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The Usage of Facebook as it Relates to Narcissism, Perceived Stress and Self-esteem.

Sophieanne Duffy-Potts

Supervised by: Andrew Denovan   April 2019

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ABSTRACT

Facebook has become a rapidly increasing popular social networking site, providing new methods of interaction and presentation. The rapid accumulation in research has suggested an association between Facebook use, individual differences and well-being factors. This current study explored the effects of narcissism, self-esteem and perceived stress on Facebook intensity. In particular focusing on grandiose and vulnerable narcissism facets. Using a non-experimental correlation design, the criterion variable was Facebook intensity and the predictor variables were grandiose and vulnerable narcissism, self-esteem and perceived stress. Participants were 124 (37 males, 85 females and 2 preferred not to say) active Facebook users who completed an online survey consisting of four scales. Interestingly, results from a hierarchical regression analysis revealed that narcissism, self-esteem and perceived stress were not significant predictors of Facebook intensity. To conclude, the current study found no direct predictive relationship and further research is required into the Facebook intensity and predictor variables relationship.

KEY WORDS:	FACEBOOK INTENSITY	GRANDIOSE NARCISSISM	VULERABLE NARCISSISM	SELF-ESTEEM	PERCEVIED STRESS

Introduction

Founded in 2004, Facebook has become one of the most popular social networking sites (Alexa Internet Inc., 2018). Facebook provides its users with a platform to connect and interact with others and can be accessed on a number of devices, including tablets, computers, consoles and mobile phones. Since the launch of Facebook, the social networking platform has reached 1.52 billion daily active users and 2.32 billion monthly active users (Facebook Newsroom, 2018) and is listed as the third most visited site in the United Kingdom after Google and YouTube (Alexa Internet Inc., 2018). Just like other social networking sites, Facebook's mission is to provide individuals with the power to share and connect with the world. Such power is provided through the creation of online profiles, the use of Facebook features, instant messaging and the sharing of statuses, photos and videos anywhere in the world. These aspects of Facebook have altered the way in which individuals communicate and present themselves (Hussain & O'Sullivan, 2017). It is for this reason that researchers have taken an interest in examining the reasons for such use, characteristics of usage and the impact and relationships of Facebook with well-being and personality.

Numerous researchers have established the reasons/motives for Facebook use. The dual Factor Model (Nadkarni & Hofmann, 2012) posits that individuals make use of Facebook to fulfil belongingness and self-presentation needs. Both can be achieved through the use of Facebook features. Such as communication online, profile information and posting statuses and photos have been positively associated with the motivation for Facebook use (Zhao et al, 2008; Alhabash et al, 2012). Researchers have also demonstrated a link between Facebook, personality and well-being in a variety of ways. Including intensity/frequency of use, the number of friends, privacy settings and the posting of statuses and photos. Results have found that Facebook intensity is associated with depression, anxiety and low levels of self-esteem (Kalpidou et al, 2011; Labrague, 2014). Additionally, personality traits such as the big five and narcissism are shown to be positively correlated with higher amounts of Facebook friends (Ryan & Xenos, 2011). With multiple findings showing many well-being and personality traits to be predictors of Facebook intensity (Eskisu et al, 2017). It therefore puts into perspective that although Facebook connecting the world may be somewhat beneficial, it is important to investigate these findings to allow an understanding of the Facebook phenomenon but to also understand the predictor variables and the possible negative or positive effects. One trait which is consistently associated with Facebook use (intensity) is narcissism.

Narcissism and Facebook Use

Narcissism is a personality trait that refers to the inflated sense of self (Gnambs & Appel, 2018), which manifests in an obsessional admiration for oneself (Blachnio et al, 2016). Distinct, albeit related forms of narcissism have been distinguished (Pincus et al, 2014; Miller et al, 2012): grandiose and vulnerable narcissism. Both share preoccupation with the self but differ in particular characteristics. Grandiose narcissism is characterised by grandiosity, lack of empathy, self-presentation and exaggeration of positive qualities (Gnambs & Appel, 2018; Miller et al, 2012; Gore & Widiger, 2016). Conversely, vulnerable narcissism is characterised by negative emotions, lack of self-confidence, self-inhibition but all-the-while individuals crave recognition and hold grandiose expectations for themselves (Dickinson & Pincus, 2003; Miller et al, 2012).

Given Facebook's very nature, its emphasis on self-presentation and self-promotion is tailored to the needs of narcissistic individuals. This encourages narcissists to become transfixed in the world of Facebook (Blachnio et al, 2016; Brailovskaia & Margraf, 2016). For instance, Ryan & Xenos (2011) found users to be more narcissistic than non-Facebook users. Likewise, narcissism is positively related to logging on and time spent on Facebook (Mehdizadeh, 2010). Facebook may appeal to narcissists by providing an ideal outlet for them through unique features such as; posting photos, updating statuses, receiving likes and comments, and adding multiple friends. Narcissists are more likely to self-promote through status updates (Ong et al, 2011) and attractive photos (Buffardi & Campbell, 2008). Large friend counts are desirable by those of higher narcissism levels (Davenport et al, 2014), representing popularity and additional likes and comments (Errasti et al, 2017). Conversely, it was found that high narcissism users receive less positive feedback (Choi et al, 2015), due to negative perceptions of narcissism (Kauten et al, 2015). It is also argued by Davenport et al (2014) that social networking sites are operationalised in different ways (e.g. time spent and status updates), which causes concern in measuring the optimum use of sites such as Facebook. This may explain why some studies have found no association between narcissism and Facebook intensity (Ryan & Xenos, 2011; Skues et al, 2012).

Extensive research has examined the association between narcissism and Facebook intensity. Subsequently, a gap has formed in distinguishing between grandiose and vulnerable narcissism regarding Facebook intensity, due to the predominant focus placed on grandiose narcissism and the association to Facebook. Grandiose narcissism is found to positively predict Facebook use (Walters & Horton, 2015), the number of friends, and the frequency of status and attractive photo updates (Liu & Baumeister, 2016). Limited studies investigating Facebook use and the distinction between grandiose and vulnerable narcissism have found both to positively predict Facebook intensity and self-presentation behaviours (Brailovskaia & Bierhoff, 2016; Ozimek et al, 2018). Although vulnerable narcissists show more preference for online interaction and are more likely to predict privacy control (Ahn et al, 2015; Ksinan & Vazsonyi, 2016). Whereas grandiose narcissism has been positively correlated to Facebook addiction (Taylor & Strutton, 2016; Casale & Fioravanti, 2018).

Social online-self-regulation theory (Ozimek et al, 2017) can explain the association of both facets of narcissism, suggesting narcissists use Facebook to engage in self-regulation strategies to maintain attention and the inflated self (Ozimek et al, 2018). Although evidence of the significant role both narcissism facets have on Facebook intensity is emerging, its scarce, making conclusive assumptions problematic. Utilising Hussain & O'Sullivan (2017) study which investigated narcissism (whole concept), self-esteem, perceived stress and found a combined predictor impact on Facebook intensity, the current study will examine the two facets of narcissism, self-esteem and perceived stress on Facebook intensity.

Self-esteem, Narcissism and Facebook Use
Self-esteem is a psychological construct defined as the global evaluation of the self (Banks & Pollard, 2017). This construct reflects the positive or negative value placed on oneself (Rosenberg, 1965) and is considered a basic human necessity (Bergagna

& Tartaglia, 2018). Some might correlate higher self-esteem with greater Facebook intensity, but due to these individuals having already established positive self-perceptions, Facebook is regarded as less important, therefore additional attention is not required (Blachnio et al, 2016). Contrariwise, Facebook appears beneficial for low self-esteem individuals, due to the platform it provides for overcoming associated issues (Lee et al, 2012; Blachnio et al, 2016). Research shows an association between low self-esteem and the number of Facebook friends (Lee et al, 2012), time spent on Facebook (Mehdizadeh, 2010) and Facebook intensity (Blachnio et al, 2016). Findings interpreted using Social Compensation Theory (Tice, 1993) suggest that those with low self-esteem are motivated to use Facebook to compensate for their low self-esteem and lack of satisfactory face-to-face interaction (McKenna et al, 2002). Although, studies have revealed no association between self-esteem and Facebook intensity (Skues et al, 2012) as well as social networking sites in general (Wilson et al, 2010).

Given the nature of narcissism and self-esteem it is unsurprising that research has commenced investigating the two (Brookes, 2015). Narcissism has been characterised as an addiction to self-esteem (Baumeister & Vohs, 2001), with consistent reporting's of positive relationships between the two (Campbell et al, 2002; Sedikides et al, 2004). Growing literature on narcissism facets reports an association between high self-esteem and grandiose narcissism, whereas low self-esteem is conversely associated with vulnerable narcissism (Rohmann et al, 2012; Brookes, 2015). However, not all believe this to be the case and consider narcissism as a 'mask' for low self-esteem and a defence for feelings of inferiority (Kernberg, 1975). The mask model (Kernberg, 1970) suggests that narcissistic individuals display high explicit self-esteem, in order to cover low implicit self-esteem. (Jordan et al, 2003). Zeigler-Hill (2006) found those with high explicit but low implicit self-esteem possess higher levels of narcissism, although inconsistencies have been reported (Bosson et al, 2008). Nevertheless, the distinction between explicit and implicit self-esteem is believed to explain why narcissists may rely on self-promoting and enhancing strategies (Kernis, 2003). While not empirically investigated, this provides a potential argument for support in the growing literature regarding self-esteem, narcissism and Facebook use. Many studies have found high levels of narcissism and low levels of self-esteem to influence the predictability of Facebook intensity (Mehdizadeh, 2010; Blachnio et al, 2016; Hussain & O'Sullivan, 2017). This isn't surprising as Facebook provides high narcissistic and low self-esteem individuals a suitable environment to regulate their self-image and compensate for fragile self-esteem (Eskisu et al, 2017; Errasti et al, 2017). Furthermore, concerns of Facebook increasing narcissism and negatively impacting self-esteem (Vries & Kuhne, 2015; Reed et al, 2018) may implicate such findings.

Further research is required to provide conclusive, informative knowledge into the relationship between narcissism, self-esteem and Facebook due to the inconsistent and contradicting findings. Hussain & O'Sullivan (2017) found narcissism and self-esteem to predict Facebook but only in conjunction with higher perceived stress levels, demonstrating a contribution of perceived stress on Facebook intensity.

Perceived Stress, Narcissism and Facebook Use
Stress is the extent to which an individual perceives demands as exceeding their ability to cope (Lazarus & Folkman, 1984). The individual's thoughts on how much

stress is being experienced at a given time, the incorporation of feelings of unpredictability of life, how often stress is dealt with and the individual's confidence in their ability to deal with the problems is simply referred to as perceived stress (Philip, 2013).

Limited studies have examined the field of perceived stress and Facebook use, but one conducted fairly recently, Hussain & O'Sullivan (2017) examined stress as a predictor of Facebook intensity, in addition to other predictor variables. It was found higher perceived stress was the strongest predicter of Facebook intensity usage. More focused studies found, the more time spent on Facebook is linked to having higher levels of stress (Bevan et al, 2014; Oliva et al; 2018). Both results suggest a strong association between higher perceived stress and higher Facebook intensity. Facebook features can explain why perceived stress levels are linked with Facebook use. Status updating is a unique posting instrument (Marshall et al, 2015). 98% of status updates displayed stress related references (Egan & Moreno, 2011) and disclosing important, bad health news on Facebook was found to be associated with higher levels of stress (Bevan et al, 2014). This demonstrates how those experiencing higher perceived stress levels may use Facebook as an outlet to voice stress and receive comfort (Egan & Moreno, 2011), but doesn't explain why inactive users also reported greater stress.

Additionally, higher numbers of friends have been strongly associated with perceived social support (Nabi et al, 2013), which enhances resilience to stress (Ozbay et al, 2007). Thereby, the use of Facebook, friends and social support can reduce stress levels, as individuals with higher perceived stress may increase Facebook intensity to obtain social support from multiple friends online (Hussain & O'Sullivan, 2017). However, this has not been empirically supported, as studies have found no significant effect of receiving social support on Facebook or perceived stress (Chen & Bello, 2017).

Characteristics of narcissism would suggest a connection with perceived stress and Facebook. Hussain & O'Sullivan (2017) found narcissism to be a predictor of Facebook use, only in the inclusion of stress. Insinuating stress to be a mediator between narcissism and Facebook use. Narcissism and (perceived) stress are found to be linked (Cheng et al, 2013), with the severity of narcissism affecting the strength of perceived stressors and stress coping (Fukunishi et al, 1995). Particularly, vulnerable narcissism has been found to predict higher levels of perceived stress (Ng et al, 2014). This study implies low self-esteem in vulnerable narcissists impacts the ability to adjust and therefore results in higher perceived stress. This can be applied to previously mentioned research on vulnerable narcissism, self-esteem, which all in all can be argued in relation to Facebook use.

Literature suggests a link between (perceived) stress and Facebook use, as demonstrated with the significant results produced by Hussain & O'Sullivan (2017) in the relationship between perceived stress and Facebook intensity. However, inconsistencies are still present, and Hussain & O'Sullivan's study did not examine distinct aspects of narcissism. For theoretical development, it is important to further study perceived stress and Facebook intensity but also, the role vulnerable narcissism plays in relation to Facebook intensity via perceived stress.

The present study
A substantial amount of evidence has been provided by literature and research in examining the independent or combined relationship of narcissism, self-esteem, perceived stress and Facebook intensity. Nevertheless, areas in this field of research require further investigation to provide theoretical development and overcome the weak and inconsistent findings which have been reported. In the previous literature one main gap identified is the lack of investigation into the grandiose and vulnerable narcissism facets on Facebook intensity. Research has also predominately examined the standalone effect of narcissism, self-esteem and perceived stress as predictors of Facebook intensity. Therefore, the current study aims overcome inconsistencies and to fill in the gaps by further investigating the effect of narcissism (grandiose and vulnerable), self-esteem, perceived stress on Facebook intensity.

On the basis of findings presented by previous literature, it was firstly hypothesised that grandiose and vulnerable narcissism will both positively predict Facebook intensity. Furthermore, it was hypothesised that self-esteem will negatively predict Facebook intensity, whereas perceived stress will positively predict Facebook intensity. In addition to this, self-esteem and perceived stress were predicted to contribute to the relationship between narcissism and Facebook intensity. Finally, it was predicted that the Facebook specific variables; content and friends will further add to the narcissism, self-esteem, perceived stress and Facebook intensity relationship.

Method

Design

The current study was a non-experimental correlation design, consisting of one criterion: Facebook intensity and three predictor varaibles: narcissism, self-esteem and perceived stress. In relation to the narcissism predictor, grandiose and vulnerable narcissism facets were examined.

Participants

Using Green's (1991) criteria of 50 + (8x4) a minimum sample of 82 was required. Using opportunity sampling 124 (37 males, 85 females and 2 preferred not to say) participants were collected aged between 18-64. Participants were required to match the inclusion and exclusion criteria. The inclusion criteria for the participants were to be over the age of 18, have provided informed consent and must currently have an active Facebook profile. The exclusion criteria for the participants is to have no current diagnosis of a mental health disorder.

Measures

Participants were asked to provide demographic information (e.g. age, occupation and gender. Appendix 5) and the following scales were used (see Appendix 6 for all measures):

Facebook Intensity Scale (FIS, Ellison et al, 2007): An 8-item scale measuring Facebook usage based upon duration, frequency, emotional attachment and its integration into the respondent's daily activities (e.g. "Facebook is part of my everyday activity" and "I feel out of touch when I haven't logged onto Facebook for a while"). Participants respond on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), unless noted otherwise. For the current study, the lead researcher chose questions 7 (Approximately how many TOTAL Facebook friends do you have?" and 8 (In the past week, on average, approximately how much time PER DAY have you spent actively using Facebook) as closed-ended questions. An additional item was added at the discretion of the researcher to examine Facebook content/feature changes. Cronbach's alpha value has been reported at .83 (Pettijon et al, 2012), suggesting high reliability.

The 60-item Five-factor Narcissism Inventory Short-Form (FFNI-SF, Sherman et al, 2015): A scale measuring elements of narcissism, particularly assessing both grandiose (e.g. authoritativeness and lack of empathy) and vulnerable (e.g. distrust and longing for admiration) variants of narcissism. Examples of items found on the FFNI-SF are "I do not waste my time hanging out with people who are beneath me" and "I'm slow to trust people". A 5-point Likert scale (1= Strongly Disagree, 5= Strongly Agree). For obtaining the scores of the FFNI-SF, three items are reversed, and then particular items are calculated to gain a total sum of grandiose narcissism and of vulnerable narcissism scores. The reported Cronbach's alpha for FFNI-SF has been reported at .87 (Eski, 2016).

Rosenberg Self-Esteem Scale (RSE, Rosenberg, 1965): A 10-item scale measuring participants overall self-worth by assessing both positive (e.g. "I take a positive attitude toward myself") and negative (e.g. "I feel I do not have much to be proud of") feelings about the self. A 4-point Likert scale is used to assess individual's agreement with the statements (1= Strongly Agree, 4= Strongly Disagree). Scores

were obtained by reversing five of the negatively worded items and summing all scale items to gain an overall score (the higher the score, the lower the self-esteem). The RSE has high reliability, with a reported Cronbach's alpha score of .83 (Blachnio et al, 2016)

Perceived Stress Scale (PSS, Cohen et al, 1983): The 10-item scale is designed to examine the participants stressful situations and to measure the frequency of stress levels within the last month (e.g. "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?" and "In the last month, how often have you felt nervous and stressed?"). A 5-point Likert scale is used (1= Never, 5 = Very often). The scores are obtained by reversing the four positively written items and summing all scale items to gain an overall score. Cronbach's alpha score for PSS has been reported as .78 (Wright, 2012) suggesting overall good internal reliability.

Procedure
To begin the process of the research, ethical approval following BPS ethics guidelines was obtained (Appendix 1) from Manchester Metropolitan University (EthOS, online software).

Participants were recruited via online advertisements (Appendix 3) on the social media platform Facebook and the Manchester Metropolitan University online participation pool. The link to the online survey was posted onto these websites, allowing participants to access the survey (Qualtrics). There were no restrictions on what device the participants could access the survey on (e.g. computer or phone). Once the participant had clicked the link, they were taken to the first page containing the invitation to take part in the research study. This page contained the participant information sheet and consent form (Appendix 4), that provided an overview of the study, the aim and were informed of the study requirements. The contact details for the researchers were also provided in case of any questions. Continuing onto the next page meant the participants provided consent to partake, which was clearly stated. Once consent was obtained, the participants were presented with demographic questions, followed by the four scales in the following order; PSS, RSE, FIS and FFNI-SF.

After completion, a unique ID code (Appendix 7) could be created which was followed by the debrief (Appendix 8). Within the debrief the aim, the confidentiality of the research and contact details were reinforced. The participants were also thanked for their participation in the study.

Ethical Considerations
For the current study the British Psychological Society ethical guidelines were followed. The use of a participant information sheet and consent form ensured that the participants were aware of what the research entailed and were able to provide full informed consent. The opportunity to withdraw was stated clearly to the participants and the nature of the study meant the participants did not experience any psychological or physiological harm. To maintain confidentiality and anonymity the creation of a unique ID code could be created. An insurance checklist was completed to ensure the correct insurance was in place (Appendix 2).

Data analysis
SPSS-25 was used to complete all statistical analyses. Firstly, Cronbach's alpha was used to measure the internal consistency of each questionnaires (George & Mallery, 2016). The typical accepted reliability coefficient of .70 (Nunnally, 1978) was taken into account. Secondly, a Person's correlation coefficient (r) was conducted to examine the extent in association between the variables, ranging from -1.00 to +1.00 (George & Mallery, 2016). The relationship between the predictors and criterion variables are presented in a correlation matrix (see Table 1).

In the final step to examine the effect and variance on Facebook intensity when accounting for grandiose and vulnerable narcissism, self-esteem, perceived stress and Facebook-specific variables (time, friends and content) a three-stage hierarchical regression (see Table 2) was deemed an appropriate method of analysis. As such statistical test is designed to investigate the theoretical assumptions and to examine the effect of several predictor variables on the criterion in a sequential way (Petrocelli, 2003), therefore a suitable choice of method in regard to the current study's research question, hypotheses and design. Prior to conducting the statistical analysis, the relevant assumptions were tested. All assumptions were met therefore clarifying the hierarchical regression analysis as appropriate and the analysis commenced. The extent that the predictor variables were predictive of the criterion was determined (see Table 2).

Results
Reliability Analysis

To ensure reliability of the measures used in the current study, each questionnaire was subjected to internal consistency analysis. The results demonstrated the highest reliability for 'Self-esteem', $\alpha = .92$ and 'Narcissism', $\alpha = .90$. For the subscales of narcissism, reliability was reported high for 'Grandiose narcissism' ($\alpha = .92$) and 'Vulnerable narcissism' ($\alpha = .88$). Reliability for the 'Perceived Stress' scale was also high, $\alpha = .88$. However, the 'Facebook Intensity' scale reported marginally lower than the typically accepted reliability coefficient, $\alpha = .68$, this is potentially problematic in regards to the results.

Descriptive Statistics

A Pearson correlation was used to test how each predictor is related. An examination of the correlations revealed that there were no independent variables highly correlated with Facebook intensity (see Table 1). As shown below, there was a very weak positive correlation between 'Vulnerable Narcissism' and 'Facebook Intensity', $r(122)=.05$, $p<.001$. Likewise, 'Perceived Stress' ($r(122)=.01$, $p<.001$), 'Friends' ($r(122)=.16$, $p<.001$) and 'Time' ($r(122)=.04$, $p<.001$) shown a very weak positive correlation to 'Facebook Intensity'. Also shown in the table, 'Grandiose Narcissism' ($r(122)=-.03$, $p<.001$) and 'Self-Esteem' ($r(122)=-.02$, $p<.001$) shown a very weak negative correlation with 'Facebook Intensity'. A moderate negative correlation was found between 'Content' and 'Facebook Intensity', $r(122)=-.34$, $p<.001$. An examination of the correlations did however reveal positive correlations between the predictors. A strong positive correlation was found between 'Self-esteem and 'Perceived stress', ($r(122)=-.68$, $p<.001$). Additionally, 'Self-esteem' ($r(122)=.71$, $p<.001$) and 'Perceived Stress' ($r(122)=.65$, $p<.001$) demonstrated a strong positive correlation with 'Vulnerable Narcissism'. 'Grandiose Narcissism' indicated a moderate positive correlation with 'Friends', $r(122)=.41$, $p<.001$ and a weak positive correlation with 'Content', $r(122)=.25$, $p<.001$.

Hierarchical Regression Analysis

The relevant assumptions of this statistical analysis were tested prior to conducting the hierarchical regression. To allow clarification that a hierarchical regression is appropriate for analysing the data. The five assumptions are; outliers, multicollinearity, independent errors, homoscedasticity and linearity of data. Firstly, an analysis of standard residuals shown no outliers were contained in the data set (Std. Residual Min = -2.45, Std. Residual Max = 2.16). The data also met the assumption of independent errors (Durbin-Watson = 1.94). The statistics from a collinearity test were all within the accepted limits, deeming the assumption of no multicollinearity met (Stage 3: vulnerable narcissism, Tolerance = .42, VIF = 2.41; grandiose narcissism, Tolerance = .69, VIF = 1.44; perceived stress, Tolerance = .47, VIF = 2.11; self-esteem, Tolerance = .39, VIF =2.57; friends, Tolerance = .77, VIF = 1.31; time, Tolerance = .99, VIF =1.01; content, Tolerance = .91, VIF = 1.10). Finally, residual and a scatterplot revealed that the assumptions for linearity and homoscedasticity were met and satisfied (See Appendix 9 for all SPSS output).

A hierarchical regression analysis was performed in three stages. Stage one examined the extent to which the variables 'grandiose' and 'vulnerable' narcissism were predictive of 'Facebook intensity'. Stage two, tested the extent of 'grandiose

Table 1. Correlations of study variables

Variable	Mean	Standard Deviation	Facebook Intensity	Vulnerable Narcissism	Grandiose Narcissism	Perceived Stress	Self-Esteem	Friends	Time	Content
Facebook Intensity	20.15	4.53								
Vulnerable Narcissism	50.98	10.65	.05*							
Grandiose Narcissism	110.64	21.99	-.03*	.03*						
Perceived Stress	30.56	7.52	.01*	.65*	-.14*					
Self-Esteem	28.51	6.19	-.02*	.71*	-.12*	.68*				
Friends	.35	.48	.16*	0.9*	.41*	.09*	.15*			
Time	.02	.13	.04*	-.09*	.04*	-.07*	-.06*	.04*		
Content	.37	.49	-.34*	-.09*	.25*	-.11*	-.12*	-.01	.03*	

Note. * Indicates p<.001

narcissism' and 'vulnerable narcissism' with additional variables, 'self-esteem' and 'perceived stress' being predictive of 'Facebook intensity'. In the final stage, further Facebook-specific variables were added, 'time', 'friends' and 'content'.

For stage one a non-significant model emerged ($F(2,121)=.231$, $p<.001$). The relationship between the variables was not strong (R= .06) and the model approximately explained 0.4% (R^2_{adj} = -1.3%) of variance in 'Facebook Intensity'. For stage two, an ANOVA produced a non-significant result ($F(4,119)=.337$, $p<.001$). The variable relationship was weak (R=.10) and explained 1.1% (R^2_{adj} = -2.2%) variance in Facebook intensity. A non-significant R² change occurred (.007, p=.642). In the final stage a significant model was produced ($F(7,116)=3.24$, $p<.001$). In this stage, the relationship between the variables was reasonable (R=.40) and an approximate variance of 16.3% (R^2_{adj}=11.3%) in Facebook Intensity was explained by the model. A significant R² change occurred (.152, p =.001).

Table 2 shows the predictors contribution in accounting for the variance in Facebook intensity scores. As shown in Table 2, no variable significantly predicted Facebook intensity scores within the first two stages. In the final stage, Friends ($β$= .20, $t(116)$ = 2.01, p=.047) and Content ($β$= -.34, $t(116)$ = -3.83, p<.001) did significantly predict Facebook intensity. Vulnerable narcissism ($β$= .16, $t(116)$ = 1.23, p= .22), grandiose narcissism ($β$= -.06, $t(116)$ = -.56, p=.57), however, did not significantly predict Facebook intensity scores. Additionally, perceived stress ($β$= -.03, $t(116)$= -.26, p= .79), self-esteem ($β$= -.18, $t(116)$= -1.35, p= .18) and time ($β$= -.05, $t(116)$ = -.53, p=.60) were also not predictive of Facebook intensity.

Table 2. Regression analysis summary scores for predicting Facebook Intensity scores

Variable	B	SE B (std. Error)	β (beta score)
Step one			
Vulnerable Narcissism	.02	.04	.05
Grandiose Narcissism	-.01	.02	-.03
Step Two			
Vulnerable Narcissism	.06	.06	.15
Grandiose Narcissism	-.01	.02	-.05
Perceived Stress	-.01	.08	-.02
Self-Esteem	-.08	.11	-.12
Step Three			
Vulnerable Narcissism	.07	.06	.16
Grandiose Narcissism	-.01	.02	-.06

Perceived Stress	-.02	.07	-.03
Self-Esteem	-.14	.10	-.18
Friends	1.84	0.92	.20
Time	1.63	3.06	.05
Content	-3.18	.83	-.34

Note. Step 1: R^2= 0.6, R^2_{adj}= -1.3%. Step 2: R^2= .10 R^2_{adj}= -2.2%. Step 3: R^2= .40, R^2_{adj}= 11.3%

Discussion

The purpose of the present study was to explore the effect of narcissism, self-esteem and perceived stress on Facebook usage (Facebook intensity). In lieu of exploring the standalone concept of narcissism, grandiose and vulnerable facets of narcissism were examined. The findings illustrated that neither grandiose narcissism, vulnerable narcissism, self-esteem or perceived stress were significant predictors of Facebook intensity. Three out of four hypotheses were not supported, however, in line with the final hypothesis friends and content were discovered to significantly predict Facebook intensity.

In clear contrast to the study hypotheses no significant predictive relationship emerged regarding the predictor variables; narcissism, self-esteem and perceived stress and Facebook intensity. It is not clear as to why these results occurred, as the findings contradict the majority of literature and research within this field. Firstly, the absence of predictability in both grandiose and vulnerable narcissism on Facebook intensity is inconsistent with previously reported evidence that levels of narcissism (including grandiose and vulnerable narcissism) are positively related to Facebook intensity (Mehdizadeh, 2010; Ozimek et al, 2018). A possible explanation for this is the negative responsiveness to narcissistic users, as individuals who demonstrated high levels of narcissism receive less positive feedback (Choi et al, 2015). As known, narcissistic individuals rely and partake in self-promotion and self-regulatory strategies to maintain attention and admiration (Ozimek et al, 2018). Therefore, narcissistic individuals may be less inclined to intensely use Facebook as such, due to the likely negative feedback and failure to achieve the wanted attention, as this would damage the narcissistic ego.

Furthermore, the awareness of negative perceptions held against narcissistic tendencies (Kauten et al, 2015) may have resulted in social desirability bias, in which the items aren't answered truthfully in order for the participant to be perceived in a positive light. Simply, those who are narcissistic may answer lower scores to appear non-narcissistic. This may have contributed the low mean score of 2.69 reported for narcissism in the current study. This signifies a low average of narcissism levels and a skewed population of non-narcissistic participants would prove difficult to obtain significant results. Parallel to Skues et al (2012) with a reported mean of 1.71 and no association was found between narcissism and Facebook intensity. Both the current and Skues et al's study can be compared to Ryan & Xenos (2011) with a reported association and a mean of 10.28.

The lack of association between self-esteem and Facebook intensity contradicts a large majority of previous literature that suggests an increase in Facebook use is related to higher levels of self-esteem (Blachnio et al, 2016). Whether it be high or low self-esteem, the current study failed to report any significant relationship. Despite the largely contrasting findings, few studies have provided evidence in line with the current results. Skues et al (2012) found no association between Facebook intensity and the reported levels of self-esteem. Also consistent with Hussain & O'Sullivan (2017) with self-esteem alone not predicting Facebook intensity. Hussain & O'Sullivan did however, find low self-esteem and high narcissism to predict Facebook intensity, but only with the inclusion of the stress predictor. Meaning high levels of stress were required to increase the predictability in Facebook intensity. The perceived stress predictor in the current study yield insignificant results,

therefore the inclusion of the stress criteria was unable to contribute to the self-esteem and Facebook intensity relationship. Utilizing Hussain & O'Sullivan's (2017) study, this is a potential reason as to why insignificant results were reported.

Perceived stress did not significantly predict Facebook intensity, nor did it contribute to the self-esteem, narcissism and Facebook intensity relationship. Due to the limited research in the direct field of perceived stress and Facebook intensity, it is difficult to present consistent findings with the current results. Hussain & O'Sullivan (2017) found perceived stress alone not to predict Facebook intensity, but perceived stress was reported as being the strongest predictor in the combined effect of narcissism and self-esteem on Facebook intensity. Which is consistent with previous research that found higher perceived stress to predict greater Facebook intensity (Oliva et al, 2018). Therefore, inconsistent with the current study. Interestingly, examining social support, levels of perceived stress and Facebook intensity may reveal the reasoning behind the current study's insignificant findings. From a theoretical standpoint it is unclear whether Facebook intensity and friends is associated with high perceived stress or whether levels of perceived stress are reduced though Facebook social support (Nabi et al, 2013; Cheno & Bello, 2017).

Finally, a general explanation as to why no predictors variables predicted Facebook intensity may be a result of a low reliability score reported for the Facebook Intensity Scale. A score of .68 is a cause for concern, as it is below the accepted reliability coefficient. The reliability score is found to differ within other studies (Pettion et al, 2012). Deeming the Facebook intensity scale in the current study as problematic. As low internal consistency in the measure, potentially impacts the investigation of predictor variables and the Facebook intensity relationship. It is important to keep in mind that multiple studies have produced significant results, and only few have produced insignificant results it would therefore be negligent to rule out an association between self-esteem, perceived stress, narcissism and Facebook intensity based on the findings of this study alone.

The results of the final stage hierarchical regression confirmed the final hypothesis, with content and friends found to significantly predict Facebook intensity. Content was an additional item added to the Facebook intensity scale in the present study to measure content and feature changes on Facebook (e.g. status updates). The significant content finding is consistent with previous research that identified status updates to be the strongest predictor of Facebook intensity (Alhabash et al, 2012). On the other hand, it is not surprising that friends predicted Facebook intensity given that this item is part of the original Facebook intensity scale.

Nonetheless, in terms of the correlations, four main significant relationships were established between predictor variables. The relationships identified add to the growing literature that focuses on narcissism facets rather than as a whole concept. Specifically, a positive relationship existed between self-esteem and vulnerable narcissism, revealing that individuals with lower levels of self-esteem are higher in vulnerable narcissism levels, similarly in line with previous research (Brookes, 2015; Rohmann et al, 2012). Additionally, vulnerable narcissism was also found to positively correlate with levels of perceived stress, which is supportive of Ng et al (2014) study that found higher vulnerable narcissism levels to predict high levels of perceived stress.

Likewise, positive correlations emerged concerning grandiose narcissism and the Facebook-specific variables; friends and content. The positive relationship between grandiose narcissism and Facebook friends is supported by Liu & Baumeister (2016), with levels of grandiose narcissism predicting a higher number of friends on Facebook. This is in line with the narcissistic desirability to obtain a large number of friends to increase feedback and represent popularity (Davenport et al, 2014; Errasti et al, 2017). Finally, previous research supports the positive correlation reported between grandiose narcissism and content, with grandiose narcissists having a higher frequency of status and photo updates on Facebook (Liu & Baumeister, 2016). The above correlations demonstrate the separate relationships of grandiose and vulnerable narcissism, supporting the examination of narcissism facets and the impact both have on variables.

Limitations and future research
The present study is limited in a variety of ways. Firstly, in line with the previously mentioned low reliability score of the Facebook intensity scale, one main limitation of the current study is in capturing the true extent of Facebook use (intensity). The typically employed indicators of use, are not exactly optimal methods for operationalising Facebook use. For instance, items that appear on the Facebook intensity scale do not fully engage the true extent to which Facebook is actively used (e.g. time spent using Facebook). For example, one individual checks Facebook for a short time throughout the day, whereas another individual in a day may log in multiple times and spend several minutes checking all features of Facebook. Yet it would not be clear which individual used Facebook more. Examining Facebook intensity, personality and psychological constructs has been argued to be done through friends or motives on Facebook use, not through time spent (Bergman et al, 2011; Kalpidou et al, 2011). Therefore, in order for future research to gain optimal methods in measuring Facebook use, the construct of Facebook intensity requires revision and further investigation. It would also be beneficial to include measures for motives of use.

Secondly, results were obtained via self-report methods, in which caution should be taken as previously mentioned social desirability bias may have occurred. For instance, participants may respond with the intention of following what they believe to be socially desirable levels of narcissism, self-esteem, perceived stress or Facebook use. Thus, the true interaction between the predictors and the criterion may in fact be concealed, therefore posing a threat to the construct validity of the study (Jo et al, 1997). This could be solved in future research by controlling the level of social desirability through indirect questioning (Fisher, 1993) or using methods of technology to track and measure actual Facebook use.

Another limitation is the length of the questionnaire as participants were required to answer a total of 93 items. Research has demonstrated greater 'burden' and lower quality in responses towards the end of a lengthy questionnaire (Galesic, 2006; Galesic & Bosnjak, 2009). The extensive measures used in the current study, may have caused lethargy within the participants. Consequently, the results may have been impacted. This could be improved by future research in focusing on specific variables or to develop a short version of the measures.

Future research should continue to examine the two facets of narcissism, self-esteem and perceived stress but for theoretical development, future research should incorporate multiple social networking sites (e.g. twitter and Instagram) and examine the relationship using different measures of social networking use, instead of sole intensity use. Additional personality types may also be studied. Research should consider the employment of experimental methods such as priming paradigms to clarify causal relationships between the predictor variables and Facebook intensity. Together this will warrant significant relationships and create understanding into the extent of the relationship between individuals, personality, well-being and social networking.

Conclusion

To conclude, the current study found no evidence of an effect between the predictor variables of narcissism, self-esteem, perceived stress and Facebook intensity. The results reported contradicted a majority of past research literature in this area. Nonetheless, the study did reveal positive correlations between the predictor variables further assisting the growing literature on individual differences, well-being and personality traits. This may aid in the future understanding and interventions of disorders. Despite the limitations and lack of significant findings, research concerning the facets of narcissism, other psychological variables and social networking would provide theoretical development. Implications were proposed for future research in order to overcome the limitations identified, which could deliver significant findings and a more comprehensive examination into this particular field of psychological research.

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