

Prediction of the time spent on Instagram by social media addiction and life satisfaction

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Abstract

There are many different debates regarding the time spent on Instagram by social media addiction and life satisfaction. In consequence, in this research, it is aimed to reveal the variables that predict the time spent on Instagram by university students. The research is done in accordance with the causal and correlation model by using a quantitative research method. The results of the research are predicted by the time spent on Instagram, gender, age and social media addiction. Time spent on Instagram differentiates in accordance with the level of social media addiction (Sig = 0.00, $p < 0.05$) but does not differentiate by life satisfaction (Sig = 0.06, $p > 0.05$). As social media addiction increases, life satisfaction decreases ($r = -0.19$). Women spent 0.42 times more time, and the women at the age of 21–22 years spent 0.38 times more time on Instagram.

Keywords: Instagram, life satisfaction, social media, addiction.

1. Introduction

Social media is an Internet (online) platform, where the persons sharing similar interests communicate with each other. Users, through social media, may reach their friends, develop new friendships and convey their messages by sharing posts to large masses. Social media emerged as a modern fact in our life as a result of the increase in Internet usage (Boyd & Ellison, 2007). With the proliferation of the Internet and the advancement of mobile devices, the number of social media users increases gradually. The number of Facebook and Instagram users in the world reached to one and a half billion, and each of these users spends 136 minutes on these media per day ('Instagram istatistikleri', 2019a).

With the widespread use of social media, the problematic uses are seen, and the concept of social media addiction took place in the literature (Kuss & Griffiths, 2017). Although social media addiction is still not regarded as a medical diagnosis, it has become a field of an intensive study. Generally speaking, the symptoms of social media addiction are examined similarly with the symptoms of all kinds of dependencies.

Various risk factors related to social media addiction were investigated. Various research works were conducted on subjects such as perceived social support (Bilgin & Tas, 2018), self-respect (Andreassen & Pallesen, 2014; Bozoglan, Demirer & Sahin, 2013; Hawi & Samaha, 2017; Hou, Xiong, Jiang, Song & Wang, 2019; Zhan, Sun, Wang & Zhang, 2016), mental health (Hou et al., 2019; Jeri-Yabar et al., 2019), success in courses (Hou et al., 2019), social commitment (Savci & Aysan, 2017), subjective well-being (Mackson, Brochu & Schneider, 2019), life satisfaction (Bozoglan et al., 2013; Hawi & Samaha, 2017; Sahin, 2017; Wilczek, 2018; Ye, Hashim, Baghirov & Murphy, 2018), (Campisi, Folan, Diehl, Kable & Rademeyer, 2015), gender (Huang & Su, 2018; Shane-Simpson, Manago, Gaggi & Gillespie-Lynch, 2018; Simsek, Elciyar & Kizilhan, 2019; Thelwall & Vis, 2017) and cultural differences (Sheldon, Rauschnabel, Antony & Car, 2017).

It is seen that the studies on social media addiction are predominantly conducted with regard to Facebook and Twitter (Andreassen & Pallesen, 2014; Hawi & Samaha, 2017). The number of research works conducted on Instagram is relatively limited (Frison & Eggermont, 2017; Huang & Su, 2018; Kircaburun & Griffiths, 2018). Instagram is a social media application, which enables the users to share photos and videos. It is the most popular social media channel recently (Huang & Su, 2018). Instagram has the highest number of users amongst social media applications worldwide after Facebook and YouTube. The number of shares per day is 95 million, and the number of 'likes' per day is five billion on the average (Instagram istatistikleri, 2019b). Those, who begin to use Instagram, keep at it due to the perceived ease of use, social interaction and being satisfied with entertainment (Hwang & Cho, 2018).

The use of social media generally increases life satisfaction (Zhan et al., 2016). Life satisfaction is a part of subjective well-being and forms the cognitive aspect of happiness (Diener, Emmons, Larsen & Griffin, 1985). Life satisfaction is defined as meeting the needs and wants (Deniz, Avsaroglu, Deniz & Bek, 2010). Similarly, it can also be defined as having more positive emotions than negative ones with regard to all events experienced on the same day. Thus, it can be said that the persons who have positive emotions as their needs and wants are met to have high life satisfaction. The previous studies conducted on social media addiction have revealed the contradictory results. Whilst, in some studies, a negative correlation was found between social media addiction and life satisfaction (Bozoglan et al., 2013; Hawi & Samaha, 2017), this correlation was not found in some others (Campisi et al., 2015).

This research is conducted to find the different results regarding the time spent on Instagram. The primary purpose of this research is to determine whether there is a correlation between social media addiction and life satisfaction. The second purpose is to reveal whether the university students' social media addiction or level of life satisfaction differs by the time that they spend on Instagram. The third purpose is to explain a model which predicts the time spent on Instagram in terms of gender, age and social media addiction.

2. Method

The quantitative research method is used in this research, and the research designs of this method are developed on the basis of the comparative model and ex post facto model. The comparative model aims to determine the existence of a covariance between two or more variables or the degree of this covariance if any. *Ex post facto* model, on the other hand, examines the revealed or existing cause and effect relationships amongst some variables (Nunnally, 1978).

2.1. Study group

The study group of the research is composed of 433 university students studying in two different faculties of education located in Istanbul Province in the 2019–2020 fall semester. It is suggested that the size of the sample should be at least 10 times more than the number of items (Nunnally, 1978). Accordingly, the number of participants in the research is sufficient. The sampling technique of the research is random sampling in the form of simple random sampling. In this method, a random sample is selected by the researcher from a sampling frame either manually or through a computer by using a random number table or through an online number generator (Fraenkel, Wallen & Hyun, 2012). Daily time spent on Instagram is classified under five categories as shown in Table 1.

Table 1. Distribution regarding the demographic characteristics of the study group

Options	1	2	3	4	5	Total
Gender	Male	Female				
	<i>n</i> 94	339				433
	% 21.7	78.3				100.0
Age	18–20	21–22	22–23	24 and above		
	<i>n</i> 160	189	59	25		433
	% 37.0	43.6	13.6	5.8		100.0
Time spent on Instagram per day	IP1	IP2	IP3	IP4	IP5	
	<i>n</i> 67	90	131	70	75	433
	% 15.5	20.8	30.3	16.2	17.3	100.0

The ones spending 15–29 minutes on Instagram per day (IP1), 30–59 minutes (IP2), 60–119 minutes (IP3), 120–179 minutes (IP4) and more than 180 minutes (IP5).

According to the demographic characteristics of the participants, the number of male students was 94 (21.7%), and the number of female students was 339 (78.3%). According to the ages of the participants, the highest number was in the age group of 21–22 years (43.6%), and the least number was 24 years and older (5.8%). In terms of the time spent on the Instagram, the highest number of participants was in IP3 category (131 participants, 30.3%). The least number of participants was in IP1 category (67 participants, 15.5%).

2.2. Data collection tool

The social media addiction scale developed by Sahin and Yagci (2017) is used in this research. As the research is designed to use a university sample, this scale prepared for adults is used. This five-point Likert scale is composed of 20 items and two subdimensions. The virtual tolerance factor load for these subdimensions was determined as 0.61, and the virtual communication factor load was determined as 0.87. Confirmatory factor analysis is made, and the suitability index values are found (RMSA = 0.059; SRMR = 0.060; NFI = 0.59; CFI = 0.96; GFI = 0.90 and AGFI = 0.88). Cronbach's alpha internal consistency coefficient is determined as 0.94 for the whole scale, 0.92 for virtual tolerance

and 0.91 for virtual communication subdimensions. Test–retest reliability coefficients used to analyse the reliability of the scale, which are obtained as 0.93 for the whole scale, 0.91 for virtual tolerance and 0.90 for virtual communication subdimensions. Turkish version adopted by Dagli and Baysal (2016) of the ‘life satisfaction’ (SWL) developed by Diener et al. (1985) is used in the research. The scale is one-dimensional and includes five items. In reliability analysis of the scale, Cronbach’s alpha internal consistency coefficient is found to be 0.88, and test–retest reliability is found to be 0.97. Factor analysis results obtained in the validity analysis reveal that the life satisfaction has a one factor structure and is composed of five items as the original scale.

2.3. Analysis of process and data

Personal information form and scales are applied to participants in the research to collect data. The process is managed through Google Survey with volunteer participants. The collected data are analysed by using the SPSS_25 statistical package program. First, one-way and multivariable extreme values of the data are looked at, and no extreme value is found. In the Kolmogorov–Smirnov test for normality distribution, p is found as <0.005 . The data obtained from the participants are evaluated with relational, one-way analysis of variance (ANOVA) and multinomial logistic regression analysis. First, the correlation between the independent variables is analysed. Then, the differences in the variables depending on the time spent on Instagram are analysed. Finally, multinomial logistic regression analysis is made to analyse which variables are predictors. Multinomial logistic regression enables the creation of a model that explains the categorical change in a dependent variable based on the multiple independent variables (Starkweather & Moske, 2011).

3. Findings

In this part, the findings regarding the below hypotheses are presented by using the data obtained from the data collection tool used in the research.

Hypothesis 1: There is a correlation between social media addiction and life satisfaction.

The Pearson correlation test is made in relation to Hypothesis 1, and the findings regarding the correlation between social media addiction and life satisfaction are presented as follows:

Table 2. Total Pearson’s correlation analysis scores of social media addiction scale and life satisfaction

		Total Score of Life Satisfaction
Total Score of Social media addiction Scale	<i>R</i>	-0.187
	<i>p</i>	0.000
	<i>N</i>	433

According to Table 2, there is a weak negative correlation between social media addiction and life satisfaction ($r = -0.187$; ($p < 0.05$). According to this analysis, the satisfaction of students with life decreases as their social media addiction increases. However, the correlation between them is weak.

Hypothesis 2: Social media addiction or life satisfaction differs for university students according to the time spent on Instagram.

Hypothesis 2 is tested with one-way ANOVA. Whether university students’ social media addiction and life satisfaction differ by the time that they spend on Instagram or not determined accordingly.

Table 3. One-way ANOVA for social media addiction and life satisfaction difference by the time spent on Instagram

Variable	Source of the variance	Sum of squares	Df	Mean squares	F	p
Social media addiction	Between groups	43.355	5	8.671	28.474	.000
	Within groups	130.031	427	.305		
	Total	173.386	432			
Life satisfaction	Between groups	12.160	5	2.432	2.160	.058
	Within groups	480.832	427	1.126		
	Total	492.991	432			

At the end of ANOVA analysis, *F* value is found as 228.474, and it is concluded that there is a significant difference ($p < 0.05$). According to this analysis, social media addiction differs by the time spent on Instagram. However, no statistically significant difference is found between the life satisfaction average scores of students ($F = 2.160, p > 0.05$).

On completion of ANOVA analysis, supplementary *post hoc* analysis is made to determine the source groups of the significant difference observed in social media addiction. Thus, the hypothesis regarding the homogeneity of group distribution variances is tested with Levene's test, and the homogeneity of the variances is confirmed ($p > 0.05$). Then, Scheffe multiple comparison test, which is frequently used if the variances are homogeneous, is made. The Scheffe test is preferred because it is sensitive to alpha errors.

Table 4. Post-hoc (Scheffe) test on the difference in social media addiction by the time spent on Instagram

(I) Time spent on Instagram	(J) Mean difference	Time spent on Instagram (I-J)	Std. error	p
IP1	IP2	-0.33146	.09162	.012
	IP3	-0.52793	.08528	.000
	IP4	-0.71416	0.09704	0.000
	IP5	-0.91301	0.09545	0.000
IP2	IP4	-0.38270	0.09048	0.002
	IP5	-0.58156	0.08877	0.000
IP3	IP5	-0.38508	0.08221	0.000

According to Table 4, the differences are observed between category IP1 and categories IP2, IP3, IP4 and IP5. Furthermore, the differences are found between category IP2 and categories IP4 and IP5. It is also revealed that there is a difference between categories IP3 and IP5.

Hypothesis 3: Time spent on Instagram is predicted by gender, age and social media addiction.

Multinomial logistic regression analysis is made to analyse Hypothesis 3, and the findings are presented in tables and texts. Model compliance information regarding the model estimated in the research and pseudo R^2 values are shown in Table 1.

Table 5. Model compliance information and pseudo R^2 values

Model	Model Compliance information				Pseudo R^2	
	-2LL	χ^2	df	P	Cox and Snell	Nagelkerke
Intercept only	1106.361					0.287
Final	960.025	146.336	25	0.000	McFadden	0.101

According to Table 5, model compliance information ($LR \chi^2 = 146.336$; $df = 25$; $p = 0.000$) confirms that the model is statistically significant. Pseudo R^2 values of Cox and Snell and Nagelkerke represent the amount of variance explained by the logistic model, and the result obtained as 0.685 shows a good compliance. Besides, as Cox and Snell R^2 will never be 1, Nagelkerke R^2 is calculated to make a clearer interpretation (Cokluk, 2010).

Table 6 shows if each one of the independent variables (social media addiction, gender and age) used in the research significantly explains the dependent variable (time spent on Instagram) as a whole.

Table 6. Likelihood ratio test values

Effect	-2 Log likelihood of reduced model	Chi-square (χ^2)	df	p
Constant	887.828	0.000	0	0
Social media addiction	985.387	97.558	4	0.000
Gender	898.498	10.670	4	0.031
Age	901.458	13.630	8	0.092

The likelihood ratio test is used to measure the significance of an independent variable in the logistic regression model. Table 6 shows that the independent variable of social media addiction ($p = 0.00 < 0.05$) and gender ($p = 0.031 < 0.05$) has a statistically significant effect on the dependent variable of the time spent on Instagram. On the other hand, it is concluded that the independent variable of age does not have a significant effect ($p = 0.069 > 0.05$).

Table 7. Multinomial logistic regression model's coefficient, standard error, odds rate predictions, df p and $Exp(\beta)$ values

Categories	On Instagram per day	β	Std. error	Wald	df	p	$Exp(\beta)$
Category IP2	Intercept	-3.239	0.842	0.842	1	0.000	
	Social media addiction	0.947	0.294	0.294	1	0.001	2.579
	Gender (female)	0.866	0.389	0.389	1	0.026	2.377
	Gender (male)	0	.	.	0	.	.
	Age (18–20 years)	0.334	0.454	0.454	1	0.462	1.396
	Age (21–22 years)	1.381	0.472	0.472	1	0.003	3.980
	Age (23 years and above)	0	.	.	0	.	.
Category IP3	Constant	-4283	0.835	0.842	1	0.000	
	Social media addiction	1.566	0.290	0.294	1	0.000	4.788
	Gender (female)	0.994	0.373	0.389	1	0.008	2.701

	Gender (male)	0	.	.	0	.	.
	Age (18–20 years)	0.004	0.412	0.454	1	0.992	1.004
	Age (21–22 years)	0.970	0.438	0.472	1	0.027	2.638
	Age (23 years and above)	0	.	.	0	.	.
Category IP4	Constant	-6.992	1.061	0.842	1	0.000	
	Social media addiction	2.181	0.344	0.294	1	0.000	8.856
	Gender (female)	1.315	0.463	0.389	1	0.004	3.724
	Gender (male)	0	.	.	0	.	.
	Age (18–20 years)	0.131	0.492	0.454	1	0.790	1.140
	Age (21–22 years)	1.036	0.514	0.472	1	0.044	2.818
	Age (23 years and above)	0	.	.	0	.	.
Category IP5	Constant	-8.396	1.115	0.842	1	0.000	
	Social media addiction	2.862	0.361	0.294	1	0.000	17.491
	Gender (female)	0.649	0.426	0.389	1	0.127	1.913
	Gender (male)	0	.	.	0	.	.
	Age (18–20 years)	-0.090	0.502	0.454	1	0.858	0.914
	Age (21–22 years)	1.107	0.513	0.472	1	0.031	3.024
	Age (23 years and above)	0	.	.	0	.	.

Reference Category: Category IP1

According to Table 7, the dependent variable of time spent on Instagram is analysed on five categories in accordance with the multinomial logistic regression model. The dependent variable of the research is time spent on Instagram, and the independent variables are social media addiction, gender and age. Category IP1 is taken as a reference value for spending time on Instagram. In other categories, the time spent on Instagram by participants is assessed in consideration of social media addiction, gender, age, β coefficients of the time spent on Instagram by participants and Wald statistics. According to multinomial logistic regression analysis, it is concluded that independent variables are significant predictive variables. Life satisfaction, which is not found statistically significant

in the research, is not added to the model. Furthermore, these variables do not significantly affect the reliability of the model.

Social media addiction: Time spent on Instagram by university students is statistically significant for all levels ($p < 0.05$).

- Probability of 'time spent on Instagram in category IP2' is 2.579 times less or, in other words, 0.39 (1/2.579) times more than the probability of 'time spent on Instagram in category IP1' at Social media addiction level.
- Probability of 'time spent on Instagram in category IP3' is 4.788 times less than the probability of 'time spent on Instagram in category IP1' at social media addiction level.
- Probability of 'time spent on Instagram in category IP4' is 8.856 times less than the probability of 'time spent on Instagram in category IP1' at social media addiction level.
- Probability of 'time spent on Instagram in category IP5' is 17.491 times less than the probability of 'time spent on Instagram in category IP1' at social media addiction level.

Gender: Time spent by university students on Instagram is statistically significant for all levels except time longer than 180 minutes ($p < 0.05$).

- Probability of 'time spent on Instagram in category IP2' is 2.477 times less than the probability of 'time spent on Instagram in category IP1' for females (the level of males is the reference category).
- Probability of 'time spent on Instagram in category IP3' is 2.701 times less than the probability of 'time spent on Instagram in category IP1' for females (the level of males is the reference category).
- Probability of 'time spent on Instagram in category IP4' is 3.724 times less than the probability of 'time spent on Instagram in category IP1' for females (the level of males is the reference category).

Age: Time spent on Instagram by university students is statistically significant for all levels ($p < 0.05$).

- Probability of 'time spent on Instagram in category IP2' is 3.980 times less than the probability of 'time spent on Instagram in category IP1' for the age group of 21–22 years (23 years and above is the reference category).
- Probability of 'time spent on Instagram in category IP3' is 2.638 times less than the probability of 'time spent on Instagram in category IP1' for the age group of 21–22 years (23 years and above is the reference category).
- Probability of 'time spent on Instagram in category IP4' is 2.818 times less than the probability of 'time spent on Instagram in category IP1' for the age group of 21–22 years (23 years and above is the reference category).
- Probability of 'time spent on Instagram in category IP5' is 3.024 times less than the probability of 'time spent on Instagram in category IP1' for the age group of 21–22 years (23 years and above is the reference category).

4. Discussion and conclusions

This research is conducted to find the different results for different discussions regarding the time spent on Instagram. The primary purpose of this research is to determine whether there is a correlation between social media addiction and life satisfaction. The second purpose is to reveal whether university students' social media addiction or level of life satisfaction differs by the time that they spend on Instagram. The third purpose is to explain the model where the time spent on Instagram is predicted by gender, age and social media addiction.

First of all, an analysis is made to see whether there is a correlation between social media addiction and life satisfaction. At the end of this analysis, a weak negative correlation is found between social media addiction attitudes and life satisfaction. According to this analysis, the satisfaction of students with life decreases as their social media addiction increases. At the same time, it is concluded that this

effect rate is less effective due to the weak correlation. In some studies, it is concluded that there is a negative correlation between social media addiction and life satisfaction (Sahin, 2017; Wilczek, 2018). In the study of Sahin (2017), another study conducted with a university sample concluded that there is a negative and moderate correlation between life satisfaction and social media addiction. Wilczek (2018) revealed in his study on media platforms that radio and television have no effect on life satisfaction whilst social networks are effective. In another study, it is concluded that life satisfaction has significant effects on both general Internet dependency and social media addiction (Longstreet et al., 2017). The findings of the study do not show parallelism with some studies in the literature. Campisi et al. (2015) revealed in their study that the frequency of using social networks is not correlated with the quality of life. In the study conducted by Hawi and Samaha (2017), it is revealed that the effect of using social media leads to dependency, and it has a positive correlation with life satisfaction. It is considered that the differences in the findings of studies may originate from the selection of samples and the assessment devices used.

Then, an analysis is made to see whether social media addiction and life satisfaction levels of university students differ depending on the time that they spend on Instagram. Consequently, it is found that social media addiction differs to the degree of the time that they spend on Instagram. In some previous studies, it is also revealed that social media addiction is correlated with the time spent on social media (Kircaburun & Griffiths, 2018). An important conclusion of a study by Muhammad (2018) is that the social media may affect particularly the Instagram users positively and negatively. The positive effect is that people interconnection is increasing compared to the past. Its negative effects may be harmful leading to anxiety and depression.

Finally, an analysis is made as to whether the time spent on Instagram is predicted by gender, age and social media addiction or not. Time spend on Instagram is analysed in accordance with multinomial logistic regression in five categories. The time spent on Instagram in Category IP1 is taken as the reference variable.

- In the order of priorities, the variables in category IP2 such as constant ($\beta = -3.239$; Wald = 0.842: $p < 0.05$), age group of 21–22 ($\beta = 1.381$; Wald = 0.472: $p < 0.05$); females ($\beta = 0.866$; Wald = 0.389: $p < 0.05$) and social media addiction ($\beta = 0.947$; Wald = 0.294: $p < 0.05$) affect the time spent by university students on Instagram.
- In the order of priorities, the variables in category IP3 such as constant ($\beta = -4.283$; Wald = 0.842: $p < 0.05$), age group of 21–22 years ($\beta = 0.970$; Wald = 0.472: $p < 0.05$); females ($\beta = 0.994$; Wald = 0.389: $p < 0.05$) and social media addiction ($\beta = 1.566$; Wald = 0.294: $p < 0.05$) affect the time spent by university students on Instagram.
- In the order of priorities, the variables in category IP4 such as constant ($\beta = -6.992$; Wald = 0.842: $p < 0.05$), age group of 21–22 years ($\beta = 1.036$; Wald = 0.472: $p < 0.05$); females ($\beta = 1.315$; Wald = 0.389: $p < 0.05$) and social media addiction ($\beta = 2.181$; Wald = 0.294: $p < 0.05$) affect the time spent by university students on Instagram.
- In the order of priorities, the variables in category IP5 such as constant ($\beta = -8.396$; Wald = 0.842: $p < 0.05$), age group of 21–22 years ($\beta = 1.107$; Wald = 0.472: $p < 0.05$) and social media addiction ($\beta = 2.862$; Wald = 0.294: $p < 0.05$) affect the time spent by university students on Instagram.

Numerous research works are found on the time spent on Internet in the literature search. Time spend on Instagram is examined in terms of different variables such as gender, social media addiction and age. According to the previous research, gender, professional education background and the level of dependency on Instagram have an impact on the time spent on Instagram (Huang & Su, 2018). Penni (2017) also found that the variables of age and gender are predictive variables for social media addiction. In a study conducted to determine the correlation between time spent on social media and gender, it is found that females spend more time on social media and have a higher risk of dependency (Thelwall & Vis, 2017). Similarly, in a sectional study conducted in Taiwan, it is found that the time spend on Instagram varies by gender (Huang & Su, 2018). Females and males are affected by social media applications in different ways (Yurdagul, Kircaburun, Emirtekin, Wang & Griffiths, 2019).

It attracts attention that males are more risk in terms of technological dependencies such as Internet and game dependency (Ayas, 2012; Bozkurt, Sahin & Zoroglu, 2016; Kuss, Griffiths & Pontes, 2017; Yesilyurt & Erdogan, n.d.). However, it is a bit different when we consider social media addiction. This study reveals that females are more risk than males with respect to the time spent on Instagram.

In the conclusion of statistical analyses, it is found that the variable that predicts the time spent on Instagram the most is gender, and it is followed by age and social media addiction. The findings obtained in the literature search coincide with the results of the present research. It is considered that the present research will contribute to future studies to be conducted on the impact of life satisfaction, gender and social media addiction on the time spent on Instagram. However, the study has some limitations. The first limitation is that the sample is not selected from amongst the people who have clinically diagnosed with social media addiction. The studies conducted with people who are clinically diagnosed with social media addiction may provide more information about the model. The second limitation of the study is that the sample is only composed of the university students who study in Istanbul Province. Therefore, it is recommended to select different samples in the future studies. As females constitute a riskier group with respect to social media and Instagram dependency, it is recommended that future research works should be made with samples composed of females. Research works can be made on different variables that predict the time spent on Instagram. It is recommended to test the correlation between social media addiction and life satisfaction with a larger sample.

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