



# **Facebook Use and the Association With Self-Esteem and Depression**

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## Foreword

Submitted in partial fulfilment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.

## Abstract - English

Facebook use has increased over the last few years and research has shown that Facebook use is associated with self-esteem and depression. The aim of this current study was to examine the association between self-esteem, depression, stress and anxiety with two variables assessing Facebook behaviour, measured with the questions: “how often do you change your profile picture” and “how much time do you spend daily on Facebook”. The participants were 157 undergraduate psychology students from Reykjavik University. The results showed that depression, stress and self-esteem all had significant association with how often students changed their profile picture. The more stress participants showed and the lower their depression and self-esteem scores were, the more often students changed their profile picture. The results also indicated that students who spent more time on Facebook did not show greater depression symptoms, as hypothesised.

## Abstract - Icelandic

Facebook notkun hefur aukist gríðarlega seinustu ár og hafa rannsóknir sýnt að Facebook notkun tengist sjálfstrausti og þunglyndi einstaklinga. Markmið þessara rannsóknar var að skoða tengslin við sjálfstraust, þunglyndi, streitu og kvíða við breytur sem snúa að Facebook hegðun. Það var mælt með eftirfarandi spurningum: “hversu oft skiptir þú um forsiðu mynd” og “hversu miklum tíma eyðir þú daglega á Facebook”. Þátttakendur voru 157 sálfræði nemendur við Háskólann í Reykjavík. Niðurstöður sýndu að þunglyndi, streita og sjálfstraust höfðu öll marktæk tengsl við hversu oft nemendur skiptu um forsiðu mynd. Því meiri streitu sem þátttakendur höfðu og því lægra skor á þunglyndis og sjálfstrausts skalanum, þeim mun oftar skiptu nemendur um forsiðu mynd. Niðurstöðurnar sýndu einnig að þeir nemendur sem eyða meiri tíma á Facebook daglega sýndu ekki meiri þunglyndis einkenni, eins og tilgetið var.

*Keywords:* Facebook use, students, self-esteem, depression, profile picture, time on Facebook

### Facebook use and the association with self-esteem and depression

Facebook use has increased enormously over the last few years and today, members on Facebook are more than 500 million and spend on average 20 minutes or more per day on the website (Cassidy, 2006). Social network sites like Facebook have become a crucial part of almost every college student's daily life (Zaremohzzabieh, Samah, Omar, Bolong, & Kamarudin, 2014). According to Özgüven & Mucan (2013) Facebook has been linked to the most frequently visited social media site compared to Google, YouTube, Twitter and similar network sites. Of 550 participants, 57% checked Facebook on a daily basis and the average time they spent per day actively using Facebook was 107.95 minutes (Marshall, Lefringhausen, & Ferenczi, 2015). Several factors have been linked to Facebook use, as depression and self-esteem. These factors also seems to be correlated.

Self-esteem reflects an overall in the individual sense of self-worth or personal value. The concept is used to describe the emotional evaluation of the individuals own worth, a judgment of oneself and attitude toward the self. Richardson, Ratner, & Zumbo (2009) defined self-esteem as the extent to which individuals values, prizes or likes oneself. Guindon (2002) stated that self-esteem reflects a feeling of value, worth and accepting of self that person carries at all times. Self-esteem has been seen as a personality trait that tends to be enduring and stable. For well over a century now research on self-esteem has been a part of psychology (Strandell, 2015).

Numerous studies have been done on the Rosenberg's Self-Esteem Scale, which is one of the most used scale to assess self-esteem (Halama, 2008). Morris Rosenberg created the scale in 1965 (as cited in Greenberger, Chen, Dmitrieva, & Farruggia, 2003). The scale was developed as a ten item scale and one dimensional, with scores ranging from low self-esteem to high self-esteem (Greenberger et al., 2003). Huang & Dong (2012) examined the dimensionality of the

Rosenberg Self-Esteem Scale, with meta-analysis from 23 studies. Results showed that the 2-factor structure, which is a factor with five positive items and five negative items, was commonly supported. Several researchers also stated that the scale reflects a two-dimensional construct that contains both positive and negative images of the self (Greenberger et al., 2003; Richardson et al., 2009).

Both depression and low self-esteem trigger negative thoughts in your mind and depression can be affected by self-esteem (Steers, Wickham, & Acitelli, 2014). Previous studies have demonstrated that low self-esteem is associated with depression (Steiger, Allemand, Robins, & Fend, 2014). Several theoretical models have been observing the link between depression and self-esteem, and researchers have found that people with low self-esteem are at more risk to become depressed. Strong support was found for the vulnerability model, which states that low self-esteem is a major risk factor for depression and influences the onset and maintenance of depression. Steiger et al. (2014) did a longitudinal study and observed whether change in self-esteem affects depression. The number of participants were 1527, and the study lasted over 23 years. Self-esteem was estimated each year, from age 12 to 16. Depression was estimated when participants were 16 years old and then later when they were 35 years old. Results demonstrated that individuals with decreased self-esteem during adolescence showed more depression in adulthood, or two decades later.

Steers, Wickham, & Acitelli (2014) found that frequent Facebook use was associated with depression. By measuring 100 participants, they observed that Facebook users tended to compare themselves with others. Their main result was that visiting Facebook more frequently or spending a lot of time on the website had a significant association with the tendency to compare oneself to others, and increased depressive symptoms, because people are thought to feel badly

when comparing themselves to others (Steers et al., 2014). In a short period of time, Facebook has transformed how people interact, even though it is unknown whether the use of Facebook predicts changes in welfare over time (Kross et al., 2013). A study observed whether Facebook use predicts decrease in two elements of welfare, how individuals feel from moment to moment and how contented they are with their lives. Kross et al. (2013) contacted eighty two participants, five times per day for two weeks and results indicated that Facebook use predicted reduction in affect and life satisfaction over time, therefore showed that Facebook use was associated with life satisfaction. Interacting with Facebook during one time period, made participants feel worse later on during the same day. Average Facebook use over the two weeks experience sampling period predicted decrease in life satisfaction over time. Forest & Wood (2012) argued that individuals with low self-esteem were more likely to see the benefits of the reveal of self on Facebook, rather than in person. Participants with lower self-esteem saw Facebook as more secure place to state themselves, compared to participants with higher self-esteem. Research has indicated that depression has association with Facebook use (Steers et al., 2014; Steiger et al., 2014).

As previous research has demonstrated, Facebook use is associated with self-esteem (Forest & Wood, 2012; Wang, Jackson, Zhang, & Su, 2012) and frequent Facebook use predicts depression (Kross et al., 2013; Steers et al., 2014). The present study examined the association between Facebook use, self-esteem and depression. It was hypothesized that 1) Students who change their profile picture more often tend to have lower self-esteem, 2) Students who spend more time on Facebook show more depression.

## Method

### Participants

Participants were selected with convenience sample. A total of 157 undergraduate psychology students, from Reykjavik University in Iceland in 2016, voluntarily participated in the study. The psychology students were 14 males, 142 females and only one participant reported another. Their age ranged from 20-30 years and the average age was 22.83. The students received credit for participate in the study and all filled out informed consent form before they began the study (see Appendix A).

### Measurement

Facebook behaviour was assessed with two questions: “how often do you change your profile picture” and “how much time do you spend daily on Facebook” (see Appendix B). Self-esteem and depression was measured with self-reported questionnaire. Rosenberg Self-Esteem Scale was used to measure participants self-esteem (see Appendix C). The scale has 10-items and they are answered on a four point scale, from strongly agree to strongly disagree (Cronbach’s  $\alpha = .93$ ). Former studies have shown that the scale is rather reliable (Richardson et al., 2009; Huang & Dong, 2012). DASS-42 is a 42 item self-report instrument, used to measure depression, anxiety and stress (see Appendix D). Items are rated on a four point Likert scale from 0, meaning that the individuals believed the item “did not apply to them at all” to 3, which means that the individuals believed the item “did apply to them very much, or most of the time”. Research has shown that the scale is reliable and the internal consistency is high (Crawford & Henry, 2003). When individuals score from zero to nine they are considered normal and scores that are higher than twenty-eight indicate extremely severe depression (Cronbach’s  $\alpha = .98$ ).

### **Research design and data analysis**

SPSS was used for statistical analysis of data and a hierarchical multiple regression was conducted to test for hypothesis one, “students who change their profile picture more often tend to have lower self-esteem”. Linear regression was made to test for hypothesis two, “students who spend more time on Facebook show more depression”. There were two dependent variables in this study, the first was “how often do you change your profile picture”, and the second was “how much time do you spend daily on Facebook”. The independent variables were self-esteem, depression, anxiety and stress.

### **Procedure**

The study was reported to The Data Protection Authority and follows strict rules according to the Icelandic Science Ethics Committee ethical code of conduct. Participants were informed that the study was anonymous and they had right to withdraw their participation at any given time. Participants were told to ask their supervisor for help if they had some questions about the study. The data was collected through an online survey, on Google Forms and was sent to undergraduate psychology students at Reykjavik University in February 2016. Participants were asked to give no information about their name or social security number, so the participants answers could not be traced back to them. The average time for each participant to complete the study was around 15-20 minutes.

### **Results**

The aim of the study was to test if self-esteem, depression, stress and anxiety predicted: “how often do you change your profile picture” and “how much time do you spend daily on Facebook”. Only one participant did not have Facebook account of the total 157 responses. Greater part of the participants visited Facebook more than four times per day, or total of 76.1%.

Table 1 shows that the self-esteem scale ranged from 0-30, and scores between 15 and 25 are within normal range.

Table 1.

*Descriptive statistics for all variables*

		M	SD	Range	Under cut off score	N
Self-esteem	(1)	20.5	6.6	0-30	31 (4.8%)	149
Depression	(2)	8.2	9.6	0-42	17 (8.6%)	147
Anxiety	(3)	6.1	8.1	0-42	20 (7.4%)	147
Stress	(4)	11.1	9.9	0-42	15 (9.7%)	145
How often change picture		1.77	0.9	1-4		157
How much time on FB		3.4	1.1	1-5		157

*Note.* 1. Cut off score for Rosenberg scale: <15 points is low self-esteem.

2. Cut off score for DASS scale: >14 points is moderate to very severe depression.

3. Cut off score for DASS scale: >10 points is moderate to very severe anxiety.

4. Cut off score for DASS scale: >19 points is moderate to very severe stress.

Thirty one participant scored below 15 and that suggest low self-esteem. The under cut off indicates severe to extremely severe symptoms of depression, anxiety and stress amongst participants. Table 1 indicated that only 8.6% of the participants showed severe or extremely severe symptoms of depression.

A hierarchical multiple regression was used to test the effects of self-esteem on how often students changed their profile picture, when controlling for the effects of depression, stress and anxiety, as research has shown a strong correlation between these variables. Initial analyses were conducted to guarantee no infringement of the assumptions of linearity, normality and homoscedasticity. The correlation between the independent variables and how often students changed their profile picture were all significant, except anxiety and depression,  $p > .05$ .

Table 2.

*Pearson correlations for all variables*

	How often change picture	How much time on FB	Self- esteem	Depression	Anxiety	Stress
Self-esteem	-.245**	-.279**	1.0	-.759**	-.674**	-.706**
Depression	.079	.245**	-.759**	1.0	.877**	.819**
Anxiety	.131	.176*	-.674**	.877**	1.0	.848**
Stress	.257**	.256**	-.706**	.819**	.848**	1.0
How often change picture	1.0	.180*				
How much time on FB	.180*	1.0				

*Note.* \* $p < .05$ . \*\* $p < .001$ .

Table 2 shows that stress had the greatest correlation with how often students changed their profile picture,  $r = .257$ . Because the correlation between how often student changed their profile picture and independent variables were all weak, ranging from  $r = -.245$  to  $r = .257$ , the multicollinearity was improbable to be considered as an issue. The highest correlation among the predictors was between depression and anxiety, which is significant at a .01 level ( $r = .877$ ,  $p = .001$ ).

In the first step of the hierarchical regression depression, stress and anxiety were put to the model as independent variables, the dependent variable was how often students changed their profile picture. The first model was statistically significant,  $F(3,135) = 6.08$ ,  $p < .001$  and depression, stress and anxiety accounted for 11.9% of the variation in changing picture. In step two, a total score of self-esteem amongst participants was added to the model. Model 2 was also statistically significant  $F(4,134) = 6.58$ ,  $p < .001$  and accounted for 16.4% of the total variance of how often students changed their profile picture. When self-esteem was added to the model the

value increased from 11.9% to 16.4% and self-esteem therefore explained additional 4.5% of the variance in how often students changed their profile picture after controlling for depression, anxiety and stress ( $R^2 \text{ Change} = .045$ ,  $F(1,134) = 7.24$ ,  $p < .001$ ). As table 3 shows, all of the independent variables except anxiety significantly predicted on changing profile picture, depression ( $\beta = -.563$ ,  $t = -2.98$ ,  $p < .05$ ), stress ( $\beta = .511$ ,  $t = 3.17$ ,  $p < .05$ ) and self-esteem ( $\beta = -.336$ ,  $t = -2.69$ ,  $p < .05$ ).

Table 3.

*Results of the hierarchical regression analyses for how often change picture*

	Step 1		Step 2	
	<i>B</i>	$\beta$	<i>B</i>	$\beta$
How often change picture				
Depression	-.034	-.353*	-.054	-.563*
Anxiety	-.009	-.081	-.004	-.036
Stress	.057	.614*	.048	.511*
Self-esteem			-.047	-.336*
$R^2$	.119**			
$F$ for change $R^2$	.164**		.045**	

Note. \* $p < .05$ . \*\* $p < .001$ .

Of all the predicting variables stress was the strongest one, predicting 5.7% of the variance in “how often students changed their profile picture”. The model indicates that, the more stress participants showed and the lower their depression and self-esteem scores were, the more often participants changed their profile picture. Therefore, the first hypothesis was supported.

For the second hypothesis, a linear regression was done. The dependent variable was time spent daily on Facebook and independent variable was depression. The correlation between these variables was positive,  $r = .245$  and statistically significant,  $p > .05$ , as can be seen in table 2.

Table 4 shows that stress, depression and anxiety together explained 6.9% of the variation in

time spent on Facebook. The results indicated that individuals with low depression score, which indicates little or no depression, spend more time on Facebook. Thus, the second hypothesis is rejected, students who spend more time on Facebook do not show more depression.

Table 4.

*Results of linear regression analyses for how much time on FB*

How much time on FB	$\beta$	<i>B</i>	<i>p</i>	N
Depression	.296	.035	.110	147
Anxiety	-.340	-.048	.091	147
Stress	.302	.035	.073	145
$R^2$		.09*		
<i>F</i> for change $R^2$		.069*		

*Note.* \* $p < .05$ . \*\* $p < .001$ .

### Discussion

The aim of the current study was to examine the association between Facebook use, depression and self-esteem amongst university students. It was hypothesized that students who changed their profile picture more often tended to have lower self-esteem and students who spent more time on Facebook daily showed more depression. The findings of this study support the first hypothesis, that students who changed their profile picture more often have lower self-esteem. These findings are similar to previous research, that Facebook use is associated with self-esteem (Forest & Wood, 2012; Wang, Jackson, Zhang, & Su, 2012). The hierarchical regression model in this study only explained 16.4% of the total variance of how often students changed their profile picture. That demonstrated that the variables in the present study only explain little portion of what affects how often students changed their profile picture on Facebook. Therefore, it might be considered that other factors manipulate how often students change their profile picture. The participants in the current study had rather high self-esteem and

therefore that might affect the results. If a group with lower self-esteem were measured, e.g. college students then the results might possibly be more reliable and in line with previous research.

For the second hypothesis, the results from the present study indicated that depression do not associate with how much time students spend daily on Facebook. Therefore, this hypothesis was disapproved and not in line with previous research, that depression is correlated with Facebook use (Kross et al., 2013; Steers et al., 2014). The sample size could be a possible reason for this difference between the results from the current study and previous findings. In this study, the sample consist of 157 participants, whereas previous research consist of a larger samples. The sample was rather homogenised, were the psychology students age range from 20-30, and the majority were girls. The results might have been more interesting, e.g. if other fields from Reykjavik University had participated in the study. Overall the participants scored rather low on the DASS-42 scale, only 8.6% of participants scored higher than fourteen, and that indicates moderate to very severe depression. That might be the reason why this results are not in line with previous findings, because greater part of the students scored low on depression.

There are few limitations in the study, the first one was the study sample, which was convenience. Convenience samples have both advantages and disadvantages. The main advantages of the sample is that the data collection can be carried out in short time. Generalisability was unclear and that was one of the disadvantages, the sample can not be delegate of the whole population, then we might get difference between the current study sample and the whole population. The second hypothesis might have been supported if the sample size was greater, like in previous research. Another limitation was that the independent variables had to be measured more accurate. The DASS-42 scale might not be good enough for this study, the

scale is a measure of more serious symptoms of depression, anxiety and stress, therefore the mean scores for our group of university students were low with little variance. The results might have been more reliable if another instrument was used for measurement. Of all the independent variables, stress was the only one that was a positive predictor, so it might be interesting to examine the association between stress and how often students change their profile picture, instead of self-esteem.

The cause and consequence appears to be unknown in this study. Regression analysis estimates the relationships among two or more variables, but does not describe a causality. The effect of changing profile picture might influence individuals self-esteem and self-esteem could influence how often individuals changed their profile picture. Therefore, it is impossible to certify in what direction the impacts are.

But even so, these results are very interesting, this approach to Facebook use has not been examined before, so this current study needs further examination. It is obvious that Facebook use has great effect on our lives and it can harm ourselves if we spend enormous time on Facebook. For further verification, additional research are needed, were the sample size were greater and other measurements used e.g. different depression scale. Another suggestion would be measuring Facebook use in a different way. For example observation method, watching people when they are visiting Facebook. For future studies, it could be interesting to examine high school students and compare them with university students. Because high school students have not reached maturity and they would probably show different Facebook behaviour compared to university students. Furthermore, it would be beneficial to observe the difference in Facebook use amongst adolescents who attend school and those who do not attend school and recommend a wide range in age for additional variance.

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