



The more you use Facebook, the more you risk becoming addicted to it?: A Study Report

Agata Błachnio^{1†}, Aneta Przepiórka¹, Nazir S Hawi EdD²

ABSTRACT

In recent years, we can observe the rising popularity of Facebook, which is widely used as an important means of communication in professional or private life as well as for various other purposes: entertainment, information, and establishing or maintaining relationships. Social networking sites are changing the way we think about communication. The present study had two aims: to test the hypothesis that the intensity of Facebook use can predict Facebook addiction and to prepare a Polish adaptation of the Bergen Facebook Addiction Scale. The participants were 781 Polish Facebook users; 64.4% were women. Our results showed that the Facebook Intensity was a good predictor of Facebook addiction and explained 30.2% of variance. Additionally, we obtained a method with adequate reliability and validity.

Keywords: Facebook addiction, Facebook use intensity, Bergen Facebook Addiction Scale

Introduction

Nowadays, we can observe the rising popularity of Facebook, which is widely used as an important means of communication in professional or private life as well as for various other purposes: entertainment, information, and maintaining or establishing relationships. Since its emergence in 2004, Facebook has become one of the most popular social networking sites with over 1 billion users [1]. In Poland, about 80% of Internet users have Facebook accounts [2]. Due to its wide range of users and technological applications that enable different activities, Facebook has been an extensive subject of research around the globe [3,4].

Despite the positive aspects of this social networking site (SNS) and the wide range of possibilities it gives the users, there is also a dark side to Facebook. With the increasing number of users spending more and more time on Facebook, the danger of addiction to this SNS is becoming more and more real. Therefore, it is important to take some steps to prevent this

negative phenomenon from spreading and to reduce its negative impact. In their review, Kuss and Griffiths [5] raised the topic of addiction to SNSs in general. They stress that low engagement in social community in real life, lower achievement at school or university, and problems with partners or family may be indicators of addictions to SNS.

After a period of Internet addiction research in general, the phenomenon of addiction to social networking sites has become an increasingly interesting issue in the field of the psychology of the Internet. Andreassen, Torsheim, Brunborg, and Pallesen [6] proposed an understanding of Facebook addiction as a specific form of Internet addiction. Previous studies accumulated knowledge not only about Internet addiction in general but also about addiction to specific online behaviors such as cybersex, cybergambling, chatting, or e-shopping [7-9]. Behaviors in cyberspace are still changing and, as a consequence, new forms of maladaptive behavior are appearing [10].

^{1†}The John Paul II Catholic University of Lublin, Poland

²Notre Dame University – Louaize, Zouk Mosbeh, Lebanon

[†]Author for correspondence: Agata Błachnio, Institute of Psychology, The John Paul II Catholic University of Lublin, Poland, Al. Raclawickie 14, 20-950 Lublin, Poland; Phone: +48 81 445 35 10; email: gatta@kul.pl

There is scarce research on relationships between Facebook addiction and psychological variables. The search with “Facebook addiction” as keyword within peer-reviewed psychology articles published between 2011 and 2015 available in EBSCO, ScienceDirect, Springer, and Google Scholar databases returned 22 records. Studies on the determinants of Facebook addiction provide some evidence supporting the role of personality in this disorder [11]. Conscientiousness has been found to be negatively associated with an increased amount of time devoted to using Facebook [12]. However, openness, neuroticism, and extraversion are positively associated with Facebook addiction [13–16]. Also the relationship between Facebook dependency and somatic symptoms such as quality of sleep has been revealed. Researchers point out that Facebook dependency is related to poor sleep quality and insomnia [7,17].

Facebook addiction is linked with the emotional sphere. People with excessive Facebook use have problems with emotional regulation [18] as well as depression and anxiety [7]. This maladaptive behavior may also be reflected in quality of life and associated with subjective vitality and happiness [19]. Additionally, Facebook addiction is linked with social dysfunction and other behavioral difficulties, such as problem drinking [7,18].

In Poland, Facebook is the most popular SNS. In June 2014, Facebook was the second most often visited website after Google [2]. That is why we focused only on Facebook, excluding other types of SNS. The first aim of our study was to test the hypothesis that the intensity of Facebook usage can predict Facebook addiction. The second aim was to develop a Polish adaptation of the Bergen Facebook Addiction Scale. Although some criticism of the Facebook Addiction Scale has been offered [20], more research is needed to explore the concept of Facebook addiction and to uncover the mechanism behind it [21]. This method has been used in numerous studies, also in local languages. For instance, Uysal and colleagues [22] prepared the Turkish version.

Method

■ Instrument and Participants

We used two measures: the Facebook Intensity Scale and the Facebook Addiction Scale. Both measures are detailed below. It took approximately 15 minutes to complete the study. We collected information about demographic

and other descriptive variables, including gender, age, and the number of years the respondents has been using Facebook. Of the 840 participants who started the survey, 781 completed the entire study. They were Polish Facebook users, and 64.4% of them were women. The participants' age ranged from 10 to 64, the mean age being 20.5 years. As regards the place of residence: 5% came from rural areas, 15% from small towns ($\leq 20,000$ inhabitants), 19% from medium-sized towns (20,000–99,000 inhabitants), 29% from large towns (100,000–500,000 inhabitants), and 32% from cities ($\geq 500,000$ inhabitants).

■ Materials and Procedure

An ad hoc sampling procedure was used to recruit participants. Possessing a Facebook profile was the main prerequisite for participation in the study. An invitation was sent to Facebook users. The participants remained anonymous and received no remuneration. The invitation to take part in the study circulated on social and research networks. The following methods were used:

Facebook Intensity Scale [23], measuring the intensity and frequency of Facebook use. This scale consists of 8 items (e.g., Facebook is part of my everyday activity or I would be sorry if Facebook shut down). The Polish version the scale was found to have a Cronbach's α of .834. The scale combines two aspects of Facebook use: Facebook intensity and Facebook engagement, the number of Facebook friends, and the amount time spent on Facebook.

The Bergen Facebook Addiction Scale (BFAS); its previous version had 18 items, 3 items per each symptom of addiction, the symptoms being: salience, mood modification, tolerance, withdrawal, conflict, and relapse [6]. The back-translation procedure was applied. As in the original version, we obtained corrected item–total correlation coefficients for all items. We chose one item in the case of each symptom – the one with the highest item–total correlation, and the items thus selected were retained. These correlations ranged from .67 to .75. The procedure of adapting the method into Polish is described in the results section and the final version of the method is presented in the Appendix.

Results

■ Internet Usage

The number of years the participants has been Internet users ranged between 1 and 20, with a mean of 8.83 years. The most often indicated

numbers of years were 10, 8 and 7, in that order. The number of minutes spent using the Internet per day ranged between 2 and 1,200, with a mean of 179.15 minutes. The most often reported numbers of minutes were 120, 180, and 60, in that order.

■ **Facebook Usage**

The participants reported spending between 31 and 60 minutes on average using Facebook each day and having between 251 and 300 friends listed on their profile (Table 1). The number of friends on Facebook ranged between 10 and over 400. The most frequently reported number of friends was the “>400” category. The Pearson correlation between the daily time spent on Facebook and the number of Facebook friends was .327, $p < .0005$, suggesting a moderate relationship between them. Though this positive correlation indicates that as one of the two variables increases the other one increase as well, its moderate strength does not indicate that the participants with the largest number of friends are those who spend the largest amount of time on Facebook (Table 2).

Factor Structure of the Polish Version of the Bergen Facebook Addiction Scale

The corrected item–total correlations for all of the BFAS items are presented in the (Table 3).

Of the three items pertaining to each of the six core features of addiction (salience, tolerance, mood modification, relapse, withdrawal, and conflict), the one with the highest item–total correlation was selected. Thus, the following items were retained in the Polish adaptation: BFAS2, BFAS6, BFAS7, BFAS10, BFAS13, and BFAS18. Their corrected item–total correlation coefficients ranged from .660 to .752. Cronbach’s alpha of the 6-item BFAS was .883. Next, the 6-item BFAS was subjected to extraction using principal component analysis (PCA). The rotation method was Oblimin with Kaiser Normalization. Prior to performing PCA, the suitability of the data for factor analysis was assessed. The inspection of the correlation matrix revealed that all of the coefficients were above the recommended minimum of .300 – in fact, the lowest value was .492. The Kaiser–Meyer–Olkin measure of sampling adequacy (MSA) was .897, which exceeded the recommended value of .600, and Bartlett’s Test of Sphericity reached statistical significance ($\chi^2 = 2207.928$, $df = 15$, $p < .0001$), supporting the appropriateness of factor analysis. In fact, PCA revealed the presence of just one component with an eigenvalue exceeding

Table 1: Summary of Facebook Friends.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10	4	0.5	0.5	0.5
	11-50	4	0.5	0.5	1.0
	51-100	30	3.8	3.9	5.0
	101-150	29	3.7	3.8	8.8
	151-200	67	8.6	8.8	17.5
	201-250	75	9.6	9.8	27.3
	251-300	80	10.2	10.5	37.8
	301-400	143	18.3	18.7	56.5
	>400	333	42.5	43.5	100.0
	Total	765	97.7	100.0	
Missing	System	18	2.3		
Total		783	100.0		

Table 2: Summary Statistics for Facebook Intensity Compared to US Data From Ellison, Steinfield, and Lampe (2007).

	Poland		*USA	
	M	SD	M	SD
Individual items and scale				
Facebook Intensity ¹ (Cronbach’s alpha = .834)	0.0031	0.677	-0.08*	0.79
About how many total Facebook friends do you have at campus or elsewhere? 0 = 10 or less, 1 = 11–50, 2 = 51–100, 3 = 101–150, 4 = 151–200, 5 = 201–250, 6 = 251–300, 7 = 301–400, 8 = more than 400	6.46	1.86	4.39*	2.12
In the past week, on average, approximately how many minutes per day have you spent on Facebook? 0 = less than 10, 1 = 10–30, 2 = 31–60, 3 = 1–2 hours, 4 = 2–3 hours, 5 = more than 3 hours	2.81	1.47	1.07*	1.16
Facebook is part of my everyday activity	2.98	1.46	3.12*	1.26
I am proud to tell people I’m on Facebook	0.96	1.25	3.24*	0.89
Facebook has become part of my daily routine	2.77	1.61	2.96*	1.32
I feel out of touch when I haven’t logged onto Facebook for a day	1.76	1.52	2.29*	1.20
I feel I am part of the Facebook community at the campus	2.03	1.52	3.30*	1.01
I would be sorry if Facebook shut down	2.10	1.70	3.45*	1.14

Notes. ¹Individual items were first standardized before taking an average to create the scale due to differing item scale ranges. ²Unless provided, response options ranged from 1 = *strongly disagree* to 5 = *strongly agree*.
* data from (Ellison et al., 2007)

1, explaining 63.115% of the variance. Also, all rescaled loadings on this component were above the recommended minimum value of .400, ranging between .760 and .832 (Table 4). An inspection of the scree plot confirmed the existence of only one component. This was further supported by the results of the parallel analysis, which showed one component with an eigenvalue exceeding the corresponding criterion value for a randomly generated data matrix of the same size (6 variables x 781 respondents).

The Pearson correlation between the Facebook Intensity variable and the BFAS variable was .554, $p < .0005$, suggesting quite a strong relationship between them. This positive correlation indicates that as one of the two variables increases, the other increases too.

Table 3: Item–Total Statistics.

	Corrected Item–Total Correlation	Cronbach's Alpha if Item Deleted
BFAS1	.644	.941
BFAS2*	.660	.941
BFAS3	.604	.942
BFAS4	.482	.944
BFAS5	.704	.940
BFAS6*	.752	.939
BFAS7*	.701	.940
BFAS8	.684	.940
BFAS9	.667	.941
BFAS10*	.742	.939
BFAS11	.727	.939
BFAS12	.734	.939
BFAS13*	.735	.939
BFAS14	.721	.940
BFAS15	.725	.939
BFAS16	.585	.942
BFAS17	.628	.942
BFAS18*	.669	.941

Table 4: Pattern Matrix of BFAS.

	Component 1
Thought about how you could free more time to spend on Facebook?	.760
Felt that you had to use Facebook more and more in order to get the same pleasure from it?	.832
Used Facebook in order to forget about personal problems?	.771
Experienced that others have told you to reduce your use of Facebook but not listened to them?	.820
Become restless or troubled if you have been prohibited from using Facebook?	.805
Ignored your partner, family members, or friends because of Facebook?	.777

■ **Regression Analysis**

Hierarchical multiple regression analysis was conducted in order to assess the ability of the Facebook use intensity measure to predict the levels of Facebook addiction as measured by BFAS, after controlling for demographic variables and the length of Facebook use in years. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. Age, gender, and the length of Internet use in years were entered at Step 1, explaining 2.4% of the variance in Facebook addiction. After entering the Facebook Intensity scale at Step 2, the total variance explained by the model as a whole was 32.6%, $F(4, 765)=90.800$, $p<.0005$. Thus, the Facebook Intensity measure explained an additional 30.2% of the variance in Facebook addiction, R^2 change=.302, F change (1, 765)=334.622, $p<.0005$. In the final model, only the Facebook Intensity measure was statistically significant with $\beta=.552$, $p<.0005$.

Discussion

With the increasing number of users and spreading popularity, Facebook addiction might be emerging as a new form of psychiatric disorder [24]. The two aims of the present paper were to investigate the relationship between the intensity of using Facebook and Facebook addiction and to test the psychometric properties of the Polish version of the Facebook Addiction Scale. The results show that Facebook use intensity is a strong predictor of Facebook addiction. People who use Facebook more and more can be exposed to problems connected with Facebook use. Our findings are consistent with those of Elphinston and Noller [25], who found that time spend on Facebook was related to increased Facebook intrusion.

To explain behavior on Facebook, we can start from theories connected with Internet addiction in general. According to etiological models of Internet addiction [26], what play a crucial role in Internet addiction is the changes in the level of neurotransmitters in the brain, especially dopamine. People want to achieve the satisfaction and euphoric experience and then dopamine level increases. They obtain this effect using Facebook. After a while, the time of use must be lengthened to achieve the same level of satisfaction as in the beginning.

The data from Poland differ from the original version of the method presented by Andreassen et al. [6]. After seven years, people use social networking sites more and more. This can be a trend, or it may be connected with cultural differences.

The Polish version of the Bergen Facebook Addiction Scale had adequate reliability and validity. It has 6 items that were chosen from the pool of 18 items. The criterion was the highest loadings among the three items in each of the six aspects of addiction. The chosen items differ from that in previous research in four spheres of addiction, namely: silence, tolerance, relapse, and conflict. These differences may be due to the cultural context: Polish and Norwegian, as the original study was conducted in Norway. This scale can be used successfully in future studies.

Specific limitations have to be acknowledged in the current study. First of all, the results are based on data collected from Polish respondents, and future cross-cultural comparison will test the generalizability of the obtained relationships. Another limitation is the absence of a clinical

group of Internet-addicted patients. In the future, the scale could be administered to addicted and no addicted users to investigate its discriminant validity more thoroughly.

Despite these limitations, the most salient finding of the present study is that Facebook intensity is a very important predictor of Facebook addiction. Moreover, the method of measuring Facebook addiction has been adapted into Polish. More research is still needed for a better understanding

of Facebook addiction. In future, research needs to identify other predictors of this maladaptive behavior.

Acknowledgments

This research was supported by a grant from the NCN No. 2014/15/B/HS6/03129.

Dr. Aneta Przepiorka was supported by the Foundation for Polish Science (FNP)

References

- Facebook. Statistics. (2014).
- Gemius. Polskie badanie Internetu. Meagpanel. Dostępne (2014).
- Błachnio A, Przepiorka A, Rudnicka P. Psychological Determinants of Using Facebook: A Research Review. *Int. J. Human-Comp. Int* 29(11), 775-787 (2013).
- Wilson RE, Gosling SD, Graham LT. A review of Facebook research in the social sciences. *Persp. Psychol. Sci* 7(3), 203-220 (2012).
- Kuss DJ, Griffiths MD. Online social networking and addiction—a review of the psychological literature. *International Journal of Environmental Research and Public Health* 8(9), 3528-3852 (2011).
- Andreassen CS, Torsheim T, Brunborg GS, et al. Development of a Facebook Addiction Scale. *Psychol. Rep* 110(2), 501-517 (2012).
- Koc M, Gulyagci S. Facebook addiction among Turkish college students: the role of psychological health, demographic, and usage characteristics. *Cyberpsychol. Behav. Soc. Netw* 16(4), 279-284 (2013).
- Meerkerk G, Van Den Eijnden RJJM, Garretsen HFL. Predicting compulsive Internet use: it's all about sex! *Cyberpsychol. Behav* 9(1), 95-103 (2006).
- Rose S, Dhandayudham A. Towards an understanding of Internet-based problem shopping behaviour: The concept of online shopping addiction and its proposed predictors. *J. Behav. Addic* 3(2), 83-89 (2014).
- Błachnio A, Przepiorka A, Pantic I. Internet use, Facebook intrusion, and depression: Results of a cross-sectional study. *Eur. Psych* 2-5 (2015).
- Andreassen CS, Griffiths MD, Gjertsen SR, et al. The relationships between behavioral addictions and the five-factor model of personality. *J. Behav. Addic* 2(2), 90-99 (2013).
- Wilson K, Fornasier S, White, KM. Psychological predictors of young adults' use of social networking sites. *Cyberpsychol. Behav. Soc. Netw* 13(2), 173-177 (2010).
- Ehrenberg A, Juckes S, White KM, et al. Personality and self-esteem as predictors of young people's technology use. *Cyberpsychol. Behav* 11(6), 739-41 (2008).
- Correa T, Hinsley AW, de Zúñiga HG. Who interacts on the web?: The intersection of users' personality and social media use. *Comp. Human. Behav* 26(2), 247-253 (2010).
- Ross C, Orr ES, Sisic M, et al. Computers in Human Behavior Personality and motivations associated with Facebook use. *Comp Human Behav* 25(2), 578-586 (2009).
- Wilson K, Fornasier S, White, KM. Psychological predictors of young adults' use of social networking sites. *Cyberpsychol. Behav. Soc. Netw* 13(2), 173-177 (2010).
- Wolniczak I, Cáceres-DelAguila JA, Palma-Ardiles G, et al. Association between Facebook dependence and poor sleep quality: a study in a sample of undergraduate students in Peru. *PLoS. One* 8(3), e59087 (2013).
- Hormes JM, Kearns B, Timko CA. Craving Facebook? Behavioral addiction to online social networking and its association with emotion regulation deficits. *Addiction* (Abingdon, England) (2014).
- Uysal R, Satici SA, Akin A. Mediating effect of Facebook addiction on the relationship between subjective vitality and subjective happiness. *Psychol. Rep* 113(3), 948-953 (2013).
- Griffiths MD. Facebook Addiction: Concerns, Criticism, and Recommendations—a Response to Andreassen and Colleagues 1. *Psychol. Rep* 110(2), 518-520 (2012).
- Andreassen CS, Pallesen S. Facebook addiction: a reply to Griffiths (2012). *Psychol. Rep* 113(3), 899-902 (2013).
- Uysal R, Satici SA, Akin A. Mediating effect of Facebook addiction on the relationship between subjective vitality and subjective happiness. *Psychol. Rep* 113(3), 948-953 (2013).
- Ellison NB, Steinfield C, Lampe C. The Benefits of Facebook "Friends": Social Capital and College Students' Use of Online Social Network Sites. *J. Computer-Mediated Commun* 12(4), 1143-1168 (2007).
- Griffiths MD, Kuss DJ, Demetrovics Z. Social networking addiction: An overview of preliminary findings. In K. P. Rosenberg & L. Curtiss Feder (Eds.), *Behavioral addictions: Criteria, evidence, and treatment.* (pp. 119-141), US: Elsevier Academic Press, San Diego, CA, USA (2014).
- Elphinston Ra, Noller, P. Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychol. Behav. Soc. Netw* 14(11), 631-635 (2011).
- Young KS, Yue XD, Ying L. Prevalence estimates and etiologic models of Internet addiction. In K. S. Young & C. N. de Abreu (Eds.), *Internet addiction: A handbook and guide to evaluation and treatment.* (pp. 3-17). Hoboken, NJ US: John Wiley & Sons Inc. (2011).