Self-Esteem, Loneliness & Facebook: Do Loneliness and Self Esteem Change in Relation to Facebook Use and its Applications

Şahabettin Mutlu
Department of Psychology, Muş Alpaslan University, Muş, Türkiye
ORCID ID: 0000-0002-5521-2022

Eylem Kılıç[*]
Department of Computer Education and Instructional Technology, Van Yüzüncü Yıl University, Van, Türkey
ORCID ID: 0000-0003-2581-8717

This study aims to compare high school students' self-esteem and loneliness levels based on their use of Facebook and its applications. Quantitative research was utilized and 764 high school students participated in the current study. Data were collected through a Facebook Usage & Personal Information Form prepared by the researchers, the UCLA Loneliness scale, and the Coopersmith Self-Esteem inventory. Data were analyzed using descriptive statistics and non-parametric tests. The results of this study show that the self-esteem levels of students who spend less time on Facebook are higher than those of students who spend more time on Facebook. The level of loneliness among students with fewer friends on Facebook is higher than that of students with more friends on Facebook. The self-esteem level of students who added new people to their Facebook friend lists was found to be low, while the self-esteem level of students who did not add new people was found to be high There was no relationship between purpose of Facebook use with self-esteem and loneliness. The highest level of loneliness is observed in the group that rarely receives comments or likes on their status updates, photos, and music videos shared on Facebook. In general, it can be seen that students' levels of loneliness and self-esteem have changed about the use of Facebook and its applications.

Introduction

The Internet has an important place not only in collecting information, using e-mail and shopping, but also in establishing social communication. Every day, a multitude of individuals convey their spontaneous thoughts, emotions, and convictions through written expressions, posts, and content sharing on social media platforms, all of which are subsequently accessible to the user's online social circle (Azucar, Marengo, Settanni,2018). Social networks established for this purpose constitute the access areas that most of the Internet users visit and spend the most time during the day (Lavanco, Catania, Milio, & Romano, 2008). In a period when social networks have become so widespread, their effects on human personality and emotions have also become a curious area of investigation. In this sense, Facebook, one of the social networks

[*]Correspondency: *keylem@gmail.com*

that has spread rapidly since its emergence in 2004, has become one of the most emphasized social networks by researchers (Kosinski, Matz, Gosling, Popov, & Stillwell, 2015; Nadkarni & Hofmann, 2011; Tandera, Hendro Suhartono, Wongso, Prasetio, 2017). In addition, Facebook is the most used social media platform in personality prediction (Singh, & Singh, 2024). There are also some obvious reasons that make Facebook a subject of study in social sciences. These reasons include contact with others, expressing personal preferences, status updates and other personal posts on Facebook. These generate tangible, observable data, thus creating opportunities for research on human behaviors (such as chatting, making friends in cyberspace...) that were previously difficult to assess. As an integral part of everyday life, the study of the positive and negative effects of Facebook on users has become almost a necessity for the disciplines that study social behavior. In this sense, Facebook is considered as a database of people's real-life activities (Chugh, &, Ruhi, 2018; Hong, & Na, 2018; Wilson, Gosling, & Graham, 2012)

Facebook has become the most used social network by millions of adolescents and young adults and this age group uses the site for socializing more than other age groups (Whitlock, Powers & Eckenrode, 2006). In previous studies on Facebook, the intensity of use of the site was considered as a single variable and the duration of Facebook use and the number of Facebook friends were considered sufficient. However, Skues, Williams and Wise (2012) stated that Facebook usage intensity alone is not sufficient to measure individual differences. In addition, it is seen that the intensity of use in different applications of Facebook, which is caused by differences in the psychological structures and needs of Facebook users, should also be considered.

Personality Trait and Facebook User

Individual differences such as age, gender and personality are known to have an impact on popular media such as movies, music, television, books and other cultural media (Kraaykamp, & van Eijck, 2005; Weaver, 1991). With the Internet becoming more and more present in the media and becoming the most widely used media tool, studies examining the effects of individual differences, especially personality differences, on the Internet have become the most dominant scientific research on this subject (Ryan and Xenos, 2011). The increasing interest within the global research community is focused on understanding user behavior in social networks, evidenced by the rising number of related research papers (Tandera et al; 2017) Two of the most studied variables in the literature are self-esteem and loneliness (Al-Saggaf & Nielsen, 2014; Amichai-Hamburger & Vinitzky 2003; Ellison, Stenfield & Lampe, 2007; Kalpidou, Costin & Morris, 2011; Kraut, Lundmark, Kiesler, Mukopadhyay, & Scherlis,1998; Marengo, Montag, Sindermann, Elhai, & Settanni, 2021, Mehdizadeh, 2010; Wang, Frison, Eggermont, & Vandenbosch, 2018; Wilson, Fornasier, & White. 2010).

Facebook and Self –esteem

Self-esteem is considered a significant factor influencing individuals' psychosocial status and social lives. Research on the relationship between self-esteem and social media usage indicates that while the increasing use of social media is associated with self-esteem due to providing an environment for individuals to express their characters, on the other hand, it has been observed that people inevitably find themselves in a comparison due to the nature of social media. Social connections formed on Facebook can lead individuals to compare themselves with others, resulting in forming impressions about themselves and potential changes in their

self-worth (Wilson et al., 2012). In a study conducted by Ellison et al. (2007) among college students, Facebook usage was found to be associated with both weak and superficial social capital and strong, close social capital. The level of self-esteem regulates the relationship between this social capital and Facebook. Particularly, users with low self-esteem increase their social capital through Facebook. It was found in this research that users with low self-esteem perceive Facebook as an environment where they seek social opportunities to increase their self-esteem level and organize their profile pages accordingly. Therefore, users with low self-esteem spend more time on Facebook (Ellison et al., 2007). Facebook, especially for users with high fear of rejection and low self-esteem, facilitates meeting and communicating with new people, allowing them to expand their social circles. Hence, users with low self-esteem spend more time on the site (Steinfeld, Ellison, & Lampe, 2008). Additionally, these users use different Facebook applications more (Mehdizadeh, 2010). The level of self-esteem, which is an inherent need for individuals, also determines how much they value themselves in general. The motivation behind this need is primarily seeking greater acceptance and less rejection from others (Leary & Baumeister, 2000). These users strive to increase their self-esteem levels by fulfilling their need to belong to a social environment and likely to be popular through the platform (Lee, Moore, Park & Park, 2012).

Facebook also helps students with low self-esteem to socialize in school environments. Therefore, such students contribute to their subjective well-being levels by making more friends on Facebook and spending long hours on the site by frequently checking their friends' profile pages and activities on the site (Kalpidou et al., 2011). These users with low self-esteem, who constantly check their friends' profile pages on Facebook, observe the activities of their friends, especially those who are popular in their social circles, and compare them with their own activities. However, users with high self-esteem are more interested in their own profiles on the site (Gonzales & Hancock, 2011). In social media sites, which are new social environments due to the intensity of use, especially on Facebook, the subjective well-being of adolescents who receive many friendship offers and whose status updates are frequently liked by their friends increases and this has a positive effect on their self-esteem levels (Valkenburg, Peter, Schouten &Walther 2006).

Steinfield et al. (2008) were found that Facebook facilitates communication, especially communication with new acquaintances for the first time, and reduces the fear of rejection. This explains why individuals with low self-esteem use Facebook more than they use individuals with high self-esteem. In line with this study, there was a negative relation between self-esteem and Facebook personal importance and intensity (Blachnio, Przepiorka, & Rudnicka, 2016). Mehdizadeh (2010) investigated the effects of narcissism and self-esteem on Facebook on 100 randomly selected students aged between 18-25. The About Me section, status updates section, notes section, profile picture and the first 20 photos among the photos on the Facebook pages of the students were analyzed and a comparison was made between the students in the light of this information. As the self-esteem levels of the students were found to be low, the duration of Facebook use and the time spent on activities increased. In this study, a negative correlation was found between the amount of Facebook usage and self-esteem level (Mehdizadeh, 2010). Kalpidou et al. (2011) were found that students who formed strong emotional ties with Facebook had low levels of self-esteem. Facebook does not meet the emotional needs of students, but it contributes to their social cohesion in college. One of the important findings of this study is that as the number of Facebook friends increases, the level of subjective well-being also increases. This study also found that individuals with low self-esteem constantly look at

JCe Journal of Computer Education
Knowing is not enough, you must be able to do it.

other people's profiles, while individuals with high self-esteem are interested in their own profile pages. Gonzales and Hancock (2011) found that students' self-esteem levels were low when they looked at someone else's profile and high when they only looked at their own profiles. In addition, the self-esteem levels of individuals who made changes to their own profiles were also high. Forest and Wood (2012) observed that individuals with low self-esteem levels will be rewarded only when they make positive posts on Facebook and that self-disclosure can be seen as a positive behavior only under this condition. A recent research conducted by Tartaglia (2016) identified three distinct modes of Facebook usage: social interaction, simulation, and relationship-seeking. Social interaction involves using the platform for connecting with friends and self-expression, and individuals with high self-esteem were found to be more likely to engage in this mode. Conversely, those who use Facebook to simulate an online self-image divergent from reality tended to have lower self-esteem. Lastly, using Facebook to establish new connections, such as meeting new people, was not associated with self-esteem. Generally, Facebook and Twitter use associate with lower self-esteem among college students (Cingel, Carter, & Krause, 2022; Errasti, Amigo, & Villadangos; 2017).

Facebook and Loneliness

Loneliness can be defined as a person's feeling of not being understood by others and therefore being isolated (Geçtan, 1999). Considering the results of previous research on loneliness and media tools, it has been revealed that people relieve their loneliness by watching television, listening to the radio or going to the movies. In the results of research on the relationship between Internet use and loneliness, it is generally observed that lonely people tend to use the Internet and Internet use increases the loneliness level of users (Bonsaksen, Ruffolo, Leung, Price, Thygesen, Schoultz, & Geirdal, 2021; Boursier, Gioia, Musetti, & Schimmenti, 2020; Morahan & Schumacher, 2003; Kraut et al., 1998, Livingstone, 2008).

Previous studies on the relationship between internet use and psychological factors have mostly used internet use as a stand-alone variable even though it is a broad concept. However, since the emergence of social media, especially Facebook, scientific studies, especially recent ones, have focused on different activities of Facebook (status updates, photo uploads, friend attributes, notes, etc.) (Ellison Lampe, & Wohn, 2011). Moreover, Facebook activities in themselves have been found to affect some psychological factors and can be divided into two groups: active activities (e.g. writing messages, status updates) and passive activities (e.g. looking at photos, reading news, reading other people's notes). The use of these two different groups of activities can be triggered by different psychological states and can trigger different psychological states. While active features contribute positively, the use of passive features contributes more negatively (Burke, Marlow, & Lento, 2010).

Since Facebook has become a source of contact with other people, it is not uncommon for lonely people to try to contact other people through Facebook. Especially students in adolescence, who are uncomfortable with the stress of face-to-face human relationships, try to find a new environment through Facebook and thus try to reduce their feelings of loneliness (Sheldon, 2008). High school and college students in their first year feel lonely when they cannot quickly establish relationships with others in these new environments, so they use Facebook to meet old friends or to meet new friends more easily. These users use Facebook to compensate for their loneliness rather than forming any addiction to it (Clayton, Osborne, Miller & Oberle, 2013).

Ryan and Xenos (2011) found that Facebook users generally feel lonely when asked about their families, while non-Facebook users suffer from social loneliness. In addition, lonely people spend more time on Facebook and usually deal with passive features of Facebook (such as watching videos, looking at pictures, reading articles, etc.), that is, some of the Facebook users do not use the site to interact and communicate with others. Şimşek (2012) aimed to determine whether Facebook causes loneliness in young users and found that especially users who play a lot of games on the site and users who share a lot of music, videos and texts have high loneliness levels (Şimşek, 2012). Skues, Williams and Wise (2012) concluded in their study that students who feel lonely have more friends on Facebook and that these individuals make a great effort to access and interact with others in the virtual environment out of a sense of compensation for the lack of real or even satisfying ties.

Deters and Mehl (2012), in their study with 102 university students, found that parallel to the increase in status updates, there was a decrease in loneliness levels. It has been observed that status updates increase social interaction and friendship ties, because through Facebook status updates, the individual makes a self-disclosure, thereby increasing intimacy with existing ties. Finally, comments and likes on status updates increased interaction, but had no effect on loneliness. Since Facebook creates a virtual audience, the individual thinks that his/her status updates are eventually seen by other friends. Therefore, the individual does not feel loneliness in status updates that do not receive likes or comments. On the other hand, Lou, Nickerson and McMorris, (2012), in their study with 340 college students, found that students who used Facebook intensively and made more friends on the site decreased their loneliness levels. On Facebook, students create superficial relationships instead of sincere, close ties, which prevents users from feeling intense emotions during Facebook use; therefore, it is observed that students' motivation to use Facebook has no effect on their feelings of loneliness. Facebook users usually make friends on the site with people they know in the real world, which shows that students who feel loneliness in their own environment will generally choose the people in this environment as friends on the site, so their loneliness levels cannot have any effect on their motivation to use Facebook. As a result of a study conducted with 582 students, Taydaş (2012) found that the time spent on Facebook shapes the social environment and prevents individuals from becoming lonely because it is seen as an activity to communicate with friends.

Purpose of the Study

In this study, it was tried to determine whether the loneliness and self-esteem levels of high school students differ significantly according to their Facebook usage-applications. While numerous studies have explored the connection between Facebook usage and self-esteem/loneliness, the present study endeavors to investigate this relationship more comprehensively by encompassing a variety of Facebook applications. For this purpose, following questions were sought;

- What levels of self-esteem and loneliness do high school students experience both generally and in relation to their use of Facebook?

- Do the self-esteem and loneliness levels of high school students who use Facebook show a significant difference according to various Facebook applications?

Method

Research Model

This research is a descriptive study. Descriptive research is a type of research design used to describe and analyze the characteristics or behaviors of a population or phenomenon (Büyüköztürk, Kılıç, Akgün, Karadeniz, & Demirel, 2009). A series of questionnaires was used to collect data for the current study.

Sample

The study group consisted of a total of 764 high school students, 438 girls and 326 boys, studying in different high schools in Erciş district of Van province. In this sampling method, researchers try to collect data from individuals they can reach (Table 1). The distribution of the sample according to the determined socio-demographic variables is given below.

Table 1. Descriptive findings of sample

Variable		N	%
Gender	Female	438	57
	Male	326	43
	Total	764	100
Classroom	1	236	31
	2	313	41
	3	164	21
	4	51	7
	Total	764	100
Facebook Account	No	351	46
	1	352	46
	More than 1	61	8
	Total	764	100
	Entertainment	85	20,58
Purpose of Facebook use	İnformation sharing	46	11,14
	Social interaction	235	56,90
	Having Friends	47	11,38
School type	Anatolian High School	273	36
	Health Vocational High Schol	67	9
	Science High School	84	11
	Girl Vocational High School	135	17
	Anatolian Teacher High Schol	205	27
	Total	764	100

As seen in Table 1, 57% (n=438) of the sample was female and 43% (n=326) was male. 31% (n=236) of the students were 1st grade students, 41% (n=313) were 2nd grade students, 21% (n=164) were 3rd grade students and 7% (n=51) were 4th grade students. Forty-six percent (n=351) of the students do not have a Facebook account, 46% (n=352) have one Facebook account and 8% (n=61) have more than one Facebook account. As seen in Table 1, more than half of the students use Facebook for social interaction (56%) and 85 of them (20,58%) use Facebook for entertainment, 47 of them use Facebook for having friends and 46 (11.14%) use it for information sharing. 36% (n=273) of the study group consisted of Anatolian High School

students, 27% (n=205) of Anatolian Teacher High School students, 17% (135) of Girls Vocational High School students, 11% (n=84) of Science High School students and 9% (n=67) of Health Vocational High School students.

Data Collection Tools

In the study, "Personal Information and Facebook Usage Form", "Coopersmith Self-Esteem Inventory" and "UCLA Loneliness Scale" were used to collect data from five different school.

Personal information and Facebook usage form

An information form consisting of 16 questions about Facebook use was applied to the participants. In this form, questions prepared to ask for gender, grade level, whether they have a Facebook account, the number of Facebook friends, the number of sessions opened daily, the average time spent on the site daily and the level of use of Facebook-related applications were asked.

Coopersmith self-esteem inventory

In the study, Coopersmith Self-Esteem Inventory short form was used to measure students' self-esteem levels. The Coopersmith Self-Esteem Inventory short form consists of a total of 25 items. The answers expected for the inventory are given a score of "1" and the other answers are given a score of "0", and the total score obtained is multiplied by 4 to determine the self-esteem level of the person. Coopersmith (1967) found the Kuder Richardson reliability coefficient of the instrument to be 0.91 for girls and 0.80 for boys. Özoğul (1988) was the first person who translated the inventory into Turkish and applied it in Turkey. He found the reliability coefficient of the instrument as. 77. In this study, cronbach alpha internal consistency coefficient was found as. 69.

UCLA loneliness scale

As cited in Demir (1989), this scale was revised by Russel, Peplau and Cutrona in 1980 and the items of the scale were arranged so that half of the items were positive and half were negative. The UCLA Loneliness Scale consists of 20 items, 10 of which are coded straight and 10 of which are coded in the opposite direction. Individuals are asked to indicate how often they experience the situations in the items on a four-point Likert-type scale. The higher the score obtained from the scale, the higher the level of loneliness (Demir, 1989). The validity and reliability studies of the scale in Turkey was found 0.96 by Demir (1989). In our study, the cronbach alpha internal consistency coefficient was found to be 78.

Data Analysis

The normality and homogeneity of the distribution of the data were tested and since the data did not show normal distribution, Mann Whitney U and Kruskal Wallis tests were used to test whether students' self-esteem and loneliness levels showed significant differences according to Facebook use-applications. In addition, in case of a significant difference as a result of the Kruskal Wallis test, Mann Whitney U test was used between the groups to determine which groups the difference originated from.

Findings

Descriptive Result

According to Table 2, the mean score of students' loneliness levels is 38. This is a low number based on the lowest and highest loneliness levels, meaning that students' overall loneliness levels are low. The average self-esteem level of the students is 60,904. This is a high number based on the lowest and highest self-esteem levels, meaning that students' overall self-esteem levels are high. However, there is no big difference between the average self-esteem levels of students with and without Facebook accounts (mean=61,314, mean=60,421). Again, according to this table, there is no big difference between the average loneliness levels of students with and without Facebook accounts (mean=36,624, mean=39,190).

Table 2. Distribution of students' self-esteem and loneliness levels

General		N	Lowest	Highest	Avarage	Sd
	Loneliness	764	20,00	80,00	37,803	10,576
	Self-esteem	764	8,00	100,00	60,904	19,190
Facebook account						
No	Loneliness	351	20,00	80,00	39,190	10,744
	Self-esteem	351	12,00	100,00	60,421	19,537
Yes	Loneliness	413	20,00	77,00	36,624	10,298
	Self-esteem	413	8,00	100,00	61,314	18,904

Gender, Loneliness and Self-esteem

A Mann Whitney U test was conducted to find out the differences between the loneliness level of female and male students. The test results showed that there were significant differences in terms of gender (U = 65075,5, z = -2.096, p = 0.036). Male students feel higher level of loneliness compared to female students. In addition, a Mann Whitney U test was conducted to find out the differences between the self-esteem level of female and male students. The test results showed that there were no significant differences in terms of gender (U = 67025,5 z = -1.451, p = 0.147).

Table 3. Mann-Whitney U test result for gender, loneliness and self-esteem

Gender		N	Ranks	*U*	*p*
Loneliness	Male	326	363,12	65074,5	,036
	Female	438	396,93		
Self-esteem	Male	326	395,90	67025,5	,147
	Female	438	372,53		

P< 0.05

Time Spent on Facebook, Loneliness and Self-esteem

A Kruskal-Wallis test was conducted to evaluate differences among time spent on Facebook on loneliness level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 6.11, p = .10. A Kruskal-Wallis test was conducted to evaluate differences among time spent on Facebook on self-esteem level of the students. The test, which was corrected for tied ranks, was significant $\chi 2$ (3, 413) = 10.22, p = .0,0.

JCE Journal of Computer Education
Knowing is not enough, you must be able to do it.

When the rank averages of the groups were taken into consideration, the mean scores of the self-esteem levels of the students who used Facebook between 31-60 minutes a day were found to be the highest. Mann Whitney U analysis was used in pairwise comparisons to examine the source of the difference between the groups. According to the results of pairwise comparisons, there were significant differences between students who spent 0-30 minutes on Facebook and those who spent 61-120 minutes (p=0.007) and between students who spent 31-60 minutes on Facebook and those who spent 61-120 minutes (p=0.003).

Table 4. Kruskal Wallis test result for Time spent on Facebook and self-esteem

Self-esteem	Time spent	N	Rank	Df	$\chi 2$	P	Significant Difference
	0-30 minutes(A)	218	209,00	3	6,11		
	31-60 minutes(B)	112	224,83				A > C, B > C
	61-120 minutes(C)	55	162,56			0,01	
	121 minutes and over (D)	28	207,39				

P< 0.05

Number of Facebook friends, Loneliness and Self-esteem

A Kruskal-Wallis test was conducted to evaluate differences among number of Facebook friends on loneliness level of the students. The test, which was corrected for tied ranks, was significant $\chi 2$ (3, 413) = 16.53, p = .001. Considering the rank averages of the groups, the mean scores of the loneliness levels of the students with 0-80 friends on Facebook were found to be the highest. The mean scores of the loneliness levels of the students with the least number of friends on Facebook were found to be high. On the contrary, students with the highest number of friends on Facebook had the lowest mean loneliness level scores. According to the results of pairwise comparisons, there were significant differences between students with an average of 0-80 friends on Facebook and students with 241 or more friends on Facebook, students with an average of 81-160 friends on Facebook and students with 241 or more friends on Facebook, and students with an average of 161-240 friends on Facebook and students with 241 or more friends on Facebook. A Kruskal-Wallis test was conducted to evaluate differences number of Facebook friends on self-esteem level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 2,37, p = .498

Table 5. Kruskal Wallis test result for number of friends and loneliness

Loneliness	Friends num	N	Rank.	Df	$\chi 2$	p	Significant Difference
	0-80(A)	102	237,84			0,001	A > D
	81-160(B)	98	211,18	3	16,53		B > D
	161-240(C)	68	218,13				C > D
	241 and above (D)	145	177,26				

P< 0.05

Purpose of Facebook Use, Loneliness and Self-esteem

A Kruskal-Wallis test was conducted to evaluate differences among purpose of Facebook use on loneliness level of the students. The test, which was corrected for tied ranks,

was not significant $\chi 2$ (3, 413) = 6.18, p = .10. In addition, a Kruskal-Wallis test was conducted to evaluate differences among purpose of Facebook use on self-esteem level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 4.37, p = .22

Frequency of Facebook Status Update, Loneliness and Self-esteem

A Kruskal-Wallis test was conducted to evaluate differences among frequency of Facebook status update on loneliness level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 2.61, p = .45. Also, a Kruskal-Wallis test was conducted to evaluate differences among frequency of Facebook status update on self-esteem level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 5.39, p = .14

Frequency of Likes and Comments on Status Updates Self-Esteem and Loneliness

A Kruskal-Wallis test was conducted to evaluate differences among Frequency of Likes and Comments on Status Updates on loneliness level of the students. The test, which was corrected for tied ranks, was significant $\chi 2$ (3, 413) = 9.93, p = .019. When the rank averages of the groups were taken into consideration, it was found that the loneliness levels of the students who received very rare likes and comments on their status updates on Facebook were the highest. According to the results of pairwise comparisons, it was seen that there were significant differences between the students who frequently received likes and comments on their status updates on Facebook and the students who received very rare likes and comments, and between the students who sometimes received likes and comments on their status updates on Facebook and the students who received very rare likes and comments.

A Kruskal-Wallis test was conducted to evaluate differences among the frequency of likes and comments on status updates on self-esteem level of the students. The test, which was corrected for tied ranks, was not significant $\chi 2$ (3, 413) = 5,90, p = .114

Table 6. Kruskal Wallis test result for frequency of likes and comments on status Updates and loneliness

Loneliness	Like-Comment	n	Rank	Df	$\chi 2$	p	Significant Dif.
	Frequently	91	184,67			0,019	Frequently-very rare
	Sometimes	217	202,33	3	5,90		Sometimes-very rarely
	Very rare	87	238,41				
	Nothing	18	224,39				

P< 0.05*

Frequency of Photo-Picture Adding Self-Esteem and Loneliness

A Kruskal-Wallis test was conducted to evaluate differences among photo-picture addition frequency on loneliness level of the students. The test, which was corrected for tied ranks, was significant $\chi 2$ (3, 413) = 11.03, p = .012. When the rank averages of the groups were taken into consideration, it was found that the mean scores of the loneliness levels of the students who very rarely added photo-pictures on Facebook were the highest. According to the results of pairwise comparisons, it was seen that there were significant differences between the students who sometimes added photo-pictures on Facebook and the students who very rarely

added photo-pictures (p=0.002). A Kruskal-Wallis test was conducted to evaluate differences among the frequency of photo and picture uploads on self-esteem level of the students. The test, which was corrected for tied ranks, was not significant χ 2 (3, 413) = 7,70, p = .053

Table 7. Kruskal Wallis Test results of frequency of photo-picture adding self-esteem and loneliness

Loneliness	Photo-Picture	N	Rank	Df	χ 2	p	Significant Difference
	Frequently	31	221,21				Sometimes-very rarely
	Sometimes	157	182,77	3	7,70		
	Very rare	151	226,19			0,012	
	Nothing	74	213,30				

P< 0.05

Frequency of Music-Video File Sharing Self-Esteem and Loneliness

A Kruskal-Wallis test was conducted to evaluate differences among Music-Video File Sharing Frequency on loneliness level of the students. The test, which was corrected for tied ranks, was significant χ 2 (3, 413) = 8.34, p = .039. Considering the rank averages of the groups, the mean scores of the loneliness levels of the students who never added music-picture files on Facebook were found to be the highest. According to the results of pairwise comparisons, there were significant differences between students who frequently added music-video files on Facebook and students who never added music-video files on Facebook, students who sometimes added music-video files on Facebook and students who never added music-video files on Facebook, and students who rarely added music-video files on Facebook and students who never added music-video files on Facebook. Here, significant differences are observed between students who do not share music-video files at all and students who share music-video files with any frequency.

Table 8. Kruskal Wallis test result of frequency of music-video file sharing self-esteem and loneliness

Loneliness	Music-Video	N	Rank	Df	χ 2	p	Significant Difference
	Frequently	56	197,98				Frequently-Nothing
	Sometimes	142	197,16	3	8,34	0,039	
	Very rare	144	202,00				
	Nothing	71	243,94				Sometimes-Nothing Very rare-Nothing

P< 0.05

Meeting New People Self-Esteem and Loneliness

A Mann Whitney U test was conducted to find out the differences between the self-esteem level of the Meeting New People situations. The test results showed that there were significant differences in terms of meeting new people (U = 15993,50, z = -2.611, p = 0.009). There is a significant difference between the mean scores of the self-esteem levels of the students who meet new people on Facebook and the students who did not meet people they did

JCE Journal of Computer Education
Knowing is not enough, you must be able to do it.

-98-

not know before on Facebook, that is, whose Facebook friends were people they knew in daily life. The self-esteem level of students who added new people to their Facebook friend lists was found to be low, while the self-esteem level of students who did not add new people was found to be high.

A Mann Whitney U test was conducted to find out the differences between the loneliness of Meeting New People. The test results showed that there were no significant differences in terms of meeting new people (U = 18600,00, z = -.328, p = 0.743).

Table 9. Mann-Whitney U Test Result of meeting new people self-esteem

Self-esteem	Response	N	Rank	U	p
	Yes	275	196,16	15993,50	0,009
	No	138	228,61		

P< 0.05*

Conclusion

When the loneliness and self-esteem levels of high school students were analyzed according to their gender, it was determined that female students suffered from loneliness more than male students. In some previous studies on this subject, it was found that there was no significant difference in loneliness levels among high school students in adolescence according to gender (Kaiser & Berndt, 1985; Brage, 1993). In some studies, loneliness level scores of boys were found to be significantly higher than those of girls (Brays & Perlman, 1985; Rottenberg & Morrison, 1993; Baran & Bulut, 2002). In this study, girls expressed themselves as lonelier than boys. In a recent study, the same result was found that girls felt more lonely than boys (Sakız, Mert, & Sarıçam ,2021). Demir (1990) explains this situation with the differentiation of society's expectations from young people according to gender.

In the study, it was determined that the self-esteem levels of high school students did not differ according to their gender. According to the results of some previous studies, it was determined that students' self-esteem scores did not show a significant difference according to gender (Çevik and Atıcı, 2009). However, some studies have found that gender difference is one of the factors that make a significant difference on the self-esteem levels of high school students (Kulaksızoğlu, 2004; Temel &Aksoy,2001; Siyez, 2009). On the other hand, Brack, Orr, and Ingersoll (1987) found that girls' self-esteem levels were significantly lower than boys. In a recent study, it was found that males had higher levels of self-esteem than females (Sakız, Mert, & Sarıçam ,2021).

In the study, it was determined that the loneliness levels of high school students decreased as their number of friends on Facebook increased. Users who suffer from loneliness on Facebook try to reach more people on the site to compensate for the expectations of intimacy and interaction that they cannot find in the outside world (Skues, Williams and Wise, 2012). According to Tong, Van Der Heide, Langwell, and Walther (2008), whether the number of Facebook friends is very high or low does not have a significant effect on the psychological structures of the users because Facebook friendship is an indicator of a superficial relationship and does not have significant effects on emotions. Phu and Gow (2019) noted a correlation between having a larger number of Facebook friends and experiencing reduced loneliness. Nevertheless, their study also revealed that excessive Facebook use could worsen feelings of

loneliness. Some studies in the literature have also found that users with high self-esteem levels have a high number of Facebook friends (Kalpidou, Costin and Morris, 2011). In a study conducted by Eşkisu, Hoşoğlu, and Rasmussen (2017) it was found that there was no significant relationship between number of friends and self-esteem.

In the study, it was found that the frequency of Facebook users' status updates did not have a relationship with their loneliness and self-esteem levels. Status updates are a system that allows users to receive instant feedback to their messages. This instant interaction environment is directly related to users' self-esteem levels. Since self-esteem and loneliness are related to each other, studies emphasize the relationship between status updates and users' self-esteem and loneliness levels (Buffardi & Campbell, 2008; Kim, LaRose, & Peng, 2009). Eşkisu, Hoşoğlu, and Rasmussen (2017) found that there was no significant relationship between frequency of Facebook users' status updates and self-esteem.

It has been determined that the frequency of friends' liking and commenting on the status updates of high school students on Facebook constitutes a significant difference on their loneliness levels. Users perceive who reads their status updates on Facebook from the likes and comments they receive. This provides social interaction (Köbler, Riedly, Leimeister,&Krcmar, 2010). However, in another study, it is stated that the site functions like a news source and the status updates made by users on Facebook are seen by a targeted and known group of friends and positive social effects occur in the user, so it is not important whether there is a direct social feedback, i.e. likes and comments (Deters & Mehl, 2012).

According to the results of the research conducted by Gentile, Twenge, Freeman and Campbell (2012), it was determined that the frequency of friends' liking-commenting on the status updates made by high school students on Facebook did not create a significant difference on their self-esteem levels. Similar to our study findings, Gentile et al (2012) stated that while users' friends' commenting on their status updates satisfies their narcissistic feelings, it does not have any effect on their self-esteem levels Hong, Chen, & Li, found the same result. On the other hand, significant relationship was found between the frequency of friends' liking-commenting and self-esteem (Burrow and Rainone (2017). In a study conducted by Scissors, Burke, and Wengrovitz (2016), it is stated that people with lower levels of self-esteem are more likely to think that Likes are important and to feel bad if they do not receive "enough" Likes. In another study, users with high self-esteem consider their own ideas and the ideas of others on the site and see them as valuable, so they care about the likes and comments on their status updates and also comment on their friends' posts (Wang, Jackson, Zhang, & Su., 2012). As a matter of fact, positive comments on users' updates by their friends create an increase in the user's self-esteem level (Valkenburg et al., 2006). Marengoa, Montagb,Sindermannb, Elhaic, and Settanni (2021) explore direct relationship between received Likes and self-esteem using objective use media data and found positive relationship between them.

It was found that there was a significant difference in the loneliness levels of high school students according to the frequency of adding photos-pictures on Facebook. Students with the highest loneliness level rarely share photos-pictures on the site. However, this result contrasts with the results of previous research. Facebook users contribute to their popularity on the site by adding photos on the site and can get away from feelings of isolation thanks to the likes and comments made by their friends on the photos (Lee, Moore and Park, 2012). Users who frequently publish their personal preferences and the photos they take on Facebook express themselves in this way and thus interact with other people (Pempek, Yermolayeva and Calvert,

2009). Again, in the study of Şimşek (2012), it was determined that university students who suffer from loneliness share more pictures. In another study, it is found that there was no significant relationship with sharing photos and loneliness (Aydın, Muyan, & Demir, 2013).

It was found that the frequency of music-video file sharing on Facebook by high school students created a significant difference on their loneliness levels. Students with high loneliness levels do not share music-video files at all. In fact, music-video sharing are passive applications of Facebook and are preferred by users who feel loneliness (Ryan and Xenos, 2011). Again, as a result of the research conducted by Şimşek (2012) among Istanbul University students, an intense text-video sharing on Facebook was found among students with high loneliness level. It is thought that the different result in this study may be due to the fact that the sample group has age and cultural differences compared to other studies.

It was found that whether high school students met new people on Facebook or not made a significant difference in their self-esteem levels. The self-esteem levels of students who made friends with users they did not know before, outside their own social circles, were found to be low. In a previous study, it was observed that the self-esteem levels of users who accepted friend offers from users they did not know or sent friend offers to people they did not know were at a low level (Acar, 2008). In a study conducted by Greitemeyer (2016), it is found that number of Facebook friends increase self-esteem level of individuals. The number of friends was related to higher level of self-esteem at Facebook (Metzler, & Scheithauer, 2017). Facebook users with low self-esteem levels try to satisfy their self-esteem needs that they cannot satisfy in their own social circles by making new friends on the site and consequently creating a new social environment. A new study conducted on negative psychological and physiological effects of Facebook by review 252 research article provide valuable insight for further research (Stangl, Riedl, Kiemeswenger, and Montag, 2023).

References

Acar, A. (2008). Antecedents and consequences of online social networking behavior: The case of Facebook. *Journal of Website Promotion*, 3(1-2), 62-83.

Al-Saggaf, Y., & Nielsen, S. (2014). Self-disclosure on Facebook among female users and its relationship to feelings of loneliness. *Computers in Human Behavior, 36*, 460-468. https://doi.org/10.1016/j.chb.2014.04.014

Amichai-Hamburger, Y., & Vinitzky, G. (2010). Social network use and personality. *Computers In Human Behavior, 26*(6), 1289-1295.

Arnett, J. (2000). Emerging Adulthood: A Theory of Development from the Late Teens through the Twenties. *American Psychologist, 55*, Article No. 469. https://doi.org/10.1037/0003-066X.55.5.469

Aydın, G. S., Muyan, M., and Demir, A. (2013). The investigation of Facebook usage purposes and shyness, loneliness. *Procedia Soc. Behav. Sci.* 93, 737–741. doi: 10.1016/j.sbspro.2013.09.272

Azucar, D., Marengo, D., & Settanni, M. (2018). Predicting the Big 5 personality traits from digital footprints on social media: A meta-analysis. *Personality and Individual Differences, 124*, 150–159.

Baran, G., & Bulut, S. (2002). Examination of the loneliness levels of university students. *Journal of Educational Research*, 7(2), 11-21.

Blachnio, A., Przepiorka, A., & Rudnicka, P. (2016). Narcissism and self-esteem as predictors of dimensions of Facebook use. *Personality and Individual Differences, 90*, 296-301.

Bonsaksen, T., Ruffolo, M., Leung, J., Price, D., Thygesen, H., Schoultz, M., & Geirdal, A. (2021). Loneliness and Its Association With Social Media Use During the COVID-19 Outbreak. *Social Media + Society, 7*(3). https://doi.org/10.1177/20563051211033821

Boursier, V., Gioia, F., Musetti, A., & Schimmenti, A. (2020). Facing loneliness and anxiety during the covid-19 isolation: the role of excessive social media use in a sample of italian adults. *Frontiers in Psychiatry, 11*. https://doi.org/10.3389/fpsyt.2020.586222

Brack, C. J., Orr, D. P., & Ingersoll, G. (1988). Pubertal maturation and adolescent self-esteem. *Journal of Adolescent Health Care, 9*, 280-285.

Brage, D. (1993). Correlates of loneliness among midwestem adolescents. *Adolescence, 28*(111), 685-693.

Brays, S., & Perlman, D. (1985). Gender differences in loneliness. *Personality and Social Psychology Bulletin, 11*, 63-136.

Buffardi, L. E., & Campbell, W. K. (2008). Narcissism and social networking web sites. *Personality and Social Psychology Bulletin, 34*(10), 1303–1314. https://doi.org/10.1177/0146167208320061

Burke, M., Marlow, C., & Lento, T. (2010). Social network activity and social well-being. *Postgraduate Medical Journal, 85*, 455–459.

Burrow, A.L., Rainone, N., 2017. How many likes did I get?: Purpose moderates links between positive social media feedback and self-esteem. J. *Experim. Social Psychol.* 69, 232–236. https://doi.org/10.1016/j.jesp.2016.09.005.

Büyüköztürk, Ş., Çakmak, E., Akgün, Ö., Karadeniz, Ş., & Demirel, F. (2009). *Bilimsel Araştırma Yöntemleri* [*Research Methods in Education]* (4. Baskı). Pegem Academy.

Çevik, G., & Atıcı, M. (2009). An investigation of third graders' self-esteem characteristics regarding some variables. Journal of Human Sciences, 6, 339–352.

Chugh, R., & Ruhi, U. (2018). Social media in higher education: A literature review of Facebook. *Educ Inf Technol, 23*, 605–616. https://doi.org/10.1007/s10639-017-9621-2

Cingel, D. P., Carter, M. C., & Krause, H.-V. (2022). Social media and self-esteem. *Current Opinion in Psychology, 45*, 101304. https://doi.org/10.1016/j.copsyc.2022.101304

Clayton, R. B., Osborne, R. E., Miller, B. K., & Oberle, C. D. (2013). Loneliness, anxiousness and substance use as predictors of Facebook use. *Computers in Human Behavior, 29*, 687-693.

Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco, CA: W. H. Freeman.

Demir, A.G. (1989). Validity and Reliability of the UCLA Loneliness Scale, Turkish Journal of Psychology, 7(23).14-18, 1989

Demir, A. (1990). Some factors affecting the loneliness levels of university students. Unpublished doctoral dissertation, Hacettepe University, Institute of Social Sciences, Ankara.

JCe Journal of Computer Education
Knowing is not enough, you must be able to do it.

Deters, F. G., & Mehl, M. R. (2012). Does posting Facebook status updates increase or decrease loneliness? An Online Social Networking Experiment. *Social Psychological and Personality Science, 2*, 145-174.

Ellison, N. B., Lampe, C., & Wohn, D. Y. (2011). Facebook as a toolkit: A uses and gratification approach to unbundling feature use. *Computers in Human Behavior, 27*, 2322–2329.

Ellison, N. B., Stenfield, C., & Lampe, C. (2007). The benefits of Facebook friends: Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication, 12*, 143–1168.

Errasti, J., Amigo, I., & Villadangos, M. (2017). Emotional uses of Facebook and Twitter: Its relation with empathy, narcissism, and self-esteem in adolescence. *Psychol Rep, 120*, 997-1018. https://doi.org/10.1177/0033294117713496

Eşkisu, M., Hoşoğlu, R., & Rasmussen, K. (2017). An investigation of the relationship between Facebook usage, Big Five, self-esteem and narcissism. *Computers in Human Behavior, 69*, 294-301. https://doi.org/10.1016/j.chb.2016.12.036

Forest, A. L., & Wood, J. V. (2012). When social networking is not working: Individuals with low self-esteem recognize but do not reap the benefits of self-disclosure on Facebook. *Psychological Science, 12*, 1-7.

Geçtan, E. (1999). İnsan olmak [Being Human] (20. basım). İstanbul: Remzi Kitabevi.

Gentile, B., Twenge, J. M., Freeman, E. C., & Campbell, W. K. (2012). The effect of social networking websites on positive self-views: An experimental investigation. *Computers In Human Behavior, 28*(2012), 1929-1933.

Gonzales, A. L., & Hancock, J. T. (2011). Mirror, mirror on my Facebook wall: Effects of exposure to Facebook on self-esteem. *Cyberpsychology, Behavior, and Social Networking, 14*(1-2), 79-83.

Greitemeyer, T. (2016). Facebook and people's state self-esteem: The impact of the number of other users' Facebook friends. *Computers in Human Behavior, 59*, 182-186. https://doi.org/10.1016/j.chb.2016.02.005

Hong, C., Chen, Z. (F.), & Li, C. (2017). "Liking" and being "liked": How are personality traits and demographics associated with giving and receiving "likes" on Facebook? *Computers in Human Behavior*, 68, 292-299. https://doi.org/10.1016/j.chb.2016.11.056

Hong, S., & Na, J. (2018). How Facebook Is Perceived and Used by People Across Cultures: The Implications of Cultural Differences in the Use of Facebook. *Social Psychological and Personality Science, 9*(4), 435-443. https://doi.org/10.1177/1948550617711227

Kaiser, E. F., & Berndt, D. J. (1985). Predictor of loneliness in the gifted adolescent. *Gifted Child Quarterly, 29*(2), 74-77.

Kalpidou, M., Costin, D., & Morris, J. (2011). The relationship between Facebook and the well-being of undergraduate college students. *Cyberpsychology, Behaviour and Social Networking, 14*(4), 2011.

Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic Internet use. *Cyberpsychology & Behavior, 12*(4), 124-157.

Köbler, F., Riedl, C., Leimeister, J. M., & Krcmar, H. (2010). Social connectedness on Facebook-An explorative study on status message usage. Paper presented at the 16th Americas Conference on Information Systems. Lima, Peru, Paper 247.

Kosinski, M., Matz, S. C., Gosling, S. D., Popov, V., & Stillwell, D. (2015). Facebook as a research tool for the social sciences: Opportunities, challenges, ethical considerations, and practical guidelines. *American Psychologist*, 70(6), 543–556. https://doi.org/10.1037/a0039210

Kraaykamp, G., & van Eijck, K. (2005). Personality, media preferences and cultural participation. *Personality and Individual Differences*, 38, 1675-1688.

Kraut, R. E., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53, 65-77.

Kulaksızoğlu, A. (2004). Ergenlik Psikolojisi [Adolescent psychology] (6ncı Basım), İstanbul: Remzi Bookstore.

Lavanco, G., Catania, V., Milio, A., & Romano, F. (2008). Learning and relationships in cyberspace. *Proceedings of World Academy of Science: Engineering & Technology*, 28, 473-477.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology*, 32, 1-62.

Lee, J. E. R., Moore, D. C., Park, E. A., & Park, S. G. (2012). Who wants to be 'friend-rich'? Social compensatory friending on Facebook and the moderating role of public self-consciousness. *Computers in Human Behavior,* 28, 1036-1043.

Livingstone, S. (2008). Taking risky opportunities in youthful content creation: Teenagers' use of social networking sites for intimacy, privacy and self-expression. *New Media & Society*, 10(3), 393-411

Lou, L. L. Z. Y., Nickerson, A., & McMorris, R. (2012). An examination of the reciprocal relationship of loneliness and Facebook use among first-year college students. *Journal of Educational Computing Research,* 46(1), 105-117.

Marengo, D., Montag, C., Sindermann, C., Elhai, J. D., & Settanni, M. (2021). Examining the links between active Facebook use, received likes, self-esteem and happiness: A study using objective social media data. *Telematics and Informatics*, 58, 101523. https://doi.org/10.1016/j.tele.2020.101523

Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 13(4), 357–363.

Metzler, A., and Scheithauer, H. (2017). The long-term benefits of positive selfpresentation via profile pictures, number of friends and the initiation of relationships on Facebook for adolescents' self-esteem and the initiation of offline relationships. *Front. Psychol.* 8:1981. doi: 10.3389/fpsyg.2017.01981

Nadkarni, A., & Hofmann, S. G. (2012). Why do people use Facebook? *Personality and Individual Differences,* 52(3), 243-249.

Özoğul, S. N. (1988). The effect of mother's employment and some individual characteristics on the child's self-esteem. Hacettepe University: Unpublished master's thesis.Ankara

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, 30, 227-238.

Phu, B. and Gow, A.J. (2019), "Facebook use and its association with subjective happiness and loneliness", *Computers in Human Behavior*, Vol. 92, p. 151159.

Rottenberg, K. J., & Morrison, J. (1993). Loneliness and college achievement: Do loneliness scale scores predict college drop-out? *Psychological Reports*, 73, 1283-1288.

Ryan, T., & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior*, 27(5), 1658-1664.

Sakız, H., Mert, A., & Sarıçam, H. (2021). Self-esteem and perceived social competence protect adolescent students against ostracism and loneliness. *Journal of Psychologists and Counsellors in Schools*, *31*(1), 94-109. https://doi.org/10.1017/jgc.2020.25

Scissors, L., Burke, M., Wengrovitz, S., 2016. February). What's in a Like? Attitudes and behaviors around receiving Likes on Facebook. In: Proceedings of the 19th acm conference on computer-supported cooperative work & social computing, pp. 1501–1510. https://doi.org/10.1145/2818048.2820066.

Sheldon, P. (2008). The relationship between unwillingness to communicate and students' Facebook use. *Journal of Media Psychology*, 20(2), 67-75.

Şimşek, T. N. (2012). Youth Becoming Lonely with Facebook in Modern Urban Society (Case of Istanbul University). Istanbul University: Published Master's Thesis. Istanbul.

Singh, S., & Singh, W. (2024). AI-based personality prediction for human well-being from text data: a systematic review. *Multimedia Tools and Applications*, 83, 46325–46368. https://doi.org/10.1007/s11042-023-17282-w

Siyez, D. M. (2009). Ergenlerde problem davranışlar. Pegem Akademi Yayınları, Ankara.

Skues, L. J., Williams, B., & Wise, L. (2012). The effects of personality traits, self-esteem, loneliness, and narcissism on Facebook use among university students. *Computers in Human Behavior*, 28, 2414-2419.

Stangl FJ, Riedl R, Kiemeswenger R and Montag C (2023) Negative psychological and physiological effects of social networking site use: The example of Facebook. Front. Psychol. 14:1141663. doi: 10.3389/fpsyg.2023.1141663

Steinfeld, C., Ellison, N. B., & Lampe, C. (2008). Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology*, 29(6), 434-445.

Tandera, T., Hendro Suhartono, D., Wongso, R., & Prasetio, Y. L. (2017). Personality prediction system from Facebook users. *Procedia Computer Science*, 116, 604–611.

Tartaglia, S. (2016). Different modalities of using Facebook: The influence of actual social relations, wellbeing, and attitude towards the medium. *Studia Psychologica*, 58(1), 3–17. https://doi.org/10.21909/sp.2016.01.703

Taydaş, O. (2012). The Relationship Between Facebook Usage as a Leisure Activity and Loneliness (Case of Cumhuriyet University). Selçuk University: Published Master's Thesis. Konya.

Temel, F., & Aksoy, A. B. (2001). Ergen ve gelişimi yetişkinliğe ilk adım [Adolescence and Development: The First Step Towards Adulthood]. Nobel Yayınları, Ankara.

Tong, S. T., Van Der Heide, B., Langwell, L., & Walther, J. B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication,* 13(3), 531–549. https://doi.org/10.1111/j.1083-6101.2008.00409.x

Valkenburg, P. M., Peter, J., Schouten, A. P., & Walther, J. B. (2008). Too much of a good thing? The relationship between number of friends and interpersonal impressions on Facebook. *Journal of Computer-Mediated Communication,* 13, 531–549.

Wang, J. L., Jackson, L. A., Zhang, D. J., & Su, Z. Q. (2012). The relationships among the Big Five personality factors, self-esteem, narcissism, and sensation-seeking to Chinese university students' uses of social networking sites. *Computers in Human Behavior,* 28, 2313-2319.

Wang, K., Frison, E., Eggermont, S., & Vandenbosch, L. (2018). Active public Facebook use and adolescents' feelings of loneliness: Evidence for a curvilinear relationship. *Journal of Adolescence,* 67, 35-44. https://doi.org/10.1016/j.adolescence.2018.05.008

Weaver, J. B. (1991). Exploring the links between personality and media preferences. *Personality and Individual Differences*, 12, 1293-1299.

Whitlock, J. L., Powers, J. L., & Eckenrode, J. (2006). The cutting edge: The internet and adolescent self-injury. *Developmental Psychology*, 42, 407–417.

Wilson, K., Fornasier, S., & White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior, and Social Networking*, 13(2), 173–177.

Wilson, R. E., Gosling, S. D., & Graham, L. T. (2012). A review of Facebook research in the social sciences. *Perspectives on Psychological Science,* 7, 203–220.

Zywica, J., & Danowski, J. (2008). The Faces of Facebookers: Investigating Social Enhancement and Social Compensation Hypotheses; Predicting Facebook™ and Offline Popularity from Sociability and Self-Esteem, and Mapping the Meanings of Popularity with Semantic Networks. *Journal of Computer-Mediated Communication*, 14, 1-34. https://doi.org/10.1111/j.1083-6101.2008.01429.x

JCe Journal of Computer Education
Knowing is not enough, you must be able to do it.

-106-