



RESEARCH ARTICLE / ARAŞTIRMA YAZISI

The New Environmental Factor of Depression, Anxiety and Stress: Excessive Social Network Loading

Depresyon, Anksiyete ve Stresin Yeni Çevresel Faktörü: Aşırı Sosyal Ağ Yüklenmesi

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Abstract:

The research examined the environmental factors of depression, anxiety, and stress related to Excessive Social Network Uploading. The study aimed to investigate the effects of new communication technologies on individuals' mental states. Descriptive analyses and parametric tests were used in the study. A total of 483 participants took part in the research, including 225 women and 258 men. The data were collected online from individuals aged 18 and above, using social networks across Turkey. Data were gathered using the Excessive Social Network Uploading (ESNU) Scale, the Depression, Anxiety, and Stress Scale (DAS-21), and a socio-demographic information form. Participants' exposure to excessive social network uploading was found to be at a moderate level. Varied distribution levels were found related to depression, anxiety, and stress among participants. Regression analysis pointed to excessive social network uploading predicting depression, anxiety, and stress. The researchers suggest these two variables should be explored in different study samples and models.

Keywords: Depression, Stress, Anxiety, Excessive Social Network Uploading.

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Öz:

Araştırma depresyon, anksiyete ve stresin çevresel faktörlerini aşırı sosyal ağ yüklenmesi açısından incelemiştir. Araştırmada yeni iletişim teknolojilerinin kişilerin ruhsal durumlarına olan etkilerinin incelenmesi amaçlanmıştır. Araştırmada betimleyici analizler ile parametrik testler kullanılmıştır. Araştırmaya 225 kadın, 258 erkek olmak üzere 483 kişi katılmıştır. Araştırmada veriler tüm Türkiye’de sosyal ağ kullanan 18 yaş ve üstü kişilerden çevrim içi toplanmıştır. Veriler, aşırı sosyal ağ yüklenmesi ölçeği (ASAYÖ), depresyon, anksiyete, stres ölçeği (DAS-21) ve sosyo-demografik bilgi formu ile toplanmıştır. Katılımcıların, aşırı sosyal ağ yüklenmesine maruz kalma durumu orta seviyededir. Katılımcıların depresyon, anksiyete ve stres düzeyleri farklı puanlarda dağılım göstermiştir. Yapılan regresyon analizi sonucunda aşırı sosyal ağ yüklenmesinin depresyon, anksiyete ve stresi yordadığı anlaşılmıştır. Araştırmacılar gelecekte yapılabilecek çalışmalarda bu 2 değişkenin farklı örneklemelerde ve farklı modellerde incelenmesini önermektedir.

Anahtar Kelimeler: Depresyon, Stres, Anksiyete, Aşırı Sosyal Ağ Yüklenmesi.

Introduction

Individuals are exposed to various emotional states throughout their lives. In modern times, one of the frequently discussed and complaint-oriented issues is stress (Yavuz, 2023). Stress is a significant personal problem (Selye, 1956). Stress arises from individuals interacting with their environment (Lazarus, 1999). Stress is a consequence of individual and environmental factors (Okutan & Tengilimioğlu, 2012). Stress can result in mental disorders like depression and anxiety (Folkman, 1984). When a person is exposed to intense, unmanageable stress, it leads to anxiety (Şahin, 2019). When an individual faces a threatening situation, they tend to compare it to past stressful experiences, initiating an anxiety process (Topçuoğlu, 2022). Anxiety is one of the fundamental human emotions. It is characterized by disruptions in thought, behavior, physiological activity, and mood (Adwas et al., 2019). Anxiety is also related to depression (Knorrning, 2005). Anxiety disorders are often accompanied by other mood disorders, such as major depression (Topçuoğlu, 2022). Depression is classified as a psychiatric disorder characterized by sadness and a sense of hopelessness (Bartha et al., 2013). Depression, as a mental disorder, also stems from personal and environmental factors similar to stress and anxiety (Gurung & Shrestha, 2023). Depression, anxiety, and stress are personal reactions arising from internal and external (environmental) factors (Knorrning, 2005; Şahin, 2019; Yavuz, 2022). Internal factors include traits, temperament, character, and abilities that contribute to an individual's personality (Akçan, 2022). Internal factors include personality traits and a broad range of factors, including family and social life (Çökük, 2018). External factors include the individual's environment, their society, their role in organizations or work, interpersonal communication processes, use of technical devices, system characteristics, information overload, excessive sociability, new communication technologies, social changes, transportation issues, economic difficulties, changes in the city of residence, socio-economic status of the country, and political and economic uncertainties (Güçlü, 2001; Okutan & Tengilimioğlu, 2002; Cao & Sun, 2018; Shi et al., 2020). Selye (1956) referred to environmental factors triggering specific responses in

individuals as stressors. Each of the environmental factors related to triggering depression, anxiety, and stress is considered a stressor. The emergence of new environmental factors in the rise of psychiatric disorders such as anxiety and stress is discussed. Some studies (Müezzin, 2023) have determined that smartphone addiction leads to psychopathological conditions like depression and anxiety and psychological states like stress and sadness. Dhir et al. (2018) found that the fear of missing out (FOMO) due to compulsive social network use is an environmental factor contributing to depression and anxiety. Another study (Fu et al., 2020) found that excessive social network uploading is an environmental trigger factor for individuals. Whelan et al. (2020) identified that individuals exposed to excessive social network uploading experience negative moods such as depression and boredom. Excessive social network uploading includes following other users and the technical characteristics of the system in social networks. Excessive social network uploading is an environmental precursor to experiencing social network fatigue (Yu et al., 2019; Shi et al., 2020; Acar, 2020; Lin et al., 2021). Social network fatigue is defined as a physical or psychological negative mood that results from exposure to environmental stimuli (Acar, 2022). Initial studies on the concept adapted the precursors of medical fatigue found in clinical and occupational research to social networks (Acar & Gülnar, 2023). Literature indicates that excessive social network uploading contributes to psychological disorders in social network users (Cao & Sun, 2018; Shi et al., 2020). Studies (Cao & Sun, 2018; Acar, 2020; Shi et al., 2020) suggest this variable, which could be an environmental precursor, can potentially lead to various negative outcomes such as depression, anxiety, stress, restlessness, dissatisfaction, burnout, and technostress. However, there is no research in the literature specifically examining whether excessive social network uploading is an environmental precursor to depression, anxiety, and stress. This research is significant as it examines a different environmental precursor. The study aims to investigate the effects of new communication technologies on individuals' mental states. Based on this objective, the following research questions have been formulated:

Research Question 1: What are the levels of the participants' states of excessive social network uploading?

Research Question 2: What are the levels of the participants' states of depression, anxiety, and stress?

Research Question 3: Does excessive social network uploading significantly predict depression, anxiety, and stress?

H1: Excessive social network uploading significantly predicts depression, anxiety, and stress.

Method

Research Design

The study was designed using a quantitative research model. It examined whether excessive social network uploading predicts depression, anxiety, and stress using parametric tests.

Participants and Sample

The study sample consists of 483 individuals. Among the participants, 225 are female and 258 are male. Surveys were collected online via Google Forms between November 11, 2023, and January 29, 2024. The average age of the sample is $\bar{X}=34.56$. The youngest participant is 18 years, and the oldest is 71 years. Of the participants, 326 are employed, and 157 unemployed. The participants' educational backgrounds vary. 18 participants have completed primary education, 17 have completed secondary education, 61 have completed high school, 34 have completed associate degrees, 235 have completed bachelor's degrees, 70 have completed master's degrees,

and 48 have completed doctoral studies. Among the participants, 266 are married and 217 are single.

Data Collection Tools

Excessive Social Network Uploading (ESNU) Scale

The ESNU Scale was developed by various researchers. The social load items of the scale were developed by Maier et al. (2014). The overall Cronbach's Alpha coefficient of the scale is $\alpha = .90$. Zhang et al. (2016) added two different subdimensions: the load of system features (4 items, $\alpha = .81$) and the load of information (8 items, $\alpha = .86$). Cao and Sun (2018) added the communication load subdimension (5 items, $\alpha = .94$). Acar (2022) adapted the scale into Turkish by combining these subdimensions. The Cronbach's Alpha coefficients for the subdimensions are: information overload (IO, 3 items) $\alpha = .602$, loading of communication (CO, 5 items) $\alpha = .580$, overload of sociability (SO, 5 items) $\alpha = .672$, and overload of system (SYSO, 3 items) $\alpha = .563$. The ESNU Scale is a 5-point Likert scale (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree).

Depression-Anxiety-Stress Scale (DAS-21)

The Depression Anxiety Stress Scales (DASS-42) were developed by Lovibond and Lovibond in 1995 with 42 items. Sarıcam (2018) adapted the shorter version of the DASS-42 into Turkish with 21 items. The subdimension coefficients are: depression (7 items) $\alpha = .85$; anxiety (7 items) $\alpha = .80$; and stress (7 items) $\alpha = .77$. The cutoff score ranges for the DAS are provided for non-clinical samples in Table 1.

Table 1. DAS-21 Cutoff Scores

	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Very Severe	14+	10+	17+

Socio-Demographic Information Form

The socio-demographic information form gathers information on the participants' gender, age, marital status, education, and employment status.

Ethical Approval

Approval was received from the Social Sciences Ethics Review Board of Sivas Cumhuriyet University (Decision No: 2, Date: 14/09/2023).

Statistical Analysis of the Data

In the study, the IBM SPSS 17.0 statistical software package was used. Initially, the Skewness and Kurtosis values were examined to assess the normality distribution. The Skewness value is .111, and the Kurtosis value is .222. It was understood that the data set showed a normal distribution since the Kurtosis and Skewness values were in the accepted range of -1.5 and +1.5 (Tabachnick and Fidell, 2013). Since the data exhibited a normal distribution, it was determined that parametric tests such

as correlation and regression analysis could be used. Subsequently, the representativeness of the scales for the sample was assessed. The KMO value for the ESNU Scale is .84,8, and the Bartlett's test value is 2369.238 ($p < 0.005$). For the DAS-21, the KMO value is .95,3 and the Bartlett's test value is 5270.566 ($p < 0.005$), indicating significance. These coefficients confirm that the scales are representative of the sample. The overall Cronbach's Alpha coefficient for the 16 items of the ESNU Scale is $\alpha = .836$, with subdimension coefficients being: IO $\alpha = .740$, CO $\alpha = .809$, SO $\alpha = .804$, and SYSO $\alpha = .553$. For the DAS-21, the overall Cronbach's Alpha coefficient for the 21 items is $\alpha = .942$. The reliability coefficients for the subdimensions of the DAS-21 are: depression $\alpha = .875$, anxiety $\alpha = .870$, and stress $\alpha = .850$.

Findings

In the study, the level of exposure to excessive social network uploading among participants was determined using descriptive analysis.

Table 2. Analysis of Participants' Level of ESNU

ESNU Subdimensions	N	Mean	SD
IO	483	3,1953	,96995
CO	483	3,0348	,93903
SYSO	483	2,9068	,83122
SO	483	2,1844	,82482

To determine the participants' levels of exposure to the ESNU Scale, a range of 0.80 (4/5) was used, which extends from a 5-point Likert scale. The levels of these ranges are: 1.00-1.80 = very low; 1.81-2.60 = low; 2.61-3.40 = moderate; 3.41-4.20 = high; 4.21-5.00 = very high (Şahin & Gülnar, 2016). Participants were exposed most to IO (M = 3.19) and least to SO (M = 2.18). The overall

level of exposure to ESNU Scale for participants is M = 2.85, which is moderate.

In the study, the participants' levels of depression, anxiety, and stress were determined through separate frequency analyses according to the cutoff score ranges used for non-clinical samples.

Table 3. Analysis of Participants' Depression, Anxiety and Stress Levels

Level	Depression (%)	Anxiety (%)	Stress (%)
Normal	41,6	49,1	60,2
Mild	15,5	16,5	13,9
Moderate	28,4	13,9	15,3
Severe	7,0	7,2	8,7
Very Severe	7,5	13,0	1,9
Total	100,0	100,0	100,0

Participants' depression levels are as follows: 41.6% are normal, 15.5% have mild depression, 28.4% have moderate depression, 7.0% have severe depression, and 7.5% have very severe depression. Regarding anxiety, 49.1% are normal, 16.5% have mild anxiety, 19.9% have moderate anxiety, 7.2% have severe anxiety, and 13.0% have very severe anxiety. Regarding stress, 60.2% are normal, 13.9% have mild stress, 15.3% have moderate stress, 8.7% have severe stress, and 1.9% have very severe stress.

The study used regression analysis to determine whether excessive social network uploading predicts depression, anxiety, and stress. First, the assumptions of regression analysis were checked for correlation, autocorrelation, and issues of multicollinearity among variables. Correlation analysis was conducted to determine the direction and

strength of relationships between variables. It was found that all subdimensions of the dependent and independent variables are related and significant. There is a positive and significant relationship between depression, anxiety, and stress with IO ($r = .187^{**}$; $r = .126^{**}$; $r = .232^{**}$, $p < 0.001$), CO ($r = .259^{**}$; $r = .267^{**}$; $r = .311^{**}$, $p < 0.001$), SO ($r = .263^{**}$; $r = .264^{**}$; $r = .243^{**}$, $p < 0.001$), and SYSO ($r = .236^{**}$; $r = .280^{**}$; $r = .340^{**}$, $p < 0.001$). To identify autocorrelation among the variables in the model, the Durbin-Watson value was examined, which was 1.873, 1.812, and 1.866. It was determined that there is no relationship between consecutive values of the error term. The VIF values (IO: 1.308, CO: 1.490, SO: 1.169, SYSO: 1.265) and tolerance values (IO: .764, CO: .671, SO: .855, SYSO: .790) indicate that the regression analysis is suitable. The data meet the assumptions of regression analysis.

Table 4. Regression Analysis Results

	Model 1				Model 2				Model 3			
	Depression				Anxiety				Stress			
Constant	B	SHB	β	t	B	SHB	β	t	B	SHB	β	t
	-1,62	,133		-1,218	-2,88	,123		-2,329	-1,96	,125		-1,563
Variables												
IO	,050	,033	,075	1,538	-,012	,030	-,020	-,411	,050	0,31	0,78	1,632
CO	,080	,036	,116	2,216	,094	,033	,146	2,808	,097	0,34	0,145	2,851
SO	,144	,036	,183	3,950	,122	,034	,166	3,610	,094	0,34	0,123	2,732
SYSO	,089	,038	,114	2,371	,133	,035	,184	3,829	,016	0,35	0,223	4,755

Note 1: For Model 1, $R = 0.346$, $R^2 = 0.112$, $F = 16.207$, sig., 0.125; sig., 0.027; sig., 0.000; sig., 0.018, $p < 0.05$ **Note 2:** For Model 2, $R = 0.363$, $R^2 = 0.125$, $F = 18.161$, sig., 0.681; sig., 0.005; sig., 0.000; sig., 0.000, $p < 0.05$ **Note 3:** For Model 3, $R = 0.411$, $R^2 = 0.162$, $F = 24.304$, sig., 0.103; sig., 0.005; sig., 0.007; sig., 0.000, $p < 0.05$.

Table 4 presents three models to examine the relationship between dependent variables (depression, anxiety, stress) and independent variables (excessive social network load). In all models, the dependent variables are depression, anxiety, and stress; the independent variables are IO, CO, SO, and SYSO. In Model 1, the effect of excessive social network uploading on depression is investigated. Except for the IO variable (sig., 0.125, $p < 0.005$), all other variables (sig., 0.027, $p < 0.005$; sig., 0.000, $p < 0.005$; sig., 0.018, $p < 0.005$) significantly predict depression. The summary statistics ($R^2 = 0.112$, $F = 16.207$, $p < 0.005$) indicate that excessive social network uploading is a significant predictor of depression.

In Model 2, all independent variables except for IO (sig., 0.681, $p < 0.005$) significantly predict anxiety (sig., 0.005; sig., 0.000; sig., 0.000, $p < 0.005$). The model summary ($R^2 = 0.125$, $F = 18.161$, $p < 0.005$) shows that the independent variables, excluding IO, are significant predictors of anxiety.

In Model 3, all independent variables except for IO (sig., 0.103, $p < 0.005$) significantly predict stress (sig., 0.005; sig., 0.007; sig., 0.000, $p < 0.005$). The model summary ($R^2 = 0.162$, $F = 24.304$, $p < 0.005$) shows that excessive social network uploading is a significant predictor of stress.

According to Table 4, the independent variables significantly explain the dependent variables ($p < 0.005$). In Model 1, the independent variables account for 11.2% of the variance in depression, 12.5% of the variance in anxiety, and 16.2% of the variance in stress.

Discussion

The study first identified that participants are highly exposed to an information overload on social networks. Similarly, Cao and Sun (2018) and Shi et al. (2020) also found that participants are overexposed to excessive information overload on social networks. Another study with similar findings by Lin et al. (2021) determined that

people using social networks are primarily exposed to information related to content and posts from other users. In line with Yu et al. (2019), this study also revealed that participants experience loading of communication. Findings parallel to Zhang et al. (2016) and Fu et al. (2020) indicate that participants are not only overwhelmed by other users but also by the system's own features. Additionally, findings suggest that virtual sociability also imposes a burden on users. In alignment with the findings of Fu et al. (2020), Zhang et al. (2016), and Cao and Sun (2018), this study determined that sociability creates excessive overload for users.

The study also examined participants' levels of depression, anxiety, and stress. It found a variation in the distribution of depression, anxiety, and stress levels among participants. When excluding participants at normal levels and interpreting from mild to very severe, findings indicate that 58.4% of the sample showed signs of depression, 50.9% showed anxiety, and 39.8% showed stress. The scores were highest for anxiety at very severe levels and lowest for stress. There were challenges in co-relating these findings with other studies. Despite the extensive research on social network use and mental health, analyses were conducted directly with parametric tests without performing score distributions for depression, anxiety, and stress. As a result, this study's findings could not be compared with others.

The study found that an overload on social networks significantly predicts depression, stress, and anxiety, similar to the results of Dhir et al. and Cao and Sun (2018). Yu et al. (2019), Fu et al. (2020), and Shi et al. (2020) also identified that excessive social network uploading negatively affects mental health due to technostress and burnout. Fantasia et al. (2023) found that participants experience fear and insecurity due to overloads such as information on social networks. The findings are supported by the H1 hypothesis, indicating that individual and environmental factors could be predictors of

depression, anxiety, and stress, similar to the research results of Okutan and Tengilimioğlu (2012), Knorrning (2005), and Gurung and Shrestha (2023).

Conclusion

The study has established that excessive social network uploading is an environmental predictor of depression, anxiety, and stress. This finding adds the environmental factor as an additional trigger to the prevalence of depression, stress, and anxiety. Excessive social networking or overload is thus identified as the emerging environmental factor contributing to these conditions.

Recommendations

Going forward, research should focus on determining the score ranges for depression, anxiety, and stress. There is a need for studies to conclusively establish whether excessive social network overload can predict depression, anxiety, and stress. It is recommended that studies include participants from adolescents and diverse cultures. Lastly, governments should formulate policies regarding social network use to protect citizens' mental well-being.

Limitations

The study was limited to people aged 18 and over who use social networks in Turkey.

Declarations

Approval was received from the Social Sciences Ethics Review Board of Sivas Cumhuriyet University (Decision No: 2, Date: 14/09/2023).

Publication Permission

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Availability of Data and Materials

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Authors' Contributions

MK contributed greatly to the writing of the method and discussion section, summary and abstract of the article. He also contributed to the overall writing and proofreading of the article. NA analyzed and interpreted the research data. She also contributed to the overall writing and proofreading of the article. MK made a great contribution to writing the introduction and discussion section of the article. NA contributed greatly to data collection. All authors have read and approved the final version of the article.

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