

## ORIGINAL RESEARCH

# Adaptation of General Phubbing Scale to Turkish Culture and Investigation of Phubbing Levels of University Students in Terms of Various Variables

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## Main Points

- The smartphone addiction variable has a very strong explanation effect on phubbing addiction.
- The General Phubbing Scale, which is adapted to Turkish, is found to be a valid and reliable.
- The level of phubbing addiction of individuals is increased as the level of smartphone addiction, FOMO, and boredom tendency.
- Positive correlation is found between phubbing levels of university students, daily Internet usage time, and Internet usage time on phone.
- FOMO, and boredom tendency are significant predictors of phubbing addiction.

## Abstract

This study aimed to adapt the Generic Phubbing Scale (GPS) to Turkish culture and to examine the phubbing levels of university students concerning various variables. Acceptable goodness-of-fit indices were found in the first-order confirmatory factor analysis ( $\chi^2/df=2.47$ , GFI=0.92, IFI=0.92, CFI=0.95, NFI=0.92, AGFI=0.89, TLI=0.94, and RMSEA=0.067) and the second-order confirmatory factor analysis ( $\chi^2/df=2.61$ , GFI=0.92, IFI=0.95, CFI=0.95, NFI=0.92, AGFI=0.89, TLI=0.93, and RMSEA=0.070) performed to test the construct validity of the GPS. Later, the significance of the upper and lower 27% groups was analyzed using an independent t-test. The analysis results showed that the scale has the power to measure the desired characteristics. Chronbach's alpha internal consistency coefficient was found to be  $\alpha=0.89$ . The study examined university students' phubbing levels in terms of various variables and performed a hierarchical regression analysis to explore whether the variables of smartphone addiction, fear of missing out, and boredom proneness were predictive variables for university students' phubbing addiction levels. According to the results, these three variables were found to be significant predictor variables for the phubbing levels of university students.

**Keywords:** Addiction, phubbing, reliability, scale, validity

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Received: 23.06.2019

Revision: 03.11.2019

Accepted: 23.11.2019

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Available online at www.  
addicta.com.tr

## Introduction

While innovations brought by technology make people's lives more convenient, it also causes problems in various areas (Çakır & Oğuz, 2017; Goddard, 2010; Pugh, 2017). Technology addiction and other related addiction types are some of these problems (Meral, 2018; Pendergrass, 2017). While these problems manifest primarily as Internet and game addiction, they have taken on a new dimension with the

introduction of smartphones into individuals' lives (Geser, 2006). Today, it is observed that technology addiction and its types have started to obstruct individuals' social relations and communication channels.

People can easily access the services provided by technology by using their smartphones (Randler et al., 2016; Tekin, Güneş, & Çolak, 2014) because smartphones are technological gadgets that provide

**Cite this article as:** Yam, F. C., & Kumcağız, H. (2020). Adaptation of general phubbing scale to Turkish culture and investigation of phubbing levels of university students in terms of various variables. *Addicta: The Turkish Journal on Addictions*, 7(1), 48-60.

individuals with all technical opportunities to all in one. Due to the developments in the smartphone technology and the increase in the individual smartphone usage, a new type of problem which is called as the smartphone addiction has emerged (Kwon, Kim, Cho, & Yang, 2013). With the increase in smartphone addiction levels of individuals, new problems related to smartphone addiction, such as Nomophobia and netlessphobia, have emerged (Barrios-Borjas, Bejar-Ramos, & Cauchos-Mora, 2017). In addition to these types of addictions, a different type of addiction that increases the frequency and duration of smartphone use of individuals is social media addiction (Griffiths & Szabo, 2014). An individual with a high level of social media addiction tends to check the news on social media via his phone. This type of addiction includes many factors such as rewarding (getting more followers), encouraging (gaining appreciation), entertaining (group games, video sharing) the individual (Ayhan & Balci, 2009; Küçükkuurt, Hazar, Çetin, & Topbaş, 2009).

Furthermore, by dint of social media, people may have chances to meet their relationship needs that cannot be achieved in real life. Therefore, people's social media addiction may increase rapidly. The adverse effects of social media addiction on individuals have grown to such an extent that "the fear of missing out" concept has emerged. The term Fear of Missing Out (FOMO) in English is defined as the state of anxiety and fear that individuals feel when they miss news and updates on social media and sharing sites they follow, and they do not hear about them (Fox & Moreland, 2015). As can be seen from the aforementioned explanations, the introduction of the smartphone into daily life does not only lead to smartphone addiction but also causes various problems in different fields. It seems that individuals cannot stay away from their smartphones, and they are constantly busy with their smartphones, even at home, work, and other social settings. As the theoretical explanations and the research results mentioned above display, this problem may also cause new types of addictions to emerge with the increase in smartphone use and technological innovations.

Recently, the increase in the level of smartphone use of individuals in social environments has suggested the fact that this phenomenon cannot be explained with the concept of smartphone addiction. This situation has first been described as "phubbing." Phubbing is a term used to describe such a situation: an individual focuses on his phone and does not communicate with the people around him (Karadağ et al., 2016; Nazir & Pişkin, 2016). In other words, individuals with phubbing addiction prefer spending time in the virtual world with their smartphones to communicate with people in social environments. This type of addiction has adverse effects on the social development and communication skills of individuals (Gömleksiz & Fidan, 2011; Luk et al., 2018). These phubbing behaviors can deteriorate individuals' relations with other people around them (Krasnova, Abramova, Notter, & Baumann, 2016). It is stated that phubbing actions interfere with the interpersonal communication of individuals and may lead individuals to become lonely in society in later stages (Nazir & Pişkin, 2016; Youarti & Hidayah, 2018). Phubbing defines a person who is occupied with digital devices (Aagaard, 2019). Besides, phubbing addiction consists of a multidimensional structure since it includes types such as social media, Internet, telephone, and game addiction, and it is beyond smartphone ad-

diction (Al-Saggaf, MacCulloch, & Wiener, 2018; Barrios-Borjas, Bejar-Ramos, & Cauchos-Mora, 2017). When the studies on phubbing addiction in the literature are examined, it is seen that factors such as smartphone addiction (Davey et al., 2018; Munatirah & Anisah 2018; Yan & Wan 2017), social media addiction (Al-Saggaf, MacCulloch, & Wiener, 2018; Hanika, 2015; Karadağ et al., 2016), Internet addiction (Yan & Wan, 2017), game addiction (Karadağ et al., 2016), fear of missing social developments (Franchina, Vanden Abeele, Van Rooij, Lo Coco, & De Marez, 2018) an important role.

Additionally, it has been found that phubbing addiction causes depression (González-Rivera, Segura-Abreu, & Urbistondo-Rodríguez, 2018; Wang, Xie, Wang, Wang, & Lei, 2017), decreases relationship quality (Aagaard, 2019; Çizmeçi, 2017), decreases marriage satisfaction (Carjaval, 2017; Roberts & David, 2016) and increases loneliness level (Franchina et al., 2018). According to the results of this research, phubbing addiction is seen as a type of addiction with high negative effects (Aagaard, 2019; Carjaval, 2017; Çizmeçi, 2017; Franchina et al., 2018; Roberts & David, 2016). Phubbing addiction has a significant impact on social development, which is the greatest development area of individuals and which is highly likely to spread in society. Evaluation of this phenomenon by the researchers will play a significant role in taking various measures. Therefore, it is considered that determining the indicators of this addiction type in individuals and determining their levels is an essential step in terms of measures to be taken against phubbing addiction. For all these reasons, this study aims to adapt the General Phubbing Scale, which is a multidimensional assessment tool, to evaluate the behavior of individuals using smartphones in social settings in Turkish culture. Besides, in the scope of the study, phubbing levels of university students were examined in terms of various variables, and it was aimed to perform hierarchical regression analysis to determine whether the variables of smartphone addiction, FOMO, and tendency to boredom were predictive variables on phubbing addiction levels of university students.

## Methods

This is a research conducted by using a relational screening model. The relational screening model is a research model that tries to reveal the relationship between two or more variables and the degree of this relationship (Karasar, 2005). In other words, it is a research model that aims to determine whether there is a co-change between the variables in the relational screening model, and if so, the level of the change (Kalaycı, 2017).

### Study Group

The study group of the study consists of 327 university students (239 females and 88 males) studying at Ondokuz Mayıs University. Of the university students participating in the research, 30% of them are 1st grade, 23.2% are 2nd grade, 13.8% are 3rd grade, and 32.7% are 4th grade. In addition, 45% of these students are studying at Faculty of Education, 13.5% at Faculty of Medicine, 5.8% at Faculty of Health Sciences, 8.9% at Faculty of Engineering, 10.7% at Faculty of Economics and Administrative Sciences, and 10.4% at Faculty of Arts and Sciences. 4.9% of them study at the Faculty of Veterinary Medicine. Since the data of the study was collected via Google Drive, the data collection tools were made Internet-based and delivered to the participants online.

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The study group consisted of the respondents. Therefore, the gender and faculty ratios of the participants reflect the number of respondents to the Internet-based data collection tool. In other words, there was no specific proportion of participants regarding gender and faculty types before the study.

For the validity study of the scale, a 30-person group (students in the last grade of the department of English Language Education, Ondokuz Mayıs University who were familiar with both languages were first tested in the original language and then in Turkish. In the next stage, to perform the validity and reliability study of the Phubbing Scale, 327 students (239 females and 88 males) studying at the university between March and May 2019 were applied Phubbing Scale and validity and reliability analyses were performed on the data obtained during this process.

For the criterion validity study, Smart Phone Addiction Scale-Short Form adapted by Noyan, Enez, Nurmedov, Yılmaz, & Dilbaz (2015) applied to 171 university students studying at the university Ondokuz Mayıs University between March-May 2019. FOMO adapted by Gökler, Aydın, Ünal and Metintaş (2016) with Koç, Ekşi and Demirci (2018) was also applied. After the correlation coefficient between the Brief Boredom Tendency Scale and the Turkish form of the Phubbing Scale was analyzed.

For the criterion validity study, Smart Phone Addiction Scale-Short Form adapted by Noyan et al. (2015), applied to 171 university students studying at the university between March-May 2019; Koç, Ekşi and, Demirci (2018), the correlation coefficient between the Short Boredom Tendency Scale and the Turkish form of the Phubbing Scale was analyzed.

### Data Collection Instruments

#### Smart Phone Addiction Scale - Short Form (TSPAS-SF)

The scale was developed by Kwon et al. (2013) and adapted to Turkish by Noyan et al. (2015). The scale is a five-point Likert scale with ten items. The Turkish adaptation of the scale was conducted on 367 university students. The researchers obtained construct validity with exploratory factor analysis, and the results showed that the scale was validated on the Turkish sample. As a result of the principal components analysis made with the data obtained from the scale, it was seen that the one-dimensional structure consisting of ten items explained 46.3% of the total variance in the (TSPAS-SF) scores. The Chronbach's alpha coefficient of the scale, whose factor loadings ranged from 0.49 to 0.83, was 0.87, and the test-retest reliability coefficient was 0.93. In this study, the internal reliability coefficient of the scale was calculated as 0.87.

#### Fear of Missing Out Scale (FMOS)

The measurement means developed by Przybylski, Murayama, Dehaan, & Gladwell (2013), the scale was adapted to Turkish by Gökler et al. (2016). It is a five-point Likert scale with ten items and one dimension. Researchers conducted exploratory factor analysis within the context of adaptation to Turkish. As a result of the factor analysis, the Kaiser-Meyer-Olkin (KMO) value was found to be.80, and they reported that the Bartlett test provided sphericity criteria ( $p<0.001$ ). As a result of the study, a one-dimensional structure consisting of ten items explaining 39.4% of the total variance was obtained, and they accepted that the mea-

surement mean was confirmed in the Turkish sample according to these results. The researchers found that the Chronbach Alpha internal reliability coefficient of the Turkish FMOS from adaptation studies was.81. In this study, the internal reliability coefficient of the scale was calculated as 0.81.

#### Brief Boredom Tendency Scale (BBTS)

The measurement mean was developed by Struk, Carriere, Cheyne, and Danckert (2017) and adapted to Turkish by Koç, Ekşi, and Demirci (2018). The measurement mean consists of eight items prepared in seven Likert types and one dimension. According to the confirmatory factor analysis conducted by the researchers indicated that the results of the fit indices ( $\chi^2=80.083$ ,  $SD=20$ ,  $p<0.001$ ; CFI=0.96; TLI=0.94; SRMR=0.039; RMSEA=0.078) reported that the structure was confirmed in Turkish culture. The Cronbach Alpha internal consistency coefficient of the scale, whose factor loads ranged from 0.52 to 0.80, was found to be 0.86. In this study, Chronbach alpha internal reliability coefficient of the scale was calculated as 0.87.

#### General Phubbing Scale (GPS)

The scale was developed by Chotpitayasunondh and Douglas (2018) with data collected from 352 people aged 18-61 years ( $\bar{X}=34.82$ ,  $SD=10.42$ ) to measure to what extent people are busy with their smartphones in social settings and they ignore people around them. It was determined that 51.3% of the participants worked full time, and 62.7% of them received university-level education.

As a result of the exploratory factor analysis conducted by the researchers who developed the scale, the number of 33 items of the scale (KMO=0.97, Barlett Sphericity coefficient=7497.11;  $p<0.001$ ) was reduced to 15. Then, the pro max rotation method was applied, and a structure with an eigenvalue greater than one and explaining 65.72% of the total variance was obtained. They tested the structure with confirmatory factor analysis and concluded that the structure obtained by the indexes was confirmed ( $\chi^2/df=2.20$ , CFI=0.97, GFI=0.93, NFI=0.95, SRMR=0.04, RMSEA=0.06). The Cronbach's alpha coefficient of the General Scale of Phubbing was calculated as 0.93. The Cronbach Alpha's internal consistency coefficient of the Nomophobia sub-dimension of the scale, which has four sub-dimensions, was calculated as 0.84, Cronbach Alpha internal consistency coefficient of the Interpersonal Conflict sub-dimension was calculated as 0.87, Cronbach Alpha internal consistency coefficient of the self-isolation sub-dimension was calculated as 0.83, and Cronbach Alpha internal consistency coefficient of the Problem Acknowledgment sub-dimension was calculated as 0.82.

#### Procedure

To customize the scale into Turkish, permission was received from Chotpitayasunondh, one of the researchers who developed the scale in January 2019 by e-mail. Approval was received from Ondokuz Mayıs University Social and Humanities Ethics Committee (2019/175) and the related institution. The students were informed about the research during the courses at which they are available, and volunteer students were asked to fill the measurement means. This research was carried out in eight stages. In the first stage, the original scale was translated into Turkish by four independent individuals. In the second stage, translations by the translation groups were compared and contrasted in terms

of language and meaning. In the third stage, the test, which was translated into Turkish, was translated into the initial language of the scale by four independent experts in both languages. In the fourth stage, after the translation process of the original test into Turkish was completed, the test translated into Turkish was examined by a Turkish language expert in terms of Turkish grammar and comprehensibility. After the feedback, the necessary arrangements were made according to the format of the original test.

In the fifth stage, the first group of 30 students studying in the English Language Department were given the test in the original language and then the test, which was translated into Turkish. During this process. The tests were numbered, and the same number of original and Turkish tests were given to the same people. In the sixth stage, correlation analysis was performed for language validity. The correlation between the two applications was calculated as  $r=0.96$  ( $p<0.001$ ), and the two forms were thought to be semantically equivalent. In other words, it indicates that the Turkish form of the scale is understandable and semantically equivalent to the English form. In the seventh stage, the test, which was translated into Turkish, was finalized. In the eighth stage, validity and reliability analyses of the Turkish test was performed.

After these studies, in the sixth stage, Phubbing Scale was applied to 327 students (239 females and 88 males) who were studying at the university between March-May 2019 and validity and reliability analyses were performed on the data obtained in this process. In the seventh stage of the study, Turkish version of Phubbing Scale and Smart Phone Addiction Scale-Short Form adapted by Noyan et al. (2015) and FMOS adapted by Gökler et al. (2016) and BBTS adapted by Koç, Ekşi, and Demirci (2018) were applied, and the correlation coefficient between them was calculated.

In the last stage, which is the eighth stage, after all these studies, data were collected in the related sample group, non-confirming and outlier values were analyzed by using SPSS 15 program (Statistical Package for the Social Sciences Inc.; Armonk, NY, USA) with box plot graph, and non-confirming values were extracted. The construct validity of the General Phubbing Scale was verified by Amos 23 program. In addition, the Cronbach Alpha's internal reliability coefficient was calculated for the reliability study of all scales used in the study.

### Data Analysis

Confirmatory factor analysis (CFA) was used to examine the construct validity of the General Phubbing Scale. CFA aims to explore the factor or factors that depend on the relationships between variables (Tabachnick & Fidell, 2013). In the CFA method, it is intended to reveal the level of compliance of the data obtained with the predicted model according to the compliance statistics collected by the researcher (Şencan, 2005) and chi-square value/degree of freedom ( $\chi^2/df$ ), goodness-of-fit index (GFI), corrected compliance index (AGFI), comparative fit index (CFI), mean square root of approximate errors (RMSEA) are used (Meydan and Şeşen, 2015). From these indexes, it can be stated that when TLL, GFI, CFI and NFI $>0.90$ , AFGI $>0.85$ , and RMSEA $<0.08$  or  $<0.010$  criteria are met, acceptable compliance is achieved (Hu & Bentler, 1999). On the other hand, "chi-square

value/degree of freedom ( $\chi^2/df$ )" indicates that the fit index is useful when the value is two or less, and acceptable when it is five or less (Meydan & Şeşen, 2015; Şimşek, 2007). In this study, the fit indices obtained from CFA were interpreted by taking the criteria mentioned above into account.

The relationship between the scales used for criterion validity and the scores obtained from the General Phubbing Scale were tested by Pearson Product Moment Correlation ( $r$ ) analysis. In order to verify the distinctive validity of the Turkish form of the General Phubbing Scale, an independent group t-test was used to determine whether the difference between the mean scores of the upper and lower 27% group was significant. In addition, the internal consistency coefficient was calculated for internal reliability analysis.

In the later stage of the study, a two-sample t-test was used to determine whether the scores obtained from the scales differed significantly by gender, and a one-way ANOVA test was used to determine whether the scores were considerably differentiating based on the class level and taking additional Internet package or not. The one-way ANOVA was used where assumptions were homogeneous, and the Kruskal – Wallis H test was used if where assumptions were not homogenous. At the same time, eta-square (effect size,  $\eta^2$ ) coefficient was calculated to determine the effect of the independent variable on multiple comparison tests. This coefficient has a value between 0-1 and the coefficients of 0.01, 0.06, and 0.14 are considered to be small, medium, and large effect sizes, respectively (Büyüköztük, 2014). Histogram, one of the descriptive statistical criteria (kurtosis, skewness, mean, median, standard deviation) and Kolmogorov-Smirnov test, one of the P-P plot graphs and normality tests were used to examine the normality of the distribution of scores obtained from the scales. The homogeneity of variances was analyzed with Levene's F test before using the difference tests. In addition, the relationship between the scores obtained from the scales and how long the person possessed the smartphone, the Internet amount on a mobile phone, daily surf on the Internet, Internet usage on phone and the daily time spent on social media were analyzed by Pearson Product Moment Correlation ( $r$ ) analysis. Finally, hierarchical regression analysis was used to examine whether smartphone addiction is a significant predictor of phubbing behaviors and FOMO. AMOS 23 was used for CFA, and SPSS 23 was used for other statistics.

## Results

### GPS Language Equivalence

In order to conduct language and semantic equivalence study, GPS was applied to a group of 30 people who had command of both English and Turkish language, and the correlation between the two applications was calculated as  $r=0.96$  ( $p<0.001$ ). This result indicates that the Turkish form of the scale is understandable and semantically equivalent to the English form.

### Construct Validity of GPS

#### Confirmatory Factor Analysis Findings of GPS

CFA was performed for the construct validity of the General Phubbing Scale. For the validity of the results of the CFA, the model's Chi-square fit test, RMSEA, GFI, NFI, CFI, and IFI indicated that the AFGI goodness-of-fit indexes should have an ac-

ceptable or excellent fit (Kline, 2005; Tabachnick & Fidell, 2013). In this study, the construct validity of the scale was first tested by first-level CFA.

Correlation indexes obtained as a result of first-level CFA were  $\chi^2/df=3.07$ , GFI=0.90, IFI=0.92, CFI=0.93, NFI=0.92 AFGI=0.86, TLI=0.91, and RMSEA=0.080 and the scale was found to be acceptable. The diagram for the first-level CFA is shown in Figure 1.

After the first-level confirmatory factor, the proposed modifications were made because in the CFA it is recommended to make

modifications to improve the goodness-of-fit values provided that they are within the same dimension (Çelik & Yılmaz, 2013; Şimşek, 2007). Correlation indexes obtained after the CFA after modifications was calculated as  $\chi^2/df=2.47$ , GFI=0.92, IFI=0.92, CFI=0.95, NFI=0.92 AFGI=0.89, TLI=0.94 and RMSEA=0.067 and the scale was found to have a good level of fit and improvements in the goodness-of-fit values were achieved. The diagram for the first-level CFA after modification is shown in Figure 2.

After this study, a second-level CFA was conducted to test whether the implicit structure was verified. As a result of the second-level

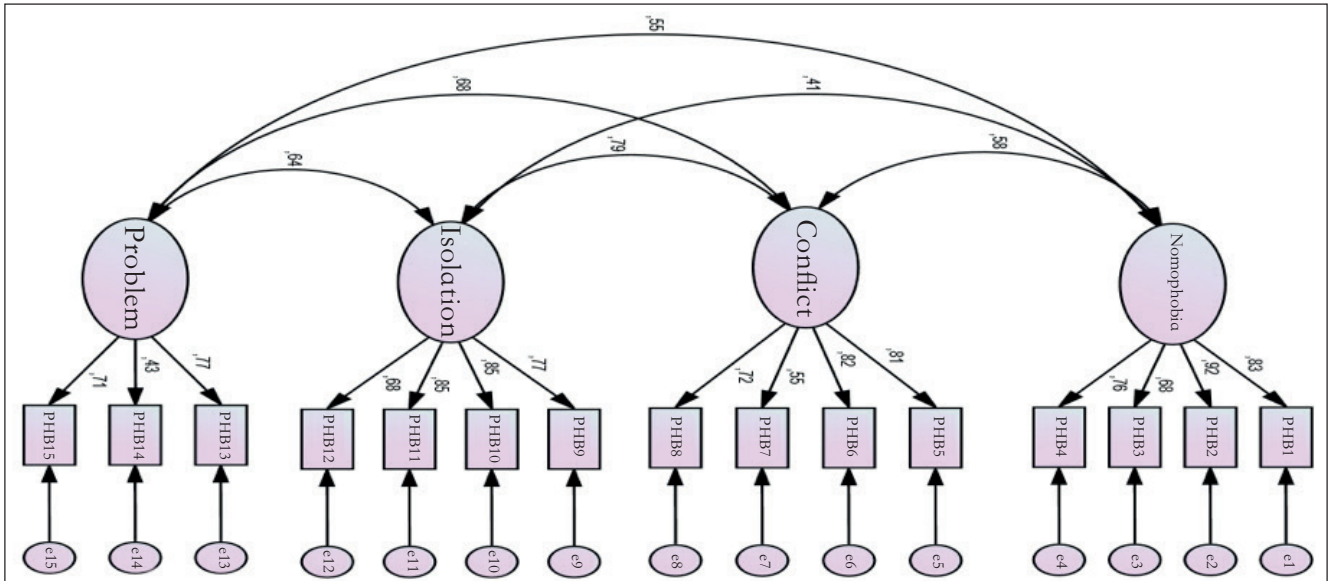


Figure 1. General Phubbing Scale first-level confirmatory factor analysis path diagram.

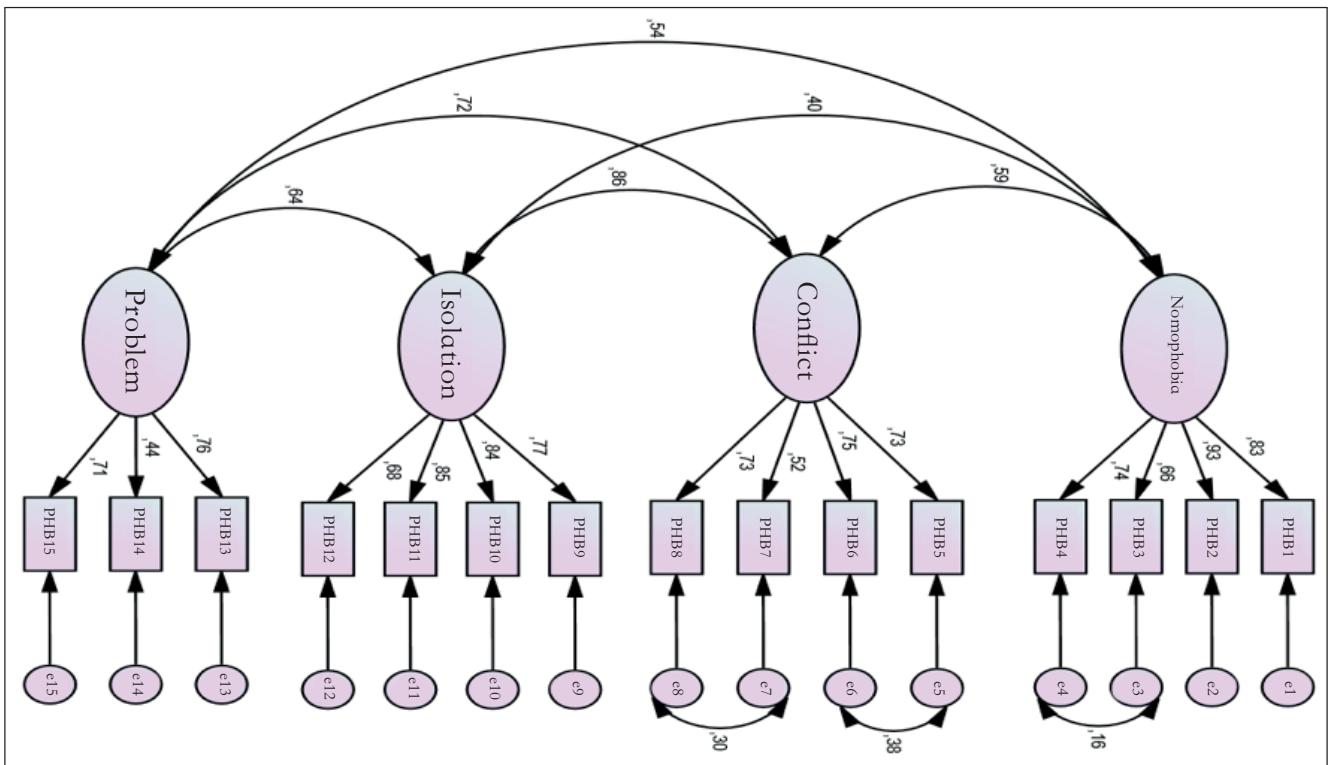


Figure 2. First-level confirmatory factor analysis path diagram after General Phubbing Scale modification.

el CFA,  $\chi^2/df=2.61$ , GFI=0.92, IFI=0.95, CFI=0.95, NFI=0.92 AFGI=0.89, TLI=0.93 and RMSEA=0.070 and the results of second-level CFA were found to be acceptable. The diagram for the second-level CFA is shown in Figure 3.

**Criterion Link Validity of GPS**

GPS and Smart Phone Addiction Scale-Short Form (SPAS-SF), FMOS, and BBTS were used for criterion validity. The relationship between the instruments was examined by Pearson Product Moment Correlation (r) analysis. The results of the analysis are shown in Table 1.

In Table 1, there was a significant ( $p<0.01$ ) relationship between General Phubbing Scale and Smart Phone Addiction Scale ( $r=0.82$ ), FMOS ( $r=0.55$ ), and BBTS ( $r=0.47$ ). In addition, when the table is examined, it can be seen that there is a significant positive correlation between Smart Phone Addiction scores and FOMO ( $r=0.63$ ,  $p<0.01$ ) and boredom scores ( $r=0.54$ ,  $p<0.01$ ).

**Table 1.**  
*Pearson Moments Multiplication Correlation Coefficients between Scales*

	GPS	SPA-SF	FMOS	BBTS
GPS	1			
SPA-SF	0.815**	1		
FMOS	0.552**	0.625**	1	
BBTS	0.472**	0.544**	0.524**	1

\*\* $p<0.01$ ; GPS: General Phubbing Scale; SPA-SF: Smart Phone Addiction Scale-Short Form; FMOS: Fear of Missing Out Scale; BBTS: Brief Boredom Tendency Scale.

**Internal Criteria Based Validity of GPS**

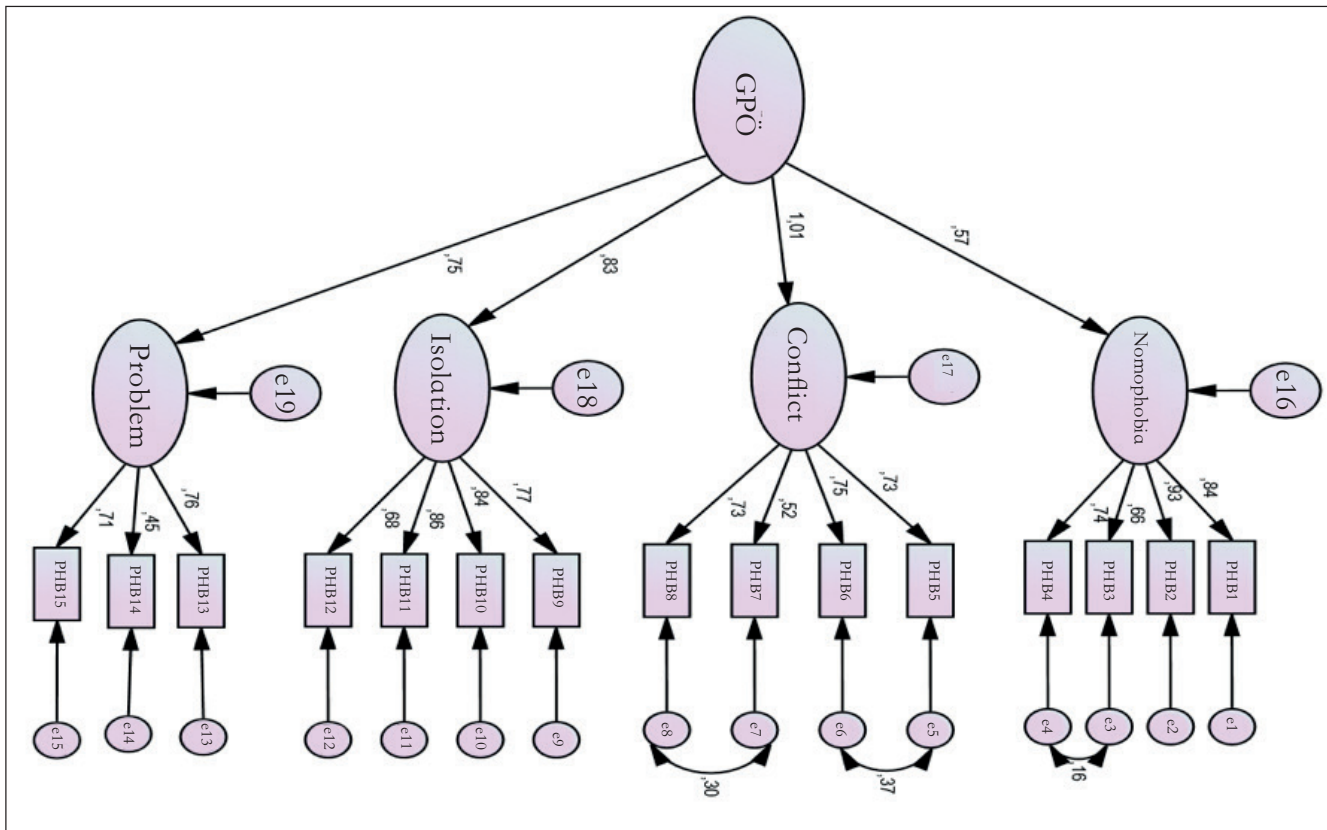
In order to test the validity of the General Phubbing Scale based on the internal criterion and whether it is a distinctive measurement mean, a two-sample independent t-test was used for the 27% subgroup, and upper group mean scores. According to the results of the analysis, it was concluded that the GPS was a distinctive measurement mean that measured the structure that it aimed to measure ( $\bar{x}_{alt}=24.46$ ,  $\bar{x}_{up}=59.84$ ;  $t=-30.67$ ;  $p<0.001$ ).

**Reliability Study**

Chronbach's alpha internal consistency coefficient calculated for the reliability analysis of the GPS which was obtained from the data collected from 327 university students was 0.89, 0.87 for Nomophobia sub-dimension, 0.81 for Interpersonal conflict sub-dimension, 0.86 for the Personal isolation sub-dimension and 0.66 for the Problem acceptance sub-dimension. In addition, Chronbach Alpha internal consistency coefficient was calculated from the data collected from 171 university students for the measurement instruments used for criterion validity, and as a result, it was found out to be 0.91 for the Smart Phone Addiction Scale-Short Form (SPA-SF), 0.88 for the Fear of Missing Out Developments in Social Environments Scale (FOMO) and 0.87 for the BBTS.

**Investigation of General Phubbing Level of University Students in Terms of Various Variables**

There is strong evidence that the scale was a valid and reliable measurement mean. Independent Sample t-test was used to test whether the subscales of the General Phubbing Scale and the general score of the scale differed significantly depending on the gender of the students. One-Way ANOVA and Kruskal - Wallih



**Figure 3.** General Phubbing Scale second-level confirmatory factor analysis path diagram.

H Test were used to examine if there is a significant difference depending on buying extra Internet package or class level. In addition, the relationship between the scores obtained from the scales, the time period a person has possessed a smartphone, the amount of the Internet package in the mobile phone, the daily time of Internet usage, the Internet usage time on social media was analyzed by Pearson Product Moment Correlation (r) analysis. Finally, hierarchical regression analysis was conducted to examine whether smartphone addiction is a significant predictor of phubbing behavior and FOMO.

**Descriptive Statistical Findings of Variables**

Descriptive statistics related to the scores obtained from the GPS, Smart Phone Addiction Scale-Short Form (SPAS-SF), FMOS, and BBTS applied to university students is given in Table 2.

The compliance of the data obtained from the study to the normal distribution was examined by the Kolmogorov-Smirnov test, which is one of the normality tests, and it was found that the GPS and FMOS were not compliant with a normal distribution (p>0.05). However, it is recommended not to decide whether or not it has a normal distribution only with normality tests, but to examine descriptive statistics, kurtosis and skewness coefficients, mean, median, and standard deviation values and to make a graphical evaluation (Büyüköztürk, 2014; Tabachnick & Fidell, 2013). It is stated that the kurtosis and skewness values should be between +1.5 and -1.5, and the mean and median values should be close to each other in order to express the normal distribution

given at this stage (Tabachnick & Fidell, 2013). When Table 1 was examined, it was found that the kurtosis and skewness values of all variables were within the recommended reference range and the mean and median values of ATB-KS (x̄=40.70; median=40.00) and KCSÖ (x̄=24.99; median=25.00) variables were close to each other. In addition, histogram and P-P plot graphs of the data were examined, and it was suggested that the data related to these variables did not deviate from the normality excessively. Other than the normality tests of the SPAS-SF and BBTS variables, these variables have a normal distribution.

**Findings Related to Correlation Analysis**

Pearson Product Moment Correlation (r) analysis was used to investigate the relationship between the time period a person has possessed a smartphone, the amount of the Internet package in the mobile phone, the daily time of Internet usage, the Internet usage time on the phone. The results of the analysis are given in Table 3.

As a result of the analysis, GPS total score was (r=0.20; p<0.01) with the time spent on the Internet and (r=0.13; p<0.05) and the time to connect to the Internet from the phone with (r=0.20; p<0.01) was found to have a low-level positive significant relationship. In addition, there was a low positive correlation between the scores obtained from the Smartphone Addiction Scale and the time spent on the Internet on a daily basis with (r=0.23; p<0.01), and the time to connect to the Internet from the phone with (r=0.23; p<0.01) was found. A positive significant rela-

**Table 2.**  
*Descriptive Statistics of Variables*

Variables	N	M	SD	(Skewness)		(Kurtosis)		Kolmogorov-Smirnov	
				Statis.	SE	Statis.	SE	Z	p
GPS	327	40.70							
	14.74	0.701	0.135	0.200	0.269	1.261	0.083		
SPAS-SF	327	25.38	11.06	0.812	0.135	0.032	0.269	1.853	0.002*
FMOS	327	25.62	8.67	0.502	0.135	-0.194	0.269	1.298	0.069
BBTS	327	24.99	10.22	0.590	0.135	0.165	0.269	1.392	0.042*

\*p<0.05; GPS: General Phubbing Scale; SPA-SF: Smart Phone Addiction Scale-Short Form; FMOS: Fear of Missing Out Scale; BBTS: Brief Boredom Tendency Scale; SD: standard deviation

**Table 3.**  
*Correlation Coefficients between Variables and Total and Sub-dimensions of GPS*

Variables	1	2	3	4	5	6	7	8	9
1. GPS Total	1								
2. Nomophobia Sub-Dim.	0.67**	1							
3. Interpersonal Conflict Sub-Dim.	0.66*	0.48**	1						
4. Personal Isolation Sub-Dim.	0.59**	0.38**	0.69**	1					
5. Problem Acceptance Sub-Dim.	0.64**	0.42**	0.51**	0.52**	1				
6. Possessing a smart phone.	0.079	0.17**	0.015	-0.045	0.009	1			
7. Internet on the phone.	0.22**	0.25**	0.12*	0.10	0.11	0.12*	1		
8. Amount of Internet.	0.098	0.15**	0.041	0.11*	0.090	0.18*	0.12*	1	
9. Time spent on the phone.	0.22**	0.25**	0.12*	0.11	0.11	0.12*	0.85**	0.12*	1

\*p<0.05; \*\*p<0.001; GPS: Generic Phubbing Scale.

tionship was found between the subscale of Nomophobia (fear of being away from the phone) and the time students possess a smartphone ( $r=0.17$ ;  $p<0.01$ ), Internet usage time ( $r=0.25$ ;  $p<0.01$ ), Internet package amount ( $r=0.15$ ;  $p<0.01$ ) and daily general Internet usage amounts  $r=0.25$ ;  $p<0.01$ ). Similarly, a positive and meaningful relationship was found between the interpersonal conflict subscale of the GPS and the time of Internet use on the phone ( $r=0.12$ ;  $p<0.05$ ) and daily general Internet usage  $r=0.12$ ;  $p<0.05$ ). Personal Isolation subscale of GPS was positively correlated with the amount of Internet packet used ( $r=0.11$ ;  $p<0.05$ ).

**Findings Regarding General Phubbing Scale Scores According to Gender Variable**

The homogeneity of the variables was examined by using Levene’s test, and the result obtained (Leven’s Test=0.009,  $p=0.69$ ;  $p>0.05$ ) before making an analysis to determine whether there is a significant difference between the mean scores of General Phubbing Scale according to the gender of the students. It was observed that the variables between groups were homogeneous. The independent sample t-test was performed, and the results are shown in Table 4.

In Table 3, it was seen that the mean scores of the General Phubbing Scale did not differ significantly by gender ( $p>0.05$ ).

**Table 4.**  
*T-Test Results of the Total Score Means Obtained from General Phubbing Scale by Gender*

Gender	N	M	SD	t	p
Female	239	40.48	14.49	-0.442	0.66
Male	88	41.30	15.48		

SD: standard deviation.

**Table 5.**  
*ANOVA Results of General Phubbing Scale Total Scores by Class Level*

Variables	Source of Variables	Sum of Squares	df	M Square	F	p
GPS Total	Between Groups	826.62	3	274.54	1.17	0.28
	Within-Groups	70028.03	323	216.81		
	Total	70854.63	326			

GPS: General Phubbing Scale; df=degree of freedom.

**Table 6.**  
*Kruskal – Wallis H Test Results for General Phubbing Scale Total Scores According to Frequency of Buying Additional Internet Package*

Variables	Frq. of Buying Add. Int. Package	n	M	SD	Mean Rank	X <sup>2</sup>	p	Difference (Dunnet’s C)	η <sup>2</sup> (effect size)
General Phubbing Level	<sup>1</sup> Never	158	36.15	12.91	133.89		0.000*	1-2	
	<sup>2</sup> Sometimes	134	42.58	13.48	180.84			1-3	0.14
	<sup>3</sup> Often	10	49.50	10.90	230.35	44.79		1-4	
	<sup>4</sup> Usually	17	60.59	17.54	264.85			2-4	
	<sup>5</sup> Always	8	45.75	21.04	179.21				
	Total		327	40.70	14.74				

\* $p<0.001$ ; SD: standard deviation.

**Results Related to Analysis of General Phubbing Scale Scores by Class Level**

Before deciding on the analysis method, the homogeneity of the variants between groups was examined by using Levene’s test. It was found that the variants between the groups were homogeneous according to the result obtained (Leven’s Test=0.92,  $p=0.43$ ;  $p>0.05$ ). It is suggested that skewness and kurtosis should be between +1.5 and -1.5 in order to express that the data are normally distributed (Tabachnick & Fidell, 2013). The skewness and kurtosis values obtained from the collected data were examined. As a result, it was calculated as .701 and skewness as 0.200, and it was found that the Kolmogorov-Smirnov test was nonsense at  $p<0.05$  level (Table 2). These results were found to meet the requirements of the one-way ANOVA test. The results of the one-way analysis of variance (ANOVA) are presented in Table 5.

In Table 5, it was seen that the students’ scores did not differ statistically according to class level ( $F_{3-323}=1.24$ ;  $p>0.05$ ).

**Findings Related to Analysis of General Phubbing Scale Scores According to Frequency of Buying Additional Internet Package**

Before deciding on the analysis method, the homogeneity of the variance between the groups was examined by using Levene’s test, and it was found that the variance between the groups was not homogeneous according to the result obtained (Levene’s test=2.86,  $p=0.023$ ;  $p<0.05$ ). According to this result, the nonparametric Kruskal – Wallis H test was used instead of a parametric one-way ANOVA. The results obtained are presented in Table 6.

General phubbing levels of university students were significantly different by the frequency of buying additional Internet packages ( $X^2_{(5)}=44.79$ ;  $p<0.001$ ). On the other hand, the effect size coefficient was calculated, and the result was  $\eta^2=0.14$ . Since this value is equal to 0.14, it can be said that the effect size of the independent variable on the dependent variable is large (Green & Salkind,

2008). Dunnett C inter-group comparison test was used in order to understand the differences between the groups. According to the comparison test between groups, it was concluded that there is a significant difference between some pairs. Mann Whitney U test was used to examine the significant differences between the two groups. The results of this test are shown in Table 7.

Table 7 shows that the overall Phubbing Scale total scores according to the frequency of buying extra Internet packages were significant at  $p < 0.001$  and  $p < 0.01$  levels. In other words, the overall phubbing mean scores of university students with the frequency of “never” ( $\bar{x} = 36.15$ ), are recognizably lower than n the students with frequency of “sometimes” ( $\bar{x} = 42.58$ ), “often” and “usually” ( $\bar{x} = 60.69$ ). At the same time, the general phubbing averages ( $\bar{x} = 60.59$ ) of the students who “usually” buy extra Internet packages were significantly higher than the general phubbing scores of the university students who “sometimes buy additional packages” ( $\bar{x} = 42.58$ ). On the other hand, the effect size coefficients were calculated in each pairwise comparison, and as a result, since all values are greater than 0.14, it can be suggested that the effect size of the independent variables on the dependent variable is high (Green & Salkind, 2008).

**Findings on Hierarchical Regression Analysis**

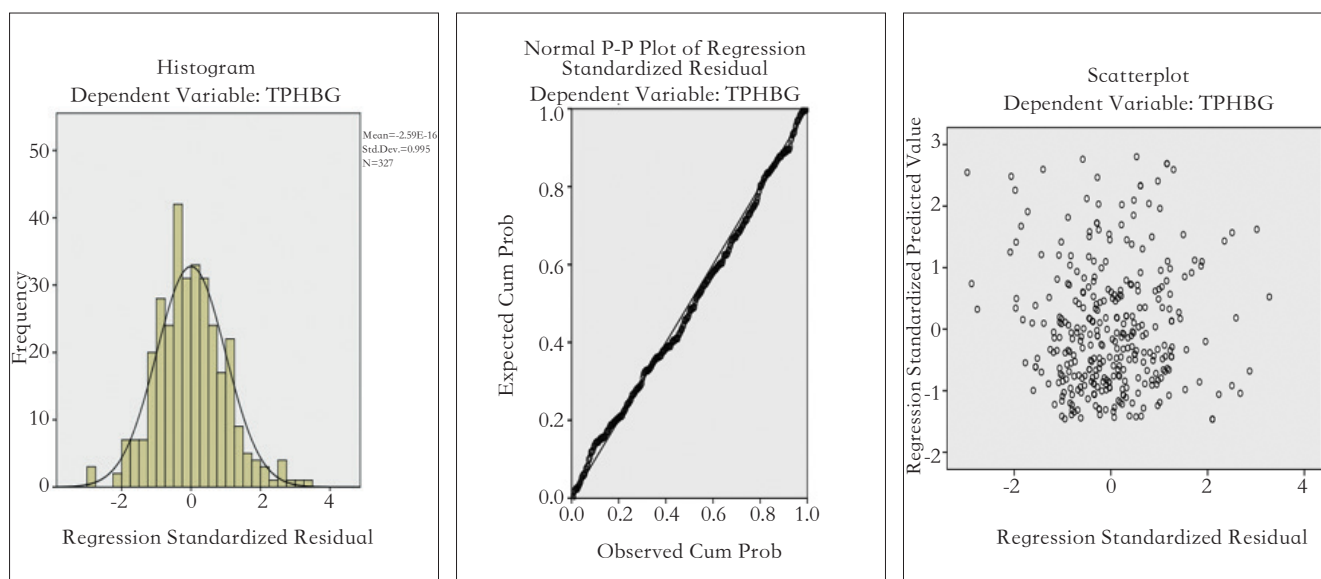
Before starting regression analysis, some assumptions of regression analysis were aimed to be tested. Skewness and kurtosis coefficients were examined to determine whether the data to be included in the analysis were normally distributed. The fact that these values are between +1.5 and -1.5 is considered to be an acceptable criterion indicating a normal distribution of data (Tabachnick & Fidell, 2013). When the skewness and kurtosis values of the data in the study were examined, it was seen that the distribution of the scores of the variables provided the assumption of normality (Table 2). On the other hand, there is a significant positive relationship between participants’ General Phubbing Scale scores and smartphone addiction ( $r = 0.81$ ;  $p < 0.001$ ), FOMO ( $r = 0.55$ ;  $p < 0.001$ ) and boredom tendency ( $r = 0.47$ ,  $p < 0.001$ ).

In addition, there is no need to have multiple connection problems between the variables to be included in the regression model. At this stage, variance increase factor ( $VIF < 10$ ), Condition Index ( $CI < 30$ ) and tolerance (tolerance value at least  $> 0.20$ ) values were examined (Tabachnick & Fidell, 2013). Tolerance values obtained in this study ranged between 0.55 and 0.73, CI values ranged between 1.0 and 9.57, and variance amplification factors

**Table 7.**  
*Mann Whitney U Test Results for Comparison of Paired Groups on Total Phubbing Scale Total Scores According to Frequency of Buying Additional Internet Package*

Pairs	n	Mean Rank	Sum of Ranks	U	Z	p	$\eta^2$ Effect Size
Never	157	125.45	19696.00	7293.000	-4.162	0.000*	0.25
Sometimes	130	166.40	21632.00				
Never	157	81.02	12720.00	317.000	-3.158	0.002**	0.24
Often	10	130.80	1308.00				
Never	157	81.18	12744.50	341.500	-4.270	0.000*	0.32
Usually	14	140.11	1961.50				
Sometimes	130	68.73	8935.50	420.500	-3.302	0.001**	0.28
Usually	14	107.46	1504.50				

\*\* $p < 0.001$ ; \* $p < 0.01$ .



**Figure 4.** P-P plot, and scatter plot.

(VIF) ranged between 1.39 and 1.84. These results indicate that there is no multicollinearity problem between the variables in the literature (Büyükköztürk, 2014; Tabachnick & Fidell, 2013). On the other hand, in terms of regression analysis, error terms should be independent and have a normal distribution, and this situation is also considered as a result equivalent to multiple normal distributions (Fox, 2016). For this, histogram, P-P plot and scatter diagram graphs of error terms are recommended (Fox & Weisberg, 2019). As a result of the graphical examination, it was seen that the error term was normal. The histogram, P-P plot, and scatter plot for these results are given (Figure 4).

After testing all the conditions of regression analysis, hierarchical regression analysis was performed to examine whether smartphone addiction, FOMO, and boredom tendency were significant predictors of phubbing addiction. The results of the analysis are shown in Table 8.

In the first model, the “Boredom” variable added to the equation was found to significantly predict phubbing dependence ( $F_{325,1}=93.06$ ;  $p<0.001$ ). “Boredom” variable explained 22% of the variance of phubbing addiction behaviors. In other words, it was determined that there was a very weak relationship between the “Boredom” level and the general phubbing level of university students. The positive value of beta value ( $\beta=0.68$ ) indicates that there is a positive relationship between the “Boredom” level and the general phubbing level; The higher the “Boredom” score is, the higher the overall phubbing level score will be.

In Model 2, the “FOMO” variable was added to the equation, and the variance explained in the phubbing dependence score increased from 22% to 35% ( $F_{324,2}=87.40$ ;  $p<0.001$ ). In other words, the variable “FOMO” had a 13% contribution to the explained variance. The beta value of the variable “Fear of Missing Out” ( $B=0.71$ ) shows that there is a positive relationship between “FOMO” and general phubbing addiction level.

In Model 3, after the variables “Boredom” and “FOMO,” “Smart Phone Addiction” variables were added to the equation, and the variance explained in the overall phubbing addiction score increased from 35% to 67% ( $F_{323,3}=216.23$ ;  $p<0.001$ ). It is seen that the “Smart Phone Addiction” variable contributes to the explained variance by 32%. In other words, the higher the level of

smartphone addiction among university students is, the higher the overall phubbing level will be ( $B=1.02$ ). However, when the smartphone addiction variable was added to the equation in Model 3, contributions of boredom variable ( $\beta=0.025$ ;  $t=0.62$ ;  $p>0.05$ ) and the FOMO ( $\beta=0.052$ ;  $t=1.44$ ;  $p>0.05$ ) to the model became meaningless in the third step. As a result, the hierarchical regression model was able to explain 67% of the total phubbing variant.

## Discussion

As a result of the analyses conducted for the construct validity of the Turkish version of the General Phubbing Scale, it was concluded that the original form was also confirmed in the Turkish sample. The CFA indices ( $\chi^2/df<3$ ; TLI, GFI, CFI and NFI>0.90, AFGI>0.85 and RMSEA<0.08) were found to be within reasonable limits (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996; Tabachnick & Fidell, 2013). In order to determine whether the difference between the 27 percent lower and upper group scores was significant, a two-sample independent t-test was used. It was thought that the measurement mean was a distinctive one. The results mentioned above indicate that the construct validity of the Turkish version of GPS was achieved.

For criterion validity, phubbing addiction level and smartphone addiction, FOMO and Short Boredom Tendency Scale were used. As a result of the correlation analysis, there was a positive correlation between phubbing addiction and smartphone addiction. During the development of the original form of the study, a positive relationship was found between phubbing addiction and smartphone addiction (Chotpitayasunondh & Douglas, 2018). Apart from this study, there are studies in the literature reporting a positive relationship between phubbing addiction level and smartphone addiction (Davey et al., 2018; Karadağ et al., 2016; Munatirah & Anisah, 2018; Yan & Wan, 2017). On the other hand, a significant positive correlation was found between phubbing addiction level and FOMO. According to this result, it can be said that phubbing addiction levels of individuals who have a FOMO have increased. The results of various studies in the literature support this research finding (Balta, Emirtekin, Kircaburun, & Griffiths, 2018; Blanca & Bendayan, 2018; Chotpitayasunondh & Douglas, 2018; Davey et al., 2018; Franchina et al., 2018). In addition, for the criterion validity, the relationship between

**Table 8.**  
*Hierarchical Regression Analysis Results*

Model	Variables	$\beta$ Standardized	SE	Unstandardized B	t	Tolerance	VIF	R <sup>2</sup>
Model 1	Stable	23.69	1.90		12.441*			
	Boredom	0.68	0.071	0.47*	9.646*	1.000	1.000	0.22
Model 2	Stable	13.34	2.17		6.137*			
	Boredom	0.36	0.076	0.25*	4.791	0.725	1.378	0.35
	Fear of Missing Out	0.71	0.089	0.42*	7.985*	0.725	1.378	
Model 3	Stable	11.32	1.56		7.254*			
	Boredom	0.04	0.057	0.025	0.619	0.649	1.541	0.67
	Fear of Missing Out	0.11	0.073	0.062	1.441	0.561	1.783	
	Smart Phone Addiction	1.02	0.058	0.76	17.555*	0.545	1.836	

For the first model  $R^2=0.22$ ,  $p<0.001$ ; for the second model  $R^2=0.35$ ,  $p<0.001$ ; Total  $R^2=0.67$   $p<0.001$ ; \* $p<0.001$ .

phubbing addiction level and boredom tendency level was examined, and a significant positive relationship was found between these two variables. Studies supporting this finding are available in the literature (Al-Saggaf, MacCulloch, & Wiener, 2018; Yan & Wan, 2017).

Chronbach's alpha internal consistency coefficient was calculated for the reliability analysis of the GPS, and as a result, it was calculated as  $\alpha=0.86$ ;  $\alpha=0.87$  for Nomophobia sub-dimension;  $\alpha=0.81$  for interpersonal conflicts;  $\alpha=0.86$  for the Personal isolation sub-dimension and  $\alpha=0.66$  for the Problem acceptance sub-dimension. These results show that the measurement mean is a reliable one. However, the internal consistency coefficient for the Problem acceptance subscale remained below the generally accepted 0.70 limit. In the literature, it is stated that the internal consistency is low, and the internal consistency coefficient between 0.65 and 0.70 is minimally acceptable in dimensions with a very small number of items (DeVellis, 1991). Since the Problem acceptance sub-dimension consisted of only two items, it was suggested that this may have occurred.

Within the scope of the research, phubbing levels of university students were examined in terms of various variables. In the study, a significant positive correlation was found between phubbing levels of university students and daily Internet usage time, amount of Internet package on smartphone and Internet usage time on a phone. In other words, this result can be thought to increase the behaviors related to phubbing addiction in individuals as the daily Internet usage and the Internet usage on the smartphone and the Internet package used in the mobile phone increase. When the related researches in the literature (Chotpitayasonndh & Douglas, 2018; Gömleksiz & Fidan 2011; Karadağ et al., 2016) and even in some other studies are examined it is seen that the Internet usage times of individuals have doubled in the last five years (We Are Social, 2019) and it supports the findings obtained from the study.

It was observed that the phubbing levels of university students did not differ significantly according to the t-test, which was done according to gender. In the literature, there are studies indicating that phubbing levels differ according to gender (Davey, 2018), and some studies suggest that they do not differ (Gömleksiz & Fidan, 2011; Ting T'ng, Hoong Ho, & Kim Low, 2018). ANOVA was used to determine whether there was a significant relationship between the frequency of buying additional Internet packages (never, occasionally, often, usually, always) and phubbing levels of university students. In order to understand which groups contributed to differentiation, the Tukey test, one of the comparison tests was conducted. According to the results, it was found that the phubbing levels were significantly higher in the participants who said that they would always buy additional Internet package compared to the participants who said they would sometimes buy, usually, often, and never. According to this result, it can be thought that individuals with high phubbing tend to buy additional Internet packages more frequently. In the literature, there are study findings supporting this result (Gömleksiz & Fidan, 2011).

In this study, hierarchical regression analysis was used to examine whether smartphone addiction, FOMO, and boredom tendency were significant predictors of phubbing addiction. Different

results were obtained in all three steps. Boredom tendency and FOMO, which were respectively added to the model, significantly predicted phubbing addiction. In other words, phubbing levels of individuals with a high tendency to boredom and FOMO increase. Literature studies on this subject support this conclusion (Al-Saggaf, MacCulloch & Wiener, 2018; Balta, Emirtekin, Kircaburun, & Griffiths, 2018; Davey et al., 2018; Yan & Wan, 2017).

The smartphone addiction variable added to the equation in the third step contributed 67% to the variance, and the contribution of the variables of boredom tendency and the FOMO had no meaning in the first and second steps. According to this result, it can be said that the smartphone addiction variable has a very strong explanation effect on phubbing addiction. In other words, the high level of smartphone addiction of university students increases their phubbing levels. This finding is supported by theoretical knowledge and the results of related researches (Karadağ et al., 2016; Munatirah & Anisah, 2018; Yan & Wan, 2017; Youariti & Hidayah, 2018).

It is considered that the results of this study will contribute to the literature about phubbing, which has been defined as a new addiction type and to the researchers who will conduct studies on this subject. In other respects, this study is expected to benefit not only the researchers but also people working in the field who is struggling with the technology and related types of addictions. At the same time, this study aimed to draw attention to the concept of phubbing, which has brought smartphone addiction to more dangerous dimensions, and it was thought that the adapted General Phubbing Scale would support those who will make studies about phubbing in the literature and can respond to the need for a measurement mean on this subject. Furthermore, the General Phubbing Scale, which has been adapted, is expected to provide an opportunity to evaluate the problem areas as a holistic point of view in the researches on the smartphone and the problem types it has created.

As a result, the Turkish version of the General Phubbing Scale, which was adapted to Turkish, was found to be a valid and reliable mean. On the other hand, as the conceptual explanations and related research indicated, the level of phubbing addiction of individuals increased as the level of smartphone addiction, FOMO, and boredom tendency increased.

### Suggestions

The research about phubbing was stated a short time ago. It is thought that the literature related to this concept requires further studies. On the other hand, since this type of addiction is increasingly spreading in society and affecting individuals' face-to-face communication to a great extent, the field is in need of studies on the phubbing and dynamics of literature. In future studies, quantitative studies investigating the causes of phubbing addiction can be done. In addition, the relationship between phubbing and loneliness, social relationship dissatisfaction, social anxiety, real self-concept on the Internet, shyness, lack of self-confidence, and social phobia can be examined as a model. In addition, by using the adapted measurement mean, individuals with high levels of phubbing behaviors can be identified, a qualitative study can be designed, and focus group interviews can be conducted with these individuals. In an experimental study, the effect of media literacy or social communication skills training on phubbing ad-

diction can be investigated. In addition, a study group consisting of different age groups can be formed, and a general comparison of phubbing levels between these groups can be performed. On the other hand, longitudinal research on how phubbing addiction is harmful to social relations can be conducted. These researches may contribute to the formation of theoretical foundations for the causes of phubbing addiction and the precautions and studies that can be taken in terms of education and society.

### Limitations and Directions

While collecting the data in the research, the measurement means were made Internet-based and sent to the relevant participants, and feedback was provided in this way. No data was collected through a face-to-face application. Therefore, the study group consisted of 239 women and 88 men. The difference between participants in terms of gender is the limitation of this study. Furthermore, the difference between the number of participants in terms of faculty types is another limitation of this study. On the other hand, the generalizability of this study is limited to the working group.

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**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Ondokuz Mayıs University Social and Humanities Ethics Committee. Ondokuz Mayıs University Social and Humanities Ethics Committee (date: 09.05.2019; no: 2019-175).

**Informed Consent:** Written and verbal informed consent was obtained from university students who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – F.C.Y.; Design – F.C.Y.; Supervision – H.K.; Resources – H.K.; Materials – F.C.Y.; Data Collection and/or Processing –F.C.Y.; Analysis and/or Interpretation –F.C.Y.; Literature Search –F.C.Y.; H.K.; Writing Manuscript –F.C.Y.; H.K.; Critical Review H.K.

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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