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NOMOPHOBIA AND PERSONALITY TRAITS: ANALYZING THE RELATIONSHIP AMONG HIGH SCHOOL STUDENTS

NOMOFOBIA E TRAÇOS DE PERSONALIDADE: ANÁLISE DA RELAÇÃO ENTRE ESTUDANTES DO ENSINO MÉDIO

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ABSTRACT

The aim of this study is to measure the nomophobia levels of high school students studying in the city center of Uşak and to examine the relationship between personality traits and nomophobia levels. The population of the study consists of high school students in Uşak city center, Turkey, while the sample group includes 200 high school students selected through a simple random sampling method from science high schools, teacher high schools, Anatolian high schools, and vocational high schools. The research was conducted using the survey model, one of the quantitative research methods. A personal information form, a nomophobia scale to measure technological addiction, and a ten-item personality scale to assess personality traits were utilized. To analyze the data, independent samples t-tests, parametric one-way analysis of variance (ANOVA), and the Tukey test for intergroup differences were applied. The findings indicate a statistically significant and inverse relationship between the "losing online connection" sub-dimension of the nomophobia scale (TNS) and both the "extraversion" sub-dimension and the overall score of the ten-item personality scale (TIPS). However, no statistically significant relationships were found for the other sub-dimensions of the TNS and TIPS. Additionally, no significant associations were identified between the subscales of the TNS and TIPS or between the overall TIPS score and the subscales of the TNS. The results of the study revealed that women exhibited higher levels of nomophobia than men, and that increased daily mobile internet and smartphone usage were associated with higher nomophobia levels. Furthermore, individuals who engaged in sports demonstrated higher scores in "agreeableness" and "emotional stability." It was also found that individuals' anxiety about "losing online connection" was inversely related to extraversion. However, variables such as phone usage duration, years of mobile internet usage, and time spent with friends during the day did not have a significant effect on personality traits or nomophobia levels.

Keywords: Nomophobia, personality, high school students.

RESUMO

O objetivo deste estudo é medir os níveis de nomofobia de estudantes do ensino médio que estudam no centro da cidade de Uşak e examinar a relação entre traços de personalidade e níveis de nomofobia. A população do estudo consiste em estudantes do ensino médio no centro da cidade de Uşak, Turquia, enquanto o grupo amostral inclui 200 estudantes do ensino médio selecionados por meio de um método de amostragem aleatória simples de escolas de ensino médio de ciências, escolas de ensino médio de professores, escolas de ensino médio da Anatólia e escolas de ensino médio vocacionais. A pesquisa foi conduzida usando o modelo de pesquisa, um dos métodos de pesquisa quantitativa. Um formulário de informações pessoais, uma escala de nomofobia para medir o vício em tecnologia e uma escala de personalidade de dez itens para avaliar traços de personalidade foram utilizados. Para analisar os dados, foram aplicados testes t de amostras independentes, análise de variância paramétrica unidirecional (ANOVA) e o teste de Tukey para diferenças intergrupais. As descobertas indicam uma relação estatisticamente significativa e inversa entre a subdimensão "perda de conexão online" da escala de nomofobia (TNS) e a subdimensão "extroversão" e a pontuação geral da escala de personalidade de dez itens (TIPS). No entanto, nenhuma relação estatisticamente significativa foi encontrada para as outras subdimensões da TNS e TIPS. Além disso, nenhuma associação significativa foi identificada entre as subescalas da TNS e TIPS ou entre a pontuação geral da TIPS e as subescalas da TNS. Os resultados do estudo revelaram que as mulheres exibiram níveis mais altos de nomofobia do que os homens, e que o aumento do uso diário da internet móvel e do smartphone foi associado a níveis mais altos de nomofobia. Além disso, os indivíduos que praticavam esportes demonstraram pontuações mais altas em "amabilidade" e "estabilidade emocional". Também foi descoberto que a ansiedade dos indivíduos sobre "perder a conexão online" estava inversamente relacionada à extroversão. No entanto, variáveis como duração do uso do telefone, anos de uso da internet móvel e tempo gasto com amigos durante o dia não tiveram um efeito significativo nos traços de personalidade ou nos níveis de nomofobia.

Palavras-chave: Nomofobia, personalidade, estudantes do ensino médio.

Introduction

In recent years, the widespread use of technology and smartphones has created a significant transformation affecting almost every aspect of individuals' daily lives. Especially among young people, mobile devices have become indispensable tools that fulfill many functions such as establishing social connections, accessing information, entertainment and identity construction (Dempsey et al., 2009). Similarly, with the rapid development of technology in recent years, there have been major changes in individuals' life activities and behaviors, causing individuals to face both psychological and social problems. Cell phones, serving as crucial information and communication channels, have become integral to daily life. Despite their role in facilitating various aspects of life, their widespread use has brought about financial burdens, prolonged phone usage, and diverse issues including academic performance, professional life, social interactions,

and reduced social cohesion (Beranuy et al., 2009; Ertan, 2019). Young people's engagement with digital devices can evolve into excessive dependencies and anxieties over time, leading to a phenomenon known as nomophobia (Bragazzi & Del Puente, 2014). Nomophobia refers to intense stress, anxiety, and fear experienced when individuals are separated from their smartphones (King et al., 2013). Adolescents, in particular, may be more susceptible to developing nomophobia due to their strong peer interactions and social approval-seeking behaviors. Defined as a modern fear by King et al. (2014), nomophobia is seen as an extension of digital addiction, arising from excessive reliance on social media and digital communication tools, causing anxiety at the mere thought of disconnecting from smartphones. Especially since high school students are in an intense period in terms of both social relationships and academic processes, there is a risk of increasing the time they spend with digital devices and their dependence on these devices. For these students, smartphones allow them to construct their social identities, ensure group belonging and stay in constant contact with their social environment. However, this need for constant access can have various negative consequences in the long run, both psychologically and academically (Bragazzi & Del Puente 2014; Öz & Tortop, 2018). With this syndrome, various problems arise in students and young individuals. These problems include distraction, decreased learning performance, social isolation, sleep problems, increased anxiety and stress levels, time management problems, and decreased participation in classes. Along with these problems, it is observed that the level of academic achievement decreases in students. At the same time, it has been revealed that young individuals accept new technological devices and the rate of use of these devices is higher than older individuals. Similarly, it is also known that the frequency of cell phone use is higher in young individuals (Dempsey et al., 2009).

One of the various psychosocial factors that may be effective on nomophobia is the personality traits of the individual. Personality is a concept derived from the Latin words "Per" and "Sona", meaning "mask worn on the face" (Liebert, 1995). In addition, "Per" and "Sona" also mean the mask worn by actors who will take on a different personality in Ancient Greek theaters (Schopenhauer et al., 2005).

Personality is a basic structure that shapes an individual's behaviors, thoughts and emotional reactions and can also affect habits such as technology use. According to Freud, personality consists of id, ego and super-ego; according to Rogers, it is the life experience that the individual perceives subjectively. Erikson defined personality as a concept that occurs as a result of psycho-social crises (Hjelle & Ziegler, 1981). Personality traits have been defined by many researchers, but it is commonly accepted that they are influenced by both environmental and hereditary factors and have a dynamic structure with a lifelong continuity (Başaran, 2000; Robbins, 2012). The five-factor personality model defines individuals' personalities in five basic dimensions such as extraversion, conscientiousness, emotional instability (neuroticism), agreeableness and openness. This model suggests that individuals' level of dependence on technology may also vary according to their personality traitsFor instance, individuals with higher levels of emotional instability, who are more prone to stress and anxiety, may view smartphones as a coping mechanism and experience heightened anxiety when separated from these devices. Conversely, extraverted individuals may use smartphones extensively to meet their social needs, while those with high conscientiousness may exhibit more balanced technology usage. Understanding the correlation between high school students' levels of nomophobia and their personality traits is crucial in comprehending their relationship with technology and its impact on their mental well-being. Adolescence, marked by identity formation and independence-seeking, is a critical period where young people intensely seek constant access and approval through smartphones. Hence, investigating the prevalence of nomophobia in this age group and the influence of personality traits on it is imperative. This study aims to assess nomophobia levels among high school students and explore how these levels correlate with various personality traits based on the five-factor model. The findings are expected to inform the development of strategies for healthier technology use among youth and targeted interventions in this domain. Furthermore, the study results may guide efforts in promoting better digital habits and designing educational programs to safeguard their psychological health.

Materials and Methods

Research Model

In this study, descriptive and relational survey models were employed as methodologies within the framework of quantitative research methods. The descriptive survey model was utilized to assess the levels of nomophobia and personality traits among students, aiming to portray their current state. Meanwhile, the relational survey model was applied to explore the connections between nomophobia levels and personality traits. This model investigates whether variables co-vary and, if so, identifies the direction of this relationship (Büyüköztürk et al., 2018). Descriptive survey models, according to Karasar (1994), seek to depict a situation in the past or present accurately.

Population and Sample

The population of the study consists of high school students studying in the city center of Uşak, Turkey, while the sample group comprises 200 high school students selected using the simple random sampling method from science high schools, teacher high schools, Anatolian high schools, and vocational high schools. Voluntary participation was ensured. The simple random sampling method ensures that each unit in the population has an equal probability of being included in the sample. In other words, each unit is selected independently, with no influence on the selection of others (Ural & Kılıç, 2005).

Data Collection Tools

As a data collection tool, the volunteers participating in the study were asked to answer the personal information form and the nomophobia scale and personality scale in the literature.

Personal Information Form

The personal information form was designed by researchers and comprised eight questions aimed at gathering information about participants' gender, sports

participation, years of phone usage, daily smartphone usage duration, years of mobile internet usage, daily mobile internet usage duration, whether they turn off their smartphones at night, and the time spent with friends during the day.

Table 1 – Distribution of demographic characteristics of the participants

	n	Variables	n	%
Gender?	200	Male	78	39,0
		Woman	122	61,0
Do you play sports?		Yes	104	52,0
		No.	96	48,0
How many years have you been using a phone?		Less than 3 years	58	29,0
		3 to 6 years	92	46,0
		More than 6 years	50	25,0
Daily smartphone usage time.		Less than 3 hours	68	34,0
		3 to 6 hours	100	50,0
		More than 6 hours	32	16,0
How many years have you been using mobile internet?		Less than 2 years	54	27,0
		2 to 4 years	58	29,0
		More than 4 years	88	44,0
Daily mobile internet usage time		Less than 2 hours	118	59,0
		2 to 4 hours	46	23,0
		More than 4 hours	36	18,0
Do you turn off your smartphone at night?		Yes	76	38,0
		No.	124	62,0
Average time spent with friends during the day		Less than 2 hours	22	11,0
		2 to 4 hours	24	12,0
		More than 4 hours	154	77,0

Considering the demographic information of the participants in the study; 122 (61,0%) were female and 78 (39,0%) were male. 104 (52,0%) do sports and 96 (48,0%) do not do sports. 58 (29.0%) have been using cell phones for a maximum of 3 years, 92 (46.0%) for 3-6 years and 50 (25.0%) for more than 6 years. 68 (34.0%) of them use smartphones for less than 3 hours per day, 100 (50.0%) for between 3 and 6 hours and 32 (16.0%) for more than 6 hours. 54 (27.0%) have been using mobile internet for a maximum of 2 years, 58 (29.0%) between 2 and 4 years, and 88 (44.0%) for more than 4 years. 118 (59.0%) use mobile internet less than 2 hours, 46 (23.0%) between 2 and 4 hours and 36 (18.0%) more than 4 hours. 76 (38.0%) stated that they do not turn off their smartphone at night and 124 (62.0%) stated that they turn off their smartphone at night. 22 (11,0%) spent a maximum of 2 hours with their friends during the day, 24 (12,0%) spent between 2 and 4 hours and 154 (77,0%) spent more than 4 hours.

Turkish Nomophobia Scale (TNS)

The nomophobia scale developed by Yıldırım and Correia (2015) and adapted into Turkish by Yıldırım et al. The scale consists of 20 items and has four sub-dimensions: inability to access information, sacrificing comfort, not communicating and losing online connection. The scale has a 7-point Likert-type rating. Scores between 20 and 140 can be obtained from the scale. An increase in the total score means an increase in the level of nomophobia. Scale sub-dimensions item and score information;

i) Lack of access to information (items 1, 2, 3, 4) (score between 4 and 28 points).

ii) Waiver of comfort (items 5, 6, 7, 8, 9) (score between 5 and 35 points).

iii) Inability to communicate (items 10, 11, 12, 13, 14, 15) (score between 6 and 42 points).

iv) Losing online connection (Items 16, 17, 18, 19, 20) (score between 5 and 35).

The Cronbach Alpha value of the scale adapted into Turkish was 0.92 and the reliability values of its sub-dimensions were 0.90, 0.74, 0.94 and 0.91.

Reliability of the TNS and its Subscales

The answers given by the sample group of 200 people to the questionnaire have a direct impact on the reliability of the questionnaire. Cursory or inconsistent responses reduce the reliability of the questionnaire. Cronbach's Alpha (α) internal consistency coefficient value is used to measure scale reliability. The higher the Cronbach's Alpha (α) value, the higher the reliability of the questionnaire. When the reliability coefficient of a scale is close to 1, it may indicate that the scale is a highly reliable measurement tool (Tavşancıl, 2002). The reliability of measurement tools prepared to be used in comparisons between groups can be between 0.60-0.80. The reliability of measurement tools for making decisions about individuals is expected to be above 0.80, and above 0.90 if the decision may lead to very serious consequences (Özçelik, 1989).

Internal consistency coefficients in a scale to be developed:

If 0.00 ≤ α < 0.40, the scale is not reliable.

If 0.40 ≤ α < 0.60, the scale has low reliability.

0.60 ≤ α < 0.80 is acceptable reliability.

If 0.80 ≤ α < 1.00, the scale is highly reliable (Tekez, 2004).

Table 2 – Cronbach's alpha values of the TSN and its sub-dimensions

TNS and its subscales	Cronbach's Alpha Value
Turkish Nomophobia Scale	0,887
Lack of Access to Information	0,701
Sacrificing Comfort	0,721
Failure to Communicate	0,901
Losing Online Connection	0,771

According to the table, the Cronbach's Alpha value of the TTS applied to the sample group is α=0.821 and the overall scale is quite reliable. In addition, the Cronbach's Alpha value for the "Inability to access information" sub-dimension was α=0.701, the Cronbach's Alpha value for the "Waiver of convenience" sub-dimension was α=0.721 and the Cronbach's Alpha value for the "Loss of online connection" sub-dimension was α=0.771. These three sub-dimensions have acceptable reliability. The Cronbach's Alpha value for the "Inability to communicate" sub-dimension was α=0.901. This sub-dimension is quite reliable.

Ten Item Personality Scale (TIPS)

Ten-Item Personality Inventory developed by Gosling et al. (2003) and adapted into Turkish by Atak (2013) was used in the study. The scale has five sub-dimensions: openness to experience (Items 5, 10), agreeableness (Items 2, 7), emotional stability (Items 4, 9), conscientiousness (Items 3, 8) and extraversion (Items 1, 6) and the scale consists of ten items in total. A total score between 2 and 14 can be obtained from the subscales of the scale. On the other hand, a total score between 10 and 70 can be obtained from the TIPS. Five of the adjectives in the scale are reverse items and reverse coding was used during the analysis. The scale is graded on a 7-point Likert scale.

Reliability of the TIPS and its Sub-Dimensions

Applied to a sample group of 200 people, the Cronbach's Alpha value of the TIPS is α=0.681. The scale has an acceptable reliability.

Data Analysis

SPSS 22.00 package program was used to analyze the data. The skewness and kurtosis distributions of the data in order to examine the normal distribution are presented in detail in Table 3.

Table 3 – Summary statistics for the total scores of the TIPS and its subscales

TIPS and its Subscales	Lowest	Highest	Average	Standard Deviation	Skewness	kurtosis
TIPS	16,00	60,00	34,4800	7,6104	0,024	0,288
Openness to Experience	3,00	12,00	7,1100	2,0637	0,191	-0,430
Mildness	2,00	12,00	6,8900	2,2456	0,058	-0,122
Emotional Stability	2,00	12,00	6,6600	2,4565	0,119	-0,732
Responsibility	2,00	12,00	7,2400	2,2287	-0,240	-0,576
Extraversion	2,00	12,00	6,5800	2,0797	0,024	-0,460

The mean total score of the 10-item TIPS is 34.48, with a standard deviation of 7.6104. Within the 200-person sample, the lowest total score recorded was 16.00, while the highest was 60. The mean total score for the 2-item "openness to experience" subscale is 7.11, with a standard deviation of 2.0637, and scores ranging from 3.00 to 12.00. The mean total score for the 2-item "agreeableness" subscale is 6.89, with a standard deviation of 2.2456, with scores ranging from 2.00 to 12.00. Similarly, the "emotional stability" subscale has a mean total score of 6.66, a standard deviation of 2.4565, and a score range of 2.00 to 12.00. The "responsibility" subscale has a mean total score of 7.24 and a standard deviation of 2.2287, with scores also ranging from 2.00 to 12.00. Lastly, the "extraversion" subscale has a

mean total score of 6.58, a standard deviation of 2.0797, and scores ranging from 2.00 to 12.00.

An analysis of the skewness and kurtosis values for the TIPS and its sub-dimensions indicates that all values fall within the range of -2 to +2. According to George and Mallery (2010), if skewness and kurtosis values are within this range, the assumption of normal distribution can be considered valid for the total scale scores.

Pearson Correlation Coefficient Interpretation of the Relationship between the total scores of the TIPS *and its subscales*

Since the total scores of the TIPS and its subscales met the assumption of normal distribution, the Pearson correlation coefficient was used to assess the relationships between the total scores of the scale and its subscales. The correlation coefficient ranges from -1 to +1, where a positive value indicates a direct relationship between two variables, while a negative value signifies an inverse relationship. As the correlation value approaches -1 or +1, the strength of the relationship increases. A correlation coefficient of 0 suggests no relationship between the two variables, and as it approaches 0, the strength of the relationship weakens. Table 4 below presents the Pearson correlation coefficient values for the relationships between the total scores of the TIPS and its subscales. The value in each cell represents the Pearson correlation coefficient, while the value in parentheses indicates the p-value for the statistical significance of the relationship. If the p-value is less than 0.05, the relationship is considered statistically significant at the 95% confidence level, and if it is less than 0.01, the relationship is significant at the 99% confidence level. When the correlation coefficient between two variables is not statistically significant, it suggests that the variables are independent of each other.

Table 4 – Correlation values of the total scores of the TIPS and its subscales

	OMKÖ	Openness to Experience	Mildness	Emotional Stability	Responsibility	Extraversion
OMKÖ	1,000	0,700** (<0,001)	0,716** (<0,001)	0,739** (<0,001)	0,687** (<0,001)	0,582** (<0,001)
Openness to Experience		1,000	0,341** (0,004)	0,434** (<0,001)	0,396** (0,046)	0,264** (<0,001)
Mildness			1,000	0,421** (0,011)	0,415** (<0,001)	0,259* (0,034)
Emotional Stability				1,000	0,320** (<0,001)	0,296** (<0,001)
Responsibility					1,000	0,224** (0,001)
Extraversion						1,000

**Correlation is significant at 0.01 level.
*Correlation is significant at 0.05 level.

When Table 4 is examined, there is a statistically significant, positive and strong relationship between the total scores of the TIPS and all sub-dimension total scores at 99% confidence level. In addition, there is a statistically significant positive and strong relationship at 99% confidence level between the sub-dimensions of the TIPS.

Table 5 – Summary statistics for total scores of **TNS** and its subscales

TNS and its subscales	Lowest	Highest	Average	Standard Deviation	Skewness	kurtosis
Turkish Nomophobia Scale	29,00	130,00	79,5800	23,2712	-0,046	-0,676
Lack of Access to Information	6,00	28,00	16,4800	5,6345	0,228	-0,783
Sacrificing Comfort	5,00	35,00	20,8300	7,3969	-0,144	-0,787
Failure to Communicate	6,00	42,00	25,5200	10,3258	-0,082	-1,048
Losing Online Connection	5,00	32,00	16,7500	7,3263	0,100	-1,037

The mean total score of the 20-item TTS is 79.58, with a standard deviation of 23.2712. Within the 200-person sample, the lowest total score recorded was 29,

while the highest was 130. The 4-item "inability to access information" subscale has a mean total score of 16.48 and a standard deviation of 5.6345, with scores ranging from 6 to 28. The 5-item "sacrifice of comfort" subscale has a mean total score of 20.83 and a standard deviation of 7.3969, with scores ranging from 5 to 35. The 6-item "inability to communicate" subscale has a mean total score of 25.52 and a standard deviation of 10.3258, with scores ranging from 6 to 42. The 5-item "online disconnection" subscale has a mean total score of 16.75 and a standard deviation of 7.3263, with scores ranging from 5 to 32. An analysis of the skewness and kurtosis values for the TNS and its sub-dimensions indicates that all values fall within the range of -2 to +2. According to George and Mallery (2010), if skewness and kurtosis values are within this range, the assumption of normal distribution can be considered valid for the total scale scores.

Pearson Correlation Coefficient Interpretation of the Relationship between TNS *and subscale total scores*

Since the total scores of the TNS and its subscales met the assumption of normal distribution, the Pearson correlation coefficient was used to assess the relationships between the total scores of the scale and its subscales. The correlation coefficient ranges from -1 to +1, where a positive value indicates a direct relationship between two variables, while a negative value signifies an inverse relationship. As the correlation value approaches -1 or +1, the strength of the relationship increases. A correlation coefficient of 0 suggests no relationship between the two variables, and as it approaches 0, the strength of the relationship weakens. Table 6 below presents the Pearson correlation coefficient values for the relationships between the total scores of the TDQ and its subscales. The value in each cell represents the Pearson correlation coefficient, while the value in parentheses indicates the p-value for the statistical significance of the relationship. If the p-value is less than 0.05, the relationship is considered statistically significant at the 95% confidence level, and if it is less than 0.01, the relationship is significant at the 99% confidence level. When the correlation coefficient between two variables is not statistically significant, it suggests that the variables are independent of each other.

Table 6 – Correlation values of total scores of TNS and its subscales

	Turkish Nomophobia Scale	Lack of Access to Information	Sacrificing Comfort	Failure to Communicate	Losing Online Connection
Turkish Nomophobia Scale	1,000	0,581** (<0,001)	0,847** (<0,001)	0,813** (<0,001)	0,728** (<0,001)
Lack of Access to Information		1,000	0,496** (<0,001)	0,283** (<0,001)	0,177* (0,012)
Sacrificing Comfort			1,000	0,520** (<0,001)	0,566** (<0,001)
Failure to Communicate				1,000	0,430** (<0,001)
Losing Online Connection					1,000

*Correlation is significant at 0.05 level.
**Correlation is significant at 0.01 level.

An examination of Table 6 reveals a statistically significant, positive, and strong relationship between the total scores of the TNS and all its sub-dimensions at the 99% confidence level. Additionally, there is a statistically significant positive relationship at the 95% confidence level between the "inability to access information" and "losing online connection" sub-dimensions. Furthermore, a statistically significant, positive, and strong relationship exists between all other sub-dimensions at the 99% confidence level.

Findings

Analysis of the total scores of TNS and its subscales according to the demographic characteristics of individuals

The table below presents the summary statistics of the total scores of the TNS and its sub-dimensions based on demographic characteristics. Since the total scores of the TNS and its sub-dimensions met the assumption of normal distribution, independent samples t-tests and parametric one-way analysis of variance (ANOVA)

were conducted to examine differences between groups. Additionally, Tukey's test was applied to identify the specific groups responsible for significant differences. All analyses were performed at a 95% confidence level.

Table 7 – Demographic characteristics of TNS and subscale total scores

		Lack of Access to Information	Sacrificing Comfort	Failure to Communicate	Losing Online Connection	Turkish Nomophobia Scale
Gender						
Woman	Average	17,2295	22,3770	27,2459	16,8689	83,7213
	St. Deviation	5,5992	6,8397	10,0043	6,9269	21,8893
Male	Average	15,3077	18,4103	22,8205	16,5641	73,1026
	St. Deviation	5,5228	7,6267	10,3041	7,9537	24,0203
	p-value	**0,018***	**<0,001***	**0,003**	0,775	**0,001***
Do you play sports?						
Yes	Average	16,2500	20,0000	26,1923	16,0962	78,5385
	St. Deviation	5,7584	7,6297	10,8816	7,0180	24,4889
No.	Average	16,7292	21,7292	24,7917	17,4583	80,7083
	St. Deviation	5,5164	7,0658	9,6920	7,6198	21,9482
	p-value	0,549	0,099	0,339	0,190	0,511
How many years have you been using a phone?						
Less than 3 years	Average	17,0345	20,0690	23,9310	15,2414	76,2659
	St. Deviation	5,6037	7,8937	10,4560	6,7572	24,2297
3 to 6 years	Average	16,6522	21,2826	25,6522	16,8478	80,4348
	St. Deviation	5,5240	7,6335	10,1618	7,6631	24,0060
More than 6 years	Average	15,5200	20,8800	27,1200	18,3200	81,8400
	St. Deviation	5,8632	6,3588	10,4131	7,1126	20,6559
	p-value	0,352	0,621	0,275	0,092	0,416

Daily smartphone usage time						
Less than 3 hours	Average	14,5882	17,1765	24,5588	13,2941	69,6176
	St. Deviation	5,5777	7,7747	10,6873	6,5313	23,8127
3 to 6 hours	Average	16,8000	21,4400	24,9600	17,9200	81,1200
	St. Deviation	5,5240	6,7274	10,9930	7,4477	22,8405
More than 6 hours	Average	18,4375	24,5625	29,3125	21,4375	93,7500
	St. Deviation	5,1864	5,5412	5,8112	6,2627	15,1487
	p-value	**0,002***	**<0,001***	0,074	**<0,001***	**<0,001***
How many years have you been using mobile internet?						
Less than 2 years	Average	16,0000	21,0000	24,3333	17,2963	78,6296
	St. Deviation	5,5558	7,8572	11,1219	6,3887	22,8715
2 to 4 years	Average	16,3103	20,5172	25,0345	16,8276	78,6897
	St. Deviation	5,7130	9,0481	11,6000	8,4524	28,2098
More than 4 years	Average	16,8864	20,9318	26,5682	17,0682	80,4545
	St. Deviation	5,6658	5,8147	8,8445	6,8595	19,7367
	p-value	0,639	0,929	0,419	0,217	0,483
Daily mobile internet usage time						
Less than 2 hours	Average	14,6102	19,6949	24,7966	14,6441	73,7458
	St. Deviation	5,7110	7,4196	10,5129	6,8507	22,9519
2 to 4 hours	Average	17,3261	21,8261	25,0870	17,9444	82,1836
	St. Deviation	4,9589	6,6510	9,9773	7,1010	21,7211
More than 4 hours	Average	19,3889	23,2778	28,4444	19,3261	90,4372
	St. Deviation	5,5845	7,6405	9,8978	7,9479	24,1577
	p-value	**0,008***	**0,022***	0,170	**0,004***	**0,015***

Do you turn off your smartphone at night?						
Yes	Average	15,5000	17,7368	23,5789	15,2368	72,0526
	St. Deviation	4,7763	7,7034	9,8241	7,3591	22,2769
No.	Average	17,0806	22,7258	26,7097	17,6774	84,1935
	St. Deviation	6,0413	6,5423	10,4832	7,1789	22,7398
	p-value	0,054	**<0,001***	**0,037***	**0,022***	**<0,001***
Average time spent with friends during the day						
Less than 2 hours	Average	14,9091	21,0000	30,4545	17,9091	84,2727
	St. Deviation	6,9891	8,4852	9,0959	6,6541	26,0442
2 to 4 hours	Average	16,6667	20,1667	29,5000	15,5000	81,8333
	St. Deviation	5,4106	6,7222	9,7222	6,7179	23,4570
More than 4 hours	Average	16,6753	20,9091	24,1948	16,7792	78,5584
	St. Deviation	5,4579	7,3763	10,2645	7,5175	22,8810
	p-value	0,385	0,896	**0,003***	0,537	0,495

The total scores of the "losing online connection" sub-dimension do not show a statistically significant difference according to gender. Women's total scores are higher than men's in all other sub-dimensions and in the TNS. "Inability to communicate" sub-dimension total scores do not show statistically significant difference according to the duration of daily smartphone use. For all other sub-dimensions and TNS, as the daily smartphone usage time of individuals increases, the total scores also increase. "Inability to communicate" sub-dimension total scores do not show statistically significant difference according to the duration of daily mobile internet use. For all other sub-dimensions and TIM, as the duration of daily mobile internet use increases, total scores also increase.

"Inability to access information" sub-dimension total scores did not show a statistically significant difference according to the status of turning off their

smartphones at night. For all other sub-dimensions and the TNS, the total scores of individuals who did not turn off their smartphones at night were higher than those of individuals who did. Individuals who spent more than 4 hours with their friends during the day had lower total scores in the "Inability to communicate" sub-dimension than individuals who spent less than 4 hours. There is no statistically significant difference in total scores according to the time spent with friends during the day for all other sub-dimensions and TNS. Total scores of TNS and its sub-dimensions do not show a statistically significant difference according to the status of practicing sports. There is no statistically significant difference in total scores according to the number of years they have been using cell phones. There is no statistically significant difference between the total scores of TNS and its sub-dimensions according to the number of years they have been using mobile internet.

Analysis of the total scores of the TIPS and its subscales according to the demographic characteristics of individuals

The table below presents the summary statistics of the total scores of the TIPS and its sub-dimensions based on demographic characteristics. Since the total scores of the TIPS and its sub-dimensions met the assumption of normal distribution, independent samples t-tests and parametric one-way analysis of variance (ANOVA) were conducted to examine differences between groups. Additionally, Tukey's test was applied to determine which groups contributed to these differences. All analyses were performed at a 95% confidence level.

Table 8 – Demographic characteristics of TIPS and subscale total scores

		Openness to Experience	Mildness	Emotional Stability	Responsibility	Extraversion	OMKÖ
Gender							
Woman	Average	6,9836	7,1148	6,7377	7,2951	6,6393	34,7705
	St. Deviation	1,9623	2,2788	2,4989	2,0517	2,0573	7,4287
Male	Average	7,3077	6,5385	6,5385	7,1538	6,4872	34,0256
	St. Deviation	2,2115	2,1604	2,3996	2,4919	2,1243	7,9134
	p-value	0,280	0,077	0,577	0,663	0,615	0,501
Do you play sports?							
Yes	Average	7,0962	7,2308	7,0385	7,2308	6,5192	35,1154
	St. Deviation	2,1520	2,3117	2,5615	2,1552	2,2338	7,9967
No.	Average	7,1250	6,5208	6,2500	7,2500	6,5458	33,7917
	St. Deviation	1,9748	2,1224	2,2803	2,3169	1,9083	7,1464
	p-value	0,922	**0,025***	**0,023***	0,952	0,668	0,220
How many years have you been using a phone?							
Less than 3 years	Average	7,2069	6,4483	6,3103	6,8621	6,9655	33,7931
	St. Deviation	1,9713	2,3031	2,2649	2,1960	1,9191	6,6616
3 to 6 years	Average	7,1304	6,8913	6,8043	7,5435	6,3261	34,6957
	St. Deviation	1,8109	1,7569	2,2249	2,1143	1,9335	6,4752
More than 6 years	Average	6,9600	7,4000	6,8000	7,1200	6,6000	34,8800
	St. Deviation	2,5790	2,8428	3,0237	2,4297	2,4578	10,2432
	p-value	0,820	0,089	0,439	0,173	0,186	0,712
Daily smartphone usage time							
Less than 3 hours	Average	7,3529	7,1471	7,6225	7,5294	6,9706	36,6235
	St. Deviation	1,8428	2,0751	2,2356	2,2022	1,9772	6,1944

3 to 6 hours	Average	6,9200	6,6400	6,2000	7,0800	6,4200	33,2600
	St. Deviation	2,2548	2,3420	2,3783	2,0581	2,0606	7,3603
More than 6 hours	Average	7,1875	7,1250	6,3875	7,1250	6,2500	34,0750
	St. Deviation	1,8740	2,2682	2,8673	2,7562	2,2860	10,1782
	p-value	0,402	0,291	**0,014***	0,420	0,150	**0,037***
How many years have you been using mobile internet ?							
Less than 2 years	Average	6,5185	6,4815	6,1852	6,8889	7,1852	33,2593
	St. Deviation	1,8299	2,3045	2,1984	2,1161	1,7164	7,0233
2 to 4 years	Average	7,1034	7,0000	6,7586	7,7931	6,6897	35,3448
	St. Deviation	2,3892	2,2321	2,8488	2,2999	2,1700	8,3320
More than 4 years	Average	7,4773	7,0682	6,8864	7,0909	6,1364	34,6591
	St. Deviation	1,8996	2,2117	2,3115	2,2057	2,1398	7,4492
	p-value	**0,026***	0,291	0,241	0,070	**0,012***	0,337
Daily mobile internet usage time							
Less than 2 hours	Average	7,0000	6,8305	6,8814	7,1356	6,9831	34,8305
	St. Deviation	1,8856	2,0013	2,2877	2,0956	1,8810	6,4001
2 to 4 hours	Average	7,3913	7,2609	6,4348	7,6522	6,1739	34,9130
	St. Deviation	2,5427	2,8002	2,8879	2,5229	2,4340	10,0748
More than 4 hours	Average	7,1111	6,6111	6,2222	7,0556	5,7778	32,7778
	St. Deviation	1,9680	2,2204	2,3798	2,2544	1,9288	7,6311
	p-value	0,554	0,390	0,290	0,355	**0,003***	0,334
Do you turn off your smartp hone at night?							
Yes	Average	7,4737	7,7895	7,0526	7,8684	7,0000	37,1842

	St. Deviation	2,1631	1,9205	2,6527	1,9345	2,1540	6,6125
No.	Average	6,8871	6,3387	6,4194	6,8548	6,3226	32,8226
	St. Deviation	1,9763	2,2591	2,3062	2,3153	1,9981	7,7302
	p-value	0,051	**<0,001***	0,077	**0,002***	**0,025***	**<0,001***
Average time spent with friends during the day							
Less than 2 hours	Average	6,6364	7,0909	6,6364	7,5455	6,5455	34,4545
	St. Deviation	1,6488	2,0215	2,4793	2,3243	1,9205	6,5226
2 to 4 hours	Average	7,0833	7,0000	6,1667	7,0000	7,2500	34,5000
	St. Deviation	2,4122	2,5366	2,1196	2,0430	2,3636	7,9836
More than 4 hours	Average	7,1818	6,8442	6,7403	7,2338	6,4805	34,4805
	St. Deviation	2,0626	2,2408	2,5070	2,2514	2,0491	7,7402
	p-value	0,512	0,863	0,569	0,709	0,242	1,000

The total scores for the "Mildness" and "Emotional Stability" sub-dimensions were higher among individuals who engaged in sports compared to those who did not. However, the total scores for all other sub-dimensions and the overall TIPS did not show a statistically significant difference based on sporting status. Individuals who used smartphones for less than three hours daily had higher total scores in the "Emotional Stability" sub-dimension compared to those who used smartphones for more than three hours daily. However, no statistically significant differences were found in the total scores of other sub-dimensions based on daily smartphone usage time. The total scores for the "Openness to Experience" sub-dimension increased as the number of years of mobile internet usage increased, whereas the total scores for the "Extraversion" sub-dimension decreased with increasing years of mobile internet use. However, the total scores for all other sub-dimensions and the overall TIPS did not show significant differences based on years of mobile internet usage. Similarly, as average daily mobile internet usage time increased, total scores for the "Extraversion" sub-dimension decreased. However, the total scores for all other

sub-dimensions and the overall TIPS did not exhibit statistically significant differences based on daily mobile internet usage time. Regarding smartphone usage habits at night, the total scores for "Openness to Experience" and "Emotional Stability" did not show statistically significant differences based on whether individuals turned off their smartphones at night. However, for all other sub-dimensions and the overall TIPS, individuals who turned off their smartphones at night had higher total scores compared to those who did not. No statistically significant differences were observed in the total scores of the TIPS and its sub-dimensions based on gender, years of phone usage, or time spent with friends during the day.

Pearson Correlation Coefficient Interpretation of the Relationship Between Total Scores of TNS and TIPS

Table 9 – Pearson correlation coefficient interpretation of the relationship between total scores of TNS and T TIPS

	OMKÖ	**Openness to Experience**	**Mildness**	**Emotional Stability**	**Responsibility**	**Extraversion**
TNÖ	-0,070 (0,325)	-0,068 (0,338)	0,007 (0,922)	-0,055 (0,439)	-0,023 (0,750)	-0,107 (0,133)
Lack of Access to Information	-0,112 (0,113)	-0,126 (0,076)	-0,012 (0,861)	-0,085 (0,233)	-0,086 (0,226)	-0,080 (0,257)
Sacrificing Comfort	-0,017 (0,816)	-0,026 (0,717)	-0,005 (0,940)	-0,059 (0,411)	0,068 (0,341)	-0,033 (0,645)
Failure to Communicate	0,016 (0,822)	-0,012 (0,865)	0,094 (0,184)	0,035 (0,625)	-0,007 (0,924)	-0,065 (0,360)
Losing Online Connection	-0,142* (0,045)	-0,077 (0,281)	-0,096 (0,177)	-0,100 (0,160)	-0,065 (0,363)	-0,152* (0,032)

*Correlation is significant at 0.05 level.

According to Table 9, there is a statistically significant and opposite relationship between the sub-dimension of "Losing online connection" and the sub-dimension of "Extraversion" and between "Losing online connection" and the general scale of " TIPS " at 95% confidence level. There is no statistically significant

relationship for the other sub-dimensions of the TNS and the TIPS. There is also no statistically significant relationship between the TNS and the subscales of the TIPS and between the TIPS and the subscales of the TNS.

Discussion and Conclusion

This study was conducted to measure the nomophobia levels of high school students and to examine the relationship between personality and nomophobia level and the results were discussed by supporting the studies in literature.

The total scores of the "losing online connection" sub-dimension do not show statistically significant difference according to gender. It was found that women's total scores were higher than men's in all other sub-dimensions and in the TNS. When the studies in the literature are examined; Özsavran and Ayyıldız, (2022); Dalbudak et al., (2020); Yılmaz et al., 2018; Arpaci et al., (2017); Erdem et al., (2017); Yıldırım et al., (2016); SecurEnvoy, (2012); Tavolacci et al., (2015); Pavithra and Madhukumar (2015), it was seen that women had a higher nomophobia rate than men. In our study, although there was no significant difference in nomophobia levels according to gender, it was determined that the nomophobia level of women was higher than men in the scale and scale sub-dimension total scores. This result is similar to the studies in the literature. The reasons why women have higher levels of nomophobia compared to men are thought to be caused by psychological, social and cultural factors and are associated with these factors. Considering that women's emotional reactions are more intense than men's, it may lead them to experience higher levels of anxiety when they experience phone deprivation or other technological device deprivation. At the same time, factors such as security concerns in our society may cause women to think of their phones as both a communication tool and a security tool, which may increase the importance of these devices. On the other hand, considering both cultural and social norms and expectations, it is thought that this situation may encourage women to be more accessible. When considering these factors, it becomes apparent that women tend to exhibit higher levels of nomophobia compared to men. However, literature also includes studies

where no significant difference in nomophobia levels between genders is found (Dixit et al., 2010; Adnan & Gezgin, 2016). This discrepancy is believed to stem from variations in sample demographics, cultural and socioeconomic contexts, and individual factors influencing the studies.

The total scores of the "inability to communicate" sub-dimension do not show a statistically significant difference according to the duration of daily smartphone use. For all other sub-dimensions and TNS, as the daily smartphone usage time of individuals increases, the total scores also increase. When the literature is examined, similar to our study, it is seen that increasing the duration of daily smartphone use increases nomophobia (Okuyan et al., 2019; Nikhita et al., 2015). The main reason here is that the increase in the duration of individuals' use of these devices increases their addiction to these and similar devices and increases their nomophobia levels.

The total scores of the "inability to communicate" sub-dimension do not show a statistically significant difference according to the duration of daily mobile internet use. For all other sub-dimensions and the TNS, as the duration of daily mobile internet use increases, the total scores also increase. This situation is thought to be due to individuals' addiction to technological devices. In short, it can be associated with the fact that the fear of staying away from technological devices, which is the main feature of nomophobia, triggers this situation in individuals. As a result, prolonged internet usage correlates with increased levels of nomophobia in individuals. Kocabaş and Korucu (2018) similarly affirm this relationship in their study. Interestingly, while the total scores for the 'inability to access information' sub-dimension did not exhibit a statistically significant difference based on whether participants turned off their smartphones at night, individuals who did not turn off their smartphones overnight scored higher across other sub-dimensions and the Total Nomophobia Scale (TNS). Literature reports indicate that individuals who do not power off their smartphones at night tend to experience higher levels of nomophobia compared to those who do (King et al., 2013; Kaur et al., 2015). This heightened nomophobia is attributed to their increased reliance on technology,

constant connectivity needs, and desire to maintain uninterrupted information flow and social interaction.

Furthermore, individuals who spent more than 4 hours daily with friends showed lower total scores in the 'inability to communicate' sub-dimension compared to those spending less time. This observation suggests that increased face-to-face social interaction may mitigate tendencies towards nomophobia by enhancing communication skills and reducing the reliance on digital communication tools.

Regarding sporting activity, our study found no statistically significant differences in TNS and its sub-dimensions based on participants' athletic status. However, literature indicates that athletes may experience stress and anxiety when separated from technological devices (Jones et al., 2019). Similarly, studies involving university students have shown increased anxiety levels when asked to abstain from phone use (Cheever et al., 2014). Our findings imply that engaging in sports could positively influence nomophobia tendencies, whereas athletes experiencing stress when away from devices underscores the risk of developing unhealthy dependencies without functional use.

In terms of years using cell phones and mobile internet, our study found no significant differences in TNS scores and its sub-dimensions. This aligns with some literature findings (Adnan & Gezgin, 2016; Gezgin & Çakır, 2016; Gezgin et al., 2017), while conflicting studies suggest varying impacts (Yıldırım et al., 2016; Han et al., 2017; Sırakaya, 2018). This inconsistency underscores that nomophobia is influenced not just by duration of phone or internet use, but also by usage habits, daily continuity of use, and other contextual factors such as device development levels, internet access, app usage, and daily online durations. This shows that the habits of individuals in the use of technological devices are more determinative in affecting nomophobia, rather than how long they have been using mobile internet.

The total scores of the "mildness" and "emotional stability" sub-dimensions of the individuals who practiced sports were higher than those of the individuals who did not practice sports. The total scores of the individuals for all other sub-dimensions and the TIPS did not show a statistically significant difference according

to their sporting status. When the literature is examined; Dereceli et al. (2023) stated that there was a significant difference in extroversion, emotional stability and responsibility sub-dimensions in their study. It is known that personality is a determining psychological factor for sportive success (Piepiora, 2020). The higher scores of "mildness" and "emotional stability" of individuals who do sports can be explained by the contribution of sports to stress management and social skills. However, the lack of a significant difference in other sub-dimensions suggests that the differences found in sub-dimensions such as extroversion and responsibility in Dereceli et al.'s (2023) study may be affected by individual and environmental factors. This suggests that the effects of sport on personality may vary according to sport type, duration and individual characteristics. "Emotional stability" sub-dimension and total scores of "TIPS" of individuals who use smartphones for less than 3 hours daily were higher than those of individuals who use smartphones for more than 3 hours daily. For all other sub-dimensions, the total scores of the individuals did not show statistically significant differences according to the duration of daily smartphone use. This result suggests that individuals' long-term use of smartphones may negatively affect their emotional balance and make a difference in their general personality traits Individuals' total scores of the "openness to experience" sub-dimension increase as their years of mobile internet use increase. In addition, the total scores of individuals in the "extraversion" sub-dimension decreased as their years of mobile internet use increased. The total scores of individuals for all other sub-dimensions and the TIPS do not show statistically significant differences according to their years of mobile internet use. In this direction, it is suggested that while mobile internet use increases individuals' tendency to be open to new experiences, it may decrease their extraversion levels by limiting their social interactions. However, the lack of a significant difference in other sub-dimensions suggests that the effect of mobile internet use on these characteristics may be limited or indirect The total scores of the "extraversion" sub-dimension of the individuals decrease while their average daily mobile internet usage time increases.

The total scores of individuals for all other sub-dimensions and the TIPS do not show statistically significant differences according to their years of mobile internet use. In this direction, it is suggested that while mobile internet use increases individuals' tendency to be open to new experiences, it may decrease their extraversion levels by limiting their social interactions. However, the lack of a significant difference in other sub-dimensions suggests that the effect of mobile internet use on these characteristics may be limited or indirect

The total scores of the "extraversion" sub-dimension of the individuals decrease while their average daily mobile internet usage time increases. The total scores of the individuals for all other sub-dimensions and the OQAS do not show a statistically significant difference according to their average daily mobile internet usage time. The increase in daily mobile internet usage time suggests that individuals may negatively affect their extraversion levels by shifting their social interactions to digital environments. The lack of a significant difference in other sub-dimensions may indicate that these characteristics are less affected by daily mobile internet use.

The total scores of "openness to experience" and "emotional stability" sub-dimensions of the individuals do not show statistically significant difference according to the status of turning off the smartphone at night. For all other sub-dimensions and the TIPS, the total scores of individuals who turn off their smartphones at night are higher than those who do not. The fact that individuals who turn off their smartphones at night have higher scores may be due to the fact that these individuals can establish a healthier psychological balance through digital detox. However, the fact that there was no difference in the dimensions of "openness to experience" and "emotional stability" suggests that these characteristics may be less affected by phone usage habits.

The total scores of the individuals on the TIPS and its sub-dimensions do not show statistically significant differences according to their gender. When the literature is examined, there are parallel studies with our study (Dereceli et al., 2023), but there are studies that contradict our study (Aliyev, 2008; Merdan 2013; Aslan & Karanfil, 2022). In his study, Merdan (2013) found a significant difference

in the gender variable in all sub-dimensions except extraversion dimension. It is thought that the fact that the total scores of the individuals in the OQAS and its sub-dimensions do not show a significant difference according to their gender is due to the fact that the individuals in the sample have similar personality traits. However, the studies in the literature that contradict our study are thought to be due to sample groups with different demographic characteristics or differences in the methods used. This situation shows that the effect of gender on personality traits should be examined in more detailed and comprehensive studies.

There is no statistically significant difference in the total scores of the TIPS and its sub-dimensions according to the number of years of phone use and the time spent with friends during the day. The fact that the total scores of individuals' TIPS and its sub-dimensions do not differ according to the duration of phone use and the time spent with friends may be due to the fact that these variables do not have a significant effect on personality traits or that they show a homogeneous distribution among individuals. When examined in the literature, there is no similar study examining the current variables with personality, which indicates that more comprehensive studies on personality should be conducted in the future.

There is a statistically significant and opposite relationship between the sub-dimension of "losing online connection" and the sub-dimension of "extraversion" and between "losing online connection" and the general scale of " TIPS" at 95% confidence level. There is no statistically significant relationship for the other sub-dimensions of the TNS and the TIPS. In addition, there is no statistically significant relationship between the subscales of the TNS and the subscales of the TIPS and between the TIPS and the subscales of the TNS. Considering the studies on the relationship between personality traits and nomophobia, there is a positive relationship between extraversion sub-dimension and nomophobia (Argumosa-Villar et al., 2017; Elhai et al., 2016; Siddigui & Az, 2015; Yıldız Durak, 2019). These findings suggest that anxiety about losing online connection may have negative effects on extraversion and general personality traits. The finding of a positive relationship between extraversion and nomophobia in the literature suggests that this may be due to individuals' high dependence on social interactions online.

However, the complexity of the relationship between personality traits and nomophobia requires a more detailed examination of individuals' technology dependency levels and usage habits.

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