



Facebook Use Oriented Attitude Scale: Development, Reliability and Validity Study

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ABSTRACT

The purpose of this study is developing a valid, reliable and useful scale to evaluate attitude of university students towards one of the most popular social network sites of the world in the last five years; Facebook. To that end, an item pool consisting of 70 items of pentad Likert type is established. After expert opinions and preliminary testing stage, 7 of the items were removed from the scale and a 63 item scale form draft was prepared. This scale draft was applied to students (n=362) of Siirt University Faculty of Education in spring term of 2014-2015. As a result of analysis of data, a 30 item "Facebook Attitude Scale" in pentad Likert type that has a Cronbach alpha internal consistency coefficient of 0,901. Also, it is observed that the items of this final scale are gathered under 3 factors and a total variance ratio of %53,624 is explained by these factors. Consequently, a valid and reliable scale that can evaluate the Facebook attitudes of individuals is developed.

KEYWORDS

Social network, Facebook, Facebook attitude, University students.

INTRODUCTION

In the recent years, where technology has gained irreplaceable importance in our lives, self-description and communication between individuals via virtual platforms have become a necessity. Present-day individuals who declares his/her opinions to groups or communities in social networking sites like Facebook and Myspace and communicates with social friends, kith and kin, and even other individuals they never met but have come together because of common interests, performs many actions from communication to daily activities with speed, convenience and freedom that technology provides (Uzunoglu, Onat, Alikılıç and Çakır, 2009, p. 7). In this day and age, social networking sites are becoming more common each passing day as the most preferred interaction type in communication between individuals. Social networking sites like Facebook, Youtube and Myspace which are found and being used commonly for the purposes such as personal information, video, content sharing, pictures, entertainment and education are nowadays functioning as popular social communication area used intensely, especially among young individuals. Social networking sites provide individualized services as well as means to define, share and edit user-created content (Akkoyunlu and Soylu, 2011) Ease of use, fast updating abilities and easy sharing features of social networking sites substantially drew interest of user groups. Both the number of social networking sites and the number of users in this area have increasingly grown each passing day. Facebook is ranked first among social networking sites due to having more users than other social networking sites and preferred more by students (Akkoyunlu and Soylu, 2011; Johnston, 2013). Nowadays, one of the social networking sites which are the latest technological development of internet is Facebook. This network is a "social network" site where old friends meet and form a friendship with other individuals in their friend groups, people look for communication with individuals of same interests, even organize in virtual environment for a common interest or goal. In Facebook, short messages and virtual presents are sent, pictures are published and invitations are made. Facebook social networking site was found by a student of Harvard University in February of 2004 and was available to use only by students of same university. Later, it became available for students of Yale, Stanford, Columbia and other universities in America and in 2006 to whole world. As 16th most visited site of the world, Facebook has about 50 million active users. The number of users in Turkey is approximately 600 thousand. Advertisement

potential of this free social networking site where millions of people spend hours have become the focus of information sector (Aziz, 2010, p. 133). Facebook has opened a new social networking area in global extent as a social networking site and as told by Zuckerberg in the words of McLuhan, contributed significantly to global village. Facebook is the only social networking site that could manage to become as popular as it is among other social networking sites. While social networks such as MySpace, Windows Live Spaces, Friendster, Orkut and Habbo generally became popular in certain countries or country groups, Facebook managed to become popular nearly in the whole world. Facebook's becoming popular like this can be interpreted as a process related to popularization of social networking concept. However, when compared to other social networking sites, the reason why Facebook have more attention is inarguably related to interaction and variety it provides to its users. (Göker vd., 2010). Commonly used in today's education together with Web 2.0, Facebook is a social media platform providing its users the ability to share information about themselves ranging from work and hobbies to favorite movies and music, political beliefs and opinions. Users and their friends can share pictures, interesting videos and music they like. Facebook also provides easy way of sending common and private messages to other users on the network together with even sharing instant messages. All these features doubling with applications, entertainment pages and groups creation makes Facebook even more popular in terms in online socializing (Hughes, Rowe, Batey and Lee, 2012). Social networking sites are not only used for entertainment and socializing but also to access information and learning and conducting professional business. Features such as customization, user-supported content adding, cooperation and metadata provided by social networks are enriching user experience and making these websites more attractive than they are. These features are increasing the importance of use of these social networking sites in education (Tonta, 2009). Social networking sites are providing innovativeness, effectiveness and cooperative learning facilities to students and teachers in education and training with their features. In addition, they increase the interaction of students with teacher, content of the lesson and each other, provide significant support for use and development of research, questioning and problem solving skills (Gül-bahar vd., 2010). Social networking sites can be conceived as a tool to be used in enriching learning experiences and habits. It is necessary to create and raise the awareness of students in

this process. In the use of aforementioned tools, firstly the gaining of the attitude of being a part of a social network that is organized in the whole world by the students should be ensured, and then students actively taking advantage of a project based study environment should be aimed. In selection and application of these projects, it must be taken into consideration that it is considered as a tool in learning process (Akkoyunlu and Soylu, 2011). In the comprehensive digital statistics report covering social media and internet by Slideshare in January of 2015, the following are described. Facebook is the number one among popular social media networks according to active user statistics. User numbers determined by up-to-date researches in 2015 are giving statistics of Turkey and World social media and internet use as follows: Internet users among world population (7.095.476.818) are 2.484.915.152 (35%) while active social networking users are 1.856.680.860 (26%). Facebook with the most active users (1.184M) among social platforms is followed by Qzone (632M), Google plus (300M) and LinkedIn (259M) respectively. In Turkey, the most used social media platforms are Facebook (93%), Twitter (72%), Google plus (70%) and LinkedIn (33%). With a population of 80.694.485, Turkey's internet users are numbered 35.990.932 while active number of Facebook users are 36.000.000. As Turkish users, an average of 4 hours 37 minutes is spent in internet and 2 hours 56 minutes of this duration is spent in social media (Slideshare, 2015). When it is taken into consideration that the number of internet users in Turkey are about 36 million, it is possible to accept that almost all of them are active Facebook account. Also, the number of people who actively uses Facebook at least once a day are more than 19 million. Therefore, about 20 million people in Turkey have become integrated with Facebook. Thanks to increasingly widespread of use of smartphones and tablets, the number of mobile Facebook users are increasing incrementally. When the intense use potential of Facebook's effects on the lives of university students as one of the most used social networking sites providing sharing and communication means to university students independent of time and space is taken into consideration, the importance of developing a measuring tool for determining the attitude of students towards Facebook use manifests itself. In this context, the researcher aimed to develop a valid and reliable "Facebook Attitude Scale (FTO)" that can determine the attitude of university students towards Facebook.

METHOD

This research is a survey type study. Survey researches which are used commonly in social sciences are researches that are conducted on large groups where opinions and attitudes of the individuals in the groups about a fact or event is obtained and where these fact and events are tried to be described (Karakaya 2009, p. 59).

Study Group

Sampling of the research is composed of 362 students (151 female, 211 male) studying in Mathematics, Science and BÖTE (Computer and Instructional Technology) departments of Siirt University Faculty of Education. Data is gathered from the students in the study group by a questionnaire prepared using Form generation service of Google Drive. The reason this data gathering service was preferred is the ability to enable more economic, practical and quality data gathering in shorter time compared to conventional questionnaire conducting by handing out papers (Goh, Hong and Goh, 2013). Internet address of the related questionnaire is published on a web page of researcher, shared on Facebook groups of the departments and sent to student e-mail addresses via e-mail for the volunteering students in study groups to fill.

Development of Data Gathering Tool

To gather data in the study, FTO draft scale form is also applied with personal information form. In draft scale development stage, (a) forming scale items, (b) consulting expert opinion, (c) preliminary testing, (d) validity and reliability study stages which are used in development of measuring tools defined in the studies found in the literature.

(a)Forming Scale Items: In development of scale items, similar scales in the literature and opinions of a student group chosen by the researcher were utilized. To form an item pool, 42 students were asked open ended questions such as (1) What is Facebook, why and to what end do you use Facebook? (2) Please write your opinions about using Facebook for educational purposes? (3) What is the place of Facebook in your life? And their opinions were obtained. In this stage, expressions that may be attitude sentences were selected systematically and as a result of examination of other scales found in literature, 70 attitude expression (40 positive, 30 negative items) containing cognitive, affective and behavioral statements ranked in draft scale.

(b)Consulting Expert Opinion: Draft scale is submitted to the opinions of 4 academican expert in Assessment and Evaluation, Computer and Turkish Language fields. Academicians were asked to choose one of the options that are "Fully Measures", "Partly Measures" and "Doesn't Measure". 5 items that were marked as "Doesn't Measure" by the experts are removed from the scale in this process.

(c) Preliminary Testing: In this stage, draft scale of 65 items were applied to 86 students in the study group for determination of comprehensibility and duration of answering. At the end of the application, 2 items that were not understood by the students were removed from the scale. Thus the final form of the draft scale consisting of 63 items (38 positive, 25 negative) were given. Draft scale was applied to students in the study scope and evaluations related to scale score distribution were made in the following process.

(d)Validity and Reliability Study: Reliability and validity are most important properties required in a measuring tool. In this context, draft scale is applied to 369 students as part of the study. In the application results scoring stage, the positive items in the scale were scored from 5 to 1 as "totally agree=5", "agree=4", "neutral=3", "don't agree=2" and "totally don't agree=1"; negative items were scored in the same way as inverted. Therefore, the highest score that can be obtained from the scale is 315 and the lowest score is 63. In the scoring stage, 7 items that were determined to be incomplete or erroneous are kept out of the scope. Reliability and validity of the draft scale were determined by using the data obtained from 362 measuring tools that were considered valid.

(e)Validity: is measuring the quality that is needed to be measured to what degree and the degree of measuring the quality that is needed to be measured without mixing with other qualities (Seçer, 2015, p. 18). Scope validity and structure validity testing which are preferred more for validity of FTO are performed. **Scope validity**, is a measure of whether the materials found in the measuring tool are adequate to measure the property in quantity and quality (Büyükoztürk, 2009, p. 167). It required cooperation with field expert and determined by consulting experts (Baykul, 2010, p. 226; Tavşancıl, 2010, p. 40). In determining the scope validity of FTO, taking opinions from experts in the field is considered suitable and sufficient. **Structure validity** enables the explanation of relation of results. In other words, it shows how a measuring tool can measure a fact (concept, dimension, etc.) correctly (Tavşancıl, 2010, p. 45). Structure validity of FTO, whether it can measure a single structure or not is examined by factor analysis method. Seçer (2013) factor analysis is performed on the purpose of validating a pre-determined structure or factor structure of measuring tool (p. 117).

(f)Reliability: is the concept revealing consistency of all questions with each other, homogeneity and sufficiency in measuring a formation at hand. Many methods were developed to determine the reliability of the scale. Most used one is the Cronbach alpha coefficient. Because this coefficient is calculated by taking all questions into consideration and has consistent statistical bases, it is the best coefficient that represents the general reliability structure of the test compared to other

coefficients (Özdamar, 2004, p. 622). Cronbach alpha coefficient is a measure of inner consistency of items in the scale. It is used commonly in determination of reliability of scales established over multiple choice and total scores (Alpar, 2003, p. 380). Therefore, Cronbach alpha coefficient is calculated to determine the reliability of FTO. For the scale to be more impartial, it has to be not only reliable but also valid (Auerbach and Silverstein, 2003, p. 79).

Data Analysis

SPSS 15.0 package software was preferred in analysis of data related to scale. Item analysis was performed in the first stage to the data obtained from 362 students to examine the contribution of the items present in the scale to the scale and determine the items that doesn't work well. Item analysis is conducted for the purpose of obtaining information to use in item selection studies. In other words, item analysis is conducted for the purpose of item statistics calculation, selection of items that can be directly put into test, determination of items that can be edited to be put into test and in what direction will these editing be done on the items, sorting out of items not suitable to be put into test (Baykul, 2010, p. 370).

In item analysis, the reliability of scale items are examined by checking the correlations between total scores obtained from each item score and items with low correlation coefficients are decided to be removed from the scale (Karasar, 2000, p. 150). In the study, item total test correlations related to scale items are obtained by calculating Pearson moment multiplication correlation value. In this stage, items with lower than 0,30 total correlation are removed. In the second stage FTO data were subjected to factor analysis, basic components analysis were selected and varimax rotation technique was applied. In this analysis, items with factor load values lower than 0,45 and items with a difference of at least 0,10 between two high load values are removed from the scale (Büyükoztürk, 2009, p. 124).

FINDINGS

In the item analysis primarily performed for determination of which items in the scale must be selected for the purpose of validity and reliability of the developed scale to be high, item analysis based on item total score correlation to evaluate the measuring power of each item were conducted and findings are shown in Table 1.

Table 1: Results of item analysis related to FTO

Item	MTPK	Item	MTPK	Item	MTPK	Item	MTPK	Item	MTPK
M1	0,216	M14	0,372*	M27	0,366*	M40	0,223	M53	0,331*
M2	0,330*	M15	0,333*	M28	0,173	M41	0,448*	M54	0,335*
M3	0,331*	M16	0,154	M29	0,379*	M42	0,256	M55	0,323*
M4	0,122	M17	0,459*	M30	0,120	M43	0,399*	M56	0,470*
M5	0,444*	M18	0,242	M31	0,400*	M44	0,376*	M57	0,251
M6	0,436*	M19	0,227	M32	0,193	M45	0,136	M58	0,411*
M7	0,063	M20	0,374*	M33	0,433*	M46	0,461*	M59	0,203
M8	0,457*	M21	0,223	M34	0,401*	M47	0,283	M60	0,388*
M9	0,368*	M22	0,401*	M35	0,394*	M48	0,343*	M61	0,425*
M10	0,288	M23	0,347*	M36	0,267	M49	0,266	M62	0,288*
M11	0,245	M24	0,298	M37	0,404*	M50	0,413*	M63	0,138*
M12	0,425*	M25	0,404*	M38	0,123	M51	0,205		
M13	0,0070	M26	0,152	M39	0,401*	M52	0,526*		

***p<0,01; MTPK: Item total score correlation**

When the Table 1 is examined, 27 items with item total score correlation lower than 0,30 (M1, M4, M7, M10, M11, M13, M16, M18, M19, M21, M24, M26, M28, M30, M32, M36, M38, M40, M42, M45, M47, M49, M51, M57, M59, M62, M63) were decided to be contributed in too small a degree and removed from the scale. Total correlation of other items were significant in 0,1 level. Cronbach alpha reliability coefficient was calculated for the remaining 36 items. "Internal consistency coefficient after item is deleted" values were checked and M53 and M55 were determined to decrease reliability of the scale and removed. Thus, the number of items removed from the scale as a result of item analysis became 29 and 34 items were left in the scale. Then, the compatibility of data structure for Factor Analysis was analyzed with Kaiser-Meyer-Olkin (KMO) and Barlett globality test. KMO value 0,900 and Barlett globality test ($\chi^2=4337,969$; $p<0,01$) data were found significant. Calculated KMO value shows that data structure is perfect for conducting factor analysis (Tavancil, 2010, p. 50) and chi square (χ^2) value obtained as a result of Barlett test found significant shows that data were formed of multivariate normal distribution. Found results shows that factor analysis can be applied to data. In the first factor analysis conducted by without limiting the factor number of scale data, it was determined that eigenvalue of each item in the scale was higher than 1, gathered in 7 different factors and explained 54,728% of scale variance. Number of factors were decided to be lowered due to being too many. According to Büyükoztürk (2009), the first covered factor where 2/3 of total variance about variables is described as important factor number. From this viewpoint, when factor values of FTO is checked, it was calculated that first three factors

describe 36,485% of total variance of the scale. This variance value shows that FTO can be a three factor scale. Another method used in determination of factor number when the scale is developed should be such as to support the evaluation conducted in the examination of scree plot obtained in Figure 1.

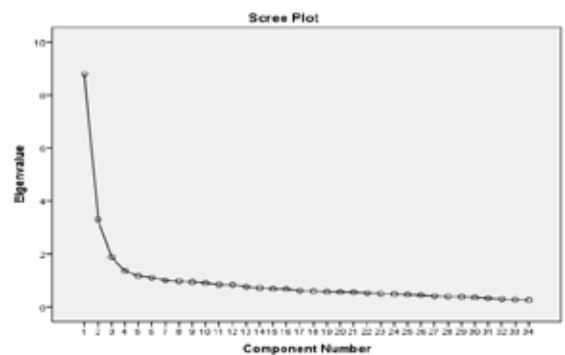


Figure 1. Scree plot

When the data of Figure 1 is examined, horizontal components show a decline towards vertical component and this decline trend is shown by dots by the frame of contribution to variance. Each space between two dots represent a factor. On the other hand, it is observed that the curve moves in the same direction after third factor, i.e. contribution of the factors after this bring are both small and close to each other. It

is decided that the optimal number of factors with high momentum fast drops within this period to be three. The eigenvalue related to three factors determined for this scale, variance percentages and total variance percentages are shown in Table 2.

Table 2: Findings related to three factors obtained as a result of factor analysis from FTO

Factor	Eigenvalue	Variance Percentage (%)	Total Variance Percentage
1	8,788	25,847	25,847
2	3,304	9,717	35,564
3	1,886	5,546	41,110

In accordance with explanations in Figure 1 and Table 2, it is thought that the scale can be three factored. After this process, factor number was coded as three and varimax rotation method was preferred due to frequency of occurrence and ease of interpretation. As a result of analysis related to FTO, 3 items with calculated factor load values below 0,45 (M9, M15 and M25) and M48 which the difference between factor load value was less than 0,1 was removed from the scale. Distribution of 30 items obtained as a result that constitutes FTO in three factors, factor loads and Cronbach alpha coefficient of factors are shown in Table 3.

Table 3: Distribution to factors, factor loads and item analysis results of FTO items

Item	Components			MTK *
	F 1	F2	F3	
F1:Personal Self				
M6	0,507			0,484
M8	0,629			0,588
M17	0,713			0,596
M31	0,484			0,431
M33	0,728			0,624
M34	0,665			0,512
M37	0,507			0,486
M41	0,520			0,500
M46	0,596			0,515
M56	0,649			0,588
M61	0,569			0,471
F2:Emotional Self				
M2		0,548		0,505
M5		0,667		0,591
M12		0,662		0,610

M14	I use Facebook in all aspects of my life.		0,453		0,490
M22	I use Facebook to entertain by playing games.		0,467		0,363
M29	Especially when I'm sad, I find myself checking my Facebook account.		0,721		0,611
M35	I am curious about how many people will like something I shared on Facebook.		0,556		0,476
M39	Facebook is part of a daily life.		0,514		0,524
M43	Especially when I'm happy, I find myself checking my Facebook account.		0,594		0,537
M52	I find myself checking my Facebook account when I am alone.		0,714		0,661
M58	Especially when I'm angry, I find myself checking my Facebook account.		0,609		0,535
F3:Social Self					
M3	I can freely express myself on Facebook.			0,559	0,473
M20	Facebook expands our social circle.			0,611	0,558
M23	Sharing my problems with my friends on Facebook comforts me.			0,501	0,441
M27	I think I will form good friendships on Facebook.			0,675	0,561
M44	In my opinion, Facebook is the best platform to discuss ideas freely.			0,604	0,490
M50	I can enter into a dialogue with my friends comfortably thanks to Facebook.			0,480	0,443
M54	In my opinion, Facebook would increase the quality of education.			0,598	0,450
M60	I enjoy using Facebook to improve my personal relations.			0,495	0,509
Cronbach alpha		0,846	0,851	0,785	0,901

***Item Total Correlation**

When Table 3 is examined, it is seen that developed FTO scale consists of three sub factors. 1. Factor consists of 11 items, 2.factor consists of 12 items and 3. Factor consists of 8 items. Cronbach alpha coefficient of each sub factor is $F\alpha_1=0,846$, $F\alpha_2=0,851$ and $F\alpha_3=0,785$ respectively. Total variance rate described by the scale is 53,624 and Cronbach alpha coefficient is 0,901. This value shows that FTO is a high degree reliable scale. Besides that, item total correlations of factor F1 changes between 0,431 and 0,596, factor F2 between 0,363 and 0,661 and Factor F3 between 0,441 and 0,558. The items in factor F1 were named as "personal self" aspect because they reflect features of personal use and sharing as well as perceptions of individual about him/herself, factor F2 were named as "emotional self" aspect because they evaluate attitude and behaviors related to emotional aspects of users and factor F3 were named as "social self" aspect because they express perceptions related to social interaction of individuals. While examining the relation of sub factors belonging FTO with each other and with total scale score, four score series, one of them being total scale score were used. When generating these score series each factor were assumed as a sub scale and sub scale scores were obtained by adding item scores constituting the factor. To determine the relations between these score series, Pearson moments multiplication correlation coefficients were calculated. Obtained findings are given in Table 4.

Table 4: Correlations of factors forming the scale with each other and total scale

Factors	Emotional Self (F2)	Social Self (F3)	Total Scale Score
Personal Self (F1)	0,390**	0,469**	0,773**
Emotional Self (F2)	-	0,565**	0,832**
Social Self (F3)	-	-	0,809**

**p<0,01

According to Table 4, correlation coefficients ($p<0,01$) significant in positive level shown by "personal self", "emotional self" and "social self" sub factors belonging to FTO with each other and total scale score shows that the developed scale is measuring required properties.

DISCUSSION

In this study, a pentad Likert type FTO to evaluate attitudes of students towards Facebook was developed and findings related to reliability and validity of the scale were presented. Generation of items used in the process of measuring tool development and consulting expert opinion, a draft scale consisting of 63 items were created by removing 7 items from a scale of 70 items. In the result of item analysis applied to data related to draft scale in the following process, 29 items that were thought to be not contributing enough to measure the attitude needed to be measured were removed. In the next stage, it was calculated in the first factor analysis of FTO that items were gathered under 7 different factors with eigenvalue higher than 1 and describes 53,624% of total variance. Because the number of factors were too much in the scale, it was decided to lower the number of factors. When the factor values of the scale are examined, first three factors with highest eigenvalues are determined to describe the 2/3 of total variance and it was decided that scale needs be of three factors. Then, as a result of factor analysis and varimax rotation technique applied to FTO, 3 items with calculated factor load value less than 0,45 and an item with a difference of less than 0,1 between factor load values were removed from the scale. Consequently, as a result of analysis conducted on the draft scale with 70 items in the beginning, a total of 40 items were removed from the scale. When the scale development studies obtained from field literatures about Facebook are examined, it draws attention that limited number of studies are present and the existing ones are mostly about Facebook addiction (Andreassen vd., 2012), use of facebook as education tool (Goh vd., 2013), educational use of social networks (Mazman, 2009), adoption of social networks (Usluel and Mazman, 2009). The studies about FTO development conducted in our county are as follows; Karal and Kokoç (2010) has developed Social Networks Intended Use Scale which is pentad Likert type, with 14 items and Cronbach alpha consistency coefficient of 0,830 to determine the intended social network site usage of university students. The three sub aspects of the scale are the first for "use of facebook for social interaction-communication purposes", second for "use of facebook for recognition and acknowledgement purposes" and third for "use of facebook for education purposes". Akdemir (2013) has developed Facebook Attitude Scale which is pentad Likert type, with 18 items, 2 factored (adoption and damage) and Cronbach alpha consistency coefficient of 0,816 to determine the intended social network site usage of elementary school students. İşman and Hamutoğlu (2013) has developed Social Network (Facebook) Usage Questionnaire which has 24 items and Cronbach alpha internal consistency coefficient of 0,890 to determine the intended social network site usage of university students. Otrar and Argın (2015) has developed Social Media Attitude Scale which has 23 items, 4 factored (need for sharing, social competence, social isolation and relationships with teachers) and reliability coefficient of 0,850 to determine the intended social network site usage of secondary and high school students. Atabek (2013) has chosen some items from the 28 item facebook questionnaire developed by Ross

and friends and developed a Facebook Attitude Scale which is single factored 7 question with Cronbach alpha coefficient of 0,859. There was no studies encountered towards developing a FTO abroad. In the FTO developed in this research, there are 30 positive items and it consists of three sub factors named as "personal self", "emotional self" and "social self". Cronbach alpha value of the FTO calculated as 0,901 shows that the items in the scale are consisting of items consistent with each other. One of the FTO's developed previously (Karal and Kokoç, 2010) is similar to the FTO developed in this research in terms of number of factors. Other developed scales (Akdemir, 2013; Otrar and Argın, 2015) are nearly similar to FTO but show differences in terms of number of items and factors. As the results obtained from this study are limited to students in the Siirt University, application of the scale as to cover students in the other universities would contribute more to the literature about FTO development. Development of such a scale is thought to strengthen the findings related to validity and reliability of the FTO when used in research processes where the relation with variables related to Facebook (gender, motivation, academic success, Facebook addiction, internet self-sufficiency perception, internet attitude, research attitude, etc.) besides the subject of scale development by researchers. Thus, the attitude of students towards Facebook will be better perceived and determined and this way the factors thought to be important in forming of positive and negative attitudes towards Facebook which will be evaluated together with related variables may be revealed clearer.

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