Relationship among smartphone addiction, age, lack of sleep, fear of missing out and social networking sites use among high school students

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Abstract

The aim of this study is to examine the relationship among smartphone addiction, fear of missing out (FoMO), excessive use of social networking sites (SNSs) on smartphones and sleep duration among high school students. The study group consists of 161 high school students from two state high schools in Turkey. Pearson correlation coefficient and stepwise multiple regression analysis techniques were used in the study, designed according to the cross-sectional method. Based on the findings of the study, there are positively correlated relationships between age, daily duration of SNS use on Smartphone, duration of smartphone ownership, and FoMO variables and smartphone addiction. In addition, there are negatively correlated relationships between duration of sleep (DoS), checking frequency of SNS (CFoS) on smartphone variables and smartphone addiction. Finally, FoMO, daily duration of SNS use on smartphone and duration of smartphone ownership predict smartphone addiction. The FoMO variable is the strongest predictor of smartphone addiction among these variables.

Keywords: Smartphone addiction, fear of missing out, social networking sites, lack of sleep, high school students.

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1. Introduction

Thanks to their advanced features and mobile applications, smartphones now enable individuals to communicate and reach information almost anywhere and at any time. It can be said that smartphones have become akin to being another bodily organ in some people’s lives. Smartphone ownership and usage are increasing daily worldwide. According to the report entitled ‘We Are Social’ (Kemp, 2017), more than half the world now uses smartphones. In Turkey, 89.9% of the 70.91 million population are mobile device users and 75% of them use a smartphone. The same report shows that 2017 will be a year of significant increase in Internet usage, and again predicts a rapid increase in mobile usage. The research report on the use of information technologies conducted by the Turkish Statistical Institute (2016) also reports that 96.9% of people in Turkey have mobile phones or smartphones. These results support the ‘We Are Social’ reports (Kemp, 2017).

However, the convenience brought to daily lives by the widespread use of smartphones, which also brings some problems for the individual. Excessive use i.e., spending more time on smartphones than planned (Caplan & High, 2006), and problematic use of smartphones is shown to be the reason for this situation. Problems caused by smartphones in the field of texting are related to traffic accidents and risks (Cazzulino, Burke, Muller, Arbgost & Upperman, 2014; Haigney & Westerman, 2001; McEvoy et al., 2005; Thompson, Baldock, Mathias & Wundersitz, 2013), hand, spine and neck problems (Shan et al., 2013; Xie, Szeto, Dai & Madeleine, 2016), stress and depression (Elhal, Dvorak, Levine & Hall, 2017; Samaha & Hawi, 2016; Thomee, Harenstam & Hagberg, 2011), poor sleep quality (Li, Lepp & Barkley, 2015; Soni, Upadhyay & Jain, 2017) and low academic performance (Alosaimi, Alyahya, Alshahwan, Al Mahiyjari & Shaik, 2016; Hawi & Samaha, 2016; Junco & Cotton, 2012; Lepp, Barkley & Karpinski, 2015; Samaha & Hawi, 2016). In particular, adolescents and young adults spend a great deal of time using their smartphones (Kumcagiz & Gunduz, 2016) in an intense and passionate means of communicating with their friends, following what their friends are posting, and sharing and transferring their experiences each day. They are mostly actively engaged in social networking site (SNS; Facebook, Instagram, WhatsApp, etc.) application usage on their smartphones (Gezgin & Cakir, 2016). Using SNSs is a particularly popular activity on smartphones, with around 80% of social media usage performed via mobile technologies (Sterling, 2017). Due to the problematic use of smartphones, which are heavily used for SNS among young people, psychological problems are seen to be increasing worldwide, especially among young people (Bianchi & Phillips, 2005; Biglu & Ghavami, 2016).

Among the problems reported in the literature related to mobile phones are problematic because of their use (Beranuy, Oberst, Carbonell & Chamarro, 2009; Billieux, Schimmenti, Khazaal, Maurage & Heeren, 2015) and smartphone addiction (Kwon, Kim, Cho & Yang, 2013; Lin et al., 2014; Oulavirta, Rattenbury, Ma & Raita, 2012). However, in the current study, these two problem areas will be mentioned as one, ‘Smartphone Addiction’. Smartphone addiction is a negative and pathological concept that is evaluated through a system of subjective, behavioural, physiological symptoms such as preoccupation, loss of control and withdrawal symptoms (Bian & Leung, 2015; Kwon et al., 2013; Y. K. Lee, Chang, Lin & Cheng, 2014; N. Park & Lee, 2014). Mobile technologies, including smartphones and tablet personal computers (tablets), are platforms where it is possible to participate in potentially addictive events, including the use of SNSs (Billieux et al., 2015).

Considering this point of view, the increasing use of SNSs and failure to control can be considered as a predictor of smartphone addiction. It is also stated that there is a relationship between smartphone addiction and SNS addiction in the field. Supporting this finding, Kuss and Griffiths (2017) state that smartphone dependency may be a part of SNS addiction. This current study examines the relationship among high school students’ age, sleep duration at night, SNS use and fear of missing out (FoMO), which is thought to be related to problematic SNS usage. More specifically, the current study aims to address the following research questions:
i. Is there a relationship between smartphone addiction and high school students’ age?
ii. Is there a relationship between smartphone addiction and high school students’ nightly sleep duration?
iii. Is there a relationship between smartphone addiction and high school students’ duration of daily smartphone SNS usage?
iv. Is there a relationship between smartphone addiction and high school students’ smartphone ownership duration?
v. Is there a relationship between smartphone addiction and high school students’ frequency of checking SNSs on smartphones?
vi. Is there a relationship between smartphone addiction and high school students’ FoMO level?
vii. Which variables predict smartphone addiction?

2. Literature review

2.1. Smartphone addiction

Smartphones meet the functional and emotional needs of users with their features and mobile applications, as well as the traditional telephone function of voice communication and mobile phone text/SMS messaging features. Young people are especially open to new forms of tools, such as smartphones, as they mature in an environment surrounded by various forms of the next generation high technology tools (Aktas & Yilmaz, 2017). Young people are more susceptible to the negative effects of smartphones than older generations. Smartphones have made life easier for many people, but at the same time they are the cause of psychological problems due to their excessive and problematic usage. The most significant issue is smartphone addiction. Although smartphone addiction is largely a new phenomenon, there have been studies published in the literature on smartphone addiction, especially about the development scale and its associated predictors in Turkey (Aktas & Yilmaz, 2017; Cakir & Oguz, 2017; Demirci, Orhan, Demirdas, Akpinar & Sert, 2014; Sar, Tuncay & Horzum, 2015) as well as in the wider world (Ching et al., 2015; Lee et al., 2014; Lin et al., 2014; Kwon et al., 2013; Mok et al., 2014).

2.2. Smartphone addiction, age and lack of sleep

The relationship between smartphone dependency and age has been a topic of research in recent studies. In a study by Divan, Kheifets, Obel and Olsen (2012), it was found that children using mobile phones are more likely to display behavioural problems such as nervousness, bad temperament, mental distraction and indolence. These problems worsen if the child begins using the mobile phone at an early age. A study by Pearson and Hussain (2016) of 17–68 years old found a negative relationship between age and smartphone addiction. Their results showed that young people are more prone to smartphone addiction. In addition, earlier research also found that problematic smartphone use in general is predicted in younger age (Lu et al., 2011; van Deursen, Bolle, Hegner & Kommers, 2015). Demirci et al. (2014) found a statistically non-significant negative correlation ($r = -0.086, p = 0.13$) between university students in Turkey in terms of smartphone addiction scores. Similarly, in a study conducted on university students by Demirci, Akgonul and Akpınar (2015) found that smartphone addiction negatively correlated with age ($r = -0.189, p = 0.003$).

Young people are using their smartphones when in bed; spending time with their smartphones before going to sleep (Akilli & Gezgin, 2016). Therefore, the sleeping time of young people who spend time at night with their smartphones is reduced (Kamibeppu & Sugiura, 2005), leading to impaired sleep quality. In addition, excessive electronic media usage at night is a risk factor for both adolescents’ sleep disturbance and depression (Lemola, Perkinson-Gloor, Brand, Dewald-Kaufmann & Grob, 2015). Relationships between sleep quality and smartphone usage have been identified in the literature. In a study with 362 adolescents aged 12–17, the adolescents who own smartphones and...
use more electronic media before bedtime, especially for the sending and receiving of messages, spend more time online compared to adolescents who have traditional mobile phones. The ownership of the smartphone, which was not related to sleep disturbance and depression, was also associated with later sleeping times. Sleep disturbance is mediated in part by the relationship between the use of electronic media before sleep and depression statements. Electronic media usage was negatively associated with DoS and sleep disturbance, which was also associated with depressive symptoms (Lemola et al., 2015). Similarly, in another study conducted by Soni et al. (2017) came to the conclusion that young people have developed significant sleep and behaviour problems due to the overuse of smartphones. The results of a study by Demirci et al. (2015) indicate that depression, anxiety and sleep quality may be associated with smartphone overuse. Such over usage may lead to depression and/or anxiety, which can in turn result in sleeping problems.

### 2.3. Smartphone addiction, FoMO and SNS use

There have been studies that have investigated the relationship between the smartphone addiction and the use of SNS via smartphones. In a study conducted among university students, smartphone addiction was found to be higher in young people with more than 4 hours of daily smartphone usage compared to those with less smartphone usage (Aljomaa, Qudah, Albursan, Bakhiet & Abduljabbar, 2016). It can be said that the role of SNSs plays a major role in terms of the use of smartphones over many hours, considering that SNSs are the likely purpose of smartphone usage, especially in Turkey (Gezgin & Cakir, 2016).

A study by Elhai, Levine, Dvorak and Hall (2016) revealed an association between the frequency of smartphone usage and smartphone dependency. As the frequency of use of smartphones increases, smartphone addiction tends to increase ($r = 0.34$, $p < 0.001$). If the purpose of using the smartphone is the use of SNS among young people, it can be considered that students will often check their social network accounts with their smartphones. Similarly, Cheever, Rosen, Carrier and Chavez (2014), who conducted a study with university students, stated that the increase in daily duration of smartphone use caused anxiety levels to rise when students were separated from their smartphones. In addition, some studies showed the use of SNS as a positive predictor of mobile phone addiction (Jeong, Kim, Yum & Hwang, 2016; Salehan & Negahban, 2013). Smartphones are considered to be a platform for users to access SNSs constantly due to their portability and continuous connectivity (Jeong et al., 2016). Because of these features, easy-to-access social network accounts can trigger excessive SNS usage and can therefore contribute to smartphone dependency among young people.

FoMO is considered as a predictor of excessive use of SNSs. Przybylski, Murayama, DeHaan and Gladwell (2013), who created the FoMO Scale (FoMOs), concluded that individuals high in FoMO use social media sites more and are more likely to use their phones whilst driving a vehicle or sat in a classroom. FoMO has been found to increase social media use in young people (Alt, 2015; Przybylski et al., 2013; Vaidya, Jaiganesh & Krishnan, 2016), and some studies show that FoMO also was the variable most related to problematic smartphone usage (Alt, 2015; Clayton, Leshner & Almond, 2015; Elhai et al., 2016; Przybylski et al., 2013). Gokler, Aydin, Unal and Metintas (2016) also found a positive relationship between the increase in the frequency of social network accounts and FoMO. These findings are important in terms of problematic SNS use and FoMO. Smartphones that make social networks easier to access are thus thought to be predisposed to addiction.

### 3. Methodology

#### 3.1. Sampling

This cross-sectional study was based on stratified random sampling. The study group consists of 178 high school students from two state schools in Edirne, Turkey. However, 17 of the students were removed from the study due to returning incorrectly completed research forms. As a result, the study
group comprised of 161 high school students, of whom 67 are female (41.6%) and 94 male (58.4%). The average age of the students was $M = 16.22$ (SD = 99). In addition, 45 of the students were from the 9th grade (28.0%), 68 from the 10th grade (42.2%), 23 from the 11th grade (14.3%) and 25 from the 12th grade (15.5%). All high school students have a smartphone and used at least one social network application.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>67</td>
<td>41.6</td>
</tr>
<tr>
<td>Male</td>
<td>94</td>
<td>58.4</td>
</tr>
<tr>
<td>School type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational high school</td>
<td>85</td>
<td>52.8</td>
</tr>
<tr>
<td>Anatolian high school</td>
<td>76</td>
<td>47.2</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th grade</td>
<td>45</td>
<td>28.0</td>
</tr>
<tr>
<td>10th grade</td>
<td>68</td>
<td>42.2</td>
</tr>
<tr>
<td>11th grade</td>
<td>23</td>
<td>14.3</td>
</tr>
<tr>
<td>12th grade</td>
<td>25</td>
<td>15.5</td>
</tr>
<tr>
<td>Total (N = 161)</td>
<td>161</td>
<td>100.0</td>
</tr>
</tbody>
</table>

3.2. Data collection instruments

3.2.1. Smartphone addiction scale-short form (SAS-SF)

The short form of the smartphone addiction scale (SAS) was developed by Kwon et al. (2013) in order to measure the risk of smartphone dependency. The Turkish version of the SASS Scale was adapted by Noyan, Darcin, Nurmedov, Yilmaz and Dilbaz (2015). The scale consists of 10 items, evaluated using six-point, Likert-type response options. Each item scores between 1 and 6 in the scale. Cronbach’s alpha coefficient in the original reliability-validity study of the scale is 0.86 (Noyan et al., 2015). In this current study, Cronbach’s alpha coefficient of the SASS Scale was calculated as 0.76.

3.2.2. FoMO Scale

The tool was originally developed by Przybylski et al. (2013) and adapted to Turkish by Gokler et al. (2016). The FoMOs has been used in this current study for the purposes of collecting data. A five-point, Likert-type scale was used in a single dimension with 10 items in total. Each item is given a score of 1–5 according to participants’ choices (from ‘1 = not true at all’ to ‘5 = definitely true’). The individual’s score is between 10 and 50 and there is no cut-off point in the scale. The higher the score, the more likely the individual concerned has FoMO. The reliability coefficient using Cronbach’s alpha is 0.95 for the original scale, 0.81 for the Turkish adaptation of the scale and 0.77 in this current study.

3.2.3. SNS use form

The form includes captures variables for high school students’ duration of daily SNS use via smartphone (DoSUS), duration of SNS ownership (DoSO) and CFoS. The following questions were posed in order to obtain this data. ‘How many years have you been using social networking services?’, ‘How many minutes or hours a day do you spend on social networks with your smartphone?’ and ‘How many minutes or hours per day do you check your smartphone social network accounts for updates and notifications?’

3.2.4. Demographics form

Demographics captured included gender, age, grade level and DoS.
3.3. Data collection and analysis

Permission to collect data from the high school students was obtained prior to data collection. The researcher informed the students about the purpose of the study, the research form used and the volunteering principle, and students were asked not to write their names on the scales in order to ensure their reliability through anonymity. Data were collected from the high school students during May of the 2016–2017 academic year spring term. The response time for completion of the research form lasted approximately 15 minutes. The Pearson moments multiplication correlation coefficient and the order in which the variables that predict smartphone dependency in high school students in order to determine the correlation of the data obtained from the research were analysed with the SPSS 23.0 package program using the stepwise regression analysis techniques.

4. Results

Table 2 shows the mean and standard deviation of the scores of the high school student participants, and the scores obtained from each of the independent variables. Table 2 also shows the correlation coefficients of the associations among DoS, DoSUS, DoSO, CFoS, FoMO and SAS variables. As shown in Table 2, the correlation coefficients of the variables studied in the study ranged from $r = 0.157$ to $r = 0.661$. As can be seen from Table 3, the highest correlation with SAS is between FoMOs ($r = 0.661$, $p < 0.01$).

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16.22</td>
<td>0.99</td>
</tr>
<tr>
<td>2. DoS</td>
<td>-.050</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.31</td>
<td>1.32</td>
</tr>
<tr>
<td>3. DoSUS</td>
<td>0.074</td>
<td>-0.089</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>211.75</td>
<td>149.73</td>
</tr>
<tr>
<td>4. DoSO</td>
<td>0.265**</td>
<td>-.204**</td>
<td>0.186*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5.95</td>
<td>2.14</td>
</tr>
<tr>
<td>5. CFoS</td>
<td>0.157*</td>
<td>0.099</td>
<td>-.199*</td>
<td>-.125</td>
<td>1</td>
<td></td>
<td></td>
<td>59.65</td>
<td>61.41</td>
</tr>
<tr>
<td>6. FoMO</td>
<td>0.057</td>
<td>-.105</td>
<td>0.438**</td>
<td>0.246**</td>
<td>-.136</td>
<td>1</td>
<td></td>
<td>2.45</td>
<td>0.84</td>
</tr>
<tr>
<td>7. SAS</td>
<td>0.157*</td>
<td>-.167*</td>
<td>0.551**</td>
<td>0.339**</td>
<td>-.234**</td>
<td>0.661**</td>
<td>1</td>
<td>2.92</td>
<td>1.31</td>
</tr>
</tbody>
</table>

* $p < 0.05$. ** $p < 0.01$.

When Table 2 is examined, it is seen that there are positive correlations with SAS among age ($r = 0.157$, $p < 0.05$), DoSUS ($r = 0.551$, $p < 0.01$), DoSO ($r = 0.339$, $p < 0.01$) and FoMO ($r = 0.661$, $p < 0.01$) variables. In addition, there is negative correlations with SAS among DoS ($r = -0.167$, $p < 0.05$) and CFoS ($r = -0.234$, $p < 0.01$) variables. According to these findings, as smartphone dependency increases, FoMO on SNS, time spent on the daily smartphone, control of daily social media accounts reached. In addition, as smartphone dependency increases, it can be stated that there is a decrease in sleep duration. Finally, those who have had social media accounts for a long time and those who are older are at greater risk of smartphone addiction.

The current study applied a stepwise multiple regression technique to determine whether or not the variables significantly predicted the SAS variable. Findings of the stepwise regression analysis are presented in Table 3.
In the first model (see Table 3), the FoMO variable is entered in the regression equation and 43% of the variance in the smartphone addiction is explained in terms of FoMO ($R = 0.66$, $R^2 = 0.43$). In other words, the strongest predictor of the smartphone addiction variable is the FoMO variable.

In the second regression model, the DoSUS variable model was added after the FoMO variable, and the variance explained in the smartphone addiction score increased from 43% to 52% ($R = 0.72$, $R^2 = 0.52$). In other words, a contribution of about 9% to the explained variance of the smartphone addiction variable is seen.

In the third regression model, DoSO variables were added after the FoMO and DoSUS variables, and the variance explained in the smartphone addiction score increased from 52% to 54%. Here, the contribution of the DoSO variable to the explained variance was found to be 2%.

The age, DoS and CFoS variables after the third model were excluded from the model because they made no meaningful contribution to the prediction of smartphone addiction in the regression model.

5. Discussion and conclusions

This study investigated whether or not there is a meaningful relationship between smartphone addiction of high school students and age, lack of sleep, fear of missing out and social networking sites use among high school students. Cypriot Journal of Educational Science, 13(2), 409-421.

5.1. Is there a relationship between smartphone addiction and high school students’ age?

It has been reported that there is a positive correlation between smartphone addiction and age of high school students at a level of 0.05 significance ($r = 0.157$, $p < 0.05$). Contrary to this result, other studies reported that as age decreases, the increase of smartphone dependency is in negative relation (Lu et al., 2011; Pearson & Hussain, 2016; van Deursen et al., 2015). However, it is thought that the age difference (14–19 years) between the adolescents is small and that the younger adolescents are controlled more by their families. A result of this endorsement seems to be that the use of smartphones differs in total and the sub-dimensions when considering age groups, and that smartphones are used most by the 18-year-old age group (Cakir & Oguz, 2017).

5.2. Is there a relationship between smartphone addiction and high school students’ nightly sleep duration?

There was a negative correlation found between smartphone addiction and the sleep duration at night of the students ($r = -.167$, $p < 0.05$). It is seen that as the addiction of smartphones increases, there is a decrease in sleep duration. Students get up early to go to school on weekday mornings. As a result, there are problems with sleep quality of students who spend time late at night with their smartphones (Lemola et al., 2015). In their study conducted with 319 university students, Lemola et al. (2015) found that participants in the high smartphone use group scored higher than the low
smartphone use group in terms of depression, anxiety and daytime dysfunction. In the same study, it was stated that their results may be related to depression, anxiety and poor sleep quality due to overuse of smartphones. In addition, in Turkey, excessive use of smartphones can lead to depression and/or anxiety, which can then lead to sleep problems (Demirci et al., 2015). A study of 2,546 adolescents in Belgium suggested that mobile phones greatly influence the sleep quality of growing adolescents. It has been stated that one quarter of young people with mobile phones face a threat to healthy sleep patterns. In addition, mobile phones seem to actually interfere with sleep, while seemingly affecting sleeping time (Van den Bulck, 2003). In South Korea, a study by Kim (2012) showed that smartphone addiction among high school students explained 4.5% of insufficient sleep. Sub-factors of smartphone addiction such as problems in daily life, withdrawal symptoms and loss of control among high school students are related with insufficient sleep (Zhang, 2013). M. J. Park (2014) also reported that smartphone addiction among university students was related to insufficient sleep.

5.3. Is there a relationship between smartphone addiction and high school students’ duration of daily smartphone SNS usage?

This current study determined that high school students use SNS via their smartphones for about three and a half hours per day. It also appears that there is a meaningful positive relationship between smartphone addiction and the daily duration of smartphone use for SNS ($r = 0.551$, $p < 0.01$). It supports the result of a significant difference between the duration of smartphone use and dependency in the study conducted by Cakir and Oğuz (2017) on 540 high school students. Nearly half of the students stated that they use their smartphones for more than four hours a day. It is seen that this ratio is considerably higher when the hours spent in school are considered. When the purpose of students’ smartphones is examined, it can be seen that social media applications such as Viber, Tango, Skype, WhatsApp, Facebook, Foursquare, and Twitter, and game programs such as Candy Crush are more intensely used. A study also found that the use of SNS mobile applications is a significant predictor of mobile addiction (Salehan & Negahban, 2013). In recent years, it has been seen that smartphone usage has spread rapidly, having all but abolished the obligation for desktop and laptop computers due to mobile devices’ ability to access the Internet and social networks with any physical or time-bound restraints. In this respect, some researchers suggest that smartphone addiction is part of the social network dependency (Kuss & Griffiths, 2017) and that smartphone addiction is an excessive and problematic use of social networking (Dogan & Tosun, 2016). Future studies could, therefore, investigate the relationship between smartphone addiction and social networking addiction.

5.4. Is there a relationship between smartphone addiction and high school students’ smartphone ownership duration?

It has been determined that there is a positive meaningful relationship between smartphone addiction and duration of smartphone ownership ($r = 0.339$, $p < 0.01$). It can be said that high school students who have encountered smartphones previously may be increasingly addicted to the smartphone. Smartphones provide a convergence of services such as a camera, MP3 player, GPS, web browsing, telephone calling, e-mail, gaming and SNS usage (Noh, Kim & Lee, 2010) on one portable device. As a result, smartphones that are owned from an early age often result in young people communicating regularly with their friends and becoming addicted to entertainment applications.

5.5. Is there a relationship between smartphone addiction and high school students’ frequency of checking SNSs on smartphones?

It has been determined that there is a negative meaningful relationship between the smartphone addiction and the frequency of checking SNS applications on smartphones ($r = -0.234$, $p < 0.01$). In the current study, the frequency of SNS checking was requested from students in terms of minutes.
Therefore, as the variable decreases, the frequency increases according to the study. In this regard, the number of minutes between checking their SNS decreases, smartphone addiction increases. In the study by Gokler et al. (2016), the FoMO scores were found to relate to the frequency of students checking their Internet access device to control their Facebook and Twitter applications. Young people heavily use their smartphones for social network accounts; therefore, it is thought that students often check their social media accounts on smartphones. It can be said that the notification features (audible and visual) of smartphones are especially effective. In addition, a result of the study conducted by Lee et al. (2014) demonstrated that compulsive use of smartphones and technology-related stress are positively related to the need for touch.

5.6. Is there a relationship between smartphone addiction and high school students’ FoMO level?

It has been determined that there is a positive meaningful relationship between smartphone dependency and the variable of FoMO level \( (r = 0.661, p < 0.01) \). As seen in the study, the FoMO variable has the highest correlation with smartphone dependency, which supports the findings of the study conducted by Elhai et al. (2016) which demonstrated that FoMO was related to problematic smartphone use. In the study conducted with university students by Gokler et al. (2016), they found a positive relationship between FoMO and problematic mobile phone use in Turkey \( (r = 0.587, p < 0.01) \). In addition, a significant relationship was reported between being online on SNS accounts throughout the day and the active use of SNS for periods over seven hours, and FOMO about preservice teachers (Gezgin, Hamutoglu, Gemikonakli & Raman, 2017). Abeele and Van Rooij (2016) argued that FoMO has a significant impact on the problematic use of social media, and that FoMO is important in explaining the problematic use of social media. Their study showed FoMO as one of the predictors of problematic uses of SNSs. Finally, FoMO was also found to be significant in association with social smartphone usage by Wolniewicz, Tiamiyu, Weeks and Elhai (2017).

5.7. Which variables predict smartphone addiction?

The results of the stepwise analysis conducted in the study revealed that three variables predicted smartphone addiction. FoMO variable was entered in the regression equation and 43% of the variance in the smartphone addiction is explained in terms of FoMO \( (R = 0.66, R^2 = 0.43) \). In other words, the strongest predictor of the smartphone addiction variable is the FoMO variable. Then, the duration of SNS use on smartphone variable model was added after the FoMO variable and the variance explained in the smartphone addiction score increased from 43% to 52% \( (R = 0.72, R^2 = 0.52) \). In other words, a contribution of about 9% to the explained variance of the duration of daily SNS use variable is seen. In the third regression model, DoSO variables were added after the FoMO and DoSUS variables, and the variance explained in the smartphone addiction score increased from 52% to 54%. The contribution of the DoSO variable to the explained variance was found to be 2%. In support of this finding, the results of the study conducted by Wolniewicz et al. (2017) demonstrated that FoMO was most strongly related to both problematic smartphone use and social smartphone use.

In future studies, researchers could study smartphone addiction, FoMO and low academic performance due to lack of sleep and excessive SNS use. As can be seen, smartphone addiction is spreading among young people and is especially triggered by SNS usage. Young people who lack sleep can experience problems in their academic performance or end up cyberloafing (Akbulut, Dursun, Donmez & Sahin, 2016) even during lessons. Further research into these variables will help reduce the problems that students experience in academic life.

6. Limitations and recommendations

There are a few limitations to be considered in interpreting the findings of this study. A high school student sample was used that did not represent the wider population of Turkey. Also, it is difficult to
obtain the necessary permission from government agencies to conduct research with high school students. The reliability of the report measurements that were used to conduct and evaluate quantitative measurements should be mentioned. More importantly, individuals may inaccurately perceive the time they spend using their mobile device (Grondin, 2010) and thereby misinterpret the time spent (Boase & Ling, 2013; Lin et al., 2015). Finally, as the study is based on cross-sectional method, causality cannot be established based on the findings.

References


