The relationship between addictive use of social media, narcissism, and self-esteem:

Findings from a large national survey

Abstract

Social media has become an increasingly popular leisure activity over the last decade. Although most people's social media use is non-problematic, a small number of users appear to engage in social media excessively and/or compulsively. The main objective of this study was to examine the associations between addictive use of social media, narcissism, and self-esteem. A cross-sectional convenient sample of 23,532 Norwegians (M_{age}=35.8 years; range=16-88 years) completed an open web-based survey including the Bergen Social Media Addiction Scale (BSMAS), the Narcissistic Personality Inventory-16, and the Rosenberg Self-Esteem Scale. Results demonstrated that lower age, being female, being single, being a student, lower education, lower income, lower self-esteem, and narcissism were associated with higher scores on the BSMAS, explaining a total of 17.5% of the variance. Although most effect sizes were relatively modest, the findings supported the notion of addictive social media use reflecting a need to feed the ego (i.e., narcissistic personality traits) and an attempt to inhibit a negative self-concept (i.e., basic cognitions). The results were also consistent with demographic predictions and associations taken from central theories concerning "addiction", indicating that females may tend to develop more addictive use of activities involving social interaction than males. However, the cross-sectional study design makes inferences about directionality impossible.

Keywords: Behavioral addiction; Online social networking addiction; Narcissism; Self-esteem; Personality; Cognition

1. Introduction

Over the last few years, the use of social media has become an increasingly popular leisure activity in many countries across the world (Kuss & Griffiths, 2011). Individuals visit social media sites to engage in many different types of entertainment and social activity including playing games, socializing, passing time, communicating, and posting pictures (Allen, Ryan, Gray, McInerney, & Waters, 2014; Ryan, Chester, Reece, & Xenos, 2014). Although this has quickly become a normal modern phenomenon (Boyd & Ellison, 2007 – for some pretentious reason, dana boyd refuses to use capital letters for her names but I suppose we can leave it as it is), concerns have been raised regarding the potential addictive use of social media (e.g., Andreassen, 2015; Griffiths, Kuss, & Demetrovics, 2014). Such excessive and compulsive use has been explained by general addiction models (Griffiths, 2005) and defined accordingly as "being overly concerned about social media, driven by an uncontrollable motivation to log on to or use social media, and devoting so much time and effort to social media that it impairs other important life areas" (Andreassen & Pallesen, 2014, p. 4054).

1.1 Addictive use of social media

The term 'Internet addiction' has been criticized for being too unspecific in terms of content. Consequently, some scholars have suggested content-related 'addiction subtypes' such as cybersexual addiction, social media addiction, net compulsions (e.g., stock trading, gambling, shopping), information overload,, and 'computer addiction' (e.g., games, programming) (Young, 1999)

.   When drawing the line between addictive and non-addictive (e.g., excessive, enthusiastic) video gaming and other addictive behaviors, scholars use specific addiction criteria (Griffiths, 2005). Accordingly, addictive social media use should thus be manifested by being preoccupied by social media (salience), using social media in order to reduce

negative feelings (mood modification), gradually using social media more and more in order to get the same pleasure from it (tolerance/craving), suffering distress if prohibited from using social media (withdrawal), sacrificing other obligations and/or causing harm to other important life areas because of the social media use (conflict/functional impairment), and desiring or attempting to control the use of social media without success (relapse/loss of control).

Consequently, as problematic social media use may represent a specific form of 'Internet addiction', the Bergen Facebook Addiction Scale was specifically developed in order to assess this behavior using the aforementioned addiction criteria (Andreassen et al., 2012). Although the scale has demonstrated reliable and valid psychometric properties across several studies (e.g., Andreassen et al., 2012, 2013; Phanasathit, Manwong, Hanprathet, Khumsri, & Yingyeun, 2015; Wang, Ho, Chan, & Tse, 2015), a generic instrument capturing the totality of all social network sites, as opposed to measuring addictive use of one specific social network site only (i.e., *Facebook*), has been called for (Griffiths et al., 2014).

1.2 Addictive use of social media and demographics

Research has consistently shown that addictive use of social media is more prevalent among females than males (Andreassen, 2015; Griffiths et al., 2014; Ryan et al., 2014), and it has been suggested that females are more inclined to develop addictive behaviors towards activities involving social interaction (Andreassen et al., 2013; Kuss, Griffiths, Karila, & Billieux, 2014; Van Deursen, Bolle, Hegner, & Kommers, 2015). Furthermore, studies also report higher scores on social media addiction scales in younger compared to older people (e.g., Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Kuss et al., 2014). This has good face validity as these online platforms play a crucial role in the leisure and social lives of adolescents and young adults (Allen et al., 2014). Young people have quickly become accustomed to being constantly "online", and appear to adapt to new technologies faster than

their older counterparts (Prensky, 2001). In addition, social media may represent an arena where the younger generation can explore and develop their identities and culture without interruption from parents or those in a position of authority (Andreassen, 2015; Mazzoni & Iannone, 2014).

Research also suggests that individuals that are not in a personal relationship are more prone to developing addictive social media use than people who have partners (Kuss et al., 2014). Again, this has good face validity as sites that promote social interaction may represent ground for meeting potential partners, or serving as an important social function along with feelings of belongingness (Andreassen, Torsheim, & Pallesen, 2014; Ryan et al., 2014). Taken together, in the present study, it is hypothesized that individuals that are of younger age, single, and female will score higher than their corresponding counterparts on a social media addiction scale (Hypothesis 1).

1.3 Addictive use of social media and narcissism

Research indicates that personality plays a role in addictive use of social media (e.g., Andreassen et al., 2012, 2013; Hong, Huang, Lin, & Chiu, 2014; Wilson, Fornasier, & White, 2010). The few studies exploring individual differences in terms of narcissism have found it to be positively associated to different online social networking activities (e.g., La Barbera, La Paglia, & Valsavoia, 2009; Malik & Kahn, 2015; Ryan & Xenos, 2011; Wang, Jackson, Zhang, & Su, 2012). This appears to be meaningful as social media use allows individuals to express their ambitions and show their successes to a potentially large audience, and to obtain highly visible rewards and recognition through "likes" and positive comments from other social media users. Most contemporary studies seem to refer to narcissism as a relatively broad behavioral trait domain, expressed by, among others, self-centered grandiosity, arrogance, manipulativeness, and similar features (Alarcón & Sarabia, 2012). However, the complexity of the narcissism construct needs highlighting.

Narcissistic personality disorder, a pathological form of narcissism, is formally recognized by the *Diagnostic and Statistical Manual of Mental Disorders* in terms of high levels of self-importance, fantasies of unlimited success, feeling special and unique, lack of empathy, envy, and arrogance (American Psychiatric Association, 2013). However, more moderate and non-clinical levels of narcissistic traits have sometimes been viewed as healthy by providing an outlet for self-confidence and self-assertion (Cambell, Reeder, Sedikides, & Elliot, 2000; Muller, 2014). Either way, as social media may represent a gratifying medium for individuals with elevated narcissistic traits in particular, it is hypothesized that narcissism will be positively related to addictive use of social media in the present study (Hypothesis 2).

1.4 Addictive use of social media and self-esteem

Basic cognitions also appear to play a role in addictive social media use (Andreassen, 2015). Such cognitions may involve core beliefs, attributions, schemata, and automatic thoughts – and that have the power to activate behavior in general (Beck, 1995), including social media activity. Hence, if an individual thinks "I am not likable" or "I have poor social skills" – while at the same time believing that having a large number of friends or followers will change such self-conceptions – this may trigger addictive social media participation. In line with this, previous research has shown that people with low self-esteem regard social media as a safer place to express themselves than people with high self-esteem (Forest & Wood, 2012), and a negative relationship between self-esteem and addictive use of social media has been reported (e.g., Hong et al., 2014; Malik & Kahn, 2015; Wang et al., 2012; Wilson et al., 2010). In short, it is hypothesized in the present study that self-esteem will be negatively associated with symptoms of addictive social media use (Hypothesis 3).

1.5 The present study

Against this theoretical and empirical background, data stemming from a large sample were analyzed in order to investigate whether demographics and dispositional traits were

associated with addictive use of social media (Hypotheses 1-3). Although these hypotheses have to some extent been tested in previous research, most empirical studies to date have relied upon small opportunity and/or targeted samples (e.g., university students), often employing non-validated measures of addictive social media use (Andreassen, 2015; Ryan et al., 2014). Consequently, the present study contributes to the literature in at least two important ways. First, the data are not collected from an opportunity or targeted sample. The large sample size also boosts the statistical power and increases the chance of identifying correlates of addictive social media use. Second, the study utilizes psychometrically validated instruments in which addictive use of social media in general (instead of focusing on a specific platform, i.e. *Facebook*) is accounted for – making it a novel and specific addition to this research field.

2. Materials and methods

2.1 Procedure

Individuals were invited to participate anonymously in an open cross-sectional web-survey via the official websites of five nationwide Norwegian newspapers during 2014. By clicking the link to the survey, participants were provided with information about the study before providing their answers. They were also informed upfront that they would receive immediate feedback on their own score concerning their social media habits after completing all the questions. The link to the survey was published up until a week on the different online editions of the newspapers. All data were saved by the survey agency *SurveyXact*, before passing it on to the research team. Participants giving none or partial responses were deleted from the data set (n=18,438). The study was carried out in accordance to the Helsinki Convention and the Norwegian Health Research Act.

2.2 Participants

In total, the sample comprised 23,532 participants (8,234 males and 15,298 females)
Their ages ranged from 16 to 88 years, with a mean age of 35.8 years (SD=13.3). The sample
represented a broad range of occupations, professional and income groups. Table 1 provides
an overview of sample characteristics and mean scores on the *Bergen Social Media Addiction
Scale* (see section 2.3) within each demographic category.

2.3 Questionnaires

The *Bergen Social Media Addiction Scale (BSMAS)* is a modified version of the
previously validated Bergen Facebook Addiction Scale (BFAS; Andreassen et al., 2012). The
modification involves using the words '*social media*' instead of the word *'Facebook'*, with
social media being defined as "*Facebook, Twitter, Instagram* and the like" in the instructions.
Although BSMAS has not been used with other samples than the present study, the original
scale (i.e., BFAS) was translated into several languages and has shown good psychometric
properties (e.g., Andreassen et al., 2012, 2013; Phanasathit et al., 2015; Wang et al., 2015).
The scale is anchored in general addiction theory, and operationalizes social media addiction
according to six basic addiction symptoms noted earlier (i.e., salience, conflict, mood
modification, withdrawal, tolerance, and relapse) (Griffiths, 2005). All questions concern
experiences occurring over the past year, and are rated on a 5-point Likert scale spanning
from *very rarely* (1) to *very often* (5) (e.g., "How often during the last year have you become
restless or troubled if you have been prohibited from using social media?"). The items
correspond with diagnostic addiction criteria (APA, 1994). Internal consistency of the
BSMAS in the present study was high (α=.88).

The *Narcissistic Personality Inventory-16 (NPI-16)* is a shortened version of the
original 40-item NPI (Raskin & Terry, 1988). The NPI-16 comprises 16 items assessing sub-
clinical narcissism (Ames, Rose, & Anderson, 2006). Scores comprise ratings on a 5-point
Likert scale using anchors of *Strongly disagree* (1) to *Strongly agree* (5) (e.g., "I am apt to

show off if I get the chance"). This scale is a unidimensional measure, thus the higher the total score, the more narcissistic the individual is. Internal consistency of the NPI-16 was high in the present study (α=.87).

The *Rosenberg Self-Esteem Scale* is a 10-item scale for assessing levels of self-esteem (Rosenberg, 1965). All statements are rated on a 4-point Likert scale ranging from *Strongly agree* (0) to *Strongly disagree* (3). The scale measures both positive and negative feelings about the self (e.g., "All in all, I am inclined to feel that I am a failure" or "I am able to do things as well as most other people"). The five positive statements were recoded, meaning that the higher the overall score, the higher the self-esteem. Internal consistency of this scale was again high in the present study (α=.89).

2.4 Statistics

Descriptive statistics of the study variables were calculated. Group differences in terms of scores on the BSMAS within sample characteristics were analyzed using analysis of variance (ANOVA). Both statistical tests for significance (*p* values) and effect sizes (eta-squared [η^2] values) were calculated. Benchmarks for eta-squared values are: .01 is small (but nontrivial), .06 is medium, and .14 is large (Cohen, 1988). Bonferroni-based post-hoc tests were performed. Pearson product-moment correlation coefficients were calculated to assess the relationships between addictive social media use, narcissism, and self-esteem. Benchmarks to define when the correlational strength is considered small, moderate or large in effect are *r* coefficients of about .1, .3, and .5, respectively (Cohen, 1988). (This statistical convention also applies for *ß* coefficients in regression analyses). Finally, a linear multiple hierarchical regression analysis was conducted, where demographic variables, narcissism, and self-esteem were regressed upon the composite social media addiction score. More specifically, age, gender, relationship status, educational level, student status, and income were entered in Block 1, whereas narcissism and self-esteem scores were entered in Block 2.

Preliminary analyses confirmed that there was no major contradiction of the assumptions of normality, linearity, multicollinerarity (tolerance over .10 and VIF under 5), and homoscedasticity.

3. Results

3.1 Group differences

ANOVA revealed several group differences in terms of BSMAS scores (see Table 1). Scores on addictive use of social media were higher among younger compared to older age groups ($F_{1,23532}=426.89$, $p<.001$, $\eta^2=.07$); singles compared to those in a relationship ($F_{1,23530}=295.26$, $p<.001$, $\eta^2=.01$); females compared to males ($F_{1,23530}=833.51$, $p<.001$, $\eta^2=.03$); lower educated compared to higher educated ($F_{5,23526}=101.63$, $p<.001$, $\eta^2=.02$); lower income groups compared to higher income groups ($F_{10,23521}=136.81$, $p<.001$, $\eta^2=.06$); and students compared to non-students ($F_{1,23530}=1118.05$, $p< .001$, $\eta^2=.05$). Overall, the eta-squared values indicated small to medium sized effects ranging from .01 (marital status) to .07 (age groups).

3.2 Correlation analysis and descriptive data

Table 2 shows the mean scores, standard deviations, distributions, scale characteristics as well as inter-correlations of the study variables. For the BSMAS variable, the skewness was 1.28 and the kurtosis 1.35, indicating a moderate asymmetrical distribution. Positive and significant correlations were found between addictive use of social media and narcissism ($r=.06$, $p<.001$) (trivial-to-small effect), and between narcissism and self-esteem ($r=.42$, $p<.001$) (large-to-medium effect). A negative correlation was found between addictive social media use and self-esteem ($r=-.25$, $p<.001$) (medium-to-small effect).

3.3 Regression analysis

Table 3 displays the results of the regression analysis. Age, gender, marital status, education, student status, and income were entered in Block 1, explaining 11.9% of the

variance in addictive use of social media ($F_{10,23521}$=318.19, p<.001). Socio-demographic factors contributed significantly including age (β=-.207, p<.001), gender (β=.190, p<.001), marital status (β=.050, p<.001), primary school (β=.033, p<.001), Master's degree (β=-.023, p<.001), PhD degree (β=-.014, p<.05), student status (β=.062, p<.001), and income (β=-.022, p<.01). Narcissism and self-esteem, entered in Block 2, additionally explained 5.7% of the variance, ΔR^2=.057, $\Delta F_{2,23519}$=809.50, p<.001. In this final block, self-esteem (β=-.260, p<.001) contributed the most, followed by gender (β=.196, p<.001), narcissism (β=.184, p<.001), age (β=-.156, p<.001), student status (β=.069, p<.001), marital status (β = .035, p < .001), primary school (β = .021, p < .01), Master's degree (β=-.020, p<.01), and PhD degree (β=-.012, p<.05). Overall, the independent variables' unique effects on the criterion variable were relatively small – although the displayed β coefficient for self-esteem, narcissism, age, and gender may be considered as more medium-sized effects. The whole model explained 17.5% of the variance in the social media addiction score ($F_{12,23519}$=418.31, p<.001).

4. Discussion

The main aim of the present study was to investigate demographic, personality, and individual differences associated with addictive use of social media. Based on the number of participants, the present study represents one of the largest surveys undertaken on this topic. The findings were broadly consistent with hypotheses and previous research, with results showing that age, gender, martial status, narcissism, as well as self-esteem contributed significantly to the explained variance (17.5%) in addictive use of social media. However, the effect sizes were generally modest.

4.1 The role of demographic factors

Demographics alone (entered in Block 1) explained 11.9% of the variance of addictive social media use in the regression analysis. In short, the study's findings demonstrated that those who were young, female, single, a student, and less educated (primary school) tended to

report higher scores on the social media addiction scale. Consequently, the first hypothesis was supported by the empirical data.

The effect size for gender was considered as medium, with females having higher addictive social media use score. This finding, and previous research in this field, may indicate that females are more at risk in developing addictive behaviors to activities involving elements of social interaction, whereas males may tend to develop problematic use of more asocial and/or solitary activities (e.g., video gaming) (Andreassen et al., 2012, 2013, 2014; Kuss et al., 2014; Van Deursen et al., 2015). Therefore, future studies should more specifically assess whether some online activities are more problematic and addictive to specific genders.

It was also hypothesized (and demonstrated) that those not in a current relationship would report higher levels of addictive social media use . This assumption was based on the fact that these platforms may represent a source of perceived companionship and/or a sense of belongingness, as well as a convenient and highly accessible social arena to find a potential partner (Andreassen et al., 2014; Kuss et al., 2014; Ryan & Xenos, 2011). However, although the findings were statistically significant, the impact of marital status on addictive social media use was very small, and arguably without any practical importance.

Finally, the study found – and in line with previous research – that younger people were more affected by addictive use of social media than older people (Andreassen, 2015; Griffiths et al., 2014; Kuss et al., 2014). The effect size was between small to medium. As noted earlier in the paper, this has good face validity as the new younger generation (the so-called 'digital natives' and 'screenagers' [Griffiths, 2010]) often uses such technologies in order to acquire, develop and maintain relationships, and may seek feedback on their behaviors and online persona as a way of forming and/or enhancing their social identity (Allen et al., 2014; Ryan & Xenos, 2011). Young people may also be more familiar with –

and willing to learn about – new technological solutions and platforms (Andreassen &

Pallesen, 2014).

4.2 The role of narcissism

Narcissism was positively related to addictive use of social media, and appeared to

have a small-to-medium sized effect after controlling for basic socio-demographics. This was

in line with both the second hypothesis and previous research. *Facebook, Instagram,*

Snapchat and other social media applications may serve as ideal social arenas for individuals

who appreciate and are attracted to engaging in ego-enhancing activities (Ryan & Xenos,

2011; Wang et al., 2012), as they enable individuals to bolster their egos on the basis of

instant feedback from potentially large numbers of other individuals. It could therefore be

speculated that individuals with elevated narcissistic traits use social media excessively

because these online platforms may fulfill a need for affiliation and confirms the sense of a

idealized self. This is in line with studies showing that narcissism is positively related to

profile updates regarding accomplishments, diet, and exercise (Marshall, Lefringhausen, &

Ferenczi, 2015).

4.3 The role of self-esteem

Self-esteem was negatively related to addictive use of social media. The effect size

was medium, and the highest in the present study. Thus, the study´s third and final hypothesis

was supported by the empirical data. This is also in keeping with previous research (e.g.,

Hong et al., 2014; Malik & Khan, 2015; Wang et al., 2012; Wilson et al., 2010), and may

imply that people use social media in order to obtain higher self-esteem (e.g., harvesting

"likes" and in-groups), and/or to escape from feelings of low self-esteem (Andreassen, 2015).

People with low self-image, may also prefer communicating online instead of face-to-face.

However, due to the cross-sectional nature of the data, the directionality is impossible to

discern. Addictive social media use may by a consequence and/or a predictor of low self-esteem.

4.4 Study limitations and strengths

This study entails all the common shortcomings involved using an open access sampling methodology (e.g., self-selection bias, lack of information about non-respondents, unknown response rate, etc.) (Kuss et al., 2014). However, the full range of scores on all variables was represented in the data, which normally strengthens the validity of estimated relationships between constructs. The cross-sectional design also places restrictions on drawing causal effects – hence the directionality may very well be the other way around. Given that all the data were based on self-report and collected via a cross-sectional design, the findings may also have been influences by the common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Due to the large sample size providing power to the analyses, several small correlations may have turned out significant. Although some of the significant findings may reflect trivial relationships due to the large sample size, some effects sizes in the regression analysis were small to moderate suggesting some substantial and meaningful relationships between study variables.

However, the very large sample size also represents one of the key strengths of the study, as well as the use of validated instruments in assessing the study's key variables. The present study used a generic social media addiction instrument, as scholars have called for such a measure (Griffiths et al., 2014), rather than focusing on one single social network site (e.g., *Facebook*). Another strength of the study was that the survey was administrated in nationwide newspapers, and not local ones. These newspapers are also known for having very different reader groups. Hence, the sample probably represents a wide range of Norwegian people and is more representative than other studies that have used self-selected samples. There was a preponderance of females in the sample. However gender was included as an

independent variable in the regression analyses, thus this was adjusted for in terms of the multivariate relationship between study variables.

Given these limitations, future research should combat the aforementioned shortcomings by using longitudinal designs with representative samples. Conducting a longitudinal study that could better address the directionality between variables, as well as looking into potential processes and mechanisms (such as using SEM to fit path models and possibly examining moderation effects), would provide more robust findings than a pure correlation study.

4.5 Conclusions

Overall, the present study suggests that basic demographics, narcissism, and self-esteem are all associated with addictive use of social media. Addictive social media use was related to being female, being single, lower age groups, lower education, lower socioeconomic status, narcissistic traits, and a negative self-concept. Although using social media is a normal and widespread modern behavior, individuals with some of these characteristics could be targets for interventions with the aim of preventing addictive and destructive online participation. More research, preferably using representative and clinical samples, on these poorly studied relationships is warranted.

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Table 1

Descriptive sample statistics and analyses of variance comparing the Bergen Social Media

Addiction Scale (BSMAS) scores

Variable		N	%	Mean (SD) BSMAS	$F_{df1, df2}$	Sig.	η^2
Age[1]	16-25 years	6621	28.1	12.0 (5.4)	$426.89_{4,23527}$	.000	.068
	26-35 years	5767	24.5	10.6 (4.8)			
	36-45 years	5416	23.0	9.7 (4.3)			
	46-55 years	3705	15.7	8.9 (3.8)			
	56 years and older	2023	8.6	8.3 (3.2)			
Gender	Female	15298	65.0	10.9 (5.0)	$833.51_{1,23530}$	.000	.034
	Male	8234	35.0	9.1 (4.1)			
Marital status	In a relationship	15372	65.3	9.9 (4.5)	$295.26_{1,23530}$	.000	.012
	Not in a relationship	8160	34.7	11.0 (5.2)			
Educational level[2]	Primary school	2350	10.0	11.8 (5.6)	$101.63_{5,23526}$	.000	.021
	High school	5949	25.3	10.8 (5.0)			
	Vocational school	3989	17.0	9.6 (4.3)			
	University - Bachelor	7629	32.4	10.2 (4.6)			
	University - Master	3343	14.2	9.6 (4.3)			
	University - PhD	272	1.2	8.7 (4.1)			
Student	Yes	4962	21.1	12.3 (5.5)	$1118.05_{1,23530}$	.000	.045
	No	18570	78.9	9.8 (4.4)			
Income[3]	0-99.999 NOK	3865	16.4	12.2 (5.5)	$136.81_{10,23521}$	.000	.055
	100.000-199.999	2475	10.5	11.5 (5.2)			
	200.000-299.999	2389	10.2	10.6 (4.8)			
	300.000-399.999	3781	16.1	10.2 (4.6)			
	400.000-499.999	4648	19.8	9.8 (4.4)			
	500.000-599.999	2807	11.9	9.3 (4.0)			
	600.000-699.999	1321	5.6	9.0 (3.9)			
	700.000-799.999	794	3.4	8.7 (3.6)			
	800.000-899.000	480	2.0	9.1 (4.1)			

900.000-999.999	281	1.2	8.4 (3.4)
1 million or more	691	2.9	8.5 (3.8)

SD=standard deviation; η^2=eta-squared; In a relationship=married, common law partner, partner, boyfriend or girlfriend; Not in relationship=single, divorced, separated, widow or widower; Income=Past year personal gross annual income (before tax) in Norwegian currency (i.e., NOK); NOK=Norwegian Krone.

1) All groups differ ($p > .05$, Bonferroni correction).

2) All groups except university education and vocational school differ ($p > .05$, Bonferroni correction).

3) Group 3 and 4 do not differ, group 6 differs not from group 7-0, group 7 differs not from group 8-11, group 8 differs not from group 9-11, group 9 differs not from group 10-11 and group 10 and 11 do not differ; all other groups differ ($p > .05$, Bonferroni correction).

Table 2

Descriptive data and correlation coefficients between study variables (N = 23,532)

	Variables	1	2	3
1	Excessive social networking	--		
2	Narcissism	.06**	--	
3	Self-Esteem	-.25**	.42**	--
	Mean	10.30	44.12	29.23
	Standard deviation	4.77	10.11	5.34
	Skewness	1.28	-0.12	-0.43
	Kurtosis	1.35	-0.01	0.38
	Range	6-30	16-80	10-40
	Alpha	.88	.87	.89
	Items	6	16	10

$**p < .01$.

Table 3

Results from the hierarchical regression analysis where age, gender, martial status,

education, student status, income, narcissism, and self-esteem were regressed upon the

Bergen Social Media Addiction Scale score (N = 23,532)

	B	Std.Error	β	t	ΔR^2
Step 1					.119***
Age	- 0.074	.003	- .207	- 27.142***	
Gender (1=♂, 2=♀)	1.903	.065	.190	29.189***	
Marital status[a]	0.504	.065	.050	7.808***	
Education[b]					
Primary school	0.524	.113	.033	4.635***	
High school	- 0.038	.081	- .003	- 0.469	
Vocational school	- 0.015	.089	- .001	- 0.172	
Master's degree	- 0.311	.095	- .023	- 3.278***	
PhD degree	- 0.634	.278	- .014	- 2.282*	
Student status[c]	0.726	.095	.062	7.631***	
Income	- 0.043	.017	- .022	- 2.573**	
Step 2					.057***
Age	- 0.056	.003	- .156	- 20.801***	
Gender (1=♂, 2=♀)	1.956	.064	.196	30.512***	
Marital status[a]	0.354	.063	.035	5.646***	
Education[b]					
Primary school	0.334	.110	.021	3.046**	

	B	SE	β	t
High school	- 0.098	.079	- .009	- 1.241
Vocational school	0.025	.086	.002	0.294
Master's degree	- 0.272	.092	- .020	- 2.957**
PhD degree	- 0.532	.269	- .012	- 1.979*
Student status[c]	0.807	.093	.069	8.721***
Income	- 0.008	.017	- .004	- 0.493
Narcissism	0.087	.003	.184	27.058***
Self-Esteem	- 0.232	.006	- .260	- 38.116***

B=unstandardized regression coefficient; β=standardized regression coefficient.
a) In a relationship=1, not in a relationship=2.
b) Bachelor's degree comprises the reference category.
c) Student=1, non-student=2.
*$p < .05$, **$p < .01$, ***$p < .001$.