I present myself and have a lot of Facebook-friends – Am I a happy narcissist!?

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ABSTRACT

For many people, Facebook use has become part of daily life. Earlier research hypothesized that one reason for the high popularity of this social platform is its association with subjective well-being and specific personality traits. In the present study, self-report data and objective data from Facebook pages of 328 Facebook users were analyzed. Results revealed a significant positive association of active Facebook use with subjective happiness and narcissism. Its relationship with depression symptoms was significantly negative. Furthermore, active Facebook use significantly positively mediated the positive link between narcissism and happiness. This finding contributes to the understanding why narcissistic individuals who usually search for attention and admiration to increase their self-esteem often engage in intensive active Facebook use.

1. Introduction

A brief glance at the Facebook wall in the morning, some short status postings during lunchtime, a public conversation in the evening, and many short visits in between – the use of the social networking site (SNS) Facebook has become an integral part of the everyday life of many people. In the year 2019, Facebook has over 2.32 billion members and 1.5 billion daily users (Roth, 2019), who often hold online conversations with persons they sometimes never saw offline, and post private contents for public consideration and evaluation.

Previous research emphasized that the way people interact on Facebook reflects their real personality rather than promoting an idealized online identity (Kosinski, Stillwell, & Graepel, 2013). This allows a high level of accuracy when judging individuals' level of personality traits such as extraversion, openness (Back et al., 2010; Hall & Pennington, 2013; Tskhay & Rule, 2014), and narcissism (Buffardi & Campbell, 2008; Vander Molen, Kaplan, Choi, & Montoya, 2018) by means of the information available on members' Facebook profile. Correspondingly, studies that used self-reported surveys (Carpenter, 2012; McKinney, Kelly, & Duran, 2012; Panek, Nardis, & Konrath, 2013) and/or objective quantitative measures (e.g., number of uploaded photos, of albums, of Facebook-friends) taken from the participants' online accounts (Brailovskaia & Bierhoff, 2016, 2018; Buffardi & Campbell, 2008; Mehdizadeh, 2010; Ong et al., 2011) found a positive relationship between narcissism and active Facebook use (i.e., posting of photos and status updates, commenting those posted by other members, writing of private messages). These results allowed the conclusion that particularly narcissistic individuals tend to take advantage of the various activities offered by Facebook (see Ryan & Xenos, 2011).

Narcissistic people are characterized by a high need of attention and admiration to confirm their belief of own grandiosity and to enhance their self-esteem (Emmons, 1987). To satisfy this need, they initiate many superficial social relationships and present themselves as confident, charming and extraverted interaction partners (Campbell, 2005; Twenge & Foster, 2008). As long as the relationships remain superficial, the low agreeableness, selfishness and tendency to manipulate other people of narcissistic individuals remain unrecognized. They keep up the positive impression and gain the expected positive feedback (Paulhus, 2001). Considering the typical characteristics of this personality trait, it has been argued that the reason for intensive active Facebook use of narcissistic persons is the wish to gain attention by superficial social interactions which enhances their popularity and boosts their self-esteem (e.g., Brailovskaia & Margraf, 2016; Buffardi & Campbell, 2008; Nadkarni & Hofmann, 2012).

However, regarding available findings about potential effects of active Facebook use, it seems reasonable to assume that there might be a further reason why narcissistic individuals intensively use this SNS. Active Facebook use was described to positively contribute to subjective well-being (Verduyn, Ybarra, Résibois, Jonides, & Kross, 2017), which includes positive (e.g., subjective happiness) as well as negative (e.g., depression symptoms) components (Keyes, 2005), inter alia by enhancing social connectedness and perception of social support

(Brailovskaia & Margraf, 2016; Frison & Eggermont, 2016; Verduyn et al., 2017). In this sense, Kim and Lee (2011), Manago, Taylor, and Greenfield (2012), as well as Nabi, Prestin, and So (2013) found uploading of photos and number of Facebook-friends to be positively related to subjective happiness. Grieve, Indian, Witteveen, Tolan, and Marrington (2013) reported a negative relationship between social connectedness on Facebook and depression symptoms.

Thus, based on previous results it may be assumed that social interaction and self-presentation on Facebook might not only enhance the self-esteem of narcissistic individuals, but also contribute to their subjective well-being. This could make it more likely that those individuals will engage in further intensive Facebook use and could explain why SNSs like Facebook are popular among narcissistic people (see e.g., Brailovskaia & Margraf, 2016; Carpenter, 2012). However, to the best of our knowledge, it has not been empirically investigated, whether active Facebook use may trigger positive emotions such as happiness and whether it may decrease negative factors such as depression symptoms which both are components of subjective well-being (Keyes, 2005) specifically in narcissistic individuals. Therefore, the general aim of the present study was to move the focus of research that considers reasons for narcissistic Facebook use to subjective well-being. The relationship between active Facebook use, subjective well-being (i.e., happiness, depression symptoms), and the trait narcissism should be investigated. Specifically, it should be considered whether active Facebook use may mediate the association between narcissism and subjective well-being (see Fig. 1).

Accordingly, we investigated following hypotheses: (1) Active Facebook use is positively related to the trait narcissism (Hypothesis 1); (2) active Facebook is positively related to subjective happiness (Hypothesis 2); (3) active Facebook use is negatively related to depression symptoms (Hypothesis 3). Earlier research described a positive link between narcissism and subjective happiness (Brailovskaia, Bierhoff, & Margraf, 2017; Brailovskaia & Margraf, 2016). Therefore, we hypothesized that (4) active Facebook use mediates the positive link between narcissism and happiness (Hypothesis 4). However, previous studies demonstrated inconclusive results due to the relationship between narcissism and depression symptoms. While Gentile et al. (2013) found both variables to be positively interrelated, other investigations described negative or even no significant associations (e.g., Brailovskaia et al., 2017), even though they mostly used the same instrument to assess narcissism. Therefore, we investigated the link between narcissism, active Facebook use and depression symptoms by research questions: (1) Is there a relationship between narcissism and depression symptoms? (Research Question 1). (2) If yes, may active Facebook use mediate the link between narcissism and depression symptoms? (Research Question 2).

2. Materials and methods

2.1. Procedure and participants

The sample included 328 Facebook users (66.2% women; age

Fig. 1. Mediation model with narcissism as predictor (X), active Facebook use as mediator (M), and subjective well-being as outcome (Y).
Note. c = total effect, c′ = direct effect.

(years): $M = 24.83$, $SD = 8.49$, range: 16–67; employment: 3% school students, 74.1% university students, 20.8% employees, 1.8% unemployed persons, 0.3% retired), who were recruited by flyers that were displayed at universities and in public places, like bakeries, in Germany, and on SNSs. All participants completed a paper-and-pencil questionnaire and saved their Facebook account (html format or screenshots) on a PC in the university laboratory. Participants were properly instructed and gave written informed consent prior to their inclusion in the study. Participation was voluntary and could be compensated by course credits for university students. The responsible Ethics Committee approved the implementation of the present study. A priori conducted power analyses (G*Power program, version 3.1) revealed that the current sample size was sufficient for valid results (power > 0.80, $\alpha = 0.05$, effect size $f^2 = 0.15$). No data were excluded. Investigated data will be made available on request.

2.2. Measures

2.2.1. Subjective happiness

Happiness was assessed with the unidimensional Subjective Happiness Scale (SHS) (Lyubomirsky & Lepper, 1999) that consists of four items rated on a 7-point Likert scale (i.e., "In general, I consider myself as a very happy person"; range: 1–7; current reliability: Cronbach's $\alpha = 0.77$). The higher the total score, the higher the happiness level.

2.2.2. Depression symptoms

The depression subscale of the Depression Anxiety Stress Scales 21 (DASS-21) (Lovibond & Lovibond, 1995) measured depression symptoms over the previous week with 7-items that are rated on a 4-point Likert scale (i.e., "I couldn't seem to experience any positive feeling at all"; 0 = *did not apply to me at all*; 3 = *applied to me very much or most of the time*; current reliability: $\alpha = 0.86$).

2.2.3. Narcissism

The personality trait narcissism was assessed with the Narcissistic Personality Inventory (NPI-40) (Raskin & Terry, 1988). The 40 items of this instrument are rated in a forced-choice format (0 = *low narcissism value*, i.e., "I don't like it when I find myself manipulating people", 1 = *high narcissism value*, i.e., "I find it easy to manipulate people"; current reliability: $\alpha = 0.83$).

2.2.4. Facebook use

Active Facebook use was assessed by eight variables. Four active Facebook use variables were assessed by a self-report questionnaire: 1) frequency of writing status updates, 2) frequency of commenting status updates, 3) frequency of writing online messages, 4) frequency of writing in discussion groups (6-point Likert scale: 1 = *once a month or less than once a month*, 2 = *once every two weeks*, 3 = *once a week*, 4 = *several times a week*, 5 = *once a day*, 6 = *more than once a day*). Furthermore, following (Brailovskaia & Bierhoff, 2016, 2018), the number of Facebook-friends, of set "Likes" (i.e., "Likes" the participant set on different official Facebook pages), of uploaded photos and albums was taken from the "Info" page of the participants' Facebook account as objective quantitative data.

2.3. Statistical analyses

Statistical analyses were conducted with the SPSS 24 and the macro Process version 2.16.1 (www.processmacro.org/index.html). After the descriptive analyses of the investigated variables, their associations were assessed by zero-order bivariate correlations. Considering the results of the correlation analyses, four mediation models were analyzed (model 4). All models included narcissism as the predictor and happiness as the outcome. Variables of active Facebook use served, successively, as hypothesized mediator. The basic relationship between
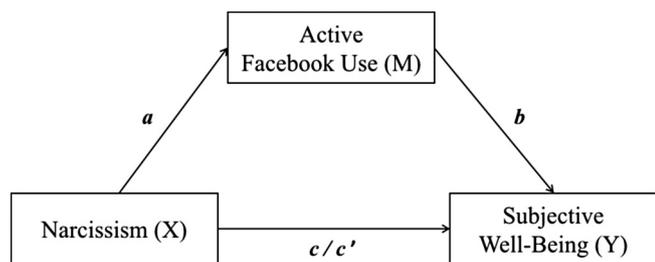
narcissism and happiness was denoted by *c* (the total effect), *a* denoted the path of narcissism to active Facebook use, and *b* denoted the path of active Facebook use to happiness. The combined effect of path *a* and path *b* represented the indirect effect. The direct effect of narcissism to happiness after inclusion of active Facebook use was denoted by *c′*. The mediation effect was assessed by the bootstrapping procedure (10.000 samples) providing accelerated confidence intervals (*CI* 95%). P_M (the ratio of the indirect effect to the total effect) was used as the mediation effect measure.

3. Results

3.1. Descriptive statistics

The descriptive values of the investigated variables are presented in Table 1. Table 2 shows the frequency of single Facebook use activities (further descriptive statistic is presented in Table 1 of Supplementary material). Of the participants, 3.6% posted status updates daily ("once a day" and "more than once a day"), 30.4% commented on the updates of other users daily, 18.3% wrote daily private messages on Facebook, and 2.7% wrote daily comments in discussion groups.

3.2. Correlations

Table 3 shows the intercorrelations between the investigated variables.

As shown in Table 3, narcissism is significantly positively correlated with subjective happiness (small effect). Its correlation with depression symptoms does not become significant. Subjective happiness and depression symptoms are significantly negatively interrelated (large effect). While narcissism is significantly positively correlated with six of the eight variables of active Facebook use, subjective happiness is significantly positively correlated with four of these variables, and depression symptoms are significantly negatively correlated with one variable of active Facebook use. All effects are small. There are significant positive intercorrelations between the active Facebook use variables (small to large effects; see Table 3).

3.3. Mediation analyses

Narcissism and depression symptoms are not significantly correlated. Therefore, no mediation analyses are calculated to assess the link between both variables and active Facebook use. Narcissism is significantly positively correlated with subjective happiness. Additionally, there are four variables of active Facebook use (i.e., frequency of writing status updates, number of uploaded albums, of set "Likes", and of Facebook-friends) that are simultaneously significantly positively correlated with narcissism and happiness. Therefore, in the next step, the proposed mediation model (see Fig. 1) is investigated for each of these Facebook variables (see Table 4).

Table 1
Descriptive statistics of investigated variables.

	M	*SD*	*Min–max*
NPI	14.52	6.60	0–34
SHS	20.01	4.42	4–28
DASS: Depression	3.73	3.82	0–21
Objective active Facebook use (number of)			
Albums	5.41	6.91	0–73
Photos	110.12	512.57	0–8489
"Likes"	145.92	199.25	0–1486
Friends	377.11	245.97	3–1368

Notes. *N* = 328; *M* = mean; *SD* = standard deviation; *Min* = minimum; *Max* = maximum; NPI = Narcissistic Personality Inventory; SHS = Subjective Happiness Scale; DASS = Depression Anxiety Stress Scales.

Results of the bootstrapped mediation analyses show that the association between narcissism and happiness is partly mediated by frequency of writing status updates, number of albums, and of set "Likes", and fully mediated by number of Facebook-friends. Adding the Facebook variables into the model reduces the total effect. All indirect effects are significant. The effect sizes of the indirect effects (P_M) are satisfying.

4. Discussion

The present study aimed to investigate the association of active Facebook use with the trait narcissism, subjective happiness, and depression symptoms. Current results indicate significant relationships that contribute to the explanation of Facebook's popularity among narcissistic individuals.

Corresponding to Carpenter (2012) who investigated Facebook use by self-report data, current results that base on self-report data and objective data show that participants with an enhanced level of narcissism tend to active Facebook use. They often write status updates and comment updates of other members of the platform. They have many Facebook-friends, frequently upload photos and set "Likes" (confirmation of Hypothesis 1). Narcissistic individuals are characterized by a low empathy level and low agreeableness. Both become evident when the relationship with these persons is deepened which often causes interpersonal conflicts. Therefore, narcissists prefer superficial interactions (Campbell, 2005). Considering that Facebook-friendships often remain superficial, the probability is reduced that their high selfishness and low agreeableness will be recognized (Okdie, Guadagno, Bernieri, Geers, & Mclarney-Vesotski, 2011). This may explain why narcissists invest in social interactions on Facebook.

In line with earlier results (Brailovskaia & Margraf, 2018; Liu & Yu, 2013), active Facebook use was positively associated with subjective happiness (confirmation of Hypothesis 2). Setting of "Likes", as well as posting of status updates and of new albums were positively linked to the happiness level. Humans are social beings. Sharing information with other individuals of the social network belongs to most important human needs (Baumeister & Leary, 1995; Wills, 1991). Satisfaction of this need may contribute to the experience of positive emotions. Furthermore, note that Facebook-members often share positive life experiences on the social platform by for example uploading of photos from vacations or celebrations (Brailovskaia & Bierhoff, 2016). Online conversations about such experiences with Facebook-friends which frequently accompany those uploads may enhance subjective happiness.

The number of Facebook-friends, who may interact with the user by for example commenting uploaded written updates and albums, was positively related to happiness, and – as the only active Facebook use variable – negatively related to depression symptoms (partly confirmation of Hypothesis 3) in the current study. The more Facebook-friends a user has, the higher is the probability that one of them is online, will interact with the user und provide positive feedback. This exchange contributes to perceive of social support which may foster the increase of happiness and the decrease of depression symptoms as presented by prior research (Frison & Eggermont, 2016; Nabi et al., 2013). Kim and Lee (2011) described Facebook-friends to "provide support when they know that the user is in need for support" (p. 362) and Moreno et al. (2011) found younger Facebook users to be likely to express their depression symptoms on Facebook. Thus, it may be assumed that interacting with online-friends can contribute to the subjective well-being (i.e., enhancement of happiness level, decrease of depression symptoms).

Furthermore, present results indicate that active Facebook use (i.e., frequency of writing status updates, number of uploaded albums, of set "Likes", and of Facebook-friends) positively mediated the relationship between narcissism and subjective happiness (confirmation of Hypothesis 4). This finding confirms the assumption that narcissistic

Table 2
Frequency of self-report active Facebook use.

	Status update write	Status update comment	Messages write	Group write
	%(n)	%(n)	%(n)	%(n)
(1) Once a month or less than once a month	84.8(278)	21.6(71)	26.5(87)	81.7(268)
(2) Once every two weeks	6.1(20)	10.7(35)	17.7(58)	6.7(22)
(3) Once a week	2.7(9)	13.7(45)	15.2(50)	5.5(18)
(4) Several times a week	2.7(9)	23.5(77)	22.3(73)	3.4(11)
(5) Once a day	1.2(4)	8.8(29)	7(23)	0.9(3)
(6) More than once a day	2.4(8)	21.6(71)	11.3(37)	1.8(6)

Notes. N = 328; due to rounding, the sum of listed figures may be higher/lower than 100%.

individuals engage in intensive active Facebook use not only to increase their self-esteem, but inter alia also to enhance their level of happiness, and thus their subjective well-being.

However, narcissism was not significantly linked to depression symptoms. This result allowed the negation of both research questions: There is no significant relationship between narcissism and depression symptoms (see Research Question 1), which may be mediated by active Facebook use (see Research Question 2). Note, narcissists often selectively perceive only such information that confirms their own grandiosity. They neglect feedback which contradicts their belief of own exclusiveness and popularity. Negative life experiences are often attributed to external factors and not to individual failure. If narcissistic individuals nevertheless experience negative emotions such as depressiveness, they often misinterpret them as anger and react aggressively. By these strategies they distance themselves from negative emotions and try to protect their self-esteem (Bushman & Baumeister, 1998; Dickinson & Pincus, 2003; Miller & Campbell, 2008). This might at least partly explain the missing relationship between narcissism and depression symptoms in the present study.

Thus, current results indicate that active Facebook use is positively linked to the personality trait narcissism, subjective happiness and negatively to depression symptoms. Furthermore, this form of Facebook use mediates the positive relationship between narcissism and happiness. This may partly explain the high popularity of Facebook use among narcissistic individuals. On Facebook, they get the possibility to control their self-presentation in social interactions and to maintain the positive impression of their own person without interpersonal conflicts

over a long period of time. Therefore, active Facebook use may have a positive impact on the happiness level of narcissistic members. However, considering current results, active Facebook use does not seem to contribute to the reduction of depression symptoms of narcissistic individuals. These findings emphasize the necessity for future studies to differentiate between positive and negative variables that belong to well-being (Keyes, 2005) and to investigate them separately to understand potential impact of Facebook use. General conclusions about the relationship between Facebook use and well-being should be avoided, because both constructs include different components which show different pattern of associations.

4.1. Limitations and further research

The present work has some limitations. First, it should be noted that even though the investigated mediation models became statistically significant, cross-sectional data were used for their confirmation that allow only correlational conclusions and hypotheses about the direction of found associations. To enable causal conclusions, future prospective longitudinal studies with an experimental design and inclusion of a control group are needed (Kraemer et al., 1997).

Second, although 15% of the participants were older than 40 years of age, the present sample was relatively young and included more women than men. Thus, to increase generalizability of results, more age and gender representative samples are desirable.

Third, based on the self-report and objective Facebook use data that were investigated in the present study, it was not possible to disclose

Table 3
Intercorrelations of investigated variables.

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) NPI	**0.152 (0.006)**	−0.062 (0.263)	**0.193 (0.000)**	**0.135 (0.014)**	0.078 (0.158)	0.084 (0.130)	**0.275 (0.000)**	**0.178 (0.001)**	**0.217 (0.000)**	**0.232 (0.000)**
(2) SHS		**−0.502 (0.000)**	**0.136 (0.013)**	0.070 (0.203)	0.065 (0.241)	−0.040 (0.446)	**0.118 (0.033)**	0.058 (0.296)	**0.196 (0.000)**	**0.264 (0.000)**
(3) DASS: Depression			−0.050 (0.371)	−0.064 (0.250)	−0.027 (0.628)	0.026 (0.634)	−0.072 (0.191)	−0.039 (0.476)	−0.014 (0.807)	**−0.175 (0.001)**
(4) Status update write				**0.305 (0.000)**	**0.211 (0.000)**	0.066 (0.232)	**0.246 (0.000)**	**0.194 (0.000)**	**0.339 (0.000)**	**0.203 (0.000)**
(5) Status update comment					**0.324 (0.000)**	0.055 (0.324)	**0.244 (0.000)**	**0.156 (0.005)**	**0.358 (0.000)**	**0.235 (0.000)**
(6) Messages write						**0.241 (0.000)**	**0.182 (0.001)**	0.056 (0.312)	**0.228 (0.000)**	**0.135 (0.015)**
(7) Group write							**0.127 (0.022)**	0.046 (0.404)	0.054 (0.326)	−0.050 (0.367)
(8) Albums								**0.798 (0.000)**	**0.261 (0.000)**	0.070 (0.204)
(9) Photos									**0.174 (0.002)**	0.043 (0.436)
(10) "Likes"										**0.305 (0.000)**
(11) Friends										

Notes. N = 328; NPI = Narcissistic Personality Inventory; SHS = Subjective Happiness Scale; DASS = Depression Anxiety Stress Scales. Significant results are marked bold.

Table 4

Estimated coefficients of the mediation models with narcissism (X), variables of active Facebook use (M), and subjective happiness (Y).

	Total effect			Direct effect			Indirect effect			Effect size		
	c	SE	95% CI	c′	SE	95% CI	ab	SE	95% CI	P_M	SE	95% CI
Status update write	0.102	0.037	[0.030; 0.174]	0.087	0.037	[0.014; 0.161]	0.014	0.009	[0.001; 0.039]	0.142	0.650	[0.005; 0.658]
Albums	0.102	0.037	[0.030; 0.174]	0.087	0.038	[0.012; 0.167]	0.015	0.009	[0.001; 0.037]	0.149	1.295	[0.002; 0.609]
"Likes"	0.102	0.037	[0.030; 0.174]	0.077	0.037	[0.004; 0.150]	0.025	0.011	[0.007; 0.051]	0.245	11.975	[0.061; 0.993]
Friends	0.102	0.037	[0.030; 0.174]	0.064	0.037	[−0.008; 0.136]	0.038	0.012	[0.019; 0.066]	0.370	1.565	[0.135; 1.376]

Notes. SE = standard error; *CI* = Confidence interval; all *CIs* generated with bootstrapping: *N* = 10.000.

processes that participants are unaware of or which they appreciate but often misinterpret during Facebook use, such as arousal (Lazarus & Folkman, 1984). Considering that these processes may influence well-being, future studies on Facebook use are advised to include psycho-physiological markers in their investigations. For example, blood pressure, heart rate and cortisol level could be taken as markers to disclose appropriate processes.

Forth, in the current study, narcissism was operationalized by the total score of the NPI-40. Previous research emphasized that results of this instrument can be considered as a total score, as well as single subscales (Raskin & Terry, 1988). Ackerman et al. (2011) suggested a three-factor structure that includes the subscales Leadership/Authority (LA), Grandiose Exhibitionisms (GE) and Entitlement/Exploitativeness (EE). In the current study, this structure could not be statistically replicated by a confirmatory factor analysis (CFI = 0.740, RSMEA = 0.060, SRMR = 0.0660). Considering that Carpenter (2012) described the GE-subscale to be positively related to self-reported variables of active Facebook use, while results of the EE-subscale were less clear, future studies are advised to investigate, whether current findings may be replicated with each of the NPI-subscales.

Fifths, considering that current results revealed mostly small effect sizes, their replication is desirable.

Additionally, while in the present study only active Facebook use was considered, future studies should also focus on passive use (i.e., monitoring of Facebook activities of other members without engaging in direct interaction with them and without presenting own information) (Verduyn et al., 2017) to investigate how this form of Facebook activity is linked to narcissism.

4.2. Conclusion

Surely, there are a lot of reasons and motives for Facebook use that are more complex than can be reflected in the investigated mediation model. However, present analyses go beyond previous investigations by contributing to the understanding why specifically narcissistic people engage in intensive active Facebook use.

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2019.05.022.

Contributors

All authors read and approved the final manuscript. Julia Brailovskaia and Jürgen Margraf elaborated the conceptualization of the study. Julia Brailovskaia conducted data curation, formal analysis, investigation, methodology, project administration, supervision, validation and visualization of the current study. Julia Brailovskaia wrote the lead of the original draft. Julia Brailovskaia and Jürgen Margraf contributed to the reviewing and edition process of the draft. Jürgen Margraf conducted funding acquisition and provided resources and software required for the investigation.

Funding

Declaration of Competing Interest

None.

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