social media use. It may also be useful to conduct research in which the form containing demographic information includes items to determine situations such as grade level, family income level, gender, internet connection possibilities, types of technological devices they own, and technology usage habits of family members.

The results of this study showed that the variables of age and basic psychological needs like “autonomy”, “competence”, and “relatedness” predicted the level of adolescents' use of information technologies, and these variables were found to explain 11% of the variance. Accordingly, researchers who will be interested in ITUS can conduct research to explain the unexplained variance by examining different variables. In addition, conducting studies that support basic psychological needs can help prevent technology addiction. Seeing this result, psycho-educational programs for families and students can be applied by school counselors to support meeting basic psychological needs.

Conferences, seminars, posters, and notice boards can be organized by school counselors for the conscious use of technology. Studies can be carried out for teachers and parents within the scope of the consultation service. The Information Technology Department (teachers) and the Guidance and Counseling Department (school psychological counselors) can cooperate on these studies.

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GENİŞLETİLMİŞ ÖZET

Giriş

Bilişim teknolojileri kullanımının bireylerin psikolojik ihtiyaçlarının karşılanmasına yardımcı olduğu öne sürülmektedir (Liu vd., 2016; Zolkepli ve Kamarulzaman, 2015). Temel psikolojik ihtiyaçlarını internet ortamında karşılamaya çalışan bireylerin internet kullanım süreleri artmakta ve sorunlu teknoloji kullanımı ortaya çıkabilmektedir (Karagülle ve Çaycı, 2014; Liu vd., 2015; Zhu vd., 2011). Alanyazında teknolojiyi problemli kullanan bireylerin, internet kanalıyla temel psikolojik gereksinimlerini karşılamaya çalıştıkları ve BT ile temel psikolojik ihtiyaçlarını karşılayan bireylerin bilişim teknolojilerini daha fazla kullandıkları ileri sürülmüştür (Can ve Zeren, 2019; Canoğulları 2014; Rogers, 2017; Ryan vd., 2006; Shen vd., 2013; Şahin ve Kesici, 2009). Araştırmalar, internet ve bilişim teknolojilerinin kullanımının sıklaşmasıyla beraber ergenlerin yaşantılarında karşılayabilecekleri birtakım psikolojik ihtiyaçlarını bilişim teknolojileri ve internet yoluyla karşılamaya yöneldiklerini ortaya koymuştur (Shen vd., 2013; Şahin ve Kesici, 2009). Bilişim teknolojileri ve internetten ihtiyaçlarını karşılamaya çalışan ergenler, karşılanmayan ihtiyaçlar sonucunda oluşan psikolojik ihtiyaç yoksunluğunu da yoğun olarak yaşayabilmektedir (Canoğulları, 2014). Teknolojinin aşırı ve sorunlu kullanımının başta psikososyal gelişim olmak üzere yol açabileceği sorunlar ve faydalı teknolojik gelişmelerin kullanımından vazgeçmeden nasıl sağlıklı düzenlemeler yapılabileceği ve bu sürecin psikososyal etkileri yeni bir araştırma alanıdır. Bu kapsamda yapılacak bütün araştırmaların, sorunların çözümüne katkı yapacak her fikir ve yaklaşımın önemli olduğu düşünülmektedir.

Yöntem

Bu çalışma, ergenlerin BT kullanma ve temel psikolojik ihtiyaç düzeylerinin ergenlerin bazı demografik özellikleri (yaş, kardeş sayısı, genel not ortalaması) ve sosyal medya kullanım sıklıkları ile ilişkisi olup olmadığının ve ergenlerin temel psikolojik ihtiyaçlarının teknoloji kullanımını yordayıp yordamadığının belirlenmesinin amaçlandığı ilişkisel tarama modeline göre planlanmış bir çalışmadır. Farklı türlerdeki liselerde okuyan öğrenciler ve lise mezuniyetlerinin üzerinden en fazla bir yıl geçmiş 508 ergen, çalışma grubunu meydana getirmiştir. Kişisel Bilgi Formu, BTKÖ ve İDÖ'den oluşan veri toplama araçları hem basılı olarak hem de çevrimiçi olarak uygulanmıştır. Kolay ulaşılabilir yolla seçilen katılımcılar, araştırmaya gönüllü olarak katılmıştır. Katılımcıların BT kullanma ve temel psikolojik ihtiyaç düzeylerinin belirlenmesi için betimleyici istatistikler kullanılmıştır. Araştırma için toplanan verilerin normal dağılım ölçütlerini karşılayıp karşılamadığı normallik testleri, basıklık-çarpıklık değerleri, çoklu uç değerlerin belirlenmesi ve çoklu doğrusallık problemlerinin değerlendirilmesi ile bulunmuştur. Değişkenler arası ilişkilerin tespit edilmesi için Spearman ve Pearson korelasyon katsayıları kullanılmıştır. Katılımcıların

teknoloji kullanım düzeylerinin yordayıcılarının belirlenmesinde, öncelikle varsayımlar test edilmiş ve Çoklu Hiyerarşik Doğrusal Regresyon Analizi yapılmıştır.

Bulgular

Bu araştırmada ulaşılan sonuçlara göre; Bilişim Teknolojileri Kullanım Ölçeği-Teknolojik Aygıtların ve Uygulamalarının Kullanımı (BTKÖ-TAUK) faktöründen elde edilen ortalama puanlar ve BTKÖ'nün toplam puanından elde edilen ortalama puanlar ergenlerin yaşı ile anlamlı düzeyde pozitif yönde ilişkilidir. Katılımcıların kardeş sayıları ve not ortalamaları, BTKÖ-Dijital Oyun Oynama ve BTKÖ-TAUK faktörlerinden ve BTKÖ toplam puanından elde edilen puan ortalamaları ile negatif yönde anlamlı düzeyde ilişkilidir. Katılımcıların not ortalamaları ile BTKÖ-Sanal Yaşam Tercihi faktöründen elde edilen puan ortalamaları anlamlı düzeyde negatif ilişkilidir. İDÖ-İlişkisellik faktöründen elde edilen puan ortalamaları, yaş ile anlamlı düzeyde negatif yönde ilişkilidir. Katılımcıların not ortalamaları ile İDÖ-Yeterlik ve İDÖ-İlişkisellik faktörlerinden ve İDÖ toplamından ulaşılan puan ortalamaları arasında pozitif yönde anlamlı bir ilişki olduğu tespit edilmiştir. Twitter kullanma sıklığı ile BTKÖ-DOO ve BTKÖ-TAUK faktörlerinden ve BTKÖ genelinden aldıkları ortalama puanlar; Instagram kullanma sıklığı ile BTKÖ-DOO, BTKÖ-TAUK ve BTKÖ-SYT faktörlerinden ve BTKÖ toplam puanından alınan ortalama puanlar; Youtube kullanma sıklığı ile BTKÖ-DOO, BTKÖ-TAUK ve BTKÖ-SYT faktörlerinden ve BTKÖ toplam puanından alınan ortalama puanlar pozitif yönde anlamlı düzeyde ilişkilidir. LinkedIn kullanma sıklıkları ile BTKÖ-DOO, BTKÖ-TAUK ve BTKÖ-SYT faktörlerinden ve BTKÖ genelinden alınan ortalama puanlar negatif yönde anlamlı düzeyde ilişkilidir. Tiktok kullanma sıklıkları ile BTKÖ-TAUK faktöründen ve BTKÖ genelinden alınan ortalama puanlar; WhatsApp kullanma sıklıkları ile BTKÖ-DOO faktöründen alınan ortalama puanlar pozitif yönde anlamlı düzeyde ilişkilidir. Facebook kullanma sıklıkları ile İDÖ genelinden aldıkları ortalama puanlar negatif yönde anlamlı düzeyde ilişkilidir. Instagram kullanma sıklığı ile İDÖ-İlişkisellik faktöründen alınan ortalama puanlar; Snapchat kullanma sıklıkları ile İDÖ-Yeterlik faktöründen ve İDÖ toplam puanından alınan ortalama puanlar pozitif yönde anlamlı düzeyde ilişkilidir. BTKÖ-DOO faktörünü cinsiyet ve "özerklik" ve "yeterlik" temel psikolojik ihtiyaçlarının yordadığı; BTKÖ-TAUK faktörünü cinsiyet, yaş ve "özerklik", "yeterlik" ve "ilişkisellik" temel psikolojik ihtiyaçlarının yordadığı; BTKÖ-SYT faktörünü genel not ortalaması ve "ilişkisellik" ihtiyacının yordadığı; BTKÖ'yü yaş ve "özerklik", "yeterlik" ve "ilişkisellik" temel psikolojik ihtiyaçlarının yordadığı belirlenmiştir.

Tartışma ve Sonuç

Sonuçlar, ergenlerin yaşları ve not ortalamalarının BTKÖ-TAUK faktöründen ve BTKÖ'nün genelinden elde edilen puan ortalamaları ile anlamlı düzeyde pozitif ilişkili olduğunu göstermiştir. Katılımcıların kardeş sayılarının BTKÖ-DOO ve BTKÖ-TAUK faktörlerinden elde edilen puan ortalamaları ve BTKÖ'nün genelinden elde edilen puan ortalamaları ile anlamlı düzeyde negatif

ilişkili olduğu bulunmuştur. Ergenlerin not ortalamaları ile BTKÖ-SYT faktöründen elde edilen puan ortalamaları arasında negatif yönde anlamlı bir ilişki olduğu tespit edilmiştir.

Regresyon analizinin ilk bloğunda cinsiyet, yaş ve not ortalaması değişkenleri modele dahil edilmiştir. Model varyansın %3'ünü açıklamıştır. Yaşın modele anlamlı bir katkı yaptığı, cinsiyet ve not ortalamasının ise modele anlamlı bir katkı yapmadığı görülmüştür. Regresyon modelinin ikinci bloğunda İDÖ faktörleri modele eklenmiştir. Model varyansın %11'ini açıklamıştır. "Özerklik", "Yetkinlik" ve "İlişkisellik" faktörlerinin modele anlamlı katkı sağladığı tespit edilmiştir. Cinsiyet ve yaşın etkisinin bu modelde devam ettiği gözlenmiştir. Yaş değişkeninin varyansın bir bölümünü açıkladığı görülmüştür. İhtiyaç tatmininin modele çok anlamlı bir katkısı olduğu görülmüştür. Özerklik, yetkinlik ve ilişkisellik faktörleri modele önemli katkı sağlamış ve ekledikleri varyans %8 olmuştur. Sonuç olarak, yaş ve temel psikolojik ihtiyaçlar olan özerklik, yetkinlik ve ilişkiselliğin BTKÖ'yü yordadığı bulunmuştur.

Literatür incelendiğinde; yaşamlarında psikolojik ihtiyaç doyumu sağlayamayan gençlerin ihtiyaç doyumu için interneti daha yoğun kullandıkları görülmüştür (Can ve Zeren, 2019; Canoğulları, 2014; Casale ve Fioravanti, 2015; Özteke-Kozan vd., 2019; Şahin ve Kesici, 2009). Zhu ve arkadaşlarının (2011) çalışmasında, yetkinlik ihtiyacı düşük olan kişilerin internetin sağladığı imkânlarla bu gereksinimlerini karşılayabilecekleri ancak bunu karşılamak için internette daha fazla zaman geçirmenin negatif etkilerinin de olacağı belirtilmiştir. Başka bir araştırmada ise problemli internet kullanım düzeyi düşük olan ergenlerin "özerklik", "yetkinlik" ve "ilişkililik" ihtiyaçlarının daha fazla olduğu bulunmuştur (Canoğulları, 2014). Eyyüpoğlu ve Özbay'ın (2018) çalışmasında, psikolojik ihtiyaçların internet kullanımının yordayıcısı olduğu ve internet bağımlılığı ile psikolojik ihtiyaç doyumu arasında negatif bir ilişki olduğu bulunmuştur. İhtiyaç tatmini için internette daha fazla zaman geçiren bireylerin problemli internet kullanımının yüksek olduğu görülmüştür (Dönder, 2021). Çocuklar ve gençler, psikolojik ihtiyaçlarını karşılamak için online oyunlar oynamakta ve oyun ortamında bu doyumu sağladıkları için oyun oynama davranışlarını sürdürmektedirler. Bu durumun da problemli internet kullanımına zemin hazırladığı değerlendirilmektedir (Allen ve Anderson, 2018; Rogers, 2017; Ryan vd., 2006).