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An Investigation of the Relationship between University Students' Internet Addiction Levels, Social Anxiety, and Communication Skills

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Main Points

- There are significant differences in university students' Internet addiction, communication skills and social anxiety levels according to different variables. The social anxiety variable is a statistically significant predictor of Internet addiction among university students.
- There is a low negative correlation between Internet addiction and communication skills of university students.
- There is a moderately positive relationship between Internet addiction and social anxiety status of university students.

Abstract

The aim of this study is to examine the relationship between university students' Internet addiction levels, communication skills, and social anxiety. The sample for the research is 5660 university students from Türkiye. The participants were reached through an easily accessible sampling method. The Addiction Scale, Interpersonal Communication Competence Inventory, and Social Anxiety Scale were used to collect data. A relational survey model was used in the analysis of the data. The prominent result of the research is that the Internet addiction status, communication skills, and social anxiety status of university students show significant differences according to different variables. It was found that there was a low negative relationship between Internet addiction and communication skills, and a moderate positive relationship between Internet addiction and social anxiety among university students. In the model established to predict the Internet addiction of university students through communication skills and social anxiety variables, the social anxiety variable was found to be a statistically significant predictor of Internet addiction.

Keywords: Addiction, anxiety, communication skills, Internet addiction, social anxiety disorder, social interaction

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Introduction

Opportunities offered by the Internet have also increased the use of the Internet by people. As of today, out of 8 billion people, which is the world population, 5.07 billion (63.5%) are Internet users, 5.48 billion (68.6%) are mobile phone owners, and 4.7 billion (59.3%) are active social media users. The average time internet users spend on the Internet daily is 6 hours and 37 minutes (We Are Social, 2022). Internet addiction, interruptions in interpersonal communication, and social anxiety have started to occur due to excessive use. Internet addiction is the first of these problems and is expressed as the inability of a person to prevent excessive use of the Internet, to find the time spent outside the Internet meaningless, to experience anxiety, anger, and aggression when not on the Internet, and to experience difficulties in school, work, family, and social life (Arısoy, 2009).

The concept of Internet addiction first emerged with the adaptation of the substance addiction criteria in the *Diagnostic and Statistical Manual*

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of Mental Disorders (*DSM-IV*) by Goldberg (1996) for Internet use (Büyükgebiz-Koca & Tunca, 2020). Internet addiction can be encountered in the literature with various concepts such as "computer addiction," "technology addiction", and "pathological internet use" (Günüç & Kayri, 2010). "Internet addiction" is not defined as a disease in any version of the *Diagnostic and Statistical Manual of Mental Disorders* published by the American Psychiatric Association (APA) (Arısoy, 2009). The first important study in the field of Internet addiction was conducted by Young (1996). Young found Internet addiction similar to gambling addiction and determined eight criteria for its diagnosis. Internet addiction can be diagnosed if at least five of the eight criteria are met (Büyükgebiz-Koca & Tunca, 2020).

Beard and Wolf (2001) conducted a study to develop the diagnostic criteria determined by Young (1998), and they opposed the determined diagnostic criteria saying that all of the first five criteria, should be met and that one of the three criteria at the end was sufficient. Griffiths (2000) defined technology addiction as active and passive. He developed six criteria that could be used for the diagnosis of all behavioral addictions, namely "significance," "mood change," "tolerance," "deprivation," "interpersonal conflict," and "repetition," and he said that all of the criteria must be met in order for a person to be called an addict. Ögel (2012) stated that Internet addiction occurs in five stages and that these stages are "intensifying internet use," "progress," "quitting," "starting to use it again," and "returning to old age." Dinç (2015) states that Internet addiction consists of four phases, namely, "experimental use," "social use," "operational use," and "addictive use."

Relationship Between Internet Addiction Level and Communication Skills

Interpersonal communication is defined as the communication for which the source and target are created by people (Dökmen, 2013). The increase in the use of the Internet has caused people to establish their communication over the Internet. Excessive and uncontrolled use of the Internet can disrupt communication between friends or within the family. Communication, which is necessary for the socialization of individuals, is a basic ability that a person needs in order to express themselves, understand other people, solve problems, and adapt to the social environment (Uzuntaş, 2013). Studies show that young people, in particular, use social media tools intensively. It is noteworthy that the use of the Internet by the older age group is not to be underestimated (Göker, 2015).

Social media platforms have an important place in the development of adolescents, and it is stated that the problems encountered in adolescence are caused by social media (Atalay, 2014). Adolescents' individual needs and expectations affect their communication and relationships with their families or others and can lead them to meet their autonomy needs (Özdemir & Çok, 2011). Social media serves as an important tool in the achievement of this autonomy. The effort of the individual to prove himself/herself and to meet expectations on the Internet causes long periods of time to be spent on the Internet. The inability to control the time spent can reach a level of dependency over a period and cause various problems.

Relationship Between Internet Addiction Level and Social Anxiety

Social anxiety refers to a psychological state that may occur due to a sensitivity to criticism or humiliation before any sort of community (Çakmak, 2014). People who use the Internet or social media may be more likely to experience social anxiety (Vannucci et al., 2017). Various studies have also shown that there is a relationship between social anxiety levels and Internet addiction (Gashti & Pilevari, 2012).

It is said that parents with excessively controlling personalities, creating a feeling of inhibition in the individual, also increase the risk of a social anxiety disorder (Wong & Rapee, 2016). A person with a social anxiety disorder may avoid face-to-face communication by isolating himself/herself from their social environment and may turn more toward the digital world. Problematic Internet use can be seen in people who stay away from social environments and prefer a virtual environment where they can interact socially (Zorbaz & Dost, 2014). In their study, Durbano and Marchesi (2016) conclude that people with social anxiety use social media more actively and see it as a more effective communication channel due to the stress and problems they experience in face-to-face communication. Unconscious and excessive use of the Internet and social media can cause social anxiety (Wakefield & Wakefield, 2018).

Relationship Between Individuals' Social Anxiety Levels and Communication Skills

It is deliberate that communicative and social difficulties experienced by individuals will interrupt their social experiences. Their increasing social anxiety will cause them to withdraw themselves from social areas, and as a result, it may hinder their social communication ability. It is emphasized that this relationship should be examined further (Pickard et al., 2017). In his research on communication skills, Levent (2020) investigated the relationship between smartphone addiction and communication skills, and a low negative correlation was found. In his study, Toluç (2020) examined the relationship between university students' social anxiety levels and communication skills, and it was found that there was a moderate difference in a significant negative direction. This showed that when the level of social anxiety increases, communication skills decrease.

Purpose of the Study

The aim of this study is to examine the relationship between university students' Internet addiction levels, their communication skills and social anxiety. For this purpose, answers are sought to the following questions:

- Do the Internet addiction, communication skills, and social anxiety scores of the participants differ significantly according to the variables of age, educational status, number of siblings, socioeconomic level, educational status of parents, and time spent on the Internet?
- How does the effect of communication skills and social anxiety variables on Internet addiction change?

Material and Methods

Research Method/Model

The fundamentals and subproblems of this study, which was conducted to examine the relationship between university students' Internet addiction levels and their communication skills and social anxiety levels, were sought using the relational screening method. In the relational screening model, the variables in

the research and the relationships between these variables are defined as existing without any intervention, without changing or affecting the situation (Fraenkel & Wallen, 2006). The relational screening model is a screening approach that seeks to determine whether covariance exists between two or more variables. The relational screening model attempts to determine whether the variables change together when there is change (Karasar, 2011).

Sample

The universe of the research consists of 8,296,959 students studying at universities throughout Türkiye, according to the 2021 – 2022 academic year data of the Higher Education Council (YÖK). The sample of the study consisted of 5660 students studying in different departments of 133 universities affiliated with YÖK and participating in the research voluntarily. The research was conducted with the approval of the Gazi University Ethics Committee, dated 15/10/2022 and numbered 2022/1086. All participants provided written informed consent.

The reason for using the convenience sampling method is that people who want to participate in the research can be included in the sample. The convenience sampling method is both economical and time-saving (Ural & Kılıç, 2011). In convenience sampling, data are collected from the population in the easiest, fastest, and most economical way (Aaker et al., 2007).

Considering the 95% confidence interval and 1.31% margin of error for the research population, the number of 5660 participants in which the analyses were carried out is above the number of samples to be reached and is sufficient to generalize to Türkiye (Bartlett et al., 2001). The demographic information of the participants is given in Table 1.

Data Collection Tools and Techniques

The Internet Addiction Scale, which was designed by Hahn and Jerusalem (2001) and adapted into Turkish by Şahin and Korkmaz (2011), together with the personal and demographic information form, and the Communication Competence Inventory Scale designed by Huang and Lin (2018) and adapted into Turkish by Çıkrıkçı and Cinpolat (2021), was used to collect the research data along with the Social Anxiety Scale developed by Özbay and Palancı (2001).

Table 1.
Demographic Characteristics of the Study Group

Demographic Characteristics		Frequency	Percentage
Gender	Female	3441	60.8
	Male	2219	39.2
	Total	5660	100
Age	18 – 24	4738	83.7
	25 – 31	478	8.4
	32 – 37	203	3.6
	38 – 44	134	2.4
	45 – 50	65	1.1
	50 and above	42	0.7
	Total	5660	100
Educational background	Associate degree	1607	28.4
	Bachelor's degree	3629	64.1
	Master's degree	349	6.2
	Postgraduate	75	1.3
	Total	5660	100

In the personal and demographic information form created by the researchers, the students' gender, age, education level, city of residence, the department they study in and university they attend, the number of siblings, whether they have their own room, the socioeconomic status of the family, and the educational status of the mother and father were included. There are thirteen items involved, including education level, average daily Internet usage time, and purpose of using the Internet.

The internal consistency coefficient for the Internet Addiction Scale was found to be 0.93. The Cronbach Alpha reliability value for the entire 5-point Likert-type scale was calculated to be 0.936. The internal consistency coefficient for the Interpersonal Communication Competence Inventory (ICCI) was found to be 0.78. The Cronbach Alpha reliability value for the entire 5-point Likert-type scale was calculated as 0.903. The Cronbach Alpha reliability value for the Social Anxiety Scale was calculated as 0.89. The scale is a Likert-type with a 5-point rating in the range of 0 – 4. The Cronbach Alpha reliability value for the entire scale was calculated as 0.960.

Data Collection Process

The "Sociodemographic Information Form," "Internet Addiction Scale," "Communication Competence Inventory Scale," and "Social Anxiety Scale" were transferred to Google Forms, an open-source survey application, and an online survey link was created as the data collection tool. The study was announced to all university students through the Presidency of the Council of Higher Education (YÖK). Students participated in the research between July 1, 2022, and October 27, 2022.

Analysis of Data

In this study, which was conducted to examine the relationship between university students' Internet addiction levels and their communication skills and social anxiety, analyses were made according to quantitative paradigms. Continuous variables in the study were examined in terms of normality with the Kolmogorov – Smirnov test, and it was seen that the obtained data met this assumption ($p > .05$). For this reason, the analyses were made using the *t*-test and analysis of variance (ANOVA), which are parametric difference tests. The relationships between the variables were examined by correlation and multiple regression analysis. An IBM SPSS statistic program (IBM SPSS Corp.; Armonk, NY, USA) was used for the analysis.

Results

In this study, university students' Internet addiction, communication skills, and social anxiety mean scores were examined in terms of gender, age, educational status, number of siblings, own room, socioeconomic level, and educational status of parents, as well as the average time spent on the Internet. After this, the relationship between Internet addiction, communication skills, and social anxiety variables was examined.

Table 2.
Descriptive Statistics of Participants' Internet Addiction Scores

Variables		*N*	$\bar{X}$	SS
Age	18 – 24	4738	36.5711	12.93798
	25 – 31	478	33.8634	15.00979
	32 – 37	203	33.3881	14.35831
	38 – 44	134	33.2759	16.31177
	45 – 50	65	32.1692	15.50158
	50 and above	42	31.8571	16.51543
Educational Background	Associate degree	1607	32.2134	12.98077
	Bachelor's degree	3629	34.3731	12.92266
	Master's degree	349	37.8539	16.41326
	Postgraduate	75	38.2133	18.54089
Number of siblings	None	420	34.7048	13.04201
	1	1907	34.3272	12.71678
	2	1552	34.0399	13.57002
	3	728	33.4959	12.88292
	4	419	33.1527	13.84330
	5	235	32.8511	14.11488
	6	141	33.1418	15.57451
	7 and above	258	35.0659	15.24711
Socioeconomic level of the family	0 – 7000	2409	33.0208	12.76000
	7001 – 15000	1875	34.4715	13.59588
	15001 – 25000	803	34.1457	13.15361
	25000 and above	573	36.6213	14.71743
Mother's education level	Elementary school	2557	33.0759	13.16560
	Middle school	814	34.2985	13.98235
	High school	1123	34.7988	12.30685
	Associate degree	215	34.3860	14.79722
	Bachelor's degree	751	35.8482	13.63528
	Postgraduate	200	36.9450	14.48659
Father's education level	Elementary school	1576	32.9416	13.19982
	Middle school	945	33.3862	13.39223
	High school	1424	34.0077	13.34611
	Associate degree	301	33.4784	12.38132
	Bachelor's degree	1123	35.3437	12.99278
	Postgraduate	291	37.5361	15.23951
Average time spent online per day	Less than 1 hour	231	25.1082	10.25465
	1 – 3 hours	1872	29.1506	10.40072
	3 – 5 hours	1961	34.1270	11.47138
	More than 5 hours	1596	40.9091	15.53235

Findings of the Internet Addiction Variable

Internet addiction score averages of university students were examined using an ANOVA test in terms of age, educational status, number of siblings, socioeconomic level, parental education level, and daily time spent on the Internet. According to the results obtained, it can be seen that the average internet addiction score of university students aged between 18 and 24 is higher than that of older age groups and that the average decreases as age increases. Once examined in terms of educational status, it was seen that the group with the highest average

Internet addiction was among the students undergoing doctorate education, and that the addiction scores decreased as the education level decreased. According to the number of siblings variable, it was found that the average score of Internet addiction of people who have seven or more siblings is higher than the others. When the average Internet addiction is examined according to the monthly income variable, it can be seen that the group with the highest monthly income also has the highest addiction. As the Internet addiction averages of the participants were examined according to their mother's and father's education levels, it was seen that the highest average score was at the graduate level for both parents' education levels. Once examined in terms of the average daily time spent on the Internet, it was found that university students who spend more than 5 hours a day on the Internet had a higher average Internet addiction than others (Table 2).

An ANOVA test was applied to test the statistical significance of the differences between these obtained means. According to these test results, it can be seen that there is a statistically significant difference between the Internet addiction mean scores of university students according to age ($F_{(5.5654)} = 4.293$; $p < .05$). A Scheffe test was used to find between which groups the Internet addiction mean score differed according to age. According to the results obtained, it was concluded that there is a statistically significant difference between the mean Internet addiction score of those aged 18 – 24 and other age groups and that the mean score of Internet addiction among university students aged 18 – 24 ($\bar{X}$ =36,5711) is higher than that of all other age groups. According to the findings, there was a statistically significant difference between the mean Internet addiction scores of university students according to their educational status ($F_{(3.5656)} = 22.998$; $p < .05$). According to the conducted Scheffe test results in terms of the educational status variable, a statistically significant difference was found between doctoral students and associate degree students, graduate students and associate degree students, and undergraduate students and associate degree students. According to the findings, it was determined that the PhD students' Internet addiction scores ($\bar{X}$ = 38,2133) were higher than those of the Internet addiction scores of the students who were studying for the associate degree ($\bar{X}$ = 32,2134), the Internet addiction scores of the graduate students ($\bar{X}$ = 37,8539) were higher than those of the associate degree students ($\bar{X}$ = 32,2134), and the Internet addiction scores of the undergraduate students ($\bar{X}$ = 34,3731) were higher than those of the associate degree students ($\bar{X}$ = 32,2134).

It can be seen that there is a statistically significant difference between the mean scores of Internet addiction among university students in terms of family income level ($F_{(3.5656)} = 12.575$; $p < .05$). A Scheffe test was used to find between which groups the Internet addiction mean score differed according to family income status. According to the results obtained, a statistically significant difference was found between the students whose family income level was between 0 and 7000 and those whose family income level is 25,000 and above. The average score for Internet addiction among students ($\bar{X}$ = 36,6213) whose family income is over 25,000 was found to be higher than the average for students ($\bar{X}$ = 33,0208) whose family income is between 0 and 7000. When the mean Internet addiction score of the university students was examined in terms of the mother's education level, it was found that there was a statistically significant difference ($F_{(5.5654)} = 8.845$; $p < .05$;). A Scheffe test was used to find between which groups the Internet addiction mean score differed according to the mother's education level. According to the results obtained, a statistically significant difference was found between the students whose mothers' education levels were graduate and primary school degree. It was concluded that the Internet addiction mean score of the students whose mothers' education was at postgraduate level ($\bar{X}$ = 36,9450) is higher than the Internet addiction mean of the students whose mothers' education levels were primary school degrees ($\bar{X}$ = 33,0759). Once the mean Internet addiction score of the university students was examined in terms of fathers' education levels, it was found that there was a statistically significant difference ($F_{(5.5654)} = 8.895$; $p < .05$). A Scheffe test was used to find between which groups the Internet addiction mean score differed according to the fathers' education level. According to the results obtained, a statistically significant difference was found between the students whose father's education level was graduate and primary school. It was concluded that the Internet addiction mean score of the students whose fathers' education levels were at the graduate levels ($\bar{X}$ = 37,5361) was higher than the Internet addiction average ($\bar{X}$ = 32,9416) of the students whose fathers' education level was a primary school degree. The mean Internet addiction score of university students was also examined in terms of time spent on the Internet, and it was found that there was a statistically significant difference ($F_{(3.5656)} = 300.380$; $p < .05$). A Scheffe test was used to find between which groups the mean Internet addiction score differed according to the average daily time spent on the Internet. According to the results obtained, a statistically significant difference was found between the students who spent more than 5 hours a day on the Internet on average and those who spent less than 1 hour on the Internet. It was concluded that the average Internet addiction score of the students who spent more than 5 hours a day on average ($\bar{X}$ = 40,9091) is higher than the average Internet addiction score of the students who spent less than 1 hour ($\bar{X}$ = 25,1082).

Findings of the Variable of Communication Skills

The university students' communication skills average scores were examined by an ANOVA test in terms of gender, age, educational status, number of siblings, own room, socioeconomic level, and educational status of parents, as well as the average time spent on the Internet. In addition, Table 4 shows the *t*-test results for the variables of gender and whether the students have their own room or not.

When analyzing Table 4, it becomes evident that there exists a statistically significant disparity in the average scores of communication skills among university students based on their gender ($t_{(5658)} = 3.527$; $p < .05$). As the communication skills averages of female and male students are examined, it is concluded that women ($\bar{X}$ = 53,3647) have higher communication skills than men ($\bar{X}$ = 52,2443). When the communication skills of the participants are examined according to whether they have their own rooms or not, there is a statistically significant difference ($t_{(5658)} = 7.385$; $p < .05$) It is concluded that the communication skills average score of the students who have their own room is higher than than that of those who do not.

Table 3.
Analysis of variance Results of Participants' Internet Addiction Scores

Variables	Source of Variance	Sum of Squares	SD	Mean of Squares	*F*	*p*
Age	Between groups	3811.952	5	762.390	4.293	.001
	Within groups	1003992.384	5654	177.572		
	Total	1007804.336	5659			
Educational background	Between groups	12145.598	3	4048.533	22.998	.000
	Within groups	995658.739	5656	176.036		
	Total	1007804.336	5659			
Number of siblings	Between groups	1604.563	7	229.223	1.288	.252
	Within groups	1006199.773	5652	178.025		
	Total	1007804.336	5659			
Socio-economic level of the family	Between groups	6677.378	3	2225.793	12.575	.000
	Within groups	1001126.959	5656	177.003		
	Total	1007804.336	5659			
Mother's education level	Between groups	7822.031	5	1564.406	8.845	.000
	Within groups	999982.306	5654	176.863		
	Total	1007804.336	5659			
Father's education level	Between groups	7865.967	5	1573.193	8.895	.000
	Within groups	999938.370	5654	176.855		
	Total	1007804.336	5659			
Average daily time spent on the Internet	Between groups	138501.313	3	46167.104	300.380	.000
	Within groups	869303.023	5656	153.696		
	Total	1007804.336	5659			

According to the ANOVA test results, the communication skills of university students aged between 32 and 37 years are higher than those of other age groups. When examined in terms of educational status, it can be seen that the group with the highest average communication skills was among the students following a doctorate education, and the communication scores decreased as the education level decreased. According to the number of siblings variable, it was found that the mean score of communication skills of people who had no siblings was higher than the others and that the mean score of communication skills decreased as the number of siblings increased. When the average of communication skills is examined according to the monthly income variable, it can be seen that the average of communication skills of the group with the highest monthly income is also the highest. When the communication skills averages of the participants were examined according to their mothers' and fathers' education levels, it was seen that the highest average score was at the graduate level for both parents' education levels. When examined in terms of the average daily time spent on the Internet, it was found that university students who spend 1 – 3 hours a day on the Internet have a higher average of communication skills than others. An ANOVA test was applied to test the statistical significance of the differences between these obtained means, and the results are given in Table 4.

According to the ANOVA test results shown in Table 4, it can be seen that there is a statistically significant difference between the university students' communication skills mean scores according to age ($F_{(5.5654)} = 3.167$; $p < .05$). A Scheffe test was used to find between which groups the communication skill mean score differed according to age. According to the results obtained, it was seen that there is a statistically significant difference between the average communication skills of students aged 32 – 37 years and students aged between 18 and 24 years. It was concluded that the average communication skill score of university students aged 32 – 37 years ($\bar{X}$ = 55,2118) is higher in comparison to students aged 18 – 24 years ($\bar{X}$ = 52,6813). According to the findings, there was a statistically significant difference between the mean communication skills of university students according to their education level ($F_{(3.5656)} = 14.501$; $p < .05$). According to the Scheffe test results in terms of educational status variable, a statistically significant difference was found between the doctoral students and the associate degree students, graduate students and associate degree students, as well as the undergraduate students and associate degree students. According to the results obtained, it was concluded that the communication skill scores of the students who are following doctoral studies ($\bar{X}$ = 58,5467) are higher than those of the associate degree students ($\bar{X}$ = 51,9521), the communication skill scores of the graduate students ($\bar{X}$ = 55,3037) are higher than those of the associate degree students ($\bar{X}$ = 51,9521), and the communication skill scores of the undergraduate students ($\bar{X}$ = 53,0116) are higher than those of the associate degree students ($\bar{X}$ = 51,9521). Once the mean of communication skills of the

university students was examined in terms of the number of siblings, it was found that there was a statistically significant difference between the groups ($F_{(7.5656)} = 13.677$; $p < .05$). A Scheffe test was used to find between which groups the communication skill average differs according to the number of siblings. According to the results obtained, it was seen that there was a statistically significant difference in the communication skill average score of the students who did not have siblings between the students who had seven or more siblings. It was concluded that university students who did not have siblings have higher communication skills ($\bar{X} = 54,5119$) than students who had seven or more siblings ($\bar{X} = 48,3101$). It can be seen that there is a statistically significant difference between the mean scores of the university students' communication skills in terms of family income level ($F_{(3.5656)} = 19.437$; $p < .05$). A Scheffe test was used to find between which groups the communication skill mean score differed according to family income status. According to the results obtained, a statistically significant difference was found between the students whose family income level was between 0 and 7000 and those whose family income level was 25,000 and above. It was concluded that the communication skill average of the students whose family income level was above 25,000 ($\bar{X} = 51,7522$) is higher than the communication skill average of the students whose income level was between 0 and 7000 ($\bar{X} = 51,7522$). As the mean of the communication skills of the university students was examined in terms of mother's education level, it was found that there was a statistically significant difference ($F_{5.5654} = 9.988$; $p < .05$). A Scheffe test was used to find between which groups the communication skills mean score differed according to the mother's education level. According to the results obtained, a statistically significant difference was found between the students whose mother's education level was at a graduate level and primary school level. It was concluded that the communication skills average ($\bar{X} = 55,3700$) of the students whose mother's education level was at postgraduate level was higher than the communication skills average ($\bar{X} = 51,8487$) of the students whose mother's education level was at primary school level. When the mean of communication skills of university students was examined in terms of father's education level, it was seen that there was a statistically significant difference ($F_{(5.5654)} = 7.352$; $p < .05$;). A Scheffe test was used to find between which groups the communication skills mean score differed according to the father's education level. According to the results obtained, a statistically significant difference was found between the students whose father's education level was at a graduate level and at primary school level. It was concluded that the communication skills average ($\bar{X} = 54,3034$) of the students whose father's education level was at postgraduate level was higher than the communication skills average ($\bar{X} = 51,5945$) of the students whose father's education level was at primary school level. The mean communication skills of university students were also examined in terms of time spent on the Internet, and it was found that there was a statistically significant difference ($F_{(3.5656)} = 2.981$; $p < .05$). A Scheffe test was used to find between which groups the communication skills average score differed according to the average daily time spent on the Internet. According to the results obtained, a statistically significant difference was found between the students who spent an average of 1 – 3 hours a day on the Internet and those who spent less than 1 hour on the Internet. It was concluded that the communication skills average of students who spent 1 – 3 hours a day ($\bar{X} = 53,5310$) was higher than the average of communication skills ($\bar{X} = 51,7446$) of students who spent less than 1 hour.

Findings of Social Anxiety Variable

The mean scores of social anxiety of university students were examined by an ANOVA test in terms of gender, age, educational status, number of siblings, own room, socioeconomic level, and educational status of parents, as well as average time spent on the Internet. Additionally, Table 5 shows the *t*-test results for the variables of gender and whether the students had their own room or not.

When Table 5 is examined, it can be seen that there is a statistically significant difference in the mean scores of social anxieties of the university students according to gender ($t_{(5658)} = 3.744$; $p < .05$). Once the social anxiety score averages of female and male students are examined, it is concluded that women ($\bar{X} = 41,3281$) (compared to men) ($\bar{X} = 38,6377$) have higher social anxiety. When the social anxiety scores of the participants are examined according to whether they have their own rooms or not, there is a statistically significant difference again ($t_{(5658)} = -6.674$; $p < .05$). It was concluded that students who have their own room ($\bar{X} = 38,7927$) have a lower social anxiety score average than those who do not have their own room ($\bar{X} = 43,9563$).

According to the ANOVA test results, the average social anxiety scores of university students aged between 18 and 24 years are higher than those of other age groups. When examined in terms of educational status, it was seen that the group with the highest average score of social anxiety was undergraduate students. According to the number of siblings variable, it was found that the average score of social anxiety of people who had no siblings was higher than the others. When the social anxiety averages are analyzed according to the monthly income variable, it can be seen that the social anxiety average of the group with the lowest monthly income is the highest, and the average of the social anxiety point decreases as the monthly income increases. When the social anxiety averages of the participants were examined according to their mothers' and fathers' education levels, it was seen that the highest average score was at the graduate level for both parents' education levels. When examined in terms of the average daily time spent on the Internet, it was found that university students who spend more than 5 hours a day on the Internet have higher average social anxiety than others. An ANOVA was applied to test the statistical significance of the differences between these means, and the results are given in Table 5.

According to the ANOVA test results shown in Table 5, it can be seen that there is a statistically significant difference between the mean social anxiety scores of university students according to age ($F_{(5.5654)} = 20.853$; $p < .05$). A Scheffe test was used to find between which groups the social anxiety mean score differed according to age. According to the results obtained, it was seen that the average social anxiety score of those aged 18 – 24 years was statistically significantly different from those of other age groups. It was concluded that the average social anxiety score ($\bar{X} = 41,5903$) of university students between the ages of 18 and 24 is higher than all other age groups. According to the findings, there was a statistically significant difference between the social anxiety mean scores of university students according to

Table 4.
Statistical Analysis of Participants' Communication Skills

***t*-Test Results of the Participants' Communication Skills Mean Scores**

Variables		*N*	$\bar{X}$	SS	SD	*t*	*p*
Gender	Female	3441	53.3647	11.33072	5658	3.527	.000
	Male	2219	52.2443	12.17445			
Having her/his own room	Yes	4037	53.6490	11.62221	5658	7.385	.000
	No	1623	51.1257	11.63428			

ANOVA Results of the Participants' Communication Skills Scores

Variables	Source of Variance	Sum of Squares	SD	Mean of Squares	*F*	*p*
Age	Between groups	2156.150	5	431.230	3167	.007
	Within groups	769928.387	5654	136.174		
	Total	772084.536	5659			
Educational background	Between groups	5893.320	3	1964.,440	14.501	.000
	Within groups	766191.216	5656	135.465		
	Total	772084.536	5659			
Number of siblings	Between groups	12860.793	7	1837.256	13.677	.000
	Within groups	759223.743	5652	134.328		
	Total	772084.536	5659			
Socioeconomic level of the family	Between groups	7878.822	3	2626.274	19.437	.000
	Within groups	764205.714	5656	135.114		
	Total	772084.536	5659			
Mother's education level	Between groups	6759.546	5	1351.909	9.988	.000
	Within groups	765324.991	5654	135.360		
	Total	772084.536	5659			
Father's education level	Between groups	4987.568	5	997.514	7.352	.000
	Within groups	767096.968	5654	135.673		
	Total	772084.536	5659			
Average time spent online per day	Between groups	1218.972	3	406.324	2.981	.030
	Within groups	770865.565	5656	136.292		
	Total	772084.536	5659			

Table 5.
Statistical Analysis Results for Social Anxiety Scores

***t*-Test Results of the Participants' Social Anxiety Mean Scores**

Variable		*N*	$\bar{X}$	SS	SD	*t*	*p*
Gender	Female	3441	41.3281	26.59756	5658	3.744	.000
	Male	2219	38.6377	26.07678			
Having a room on her/his own	Yes	4037	38.7927	25.89113	5658	−6.674	.000
	No	1623	43.9563	27.37106			

ANOVA Results of the Participants' Social Anxiety Scores

	Source of variance	Sum of squares	SD	Mean of Squares	*F*	*p*
Age	Between groups	71550.580	5	14310.116	20.853	.000
	Within groups	3880011.592	5654	686.242		
	Total	3951562.172	5659			
Educational background	Between groups	34399.449	3	11466.483	16.556	.000
	Within groups	3917162.722	5656	692.568		
	Total	3951562.172	5659			
Number of siblings	Between groups	7190.865	7	1027.266	1.472	.172
	Within groups	3944371.307	5652	697.872		
	Total	3951562.172	5659			
Socioeconomic level of the family	Between groups	7976.486	3	2658.829	3.813	.010
	Within groups	3943585.685	5656	697.239		
	Total	3951562.172	5659			
Mother's education level	Between groups	11214.181	5	2242.836	3.218	.007
	Within groups	3940347.990	5654	696.913		
	Total	3951562.172	5659			
Father's education level	Between groups	15525.722	5	3105.144	4.460	.000
	Within groups	3936036.450	5654	696.151		
	Total	3951562.172	5659			
Average time spent online per day	Between groups	105812.704	3	35270.901	51.873	.000
	Within groups	3845749.467	5656	679.942		
	Total	3951562.172	5659			

their educational status ($F_{(3.5656)} = 16.556$; $p < .05$). According to the Scheffe test results in terms of the educational status variable, a statistically significant difference was found between undergraduate students, associate degree students, graduate, and doctorate level students. According to the results obtained, it was concluded that the social anxiety scores of undergraduate students ($\bar{X} = 42,0072$) are higher than those of associate ($\bar{X} = 37,8519$), graduate ($\bar{X} = 35,1003$), and doctoral students ($\bar{X} = 32,3333$). It can be seen that there is a statistically significant difference between the social anxiety mean scores of university students in terms of family income level ($F_{(3.5656)} = 3.813$; $p < .05$). A Scheffe test was used to find between which groups the social anxiety mean score differed according to family income status. According to the results obtained, a statistically significant difference was found between the students whose family income level is between 0 and 7000 and those whose family income level is 25,000 and above. It was concluded that the social anxiety mean score of the students whose family income level is between 0 and 7000 ($\bar{X} = 41,4193$) is higher than the social anxiety average ($\bar{X} = 38,2077$) of the students whose income level is above 25,000. When the mean social anxiety score of university students was examined in terms of mother's education level, it was found that there was a statistically significant difference ($F_{(5.5654)} = 3.218$; $p < .05$). A Scheffe test was used to find between which groups the social anxiety mean score differed according to the mother's education level. According to the results obtained, a statistically significant difference was found between the students whose mother's education level was at a graduate degree level and those at a primary school level. It was concluded that the social anxiety mean score ($\bar{X} = 44,3400$) of the students whose mother's education level was at a postgraduate level was higher than the average ($\bar{X} = 39,9441$) of the students whose mother's education level was at a primary school level. When the mean social anxiety score of university students was examined in terms of father's education level, it was found that there was a statistically significant difference ($F_{(5.5654)} = 4.460$; $p < .05$). A Scheffe test was used to find between which groups the social anxiety mean score differed according to the father's education level. According to the results obtained, a statistically significant difference was found between the students whose father's education was at a graduate level and those at a primary school level. It was concluded that the social anxiety mean score ($\bar{X} = 44,2371$) of the students whose father's education level was at a graduate degree level was higher than the social anxiety mean ($\bar{X} = 37,8991$) of the students whose father's education level was at a primary school level. The social anxiety score average of university students was also examined in terms of time spent on the Internet, and it was found that there was a statistically significant difference ($F_{(3.5656)} = 51.873$; $p < .05$). A Scheffe test was used to find between which groups the social anxiety average score differed according to the average daily time spent on the Internet. According to the results obtained, a statistically significant difference was found between the students who spent more than 5 hours a day on the Internet on average and those who spent less than 1 hour on the Internet. It was concluded that the social anxiety mean score of the students who spent more than 5 hours a day ($\bar{X} = 46,0996$) was higher than the average of the students who spent less than 1 hour ($\bar{X} = 33,0519$).

Findings Related to the Effects of Communication Skills and Social Anxiety Variables on Internet Addiction

The relationship between the Internet addiction scores and communication skills and social anxiety scores of the 5660 university students who participated in the study was examined by simple correlation analysis and is shown in Table 6. When Table 6 is examined, it can be seen that there is a statistically significant relationship between Internet addiction, communication skills, and social anxiety. It was concluded that there was a low level of negative ($r = -0.092$; $p < .001$) relationship between Internet addiction and communication skills. Accordingly, in the case of a decrease in the communication skills of individuals, it can be expected that their internet addiction will increase. A moderately positive ($r = 0.399$; $p < .001$) relationship was found between Internet addiction and social anxiety. In this case, it can be predicted that when people's social anxiety increases, their Internet addiction will also increase. A low-level negative ($r = -0.239$; $p < .001$) relationship was found between communication skills and social anxiety. Accordingly, people with lower communication skills can be expected to have higher social anxiety.

Multiple linear regression analysis was used to examine whether Internet addiction was predicted by communication skills and social anxiety variables. The fact that the correlations between independent variables and dependent variables are statistically significant in multiple regression analysis and that the relationship between independent variables is not higher than 0.80 provides evidence that regression analyses can be performed over these variables (Büyüköztürk, 2006). The findings in Table 6 for this study show that multiple regression analysis can be performed. In addition, in order to control the multicollinearity assumption, which is one of the basic assumptions of multiple regression analysis, variance increase factor (VIF), tolerance value, and condition index (CI) values were examined. The results obtained are given in.

For the multicollinearity assumption, the VIF value is expected to be less than 10, the tolerance value to be greater than 0.10, and the CI to be less than 30 (Uyanık & Güler, 2013). Once the values in were examined in line with all these limits, it was seen that there was no multicollinearity problem in the data set used in the study and that the data were suitable for multiple linear regression analysis.

In order to determine the predictive power of university students' communication skills and social anxiety scores on Internet addiction scores, the effect of predictive variables on Internet addiction was examined by using an interregression model from multiple regression analysis, and the results are given in.

When is examined, the model of predicting Internet addiction with communication skills and social anxiety is statistically significant ($F = 535.351$; $p < .001$). In this model, the independent variables explain the dependent variables at a rate of approximately 16% ($R^2 = 0.159$). In this model, which was established to predict internet addiction through communication skills and social anxiety variables, the social anxiety variable was a statistically significant predictor ($t = 31,847$; $p < .001$) and its coefficient was found to be .202. In addition, the variable of communication skills is not a statistically significant predictor ($t = 0.324$; $p < .001$).

Table 6.
Statistical measures and associations in relation to internet addiction

The Arithmetic Mean, Standard Deviation and Correlation Values			
	1	**2**	**3**
1. Internet Addiction		-,092**	,399**
2. Communication Skills			-,239**
3. Social Anxiety			
Arithmetic Mean	34,0254	52,9254	40,2733
Standard Deviation	13,3449	11,6805	26,4249
**p<0,001.			

Coefficient for Multicollinearity Assumption			
	Variance Increase Factor (VIF)	Tolerance Value	Condition Index (CI)
Invariant			1,000
Communication skills	1,061	0,943	3,350
Social anxiety	1,061	0,943	11,773

Prediction Level of Communication Skills and Social Anxiety Scores on Internet Addiction									
Predictive Variables	B	Standard Error	β	t	p	R	R2	ΔR2	F
Invariant	25,646	0,872		29,400	0,000				
Communication skills	0,005	0,014	0,004	0,324	0,746	0,4	0,16	0,16	535,351**
Social anxiety	0,202	0,006	0,400	31,847	0,000				
P<0,01.									

Discussion

In this study, it was concluded that there is a moderately positive relationship between Internet addiction and the social anxiety of university students and that Internet addiction will increase when students' social anxiety increases. There are studies in the literature that overlap with this result. Gashti and Pilevari (2012) determined a significant relationship between social anxiety and Internet addiction in their study. Omoyemiju and Omotosho (2020) found a significant positive relationship between social anxiety and Internet addiction among the students. Social anxiety has been found to be a strong factor that can trigger Internet addiction for students. Akboğa and Gürgan (2019) found a positive relationship between Internet addiction and social anxiety disorder and a negative relationship with life satisfaction in their study with high school and university students. Ağırtaş and Güler (2020) found that there was a moderately positive linear relationship between Internet addiction and social anxiety levels in their study with university students. Canoğulları and Gucray (2017) determined that there was a significant difference between the Internet addiction status of adolescents and their social anxiety levels. Tecimer (2021), in her study with adolescent students, determined that there was a positive and low-level relationship between Internet addiction and general social anxiety. Weinstein et al. (2015) found a positive relationship between Internet addiction and social anxiety in their study with young adults. Tang So Kum (2018) found that social anxiety has a direct effect on Internet addiction in his study with university students. Çınar Özbay et al. (2022) found in their study with adolescents that there was a positive linear relationship between social anxiety and internet addiction. Alharbi et al. (2021), in their study with university students, found that as the level of social anxiety increases, the level of Internet addiction increases, and that social anxiety is a predictor of Internet addiction. Akın and İskender's (2011) study examining the relationship between Internet addiction and depression, anxiety, and stress among university students and Azher et al.'s (2014) study examining the relationship between Internet addiction and anxiety among university students demonstrate a positive and significant relationship between Internet addiction and anxiety level in university students. However, there are also studies that do not coincide with the results of this study. Bardakçı and Arslan (2021), in their study with university students, concluded that digital addiction levels do not have a significant effect on social anxiety levels.

The moderately positive relationship between Internet addiction and social anxiety among university students may be the result of the interaction of several factors. Online social relationships, excessive use of the Internet at the level of addiction, problems in making friends in real life, and negativity in family relationships can be counted among the reasons for this relationship. In fact, students who choose to surf the Internet were found to have higher levels of Internet addiction than those who choose to spend time with friends, and these individuals had high levels of social anxiety. It has been observed that students with high levels of content anxiety, privacy anxiety, and self-evaluation in social media prefer surfing the Internet to spending time with friends (Ağırtaş & Güler, 2020). It is believed that students who

have difficulty making friends in real life may turn to the Internet to get rid of the loneliness they experience. In fact, it has been found that students who report that their relationships with their families were not as they wanted them to be have higher levels of Internet addiction. It has been observed that students who do not get the social support they want from their families turn to the Internet to find social support and see the Internet as a way to escape the environment of family relationships that are not at the desired level (Kayri et al., 2014). In another study that found a positive relationship between problematic Internet use at the level of addiction and social anxiety, intensive Internet use may lead to a decrease in visits with friends and family (Rebberma & Umadevi, 2018). Male undergraduates with high levels of social anxiety feel that they can meet their needs for self-expression, intimacy, and autonomy online. Socially anxious undergraduates tend to use the Internet to gain more autonomy, be more assertive, be less influenced by the decisions of others, and fulfill their desire to appear more competent and resourceful than they are in person (Casale & Fioravanti, 2015). In another study, individuals' concerns about encountering negativity in face-to-face interactions explain the relationship between social anxiety and problematic Internet use, which may be at the level of addiction. Individuals who perceive face-to-face communication as more dangerous tend to communicate online because they believe that social threats are reduced in online communication (Lee & Stapinski, 2012).

In another result of this study, it was determined that there is a low level of negative relationship between Internet addiction and the communication skills of university students and that Internet addiction is expected to increase in the case of a decrease in communication skills. In their study with university students, Arslan and Bardakçı (2020) found significant differences in digital addiction and communication skills among university students in terms of gender, class level, and place of residence, as well as the type of high school they graduated from. Sevinç and Taş (2020) found a significant and inverse relationship between Internet addiction, the need for thinking, and the intimacy subdimension of expressing emotions. Akkuru (2019) found a negative relationship between Internet addiction and verbal communication in her study with university students. İliş and Gülbahçe (2019) found that there was a significant inverse relationship between social media addiction and communication skills. Kanat (2020) found that Internet addiction and social competence affect each other negatively in her study with university students. Bashirian et al. (2022), in their study conducted with university students, demonstrated a significant inverse relationship between Internet addiction and communication skills. Berte et al. (2021) found a high negative correlation in a study examining the relationship between Internet use and self-efficacy among university students in terms of the degree of addiction.

The low level of negative correlation between Internet addiction and communication skills of university students can be explained by reasons such as anxiety caused by face-to-face communication, failure to meet the expectation of approval in real life, and inadequacy of face-to-face communication skills. In fact, it has been observed that students who have difficulties establishing close relationships prefer to communicate online in order to get rid of the anxiety caused by face-to-face communication, to express their feelings and thoughts easily online, and to spend more time on online activities in order to avoid inadequacies in real-life communication skills (Ceyhan, 2011). In addition, it has been found that individuals who do not have the ability to present themselves prefer online social interaction to face-to-face relationships, and such a preference for online social interaction increases compulsive Internet use, and this situation leads to negative consequences (Caplan, 2005). Internet addiction is significantly associated with peer relationships and family communication. It was concluded that parents' communication with their adolescent children has a protective effect against Internet addiction, cyberbullying, and victimization (Aytaç et al., 2022). Lack of family support and communication indicates problems such as worthlessness, which are both the result and the cause of inappropriate and addictive use of the Internet. Those who are affected by these problems in the family are more connected to the Internet and become addicted (Tajalli & Zarnaghash, 2017).

The results of this study and similar results in the literature show that Internet addiction, which negatively affects communication skills and causes social anxiety, is an important threat to people's normal lives. The negative impact of the individual's communication skills and the social anxiety that will occur in the individual will also negatively affect the individual's comfort in life. Therefore, awareness studies, conscious-raising seminars, and the training of trainers for conscious internet use should be considered and carried out as protective and preventive measures in order to prevent Internet addiction and reduce problematic Internet use.

Limitations and Directions/Suggestions for Future Research

The study has some limitations. The information obtained is limited to the answers given to the questions in the questionnaire. It has been accepted that each student answered the questions sincerely. It is considered that this study will guide researchers who will study university students' communication skills, social anxiety, and internet addiction. We recommend researchers do such studies with secondary and high school students as well. Such a study will also allow for a comparative analysis. In addition to all these, there is a need for a more in-depth investigation by researchers of the inferences based on the results of this study and supported in the literature. These inferences will be a motivation for researchers to conduct new studies.

Ethics Committee Approval: The study was conducted with the approval of Gazi University Ethics Committee (Approval number: 2022/1086, Date: 05.10.2022).

Informed Consent: Written informed consent was obtained from all the participants who agreed to take part in the study.

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