

Development of a scale for university students' Facebook use purposes and an examination in terms of their Facebook use profiles

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ABSTRACT

The purposes of this study are to: (1) develop a valid and reliable scale for measuring university students' Facebook use purposes (FbUPs), and (2) investigate their FbUPs in terms of the variables of gender, Fb friend number, and use frequency as the indicators of Fb use profile. A total of 1098 students participated in the study from a university located in the north of Turkey. The study was conducted in two separate stages. First was the stage of scale development with 788 participants. Findings of this stage showed that The Scale-for Facebook Use Purposes (S-FbUPs) had three factors with 11-items, indicating good measurement features. In the second stage, data were collected from 310 participants to examine the effects of their Fb use profiles on the FbUPs. The findings of this stage showed that females used Fb more meaningfully than males, for educational and informational purposes. There were main significant effects of Fb friend number on the variables of "interpersonal interaction" and "self-promotion to others". Besides, the findings indicated that the students who accessed Fb most often had higher self-promotion tendency. Points for future research and practical implications are also discussed in this paper.

Keywords: *Social media; Facebook use; university students; media in education*

INTRODUCTION

Social Network Sites (SNSs) are Internet-based global environments that allow users to interact and communicate with each other via their profiles (Akçayır, 2017). They use the SNSs for several purposes that vary from site to site. Facebook (Fb), whose number of daily active users in December 2018 was 1.52 billion (URL-1), is probably one of the most popular SNSs in use all over the world (Hershkovtz & Forkosh-Baruch, 2017). While Fb was initially created as an online platform for the social community in Harvard University (Hew, 2011), nowadays it is utilized for various purposes such as entertainment, education, information, advertisement, commerce, and communication (Borekci & Aydin, 2019; Voivonta & Avraamidou, 2018; Youn & Kin, 2019).

In recent years, Fb has begun to attract the attention of educators and scholars with its usage as a teaching and learning tool in pedagogical contexts (Awidi, Paynter, & Vujosevic, 2019; Manca & Ranieri, 2016). Researchers have noted its use as a potential Learning Management System (LMS) - by creating online learning groups - for universities (Aaen & Dalsgaard, 2016; Awidi et al., 2019). Several studies reported that Fb has a positive effect on students' learning in terms of cognitive and emotional outcomes. For example, the study conducted by Ainin, Naqshbandi, Moghavvemi and Jaafar (2015) revealed that a positive relationship was found among Fb use and academic performance.

As Fb is a popular SNS among college students (Awidi et al., 2019; Chiroma et al., 2017), these students have become focus point in studies. Specifically, the studies explored the use of Fb in several disciplines (Barrot, 2018; Borekci & Aydin, 2019; Jaffar, 2014; Manca & Ranieri, 2016; Nason, Byrne, Nason, & O'Connell, 2016; Rubrico & Hashim, 2014) in higher education. As well as its benefits for learning or socialisation skills, most of the authors have noted the harm of Fb on individuals. As a matter of fact, they note that college students or young learners spend more time

on Fb than real life activities (Da Veiga et al., 2018). According to Sofiah et al. (2011), the unconscious or excessive use of Fb may negatively affect academic performance, time management, and self-regulation skills. The findings of their study showed that most of the students considered Fb as a part of daily routine and used it unconsciously. Not surprisingly, this situation can psychologically lead to Fb addiction (Hong, Huang, Lin & Chiu, 2014, Marino, Gini, Vieno, & Spada, 2018), a decline in empathetic social skills (Chan, 2014), poor physical or mental health (Pontes, Andreassen, & Griffiths, 2016) and academically it can draw on unfavourable effects in terms of learning outcomes (Junco, 2012). This means that the abuse of Fb can damage students' lives, especially at early ages. Paul, Baker and Cochran (2012) investigated the effect of Fb use on academic achievement. The results of this study showed that the more the students spent time on Fb, the lower their level of academic achievement. Therefore, researchers need to explore the learners' purposes for using SNSs like Fb in order to take educational precautions. Importantly, studying the Facebook Use Purposes (FbUPs) could be helpful to present certain solutions to problematic Fb use (excessive use, pass-time, among others), to sort out underlying psychological factors (addiction, loneliness, among others) and to make inferences for the learning-teaching process (Marino et al., 2018).

In the relevant literature, various scales were holistically developed to determine the students' SNSs use purposes by the researchers. Most of these scales were related to SNSs use with a general perspective (Karal & Kokoç, 2010; İman-Eren, 2014, Usluel, Demir, & Çınar, 2014; Maree, 2017). Specifically, the instruments used to assess Fb use as one of the SNSs, were inadequate for university students in educational contexts (Horzum, 2016; Mazman & Usluel, 2010). Importantly, despite the fact that SNSs basically include similar features, there are differences in their use purposes. For instance, Manca and Ranieri (2016) expressed the types of SNSs as follows: generic social platforms (for example, Fb, Twitter), academic and individual services (for example, Academia, ResearchGate), tools to write, comment (such as, blogs), and video sharing sites (such as, YouTube and Vimeo). It is important to evaluate the SNSs independently in terms of reliable findings or implications for learning-teaching practices.

The main reason for selecting Fb in this study is that it has widespread use among undergraduate students (Awidi et al., 2019; Chiroma et al., 2017), as was mentioned earlier. Nowadays, with the increase of the use of SNSs such as YouTube, Instagram or Twitter, the aims for Fb use are undergoing a change in higher education (Alhabash & Ma, 2017). Besides, various features such as story, live broadcast, follow, and timeline have been added to Fb over time. Considering its historical process, current scales also need to be developed for a specific social platform like Fb. In order to identify the gaps, the current study primarily focused on developing a valid and reliable scale to measure the university students' FbUPs.

On the other hand, the FbUPs have differed in terms of individuals' Fb use profiles in higher education (Horzum, 2016). Previous studies have offered several pieces of evidence for the effects of differences in Fb use profiles such as gender, Fb use time or frequency, and friend number on FbUPs. For example, Mazman and Usluel (2011) concluded that female undergraduates used Fb much more for educational purposes and interaction with others in comparison to male undergraduates. Frison and Eggermont (2016) indicated that females use Fb attentively to socialise based on communal norms while males tend to use it for independent traits. With respect to Fb use frequency, the findings of some studies indicated that the students who logged into Fb more frequently used it for self-expression or communication (Buffardi & Campbell, 2008; Nadkarni & Hofmann, 2012). From a different viewpoint, the results of the study conducted by Lambic (2016) showed that there is a positive correlation between Fb use frequency for educational aims and academic performance.

Based on the findings of the studies in the related literature, FbUPs have been differentiated according to Fb use profile features. It has been still questioned whether Fb use purposes differ in individual use features, especially in gender, and Fb friend number. The findings of studies on Fb use have differentiated in terms of cultural characteristics of the sample, individual differences, and the dimensions of the measurement tools. For instance, Cam and Isman's (2013) study showed that there was no statistically significant difference in Fb use purposes of prospective teachers in terms of the variable of gender. On the other hand, İman-Eren's (2014) study on social media use indicated that the interpersonal interaction scores of male students were significantly higher than the scores of female students. Yılmazsoy's (2018) study indicated that female students used Fb mostly for social interaction and communication compared to male students. Moreover, it was found that most of the students who spent a lot of time on Fb used it for social interaction. In spite of the importance of these variables, there are no adequate studies that can provide solid evidence for the relationship between the undergraduates' FbUPs and their Fb use profiles (Horzum, 2016). Borekci & Aydin (2019) also highlighted that there is still a gap in the research about the relationship between Fb use purposes and certain profile features of students such as Fb use frequency, friend number and gender in higher education. In addition, the results related to especially the younger generation of students may also be different along with controversial prior results. Hence, the current studies need to provide more evidence of the effects of these variables on the usage purposes of Fb as one of the SNSs. The present study particularly focused on the critical indicators of Fb use profiles: gender, Fb use frequency, and friend number. Furthermore, the current study may contribute to the literature by developing a new scale on Fb use and revealing significant results about Fb use profiles.

This study can make important contributions to the related literature in these ways: First, the S-FbUPs can help educational practitioners or researchers to determine why university students use Fb as a social platform. It is important to offer a portrait of FbUPs in the context of higher education. The scale can be a pioneer for correlational studies related to SNSs in investigating predictor or mediator variables and understanding the features such as poor achievement and asocial personality caused by Fb use in higher education. Second, it is conceivable and significant to reveal the effects of critical Fb use profiles on FbUPs. From this point of view, the results of the study may provide strong evidence for prevention or interventions to negative outcomes of Fb use.

In the light of the foregoing information, this study aims to develop a valid and reliable S-FbUPs for university students. In the context of this general purpose, the research questions were shaped as follows, too: (1) Are there any significant differences among the students' Fb use purposes in terms of gender? (2) Are there any significant differences among the students' Fb use purposes in terms of Fb friend number? (3) Are there any significant differences among the students' Fb use purposes in terms of Fb use frequency?

LITERATURE REVIEW

Facebook as a specific SNS and its use purposes

As one of the Web 2.0 technologies available today, Fb is a social network platform which allows users to communicate or interact with each other (Ellison, Steinfield, & Lampe, 2011). A user has to register with his/her e-mail address and fill in a variety of personal information to create an individual profile on Fb (Hughes, Rowe, Batey, & Lee, 2012). Its user-friendly interface, ease of use and being cost free are the main features of Fb. It is a social platform that allows users to make their profiles private as in YouTube, Twitter, Instagram, and ResearchGate. Users can change their privacy settings as secret or public; share stories, pictures or videos on the wall; post multimedia by tagging friends with their names; comment or like the posts of others; join group activities; and establish friendships with people. Fb generally allows users to identify themselves by self-descriptive information like gender, interests, birthday, relationship status, residence address,

position, school name or institution, affiliations and political views. In addition, it has some integrated applications such as game, news, survey and messenger (Aydin, 2012; Hughes et al., 2012; Lewis, Kaufman, & Christakis, 2008).

Within its potential, Fb is used to realize several aims by users. They generally use it for the purposes as follows: meeting other people; fun; leisure; gaming; media-sharing; messaging with friends; marketing; announcements; catching up with someone; the media of learning-teaching and self-expression (Hew, 2011; Mazman & Usluel, 2011; Rambe, 2012). Ryan & Xenos (2011) noted that Fb was used to update status, share photos or changes of life, chat, leave a comment, give likes, create an event and follow the news. While the activities related to connecting with others (such as, group activities, chat, discussion) were examples of two-way dialogue, the self-expression situations of users (maintenance of profile, status update) without requiring an interaction were examples of one-way dialogue. According to Junco (2012), the maintenance of existing friends, recommunication with past friends and the establishment of new friendships were the main functions of the Fb network. Sometimes, shy people who have trouble in establishing face to face communication with people may express themselves better on Fb. This means that it can be a critical platform for one's socialization and maintaining social presence.

In recent years, Fb has been used as a strong motivator for active participation and driver of change for learning-teaching process thanks to its features such as interactivity, user-friendliness, sociability and the diffusion of information (Manca & Ranieri, 2016). Fb provides several opportunities to its users in terms of formal and informal learning. The findings of previous studies have demonstrated that Fb use facilitates learning and enhances interaction in the educational process (Borekci & Aydin, 2019; Tamimi, 2017). Fb also presents a formative assessment environment to learners by providing various feedback among students (Jaffar, 2014). Thai, Sheeran and Cummings (2019) highlighted that Fb provides teachers with the opportunities to create Fb groups and manage them easily. Thanks to Fb, the interaction for students' learning continues outside the classroom. Briefly, it has played a central role in learners' social integration (Aaen & Dalsgaard, 2016). Drawing on the data in the related literature, it is seen that most of the researchers have generally categorized Fb use purposes in a similar way (Borekci & Aydin, 2019; Ellison, Steinfield, & Lampe, 2011; Hew, 2011; Hughes et al., 2012; Horzum, 2016; Manca & Ranieri, 2013; Mazman & Usluel, 2010, 2011; Nadkarni & Hofmann, 2012). These are summarized in Table 1 as follows:

Table 1: The categories of FbUPs in the related literature

Social interaction and Communication: Meeting or messaging with people, making a friend, maintaining existing relationships, finding old friends, following notifications or commenting on shares or liking them, participating in groups.
Educational and Informational: Learning management system, a collaborative learning environment for students to discuss or brainstorm learning forum or blog, groups activities, informal learning outside the class, sharing learning resources or materials, access to information, professional development, supporting self-managed learning, lifelong learning, critical thinking exercises, peer assessment, receiving notifications related to their course.
Entertainment: Gaming, spending free time, following the funny posts, using fun integrated applications.
Psychological: Fb addiction, desire for being liked by others or gaining popularity, curiosity about other people's lives, decrease in stress, narcissistic personality, loneliness, anti-sociality.
Self-expression: Self-promotion, self-maintenance of the account, sharing his/her own videos, photos or messages.

Advertising and Announcement: (Non)commercial use, information about an organization or institution, marketing, presenting a new product, keeping up with the news, following an actual issue or developments, consciousness-raising in something, inviting people to an event, distributing propaganda.

To determine the learners' FbUPs, researchers or educators have used several data collection tools. Otherwise, the specific measurement tools for FbUPs are also limited in the literature. For instance, Horzum (2016) developed an instrument with seven factors as follows: maintain existing relationships, meet new people and socializing, make express, present or more popular oneself, pass time, as a task management tool, entertainment, informational and educational purposes. Similarly, the factors on the scale developed by Mazman and Usluel (2010) were social relations, work related activities and daily activities. In this study, the educational purposes of Fb use were investigated through three factors: communication, collobaration, and resource/material sharing.

METHOD

Participants

1098 students from a university located in the north of Turkey participated voluntarily in this study. Since the main purpose of this study was to develop and validate the instrument, use of a convenience sample provided a suitable pool of participants. The age of participants ranged from 19 to 33 ($M = 20.82$, $SD = 1.02$). The sample was divided into two main stages with four sub-samples (see Figure 1). Specifically, 788 of the participants in the first stage (for scale development process) were university students. 316 of them (40.10%) were males and 472 (59.90%) were females. On the other hand, 310 students, from an independent sample, participated in the second stage (for determining the differences among the students in terms of the demeographic variables) of the study. 153 of them (49.35%) were males and 157 (50.65%) were females.

Data collection instrument and procedure

In the scale development stage, firstly, a detailed literature review was done to identify uses of Fb or other social networks and similar scales were analyzed. To determine the Facebook use purposes of university students, the Scale-for Facebook Use Purposes (S-FbUPs) was developed by the researcher(s). This scale was used to collect the data in the study. Figure 1 shows the procedures of this study.

Prior to the scale development process, 73 undergraduate students responded to questions such as "*Why do you use Facebook?*" Their responses were then analyzed to generate the items of the scale (Preliminary Stage). The procedures of the first stage (Stage I) were as follows:

1. A universal item pool with 51 items (all of them were positive) was created for the scale. The response choices of the S-FbUPs ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). In addition, there was also an area of personal information such as gender, Fb friend number, Fb use frequency on the scale.
2. The opinions of 7 experts in the field of educational technology was taken for the appropriateness of items and content validity. According to their feedback, the necessary revisions were made on the scale items.
3. 32 participants were asked to read the scale items to check the comprehensibility.
4. After revisions, the pilot scale, which consisted of 22 items, was implemented with a sample of 503 participants (Sample I) for determining the factor structure of the scale (Study I). 8 of these were excluded from the data set because the respondents left some items blank and 495 cases were analyzed.

5. The data were collected from a sample of 233 participants (Sample II) to check the factor structure of the scale (Study II). 2 of these were excluded from the data set because the respondents left some items blank, and thus; 231 cases were analyzed.
6. The scale was applied to 52 students (Sample III) for the reliability analysis (Study III). The final scale consisted of three factors with 11 items. The participants filled out the scale in 5 - 7 minutes.

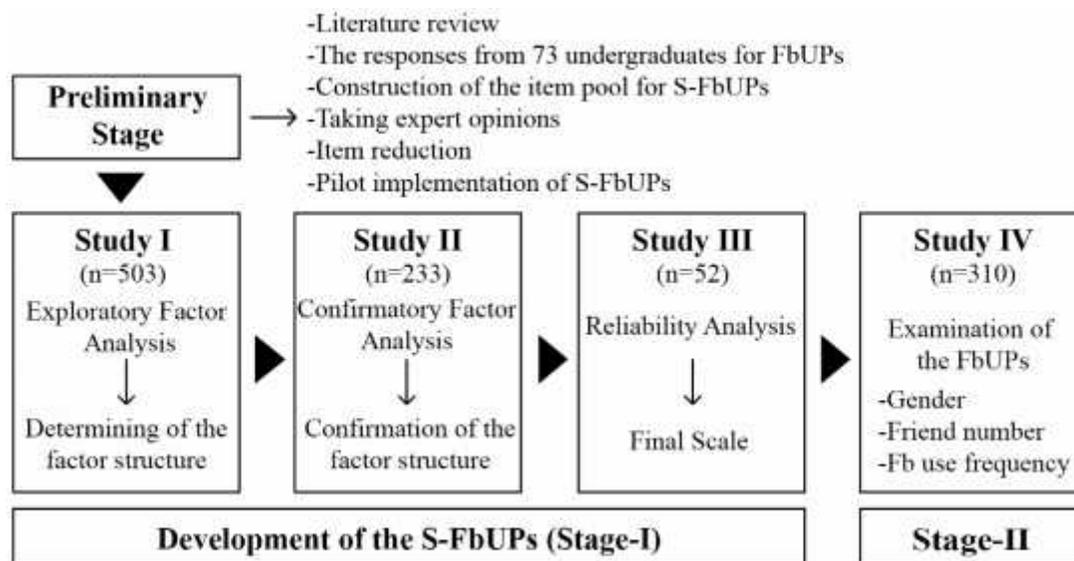


Figure 1: The study procedure

The procedures of the second stage (Stage II) were as follows in the study:

1. 310 students (Sample IV) filled out the whole scale (Study IV).
2. 4 of them were excluded from the data set and thus, 306 cases were analyzed.

Data analysis

IBM SPSS 23 software was used for the descriptive analysis, comprising Exploratory Factor Analysis (EFA), Independent Samples t Test and Multivariate Analysis of Variance (MANOVA) while AMOS was used for Confirmatory Factor Analysis (CFA). The outliers, missing values, and entry errors were checked at every stage of the study. The skewness and kurtosis values for all items were examined for normality distribution. The values around "0" indicate normal distribution of data. Kline (2010) also suggested that the skewness and kurtosis values for normality should be less than 3 and 10, respectively. In this study, the skewness indices were between -1.12 and .78 and the kurtosis indices were between -.43 and 2.34. In the scale development stage, the EFA was performed to reveal the factor structure of the S-FbUPs. The structure resulted from EFA, was tested on an independent sample by using CFA. In this content, the fit indexes (χ^2/df (Chi-square/Degrees of freedom), *RMSEA* (The Root Mean Square Error of Approximation), *CFI* (Comparative Fit Index), *TLI* (Tucker-Lewis Index) and *SRMR* (Standardized Root Mean Square Residual)) were reported for the scale. For internal consistency and re-test reliability of the scale, Cronbach's alpha (α) and Pearson correlation (r) indices were calculated, respectively.

In the second stage, MANOVA was used to test the effect of gender, Fb friend number, and FB use frequency as the independent variables on the sub-factors of FbUPs. The assumption of equality of variance-covariance matrices was examined by using Box's *M* test. The test results indicated that this assumption was met in terms of gender (Box's $M = 9.78$, $p > .05$), friend number (Box's $M = 29.64$, $p > .05$) and Fb use frequency (Box's $M = 14.10$, $p > .05$). In order to test the equality of error variances, Levene's test was also used and this assumption was met for MANOVA in the study ($p > .05$).

RESULTS

Results of the development stage of the S-FbUPs

Exploratory Factor Analysis (EFA) results (Study I)

Prior to the EFA, Keiser Meyer Olkin (KMO) was used to check the adequacy of the sample size and Bartlett's Sphericity Test (BST) was also taken into account to test the appropriateness of the data. Accordingly, the KMO index was found to be .83 and BST coefficients were found as chi-square= 1585.95 and $p < .05$. These parameters are validate suitability of the data and sample size for EFA (Tabachnick & Fidell, 2013).

After these assumptions were checked, EFA was conducted on the data set from 533 cases to determine the construct validity of the scale. The 22 items on the S-FbUPs were tested for EFA by using the principal component analysis and orthogonal rotation method (varimax). The EFA results indicated that the scale had six sub-dimensions with an eigenvalue greater than 1, explaining 62.96% of the total variance. But, the scree plot graphic also showed that three-factor solution was suitable for the scale (Figure 2 below).

Next, the items that were loaded below .40 and on two factors with a difference of .10 and below were excluded from the scale (Tabachnick & Fidell, 2013). Accordingly, it was seen that a total of 9 items were found to be unsuitable for the S-FbUPs. Lastly, EFA was conducted on three factors with 11 items again. According to the repeated EFA findings, the items were collected under three factors with an eigenvalue greater than 1. The explained variance rate for each of these factors were found to be 34.73%, 14.90%, 10.37% respectively. Moreover, the total explained variance rate was found to be 60.00%. It was decided that this rate might be acceptable for multi-factor scales as it was greater than 50% (Çokluk et al., 2014).

As shown in Table 2 below, the factor loads ranged from .65 to .80 for the overall scale. Specifically, in the first factor, four items were related to educational or informational purposes of Fb use (their factor loads ranged from .73 to .80); on the second factor, four items were related to communicative and interactive purposes of Fb use (their factor loads ranged from .66 to .74). On the other hand, on the third factor, three items were related to individual purposes (their factor loads ranged from .65 to .80). Hair, Black, Babin and Anderson (2010, p. 116) noted that if the factor loads are higher than .50 they are usually considered necessary for practical significance. Moreover, the size of items for the third factor was at the acceptable limit, at least 3. These three factors were named as "Educational and Informational" (Eal), "Interpersonal Interaction" (Ipl), "Self-Promotion to Others" (SPtO) respectively. Table 2 shows the factor loads for each of the items.

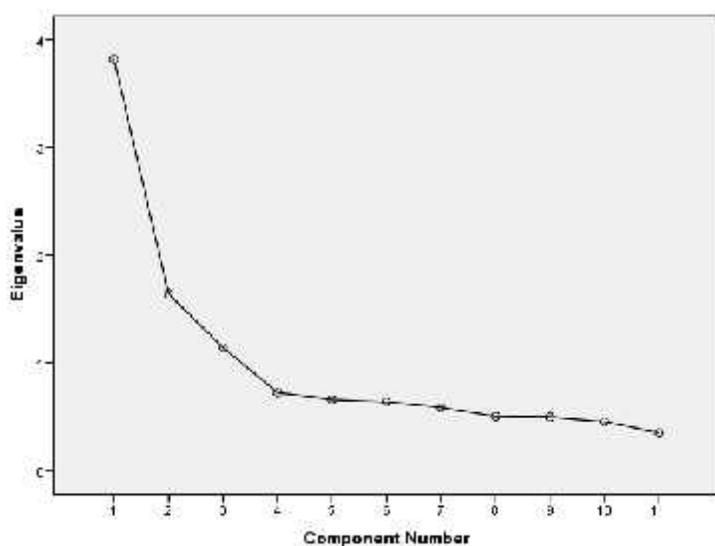


Figure 2: Scree-plot graphic

Table 2: The factor loads of items using the varimax rotation method

Number	Item	Factor load		
		Factor 1	Factor 2	Factor 3
3	I use Fb to make new friendship.		.74	
4	I use Fb to interact with people or groups of my common interests.		.66	
5	I use Fb to interact or connect with people with other different cultures.		.68	
6	I use Fb to have fun or have a good time.		.67	
12	I use Fb to be an admirable person to others with my shares.			.65
15	I use Fb to study from educational groups or pages.	.74		
16	I use Fb to be informed or follow announcements on my courses.	.77		
17	I use Fb to access any information on a specific subject.	.80		
18	I use Fb to share informative messages or posts.	.73		
19	I use Fb only as a social media account.			.78
21	I use Fb to introduce myself to others.			.80
Eigenvalue		3.8	1.6	1.1
% Explained variance rate		34.73%	14.90%	10.37%
Cronbach's Alpha value		=.81	=.76	=.75

n=533 (Sample I)

With respect to the internal consistency coefficient, Cronbach's alpha reliability indexes of the factors were found at .81, .76, .75 respectively. Moreover this coefficient was .80 for the overall scale. These findings demonstrated that the reliability of the scale was adequate, as it was over .70.

Confirmatory Factor Analysis (CFA) results (Study II)

Following the EFA, CFA was performed to confirm the structure of the scale with 11 items in an independent sample. According to CFA results, using the data from 203 cases, it was seen that the model fit indexes were perfect for the three-factor structure of the S-FbUP ($\chi^2(df = 41) = 60.809, p < .001, \chi^2/df = 1.48, RMSEA = .03, CFI = .97, TLI = .96, SRMR = .04$). Based on the cut-off criteria, these indexes were in the satisfactory range (Byrne, 2010; McCoach, Gable, & Madura, 2013). As factor loads, the standardized loading estimates of the items ranged from .62 to .78. According to Hair et al. (2010), these values were acceptable parameters for the model (greater than .5). Hence, none of the items were deleted from the S-FbUPs. In the light of these findings, a three-factor structure with 11 items of the S-FbUPs was confirmed on a different sample. Fig. 3 shows the CFA model of the S-FbUPs.

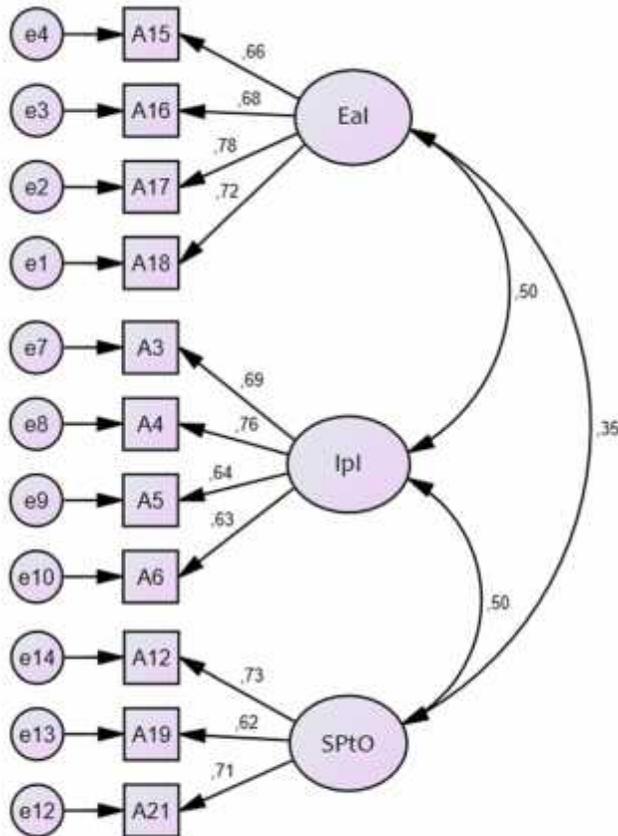


Figure 3: CFA model of the S-FbUPs on the different sample (n=203, Sample II)

The correlation coefficients between the factors were found to be positively significant ($p < .01$). But, these correlations were not high. With respect to the internal consistency coefficient, Cronbach's

alpha reliability indexes of the factors were computed as .74, .82 and .73 respectively. Moreover, this coefficient was .81 for the whole of the S-FbUPs.

Reliability results (Study III)

Cronbach's alpha (α) value for internal consistency and Pearson correlation (r) value were calculated to determine the reliability of the S-FbUPs. The participants comprising 52 students from an independent sample completed the scale with 11 items twice at three week intervals. While Cronbach's alpha values for the internal consistency coefficient of three factors were found to be .90, .88 and .91 respectively, this value was calculated as .90 for the whole of the S-FbUPs. On the other hand, Pearson correlation coefficient between pre-test and post test scores of the scale for each factor was found to be high and these values were $r = .90$, $r = .91$ and $r = .89$ respectively while it was calculated as $r = .93$ for the whole of the S-FbUPs. The reliability analysis demonstrated that the scale had a good reliability. Table 3 shows the reliability analysis results.

Table 3: Results of the reliability analysis

Factor	Cronbach's alpha (α)	Pearson correlation (r)
Eal	.90	.90
lpl	.88	.91
SPtO	.91	.89
S-FbUP	.90	.93

n=52 (Sample III)

Moreover, the item-total correlation coefficients ranged from .53 to .64 for Eal sub-factor, from .43 to .65 for IPI sub-factor, from .49 to .71 for the SPtO sub-factor. Independent t test results, for the differences of scores between upper (27%) and lower groups (27%), showed that t values were significant ($p < 0.01$).

Differences in the FbUPs by "gender", "friend number", "fb use frequency" (Study IV)

According to descriptive statistics, the students' mean scores on the three factors of S-FbUPs were as follows: $M = 3.54$ for Eal ($SD = .99$); $M = 3.42$ ($SD = .95$) for lpl; $M = 2.41$ for SPtO ($SD = 1.01$). This means that the majority of the participants generally used Fb for educational and communicative purposes. The distributions of the participants' Fb use frequencies were as follows: "frequently per day" ($n=83$), "less frequently per day" ($n=138$), "several times weekly" ($n=63$), "several times monthly" ($n=26$). 156 of them had Fb friend size between "101-499", 78 between "500-999", 56 were "100 or less", 26 between "1000 or more".

The independent t test results revealed the significant effect of gender on the variable of Eal ($t(308)=2.55$, $p < .05$) and lpl ($t(308)=2.06$, $p < .05$) as sub-factor of FbUPs, but not in terms of the variables of SPtO. Female participants ($M = 14.73$) had higher scores than males ($M = 13.48$) in terms of the variable Eal. Also, in terms of the variable lpl, males ($M = 14.06$) had higher scores than females ($M = 13.21$). Table 4 shows the independent samples t test results for the sub-factors of FbUPs in terms of gender.

Table 4: Independent samples *t* test results for the sub-factors of FbUPs in terms of gender

Variable	Gender	N	M	Df	t
Eal	Male	162	13.48	308	2.55*
	Female	148	14.73		
lpl	Male	162	14.06	308	2.06*
	Female	148	13.21		
SPtO	Male	162	7.11	308	.73
	Female	148	7.27		

* $p < .05$

For friend number, MANOVA findings were as follows: Wilks' $\lambda = .94$, $p < .05$, $\eta^2 = .020$. ANOVA results showed that there were significant effects of friend number for the variables of lpl ($F(3-306) = 4.65$, $\eta^2 = .010$, showing a small effect size) and SPtO ($F(3-306) = 6.52$, $\eta^2 = .019$, showing a small effect size), but not for the Eal variable. Comparisons of means revealed significant differences among groups ($p < .05$). For the SPtO variable, the students with "1000 or more" friends ($M = 14.69$, $SD = 2.82$) had higher mean scores than the students with "100 or less" friends ($M = 11.58$, $SD = 4.14$). Similarly, for the lpl variable, the students with "1000 or more" friends ($M = 14.69$, $SD = 2.82$) had higher mean scores than the students with "100 or less" friends ($M = 11.58$, $SD = 4.14$). Table 5 shows the ANOVA results for the sub-factors of FbUPs in terms of friend number.

Table 5: ANOVA results for the sub-factors of FbUPs in terms of friend number

Variable	Source of variance	Sum of Squares	Df	Mean Squares	F	Significant difference
Eal	Between groups	50.21	3	16.73	1.06	-
	Within groups	4809.53	306	15.71		
	Total	4859.75	309	-		
lpl	Between groups	100.11	3	56.12	3.14*	d>a
	Within groups	4759.64	306	16.90		
	Total	4859.75	309	-		
SPtO	Between groups	122.12	3	40.70	2.81*	d>a
	Within groups	4427.30	306	14.46		
	Total	4549.43	309	-		

* $p < .05$, "100 or less"=a, "101-499"=b, "500-999"=c, "1000 or more"=d

On the other hand, for Fb use frequency, MANOVA findings were as follows: Wilks' $\lambda = .86$, $p < .05$, $\eta^2 = .047$. Following that, ANOVA results indicated a main significant effect of Fb use frequency on the variable of lpl ($F(3-305) = 14.76$; $\eta^2 = .127$, showing a medium effect size), but not in terms of the variables of Eal and SPtO. Comparisons of means revealed significant differences among groups ($p < .05$). Specifically, for the lpl variable, the students who were using Fb "frequently per day" ($M = 15.60$, $SD = 3.03$) had higher scores as compared to those using Fb "less frequently per day" ($M = 13.16$, $SD = 3.94$), "several times weekly" and ($M = 12.29$, $SD = 3.23$) "several times monthly" ($M = 10.37$, $SD = 5.20$). Table 6 shows the ANOVA results for the sub-factors of FbUPs in terms of Fb use frequency.

Table 6: ANOVA results for the sub-factors of FbUPs in terms of Fb use frequency

Variable	Source of variance	Sum of Squares	Df	Mean Squares	F	Significant difference
Eal	Between groups	111.80	3	37.27	2.40	-
	Within groups	4730.73	305	15.51		
	Total	4842.54	308	-		
Ipl	Between groups	576.92	3	192.30	14.76*	h>g
	Within groups	3972.07	305	13.02		h>f
	Total	4548.99	308	-		h>e
SPtO	Between groups	36.80	3	12.26	1.32	-
	Within groups	2827.50	305	9.27		
	Total	2864.31	308	-		

* $p < .05$, "several times monthly"=e, "several times weekly"=f, "less frequently per day"=g, "frequently per day"=h

DISCUSSION AND CONCLUSIONS

The main purpose of this study was to develop a scale to measure FbUPs of university students. After the preliminary stage (literature review, creation of an item pool, and revisions), a pilot study of the scale was initially conducted on the university students (Study I). To analyse the obtained data, EFA was used. EFA findings indicated that this specific scale on Fb had three factors with 11 items, indicating good measurement features: "Educational and Informational" (Eal), "Interpersonal Interaction" (Ipl), "Self-Promotion to Others" (SPtO). The total explained variance rate (60%) was acceptable for multi-dimensional scales (Çokluk et al., 2014). Following that, CFA was used to determine whether its factor structure would be confirmed on an independent sample. CFA results confirmed the three-factor structure of S-FbUPs. Fit indexes were satisfactory for the construct validity of the scale (Byrne, 2010; McCoach et al., 2013). For the reliability of the S-FbUPs, Cronbach's alpha value for internal consistency and Pearson correlation value for a time interval of three weeks were calculated. The high coefficients indicated that reliability of the scale was perfect (DeVillis, 2012). Overall, the scale is a short instrument for university students. It should be used as a valid and reliable scale to reveal the students' Fb use purposes in higher education.

Very few scale development studies have similarly offered evidence for the SNS use purposes, like Fb. Specifically, Mazman and Usluel (2010) developed a multidimensional scale for both Fb use purposes. It had three factors, namely, 'social relations', 'work related' and 'daily activities'. Different from this study, an interesting result of the current study indicated that the scale included the dimension of 'Self-promotion to others'. Similar to this finding, Horzum's (2016) study concluded that the scale included the dimension of 'express, present or make oneself more popular'. It seems important because this dimension is related to individuals' psychological properties such as self-presentation, narcissism, and self-disclosure. Nowadays, especially among young persons, self-expression attempts extend from face to face to social networks (Yang & Brown, 2016). Ryan & Xenos (2011) highlighted that individuals with narcissistic tendencies were estimated to find pleasure in using Fb properties that could be utilized for self-promotion.

In the current study, the majority of the participants reported that they often used Fb for educational and communication purposes. The common finding of the present study with others is that Fb is used for social interaction and communication. A reason for this consensus is that the SNSs structurally allow users to connect and interact with each other (Nadkarni & Hofmann, 2012). In a previous study, Turkish prospective teachers generated metaphors regarding mostly communicational concepts for SNSs (Fidan, 2014). Not surprisingly, another common finding is that SNSs, like Fb, are seen as an educational and informational tool. This result was possible

because of the fact that the participants of the current study were university students. Most of the previous studies have shown that Fb use enhances students' academic performance, collaborative skills and activate their emotional features (Barrot, 2018; Borekci & Aydin, 2019; Rubrico & Hashim, 2014; Tiruwa, Yadav, & Suri, 2018). Importantly, this has supported the idea that Fb can be used as a helpful social platform to foster interaction among the learners and increase active participation.

In the second stage of study, the findings showed that the female students used Fb for more educational, informational purposes compared to males in terms of the gender variable, in line with the findings of previous studies (Horzum, 2016; Mazman & Usluel, 2011; Shen & Khalifa, 2010). Furthermore, in terms of the variable Ipl, males had higher scores than females. But, for the Ipl and SPtO factors, there is no difference among females and males. In the literature, there is controversy over the effects of gender differences on Fb use. The findings in the former studies have indicated that females are more likely to use SNSs for communication and maintenance of relationship while males show interest because of their leisure or entertainment features (Chan et al., 2015; Joiner et al., 2012). Mazman and Usluel (2011) concluded that females used Fb for 'maintaining existing relationships' and 'following the agenda' while males use Fb only for 'making new relationships'. According to Frison and Eggermont (2016), females use Fb to socialise while males tend to use it for independent traits. Accordingly, the main reason for our findings in relation to gender may be the fact that females use SNSs more purposefully than males to access information. Unsurprisingly, another finding of this study was that there were significant effects of Fb friend number for the variables of Ipl and SPtO. A reason for this can be that the person wants to sell or introduce oneself to more people. This is important that Fb friend number could be a predictor for SPtO. The SPtO factor at a certain level may be seen for student as a normal situation. However, psychologically, excessive or higher SPtO level adversely affects the students. Importantly, this may be an indicator of narcissistic personality. According to the results, the students who entered Fb frequently per day used it mostly for communication and social interaction compared to those using it less frequently. This may be related to building a constant communication or closer relationship with their friends and family members (Ainin et al., 2015). According to Sanchez, Cortijo and Javed (2014), the social factors (that is, social relations, social influence) are powerful variables in predicting FbUPs. The findings of the study carried out by Ainin et al. (2015) showed that a socialization variable (that is, social acceptance) was predictive of Fb use intensity while the acculturation factor was not found to be significant.

The findings revealed that there is no significant effect of Fb use frequency on SPtO variable. In a different context, interestingly, Buffardi and Campbell (2008) also concluded a positive association between narcissism and FB use especially through FB profiles and photos, which are the features that allow excessive self-promotion. In the same vein, Nadkarni and Hofmann (2012) also reported that the users' Fb use situations were stimulated by a need for self-promotion. Also, the findings of the current study revealed that there was no significant effect of Fb use frequency on the Eal variable. In the literature, the time spent on Fb or its use frequency was more associated with achievement performance than educational purpose of Fb. For instance, similar to the present study findings, Ainin et al. (2015) concluded that there was no significant difference between achievement and the hours spent daily on Fb. In contrast to this, Junco's (2015) study indicated that the time spent on Fb was a negative predictor of achievement for freshmen students. Lambic's (2016) study also indicated that there was a positive relationship between achievement performance and the frequency of Fb use for educational purposes. These different findings may be derived from the ambiguity of "time" concept regarding Fb use (daily, weekly, hour, often) or the time spent for educational use of Fb.

IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

Bearing the results of this study in mind, some implications can be drawn for educational contexts. Considering the academic context of Fb, the interpersonal interaction variable can be adapted to educational and informational purposes by educators. By the effect of the synergy among these elements of FbUPs, Fb can turn into a strong and effective social learning platform which attempts to aid students as a supporter of both formal and informal learning. Deaton (2015) highlighted that SNSs basically changed social interaction in the age of social media. Theoretically, considering the combination of social cognitive learning theory (Bandura, 2012) and technology-based learning, Fb and others have increasingly transformed into enriched learning environments. From this point of view, scholars should create a hybrid social learning model for practitioners in the age of social media. According to Vygotsky (1978), students learn with mutual interaction in a social context. From the constructivist perspective, Fb is also a potential opportunity to transform theory into practice within a course. The new features such as “like”, “comment”, “viewing rate” the media contents, “questionnaire”, “live video” have been added to Fb over time by enhancing interaction among users. As an online community-based network, Fb should be adopted as a potential LMS platform for the flipped learning paradigm (Lin & Hwang, 2018).

The findings of the study conducted on a large sample by Manca and Ranieri (2016) showed that Fb, following YouTube, is the second most preferred learning tool for university students. Specifically, educators should mainly focus on Fb group activities for courses by enhancing interaction outside the school. The results of the study conducted by Awidi et al. (2019) demonstrated that Fb group in the learning design of a course had an influence on creating a positive learning experience that encourages active engagement for students in higher education. Barczyk & Duncan (2013) underlined that Fb groups can be conceivable as a LMS because of the fact that they provide students with the opportunity to get closely acquainted with their classmates by strengthening student-student and student-teacher interactions. Hence, the students should be motivated to use Fb for educational purposes. On the other hand, as mentioned above, young persons can be inclined to narcissistic or asocial personality because of their unconscious Fb usage. For this reason, especially university students should be informed about the use of social media by educational technologists or psychological counselors.

As with any study, our study also has certain limitations. First, without being restricted to specific departments, the study for S-FbUPs was conducted on a large sample in a university located in the north of Turkey. However, the scale should not be generalized to the individuals of different cultures. According to the results of this study, the scale actually seems promising for measuring the FbUPs in higher education. For a stronger generalization, the study should also be replicated for other cultures or different samples with more participants. Another limitation is that the second purpose of this study was designed in accordance with the relational based research in nature. Hence, it is difficult to interpret the results by a causal-comparative view. In order to achieve concrete results, future studies need to be conducted through the modelling research method by including the other elements of a Fb profile. Specifically, they should be performed on the relationships between FbUPs and psychological (such as, addiction, problematic Fb use, narcissistic personality, social acceptability), educational (such as, academic performance, attitude) or individual variables (such as department or age) and Fb use information (such as Fb use time per day, relationship status). This may paint a worthwhile picture for the effects of Fb use on learning or psychological factors. Furthermore, the participants for this scale development study were university students. As a factor of the scale, Eal is not surprising in terms of the content of items. Hence, future research on scale development should further focus on different samples such as adults (especially digital immigrants) and adolescents. Thus, the structures of factor for the scale may be different on these samples. For this, as in the current study, further research is needed through interviews with these participants for the creation of scale items.

The current study focused on Fb as a social network platform. Actually, the results of several studies have demonstrated that young persons have a tendency to SNSs like Instagram, Twitter, Snapchat, and YouTube in addition to Fb (Alhabash & Ma, 2017; Hughes et al., 2012). Therefore, further studies should attempt to focus on the specific scale development for other SNSs such as YouTube and Instagram.

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