



Narcissism and problematic social media use: A systematic literature review

Silvia Casale^{a,*}, Vanessa Banchi^b

^a Department of Health Sciences, Psychology Unit, University of Florence, Via San Salvi 12, Padiglione 26, 50135 Florence, Italy

^b School of Psychology, University of Florence, Via della Torretta 16, 50135 Florence, Italy



ARTICLE INFO

Keywords:

Narcissism
 Problematic social media use
 Problematic Facebook Use
 Systematic review

ABSTRACT

Introduction: The relationship between narcissism and social media use has been a topic of research since the advent of the first social media website. While numerous meta-analyses have been conducted to synthesize empirical evidence on the association between narcissism and typical online behaviors (e.g., uploading photos and usage frequency), evidence on the association between narcissism and Problematic Social Media Use (PSMU) has not yet been systematized. The current study represents the first systematic review on this topic.

Methods: Electronic literature databases, including the Web of Science, MEDLINE, PsychINFO, and EMBASE, were searched to identify studies that examined the relationship between narcissism and PSMU. We found 14 empirical studies on narcissism and PSMU. Additionally, seven studies focused on the association with Problematic Facebook Use (PFU).

Results: Consistent results were reported regarding the positive and significant association between grandiose narcissism and PFU ($0.13 < r < 0.32$). The only two studies that included a vulnerable narcissism measure reported a positive and significant correlation with PFU as well. Studies that did not distinguish between different online platforms (i.e., those measuring PSMU) reported less consistent results.

Conclusions: The results generally revealed that narcissism might be involved in PFU, but it might not have consistent effects across social media platforms. The assessment of problematic social media use without distinguishing different platforms might not individuate narcissists' preferences and risks. However, our findings need to be interpreted with caution not only due to the relatively small number of studies on this topic but also because 19 studies out of 21 used a cross-sectional design.

1. Introduction

The use of social media has markedly increased over the past few years. The number of users of online social networking sites (SNSs) worldwide stood at approximately 2.46 billion in 2017, and it is estimated that there will be around 3.09 billion social media users around the globe by the end of 2021 (Statista, 2020). In October 2019, Facebook (FB) alone had 2.45 billion monthly active users. Instagram (IG) has recently surpassed 1 billion monthly active users, the vast majority of whom are using it on a daily basis (Statista, 2020).

Although social media platforms bring many benefits to their users, concerns have been raised about the potential adverse consequences of frequent social network activity (Müller et al., 2016), especially for mental and social well-being. A systematic review of 65 studies (Frost & Rickwood, 2017) has found positive associations between intensive FB use and symptoms of key psychiatric disorders (e.g., anxiety, depressive symptoms, body image dissatisfaction, and disordered eating). Some researchers (e.g., Kuss, 2017) also argue that the excessive use of social

media might be linked to a behavioural addiction, which in extreme cases may manifest itself in symptoms and consequences traditionally associated with substance-related addictions (e.g., salience, tolerance, mood regulation, withdrawal, conflict, relapse). Some other researchers (see, for example, Carbonell & Panova, 2017) argue against classifying Problematic Social Media Use (PSMU) as a psychiatric disorder, as repeated and persistent use of SNSs might result from a temporary coping strategy as an expected response to common stressors or losses (see Billieux et al., 2017; Kardefelt-Winther, 2017). Therefore, the lack of consistency underlying the broader concept of PSMU makes it difficult to establish a sole definition of this phenomenon (e.g., Caci, Cardaci, Scrima, & Tabacchi, 2017) as well as to use the same assessment tool for assessing the problematic use of social media (Pontes, Kuss, & Griffiths, 2015). The different approach and terms that have been used include (a) "Social media addiction," "Pathological Social media use," and "Social media disorder" used when the criteria of addiction (i.e., salience, mood modification, tolerance, withdrawal, conflict, and relapse) have been considered; (b) "Problematic Social media Use" or

* Corresponding author.

E-mail address: silvia.casale@unifi.it (S. Casale).

“Problematic use of Internet communicative services” in order to not over-pathologize daily life activities; this includes both addictive-like symptoms (i.e., deficient self-regulation) and specific features such as the preference for online social interaction, which lead to the use of social media to regulate negative feelings (Caplan, 2010). The same conceptual frameworks have also been applied to the excessive use of specific social media platforms (i.e., Facebook), albeit sometimes some specific terms have also been introduced. The term “Facebook intrusion” was first introduced by Elphinston and Noller (2011) to indicate an “excessive attachment to Facebook, which interferes with day-to-day activities and with relationship functioning” (p.631), and it is based on Brown’s behavioral addiction components (1997). In fact, Problematic Facebook Use (PFU) has been often considered as a distinct behaviour happening on the Internet but with specific characteristics and psychological issues involved, and it has been conceptualized and analyzed per se (see Marino, Gini, Vieno, & Spada, 2018).

Despite the different approaches and some conflicting positions on whether problematic SNSs use can be classified as a disorder, there is no doubt that a subset of SNSs users show a preference for computer mediated interactions and experience certain negative consequences because of their excessive use of these sites, as shown by the available empirical evidence (e.g., Casale, Fioravanti, & Caplan, 2015). For this reason, many efforts have been made in the last twenty years to gain an understanding of the psycho-social factors that might be implicated in developing PSMU.

1.1. Narcissism and PSMU

PSMU can be shaped by many factors. Personality is arguably a key individual difference variable that has been shown to play an important role in the initiation, development, and maintenance of addictive behaviors (see Andreassen et al., 2013; Grant, Potenza, Weinstein, & Gorelick, 2010). Since the various definitions of PSMU, albeit different, agree on including addictive-like symptoms, various studies (e.g., Wang, Ho, Chan, & Tse, 2015) have examined the role of personality traits—generally categorized according to the Five-Factor Model. A recent meta-analysis focused on PFU (Marino et al., 2018) that included 56 independent samples with a total of 27.867 participants (59.22% females) found a low positive correlation [$r = 0.22$; 95% CI [0.19, 0.26], $k = 0.16$, $Z = 10.96$, $p < .001$] with neuroticism and an even lower negative correlation [$r = 0.16$; 95% CI [-0.21, 0.09], $k = .15$, $Z = 4.82$, $p < .001$] with conscientiousness. Also, the above-mentioned meta-analysis has shown that needs motivating Facebook use had the strongest association with PFU. On the one hand, this result suggests that the Big Five conceptualization of personality might not be helpful in understanding this specific type of problematic behaviour. On the other hand, this result suggests that the tendency to satisfy needs through the use of social media needs to be taken into account, in keeping with various relevant theoretical perspectives (e.g., the Uses and Gratification Theory by Katz, Blumler, & Gurevitch, 1974; the dual factor-model of Facebook use by Nadkarni & Hofmann, 2012).

In light of both theories and empirical evidence, research on narcissism and social media use has been especially popular in recent years (see, for example, Bergman, Fearrington, Davenport, & Bergman, 2011), since it seems that the social media context offers an ideal communicative environment to satisfy narcissistic needs. Below we describe the definition of narcissism used in the present manuscript as well the theoretical reasons for why narcissism has been receiving growing scholarly attention in the social media literature in the last ten years.

Trait narcissism is considered a dimensional personality trait that consists of a grandiose self-concept as well as behaviors intended to maintain this self-concept in the face of reality (e.g., Emmons, 1984; Morf & Rhodewalt, 2001). Distinct from Narcissistic Personality Disorder (NPD; American Psychiatric Association, 2013), trait narcissism exists in the nonpathological population. Narcissists—a term we use as

a shorthand for those scoring higher on inventories of narcissistic personality—can be divided into grandiose narcissists (GNs) and vulnerable narcissists (VNs). The existence of two forms of narcissism was first conceptualized and examined by Wink (1991), and a portion of the psychology literature (Hendin & Cheek, 1997) has confirmed the existence of these two types. Grandiose narcissism (GN) reflects traits related to grandiosity, aggression, and dominance, while vulnerable narcissism (VN) is largely marked by hypersensitivity to the opinions of others, an intense desire for approval, and defensiveness (Dickinson & Pincus, 2003). Despite these differences, grandiose and vulnerable narcissism share some core traits, such as a sense of entitlement, grandiose fantasies, and the need for admiration (Dickinson & Pincus, 2003; Pincus et al., 2009).

Special emphasis has been placed on the theoretical speculation that social media are ideal environments for achieving narcissistic goals. In fact, various attributes of SNSs make them seem an ideal tool for displaying grandiosity and receiving desired attention (Barry & McDougall, 2018). First, SNSs provide greater control over self-presentation, compared to face-to-face interactions, rendering them a useful venue for the development of strategic interpersonal behaviors, many of which are used by narcissists to construct and maintain a carefully considered self-image (Morf & Rhodewalt, 2001). Second, social media use allows individuals to advertise their successes to a large audience, while also obtaining highly visible rewards and recognition through “likes” and positive comments from other social media users (Andreassen, Pallesen, & Griffith, 2017). Moreover, given the rise of SNS use on mobile devices, SNSs are accessible at all times and in all places. This implies that narcissists can both curate, manage, and promote an online “self” throughout the day and obtain frequent feedback on their efforts. For these reasons, some scholars (e.g., Ksinan & Vazsonyi, 2016) have recently begun to argue that high levels of narcissism might not only be associated with peculiar online behaviors (i.e., higher frequency of photo uploading) but also lead to problematic use (e.g., deficient self-regulation) and subsequent negative outcomes. That is, narcissists might become addicted to the unique communicative environment offered by social media because it is conducive the fulfilment of their self-enhancement needs. Previous studies examining the association between narcissistic traits and PSMU have shown opposite findings or, at least, inconsistent results. For example, whereas some studies have found a clear positive association between grandiose narcissism and PSMU (e.g., Andreassen et al., 2017), other studies have found relatively weak associations (e.g., Casale & Fioravanti, 2018) and no attempts have been made to systematically review the available evidence.

1.2. Aims of the review

To our knowledge, there is no systematic review on the association between the two forms of narcissism and PSMU. Existing reviews include: (a) a meta-analysis of studies (Liu & Baumeister, 2016) on the association between the grandiose form and SNS activities (i.e., status updates, posting photographs, interacting with others, commenting on others’ posts, and total friends); (b) a meta-analysis (Gnambs & Appel, 2018) on the links between grandiose and vulnerable narcissism and social networking behaviours (e.g., uploading photos and usage frequency); (c) a systematic review (Moor & Anderson, 2019) on how the dark triad/tetrad relate to antisocial online behaviors (e.g., trolling behaviors); (d) a meta-analytic review (McCain & Campbell, 2018) of studies on both forms of narcissism and social media use (e.g., time spent on social media and number of selfies uploaded); and (e) a meta-analytic review focused on FB use (Carvalho & Pianowski, 2017), which found a moderate effect size using number of FB friends and narcissism measures.

Especially the meta-analyses by Gnambs and Appel (2018) and McCain and Campbell (2018) are pertinent to the current study because both assessed time spent on social media. Both meta-analyses found

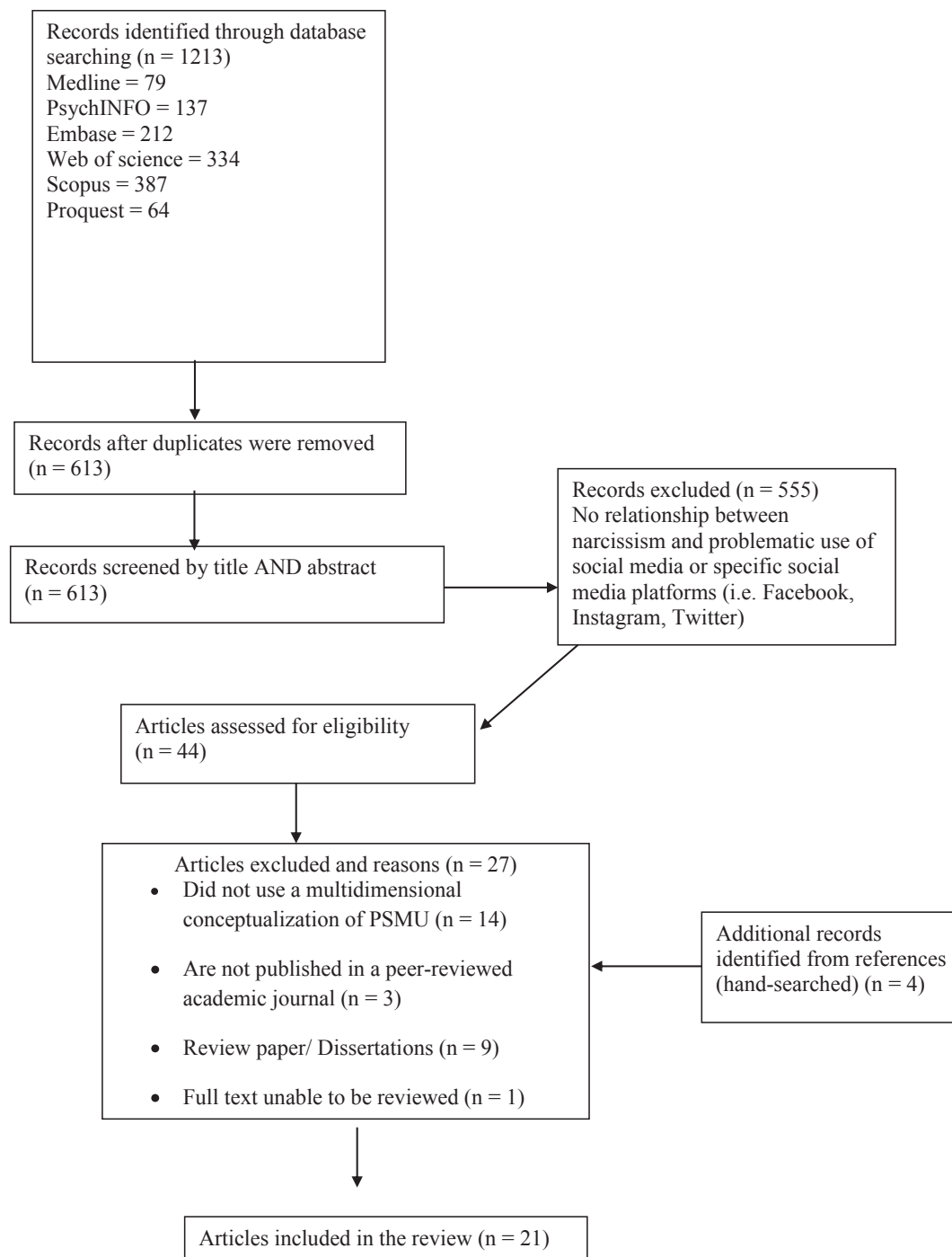


Fig. 1. PRISMA flowchart depicting the study selection process.

grandiose narcissism to have a significant—albeit small—effect on social media usage intensity. Conversely, non-significant results were reported regarding the association with vulnerable narcissism. These two meta-analyses offer initial insights into how narcissistic traits might account not only for variations in the frequency of “normal” online behaviors (e.g., posting selfies) but also for excessive social media use. However, scholars in the field agree that time spent on social media is not necessarily indicative of problematic use for a number of reasons (see Caplan, 2010; Griffiths, 2010). First, social media use is widespread especially among young adults, who tend to report intensive use of social media without experiencing any negative outcomes. According to Caplan (2003), problematic use has more to do with the negative outcomes and with the deficient impulse control than with the

excessive use. Second, whereas it is very likely that social media users who exhibit problematic use of these platforms tend to excessively use the Internet, the intense or prolonged use per se does not imply addictive symptoms (Griffiths, 2010) or problematic behaviour. Finally, people who intensively use social media may not present all the behavioural addiction criteria that need to be simultaneously fulfilled in order to classify a behaviour as problematic (Griffiths, 2009).

This consensus has led scholars in the field to not adopt time spent online as an indicator of problematic behaviour and to rely on broader and more exhaustive conceptualizations of the phenomenon (see Caplan, 2010). Despite the different approaches and terminology, there is consensus about the fact that a tendency to use social media to regulate negative emotions, an obsessive thinking pattern, deficient self-

Table 1
Measures used in the studies (n = 21) included in the review.

	Measure of Narcissism	Dimensions	N studies using the measure
Grandiose Narcissism	Narcissistic Personality Inventory – 16 (NPI-16; Ames, Rose, & Anderson, 2006)	Unidimensional construct	6
	Narcissistic Personality Inventory- 13 (NPI-13; Gentile et al., 2013)	Unidimensional construct	3
	Narcissistic Personality Inventory – 34 (NPI-34; Bazińska and Drat-Ruszczak, 2000)	Unidimensional construct	1
	Short Dark Triad (SD3; Jones & Paulhus, 2014)	Unidimensional construct	3
	Narcissism scale of the DTDD (Jonason & Webster, 2010)	Unidimensional construct	2
	Childhood Narcissism Scale (CNS; Thomaes, Stegge, Bushman, Olthof, & Denissen, 2008)	Unidimensional construct	1
	Narcissistic Personality Questionnaire (NPQ; Zheng & Huang, 2005)	Unidimensional construct	1
	Single Item Narcissism Scale (SINS; Konrath, Meier, & Bushman, 2014)	Unidimensional construct	1
	Vulnerable Narcissism	Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997)	Unidimensional construct
Narcissistic Personality Questionnaire (NPQ; Zheng & Huang, 2005)		Unidimensional construct	1
Covert Narcissism Scale (CNS; Gang & Chung, 2002)		Unidimensional construct	2
Problematic Social Media use	Bergen Social Media Addiction Scale (BSMAS; Andreassen et al., 2017)	Salience, Conflict, Mood Modification, Withdrawal, Tolerance, Relapse	6
	Social Media Disorder Scale (SMDS; van den Eijnden, Lemmens, & Valkenburg, 2016)	Unidimensional construct	3
	Generalized Problematic Internet Use Scale 2 (GPIUS2; Caplan, 2010)	Preference for Online Social Interactions, Mood Regulation, Deficient self-regulation, Negative Outcomes	1
	Chinese Social Media Addiction Scale (Liu & Ma, 2018)	Preference for Online Social Interactions, Mood Alteration, Negative Consequences and continued use, compulsive use and withdrawal, salience, and relapse	1
	Social Media Addiction Scale (Tutgun-Ünal & Deniz, 2015)	Preoccupation, Mood modification, Relapse, Conflict/problems	1
	SNS addiction tendency Scale (Seo & Jo, 2013)	Overuse, withdrawal, excessive use	2
Problematic Facebook Use	Bergen Facebook Addiction Scale (BFAS; Andreassen, Torsheim, Brunborg, & Pallesen, 2012)	Salience, Conflict, Mood Modification, Withdrawal, Tolerance, Relapse	6
	Facebook Intrusion Questionnaire (FIQ; Elphinstone & Noller, 2011)	Facebook Intrusion total score	1

regulation, and negative outcomes related to one's own use of social media need to be present in order to deem the use of social media as problematic (see Caplan, 2010; Griffiths, 2010). In this paper, we present a systematic literature review that synthesizes the available evidence on the relationship between the two forms of narcissism and PSMU conceptualized as a multidimensional phenomenon.

2. Method

This systematic literature review is guided by the Cochrane method, and the search method and findings are presented in accordance with the relevant sections of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Higgins & Green, 2011; Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., PRISMA Group, 2009). The protocol used to conduct this review is detailed below.

2.1. Eligibility criteria

Studies were included in the systematic literature review based on the following inclusion criteria: they must (a) quantitatively examine and report the relationship between grandiose narcissism, vulnerable narcissism or both, on the one hand, and problematic use of social

media or specific social media platforms (i.e., Facebook, Instagram, Twitter), on the other hand; (b) use a multidimensional conceptualization of PSMU; (c) be published in a peer-reviewed academic journal; and (d) be available in English.

This systematic literature review has a focus on narcissism and PSMU at the subclinical level rather than at the clinical level in order to increase the generalizability of the findings, as understanding personality and behaviors as traits allows for greater flexibility and a deeper understanding (see Haslam, Holland, & Kuppens, 2012). Moreover, the vast majority of the studies in the social media field has been conducted with non-clinical populations.

2.2. Information sources and search strategies

The following databases were searched in June 2019: PsycINFO, Medline Complete, Web of Science, Scopus, and the Psychology and Behavioural Sciences Collection. The search strategy was tested and refined prior to the formal search. More specifically, a search string or subject term related to narcissism was combined with a PSMU-related search string or subject term, using Boolean operators. No limits were added to the database searches. To identify eligible publications the following combinations of key words were entered in the databases' topic/subject search fields: "Narcissism" or "Egotism" or "Inflated self-

Table 2
Studies on narcissism and PSMU included in the review (n = 14).

Authors (year)	Country	Design	Sample characteristics Age = M (SD)	Findings	Quality rating (/20)
Andreassen et al. (2017)	Norway	Cross-sectional	N = 23,532 community people (F = 65%)Age: 35.8 (13.3)	Bivariate correlation GN was positively correlated with social media addiction total score ($r = 0.06, p < .001$) Multiple Regression Analyses GN predicted social media addiction total score ($\beta = 0.184, p < 0.001$) after controlling for basic socio-demographics	20
Casale, Fioravanti, and Rugai (2016)	Italy	Cross-sectional	N = 535 undergraduates (F = 50.9%)Age: 22.73 (2.77)	Two way-ANOVA Vulnerable narcissists had a higher GPIUS-2 total score than both non-narcissists and GNs (F = 6.69*, $p < 0.05, \eta^2 = 0.025$); M = 2.75 (1.37), M = 2.22 (1.14) M = 2.24 (1.18), respectively. No significant differences between GNs and non-narcissists	15
Choi (2018)	Korea	Cross-sectional	N = 285 employees (F = 53.7%) Age: nr	Bivariate correlation GN was positively correlated with the following BSMAS subscales: Mood modification ($r = 0.012, p < .001$) Withdrawal ($r = 0.33, p < .001$) Tolerance ($r = 0.102, p < .001$)	14
Chung, Morshidi, Yoong, and Thian (2019)	Malaysia	Cross-sectional	N = 128 community persons (F = 52.3%) Age: M = 19.73 (1.99)	Bivariate correlation No significant correlation between GN and social media addiction total score ($r = 0.04, p = n.r.$)	13
Demircioğlu and Göncu Köse (2018)	Turkey	Cross-sectional	N = 229 undergraduates (F = 67.7%) Age: 21.51 (1.80)	Bivariate correlation No significant correlation between GN and social media addiction total score ($r = 0.04, p = n.r.$)	10
Hawk et al. (2019)	Netherlands	Longitudinal	N = 307 adolescents (F = 52.12%) Age: 12.87 (0.75)	Cross-lagged Panel Models GN scores at T1 predicted social media addiction total score one year later via attention-seeking ($\beta = 0.034, p = .045; 95\%CI [0.001, 0.068]$).	20
Kircaburun, Demetrovics, and Tosuntaş (2018a)	Turkey	Cross-sectional	N = 181 undergraduates (F = 63.5%) Age: 22.11 (2.50)	MANOVA High-risk social media users scored significantly higher than low-risk social media users on the GN measure (F = 39.33, $p < .001, \eta^2 = 0.05$). Structural Equation Model The direct effect of narcissism on social media addiction was statistically significant ($\beta_s = 0.30, p < .001, 95\% CI [0.19, 0.41]$)	15
Kircaburun, Jonason, and Griffiths (2018b)	Turkey	Cross-sectional	N = 761 undergraduates (F = 63.99%) Age: 20.70 (2.28)	Bivariate Correlation Significant correlation between grandiose narcissism and social media addiction total score ($r = 0.22, p < .001$). Structural Equation Model The association between GN and social media addiction total score was mediated by cyberalking ($R^2 = 0.24, p = 0.05$).	15
Lee (2017)	Korea	Cross-sectional	N = 185 undergraduates (F = 62.70%) Age: 40.13 (10.66)	Bivariate correlation Significant correlation between VN and social media addiction ($r = 0.45, p < .001$) Hierarchical Regression Analysis Attachment anxiety partially mediated the association between narcissism and social media addiction (Z Sobel Test = 6.68, $p < .001$)	10
Lee (2019)	Malaysia	Cross-sectional	N = 204 undergraduates (F = 60%) Age: 22.94 (3.43)	Bivariate Correlation No significant association between GN and social media addiction ($r = 0.07, n.s.$) Multiple Regression Analysis GN did not predict social media addiction	14
Liu and Ma (2018)	China	Cross-sectional	N = 301 undergraduates (F = 27.24%) Age: 20.43 (1.54); 26.92 (1.33)	Bivariate correlation Significant correlation between social media addiction total score and both GN and VN ($r = 0.38$ and $r = 0.48, p < .001$, respectively) Multiple Regression Analyses VN narcissism contributed to social media addiction total score explaining 13.6% of the total variance ($\beta = 0.370, t = 7.767, p < 0.001$)	14

(continued on next page)

Table 2 (continued)

Authors (Year)	Country	Design	Sample characteristics Age = M (SD)	Findings	Quality rating (/20)
Lyvers, Narayanan, and Thorberg (2018)	Australia	Cross-sectional	N = 143 community persons (F = 48.25%) Age: 26.09 (SD = 4.75)	Bivariate Correlation Significant correlation between GN and social media addiction ($r = 0.26, p < 0.01$). Multiple Regression Analysis The association between GN and social media addiction was fully mediated by reward sensitivity ($z = 2.78, p = 0.005$)	13
Shin et al. (2016)	Korea	Cross-sectional	N = 513 undergraduates (F = 379) Age: n.r.	Bivariate Correlation Significant correlation between VN and SNS Addiction Tendency ($r = 0.40, p < 0.01$). Structural Equation Model Covert narcissism had a direct effect on SNS addiction tendency ($\beta_s = 0.27, p < .001, 90\% CI [0.68 - 0.082]$) and an indirect effect mediated by loneliness, social anxiety, preference for online interaction, and motive for SNS use on SNS addiction tendency ($\beta_s = 0.15, p < .001, 95\% CI [0.03-0.25]$)	10
Thiagarajan, Venkatachalam, and Sebastian (2017)	India	Cross-sectional	N = 290 community persons (F = 64.14%) Age: 23.5 (n.r.)	Bivariate Correlation No significant correlation between grandiose narcissism and social media addiction total score ($p = 0.097, n.s.$). The rho value was considerably greater for the female group ($p = 0.137, n.s.$) relative to the male group ($p = 0.034, n.s.$).	10

esteem” AND “Social media addiction” or “Social media problematic use” or “Social media disorder” or “Social media abuse” or “Social media misuse” or “Social media compulsive use” or “Compulsive Use of Social Media” or “Excessive Social Media use” or “Facebook addiction” or “Facebook problematic use” or “Facebook disorder” or “Facebook abuse” or “Facebook misuse” or “Facebook intrusion” or “Facebook overuse,” or “Compulsive Facebook use” or “Excessive Facebook use”.

2.3. Study quality

The search strategy was applied to each database, and the identified records were downloaded and merged into a single EndNote library. Duplicate articles (i.e., those identified by the search strategy in multiple databases) were eliminated, then the titles and abstracts of the records were double screened. Two reviewers (SC and VB) checked the titles, abstracts, and full-texts of the initial search results independently. Those articles deemed ineligible by both reviewers (based on their title and abstracts) were excluded. The search selection process is detailed in Fig. 1. The studies were critically appraised using the AXIS tool, a quality assessment tool for observational cross-sectional studies (Downes, Brennan, Williams, & Dean, 2016). The tool comprises 21 items for which there are three response options (“yes,” “no,” or “don’t know”) to assess study quality and reporting transparency (with “yes” scored as 1, and “no” or “don’t know” scored as 0). A quality score out of 21 is then generated. It is worth noting that the tool allows each study to be assigned a score, but the interpretation of these scores is subjective. We used the following guidelines, which are already in use (Moor & Anderson, 2019): scores indicating low quality = 1–7; scores indicating medium quality = 8–14; scores indicating high quality = 15–20). The quality score for each study identified by this systematic review is presented in Table 2 and Table 3, and any additional comments on study quality are presented throughout the results.

3. Results

3.1. Study characteristics

The initial search yielded a total of 1213 documents. After the title and the abstract were doubled screened, 17 fit the inclusion criteria. Four additional papers were identified with a manual search of the reference list of the key studies.

All the 21 articles were published between 2015 and 2019, thus reflecting the recent and increasing scientific interest on this research topic. Nineteen studies were cross-sectional and two were longitudinal. Three studies were conducted in Germany, three in Turkey, two in Poland, two in Italy, two in Malaysia, three in Korea, and one each in Norway, the Netherlands, China, Pakistan, Australia, and India. Undergraduate students were the most commonly used samples (n = 14), four studies used convenient community samples, one study used a sample of high school students, one study focused on employees, and one study used a sample of inpatients with psychological disorders. The grandiose form of narcissism was assessed in 18 out of the 21 studies whereas the vulnerable form of narcissism was assessed in six out of the 21 studies. 14 articles assessed the association between narcissism and generalized PSMU, whereas the other seven were focused on PFU. Table 1 shows the measures used by the studies included in the review.

3.2. Main findings

Results concerning the association between grandiose narcissism and generalized PSMU appear to be inconsistent across the studies (Table 2). Seven studies reported a significant positive correlation ranging from $r = 0.06$ (Andreassen et al., 2017) to $r = 0.38$ (Liu & Ma, 2018). In keeping with these results, Hawk, van den Eijnden, van Lissa, and ter Bogt (2019) found that adolescents’ grandiose narcissism scores

Table 3
Studies about narcissism and PFU included in the review (n = 7).

Authors (year)	Country	Design	Sample characteristics Age = M (SD)	Findings	Quality rating (/20)
Atroszko et al. (2018)	Poland	Cross-sectional	N = 1157 undergraduates (F = 51.9%) Age = 20.33 (1.68)	Bivariate correlation Positive association between GN and FB problematic use ($r = 0.13, p < 0.01$) Multiple regression analysis GN was a significant positive predictor of BFAS total score after controlling for the Big Five Personality traits ($\beta = 0.17, p < 0.01$) Bivariate correlation Positive association between GN and FB intrusion ($r = 0.32, p < 0.01$). Structural Equation Modeling A positive significant path between GN and FB intrusion was found Bivariate correlation GN at T1 was significantly and positively associated with FB addiction one year later ($r = 0.19, p < .05$). Multiple Regression analysis Controlling for gender and age, narcissism explained 7.1% of the variance in FB addiction scores ($\beta = 0.26, p < .001$)	18
Blachnio and Przepiórka (2018)	Poland	Cross-sectional	N = 360 undergraduates (F = 64%) Age = 22.22 (SD = 6.84)	Bivariate correlation GN at T1 was significantly and positively associated with FB addiction one year later ($r = 0.19, p < .05$). Multiple Regression analysis Controlling for gender and age, narcissism explained 7.1% of the variance in FB addiction scores ($\beta = 0.26, p < .001$)	15
Brailovskaia and Margraf (2017)	Germany	Longitudinal	N = 179 undergraduates (F = 77.1%) Age = 22.52 (5.00)	Bivariate correlation GN at T1 was significantly and positively associated with FB addiction one year later ($r = 0.19, p < .05$). Multiple Regression analysis Controlling for gender and age, narcissism explained 7.1% of the variance in FB addiction scores ($\beta = 0.26, p < .001$)	15
Brailovskaia, Schillack, and Margraf (2018)	Germany	Cross-sectional	N = 520 undergraduates (F = 75%) Age = 22.42 (4.61)	Multiple Regression Analysis GN predicted BFAS total score ($\beta = 0.136, p < .001$)	14
Brailovskaia et al. (2019)	Germany	Cross-sectional	N = 112 inpatients with psychological problems (F = 71.4%) Age = 49.43 (9.17)	Bivariate correlation Significant positive association between GN and BFAS total score ($r = 0.21, p < .05$)	15
Casale and Fioravanti (2018)	Italy	Cross-sectional	N = 535 undergraduates (F = 50.08%) Age = 22.70 (2.76)	Bivariate correlation Positive association between both GN and VN and FB problematic use ($r = 0.13$ and $r = 0.25, p < .001$, respectively) Structural Equation Modeling GN was indirectly associated with FB addiction via the need to belong and the need for admiration	15
Malik and Khan (2015)	Pakistan	Cross-sectional	N = 200 undergraduates (F = 50%) Age = n.r.	Bivariate correlation Positive association between VN and BFAS total score ($r = 0.20, p < .001$)	10

predicted social media addiction total score via attention seeking one year later. Conversely, four studies did not find a significant correlation at the bivariate level, and one study did not find significant differences between GNs and non-narcissists in PSMU scores. The three studies investigating vulnerable narcissism and PSMU reported a significant moderate positive association ($r = 0.45$ by Lee, 2017; $r = 0.48$ by Liu & Ma, 2018; and $r = 0.40$ by Shin, Lee, Chyung, Kim, & Jung, 2016). Similarly, a study comparing vulnerable narcissists and non-narcissists found the former to have significantly higher scores on a PSMU measure relative to both non grandiose and non-narcissists (Casale, Fioravanti, Rugai, Flett, & Hewitt, 2016).

More consistent results were found when research focused on PFU (Table 3) in that all seven studies found significant positive correlations with narcissism, be it grandiose or vulnerable. The association with the grandiose form, which was assessed in six out seven studies, ranged from $r = 0.13$ to $r = 0.32$. The association with the vulnerable form, which was assessed in two studies, ranged from $r = 0.20$ to $r = 0.25$.

4. Discussion

The aim of this review was to examine and critically appraise the existing quantitative research on narcissism and PSMU to increase our understanding of this relationship. First, two different trends emerged: some authors did not distinguish between different online media (i.e., PSMU was defined as a generalized difficulty in regulating one's own use of various social media) whereas some others focused on PFU. On the one hand, this might indicate a tendency to consider PFU as a distinct behaviour that deserves to be conceptualized and analyzed as a single construct (Marino et al., 2018). On the other hand, it is not possible to rule out that some studies focused on FB simply because it was the only available online social network till some time ago and still is the most commonly used social networking online medium (Statista, 2020).

Consistent results were found regarding the positive and significant association between grandiose narcissism and PFU, and the only two studies that included a vulnerable narcissism measure reported a positive and significant correlation as well. Conversely, studies investigating PSMU use as a unitary category (i.e., studies that did not distinguish between different online platforms) reported less consistent results. This result implies that narcissism might not have consistent effects across social media platforms, and some key differences between the platforms might exist. In other words, one possibility is that different SNSs differ in the extent to which they facilitate the narcissistic needs satisfaction, which, in turn, has been found to be associated with problematic use (see Casale & Fioravanti, 2018). For example, Twitter differs from Facebook in certain functional ways. Facebook, in particular, has been described as “an ideal tool for self-promotion as users can frequently post status updates, comments or photos of themselves and reasonably expect timely and frequent positive feedback” (Panek, Nardis, & Konrath, 2013, p. 2006). Differently from Facebook, Twitter may not be as good a tool for self-promotion, as it limits the length of tweets to 140 characters (Davenport, Bergman, Bergman, & Fearington, 2014). Also, Twitter allows users greater anonymity than Facebook, which may privilege the content of one's message over one's projected identity, and research has shown that Twitter use is driven primarily by interest for entertainment news, celebrity news, and sports news (Hargittai & Litt, 2011). The current findings confirm that FB might be particularly appealing to both grandiose and vulnerable narcissists in that the current review shows that it is more likely for narcissists to be at risk for PFU than at a risk for a more general difficulty in regulating one's own use of online social media. Moreover, the findings of the present systematic review suggest that future research should make hypotheses specific to different social media platforms since the lack of specification regarding the type of sites included under the umbrella of “social networking” might elide important differences in people's motivations for using SNSs (Davenport et al., 2014).

Although this first systematic review makes important contributions to understanding the relations between the need to satisfy narcissistic needs and problematic use of online social platforms, there are limitations that need to be kept in mind. First, this review relied almost exclusively on concurrent associations. Unfortunately, this research field is still dominated by cross-sectional studies, which hamper the possibility to establish the direction of the association between narcissism and PSMU. The only two studies that collected data at multiple points have reported that grandiose narcissism predicts PSMU (Hawk et al., 2019) and PFU (Brailovskaia & Margraf, 2017) one year later. Longitudinal studies are especially needed in this field because it is impossible to rule out the possibility that problematic use of SNSs reinforces the very issues that led to its use in the first place (Slater, 2007), thereby helping to sustain those particular narcissistic needs and desired gratifications. Although narcissism is often conceptualized as a stable trait, some researchers have suggested that narcissism and social media use are mutually reinforcing. Halpern, Valenzuela, and Katz (2016), for example, conducted a cross-lagged analysis of a two-wave, panel survey in order to determine whether narcissists take selfies as an outlet for maintaining their positive self-views or whether selfies increase their levels of narcissism. Their findings point toward the presence of a self-reinforcement effect by which narcissism influences selfie production, which, in turn, increases the levels of narcissism reported by users over time. Moreover, longitudinal investigations would be able to answer the question whether such relations tend to remain stable over time, or whether they change in strength in different life periods. In addition, the majority of the studies involved convenience samples made up entirely by college students ($n = 14$), and only one study (Andreassen et al., 2017) reported efforts to ensure the sample being nationally representative. Finally, it is noteworthy that only one study (i.e., Brailovskaia, Margraf, & Köllner, 2019) was conducted with a sample composed of a non-general population sample. Future studies should pay more attention to clinical samples as well as to adolescents, since high-school students are the population more involved in online social platforms. Future research should also pay attention to potential moderators of the relationship between the two forms of narcissism and PSMU. Previous studies highlighted that online social media allow greater control over self-presentation, and this means that they might be particularly appealing for those narcissists who search for admiration by projecting a perfect image (i.e. perfectionistic self-presentation might moderate the association between narcissism and PSMU; see Casale et al., 2016).

Beyond these limitations, the current findings have both theoretical and practical implications. From a theoretical point of view, they highlight one of the potential psychological risk factors for problematic use of online social platforms, particularly Fb. From the practical point of view, they highlight that it is important for clinicians and counselors to evaluate and address the needs that narcissists try to meet through the use of FB, in order to also reduce the behavioural symptoms of Fb addiction. In fact, according to the already mentioned Uses and Gratifications different people can use the same medium for very different purposes. This might imply that treatments that focus on the behavioral dimensions of PSMU (e.g., the lack of control on one's own use) without addressing those needs that led to the problematic use in the first place are less likely to be effective.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

References

- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, D.C.: Author.
- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality*, 40(4), 440–450. <https://doi.org/10.1016/j.jrp.2006.03.004>

- jrj.2005.03.002.
- Andreasen, C. S., Griffiths, M. D., Gjertsen, S. R., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioral addictions and the five-factor model of personality. *Journal of Behavioral Addictions*, 2(2), 90–99. <https://doi.org/10.1556/JBA.2.2013.003>.
- Andreasen, C. S., Pallesen, S., & Griffith, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behavior*, 64, 287–293. <https://doi.org/10.1016/j.addbeh.2016.03.006>.
- Andreasen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports*, 110, 501–517. <https://doi.org/10.2466/02.09.18.PR0.110.2.501-517>.
- Atroszko, P. A., Balcerowska, J. M., Bereznowski, P., Biernatowska, A., Pallesen, S., & Andreasen, C. S. (2018). Facebook addiction among Polish undergraduate students: Validity of measurement and relationship with personality and well-being. *Computers in Human Behavior*, 85, 329–338. <https://doi.org/10.1016/j.chb.2018.04.001>.
- Barry, C. T., & McDougall, K. H. (2018). Social media: Platform or catalyst for narcissism. In A. D. Hermann, A. D. Brunell, & J. D. Foster (Eds.). *Handbook of Trait Narcissism: Key Advances, Research Methods, and Controversies* (pp. 435–441). Cham: Springer International Publishing.
- Bazińska, R., & Drat-Ruszczak, K. (2000). Struktura narcyzmu w polskiej adaptacji kwestionariusza NPI Raskina i Hulla [The structure of narcissism in the Polish adaptation of Raskin's and Hall's NPI]. *Czasopismo Psychologiczne*, 6, (pp. 171–187).
- Bergman, S. M., Fearington, M. E., Davenport, S. W., & Bergman, J. Z. (2011). Millennial narcissism, and social networking: What narcissists do on social networking sites and why. *Personality and Individual Differences*, 50, 706–711. <https://doi.org/10.1016/j.paid.2010.12.022>.
- Billieux, J., van Rooij, A. J., Heeren, A., Schimmenti, A., Maura, P., Edman, J., ... Kardefelt-Winther, D. (2017). Behavioural Addiction Open Definition 2.0 – Using the Open Science Framework for collaborative and transparent theoretical development. *Addiction*, 112(10), 1723–1724. <https://doi.org/10.1111/add.13938>.
- Blaichnio, A., & Przepiórka, A. (2018). Facebook intrusion, fear of missing out, narcissism, and life satisfaction: A cross-sectional study. *Psychiatry Research*, 259, 514–519.
- Brailovskaia, J., & Margraf, J. (2017). Facebook Addiction Disorder (FAD) among German students—A longitudinal approach. *PLoS ONE*, 12(12), e0189719. <https://doi.org/10.1371/journal.pone.0189719>.
- Brailovskaia, J., Margraf, J., & Köllner, V. (2019). Addicted to Facebook? Relationship between Facebook Addiction Disorder, duration of Facebook use and narcissism in an inpatient sample. *Psychiatry Research*, 273, 52–57. <https://doi.org/10.1016/j.psychres.2019.01.016>.
- Brailovskaia, J., Schillack, H., & Margraf, J. (2018). Facebook Addiction Disorder in Germany. *Cyberpsychology, Behavior, and Social Networking*, 21(7), 450–456.
- Brown, I. (1997). A Theoretical Model of the Behavioural Addictions—Applied to offending. In J. E. Hodge, M. McMurrin, & C. R. Hollins (Eds.). *Addicted to Crime?* (pp. 13–65). Chichester, UK: John Wiley.
- Caci, B., Cardaci, M., Scrima, F., & Tabacchi, M. E. (2017). The dimensions of Facebook addiction as measured by Facebook Addiction Italian Questionnaire and their relationships with individual differences. *Cyberpsychology, Behavior, and Social Networking*, 20(4), 251–258. <https://doi.org/10.1089/cyber.2016.0073>.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic internet use and psychosocial well-being. *Communication Research*, 30(6), 625–648. <https://doi.org/10.1177/0093650203257842>.
- Caplan, S. E. (2010). Theory and measurement of generalized problematic Internet use: A two-step approach. *Computers in Human Behavior*, 26(5), 1089–1097. <https://doi.org/10.1016/j.chb.2010.03.012>.
- Carbonell, X., & Panova, T. (2017). A critical consideration of social networking sites' addiction potential. *Addiction Research & Theory*, 25(1), 48–57. <https://doi.org/10.1080/16066359.2016.1197915>.
- Carvalho, L. F., & Pianowski, G. (2017). Pathological personality traits assessment using Facebook: Systematic review and meta-analyses. *Computers in Human Behavior*, 71, 307–317. <https://doi.org/10.1016/j.chb.2017.01.061>.
- Casale, S., & Fioravanti, G. (2018). Why narcissists are at risk for developing Facebook addiction: The need to be admired and the need to belong. *Addictive Behaviors*, 76, 312–318. <https://doi.org/10.1016/j.addbeh.2017.08.038>.
- Casale, S., Fioravanti, G., & Caplan, S. E. (2015). Online disinhibition: Precursors and outcomes. *Journal of Media Psychology: Theories, Methods, and Applications*, 27(4), 170–177. <https://doi.org/10.1027/1864-1105/a000136>.
- Casale, S., Fioravanti, G., Rugai, L. (2016). Grandiose and vulnerable narcissists: Who is at higher risk for social networking addiction? *Cyberpsychology, Behavior, and Social Networking*, 19(8), 510–515. <https://doi.org/10.1089/cyber.2016.018>.
- Casale, S., Fioravanti, G., Rugai, L., Flett, G. L., & Hewitt, P. L. (2016). The interpersonal expression of perfectionism among grandiose and vulnerable narcissists. Perfectionistic self-presentation, effortless perfection, and the ability to seem perfect. *Personality and Individual Differences*, 99, 320–324. <https://doi.org/10.1016/j.paid.2016.05.026>.
- Choi, Y. (2018). Narcissism and social media addiction in workplace. *The Journal of Asian Finance, Economics and Business*, 5(2), 95–104.
- Chung, K. L., Morshidi, I., Yoong, L. C., & Thian, K. N. (2019). The role of the dark tetrad and impulsivity in social media addiction: Findings from Malaysia. *Personality and Individual Differences*, 143, 62–67. <https://doi.org/10.1016/j.paid.2019.02.016>.
- Davenport, S. W., Bergman, S. M., Bergman, J. Z., & Fearington, M. E. (2014). Twitter versus Facebook: Exploring the role of narcissism in the motives and usage of different social media platforms. *Computers in Human Behavior*, 32, 212–220. <https://doi.org/10.1016/j.chb.2013.12.011>.
- Demircioğlu, Z. I., & Göncü Köse, A. (2018). Effects of attachment styles, dark triad, rejection sensitivity, and relationship satisfaction on social media addiction: A mediated model. *Current Psychology*. <https://doi.org/10.1007/s12144-018-9956-x>.
- Dickinson, K. A., & Pincus, A. L. (2003). Interpersonal analysis of grandiose and vulnerable narcissism. *Journal of Personality Disorders*, 17, 188–207. <https://doi.org/10.1521/pe.17.3.188.22146>.
- Downes, M. J., Brennan, M. L., Williams, H. C., & Dean, R. S. (2016). Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open*, 6(12), e011458. <https://doi.org/10.1136/bmjopen-2016-011458>.
- Elphinston, R. A., & Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior & Social Networking*, 14(11), 631–635. <https://doi.org/10.1089/cyber.2010.0318>.
- Emmons, R. A. (1984). Factor analysis and construct validity of the Narcissistic Personality Inventory. *Journal of Personality Assessment*, 48, 291–300. <https://doi.org/10.1207/s15327752jpa4803.11>.
- Frost, R. L., & Rickwood, D. J. (2017). A systematic review of the mental health outcomes associated with Facebook use. *Computers in Human Behavior*, 76, 576–600. <https://doi.org/10.1016/j.chb.2017.08.001>.
- Gang, S. H., & Chung, N. W. (2002). A study on the development and validation of the covert narcissism scale. *Korean J Couns Psychother*, 14(4), 969–990.
- Gentile, B., Miller, J. D., Hoffman, B. J., Reidy, D. E., Zeichner, A., & Campbell, W. K. (2013). A test of two brief measures of grandiose narcissism: The narcissistic personality inventory-13 and the narcissistic personality inventory-16. *Psychol Assess*, 25(4), 1120–1136. <https://doi.org/10.1037/a0033192>.
- Gnams, T., & Appel, M. (2018). Narcissism and social networking behavior: A meta-analysis. *Journal of Personality*, 86, 200–212. <https://doi.org/10.1111/jopy.12305>.
- Grant, J. E., Potenza, M. N., Weinstein, A., & Gorelick, D. A. (2010). Introduction to behavioral addictions. *American Journal of Drug and Alcohol Abuse*, 36(5), 233–241. <https://doi.org/10.3109/00952990.2010.491884>.
- Griffiths, M. D. (2009). Minimizing harm from gambling: What is the gambling industry's role? *Addiction*, 104, 696–697. <https://doi.org/10.1111/j.1360-0443.2009.02499.x>.
- Griffiths, M. D. (2010). The role of context in online gaming excess and addiction: Some case study evidence. *International Journal of Mental Health and Addiction*, 8(1), 119–125. <https://doi.org/10.1007/s11469-009-9229-x>.
- Halpern, D., Valenzuela, S., & Katz, J. E. (2016). “Selfie-ists” or “Narci-selfiers”? A cross-lagged panel analysis of selfie taking and narcissism. *Personality and Individual Differences*, 97, 98–101. <https://doi.org/10.1016/j.paid.2016.03.019>.
- Hargittai, E., & Litt, E. (2011). The tweet smell of celebrity success: Explaining variation in Twitter adoption among a diverse group of young adults. *New Media & Society*, 13, 824–842. <https://doi.org/10.1177/1461444811405805>.
- Haslam, N., Holland, E., & Kuppens, P. (2012). Categories versus dimensions in personality and psychopathology: A quantitative review of taxometric research. *Psychological Medicine*, 42(5), 903–920. <https://doi.org/10.1017/S0033291711001966>.
- Hawk, S. T., van den Eijnden, R. J. J. M., van Lissa, C. J., & ter Bogt, T. F. M. (2019). Narcissistic adolescents' attention-seeking following social rejection: Links with social media disclosure, problematic social media use, and smartphone stress. *Computers in Human Behavior*, 92, 65–75. <https://doi.org/10.1016/j.chb.2018.10.032>.
- Hendin, H. M., & Cheek, J. M. (1997). Assessing hypersensitive narcissism: A reexamination of Murray's Narcissism Scale. *Journal of Research in Personality*, 31, 588–599. <https://doi.org/10.1006/jrpe.1997.2204>.
- Higgins, J. P. T., & Green, S. (2011). *Cochrane Handbook for Systematic Reviews of Interventions*, Vol. 4. Wiltshire, Great Britain: John Wiley & Sons.
- Jonason, P. K., & Webster, G. D. (2010). The dirty dozen: A concise measure of the dark triad. *Psychological Assessment*, 22(2), 420–432. <https://doi.org/10.1037/a0019265>.
- Jones, D. N., & Paulhus, D. L. (2014). Introducing the Short Dark Triad (SD3): A brief measure of dark personality traits. *Assessment*, 21(1), 28–41. <https://doi.org/10.1177/1073191113514105>.
- Kardefelt-Winther, D. (2017). Conceptualizing Internet use disorders: Addiction or coping process? *Psychiatry and Clinical Neurosciences*, 71(7), 459–466. <https://doi.org/10.1111/pcn.12413>.
- Katz, E., Blumler, J., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. Blumler, & E. Katz (Eds.). *The Uses of Mass Communications: Current Perspectives on Gratifications Research* (pp. 19–32). Beverly Hills: Sage Publications.
- Kircaburun, K., Demetrotic, Z., & Tosuntaş, S. B. (2018a). Analyzing the Links Between Problematic Social Media Use, Dark Triad Traits, and Self-esteem. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-018-9900-1>.
- Kircaburun, K., Jonason, P. K., & Griffiths, M. D. (2018b). The Dark Tetrad traits and problematic social media use: The mediating role of cyberbullying and cybertroubling. *Personality and Individual Differences*, 135, 264–269. <https://doi.org/10.1016/j.paid.2018.07.034>.
- Konrath, S., Meier, B. P., & Bushman, B. J. (2014). Development and validation of the Single Item Narcissism Scale (SINS). *PLoS ONE*, 9, e103469. <https://doi.org/10.1371/journal.pone.0103469>.
- Ksinan, A. J., & Vazsonyi, A. T. (2016). Narcissism, Internet, and social relations: A study of two tales. *Personality and Individual Differences*, 94, 118–123. <https://doi.org/10.1016/j.paid.2016.01.016>.
- Kuss, D., J., & Griffiths, M. D. (2017). Social Networking Sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health*, 14(3), 311. doi: 10.3390/ijerph14030311.
- Lee, S.-L. (2019). Predicting SNS addiction with the Big Five and the Dark Triad. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 13(1), article 3. doi: 10.5817/CP2019-1-3.
- Lee, W. K. (2017). The Relationship between Narcissism and Problematic Social Networking Sites (SNS) Use: Mediating Role of Attachment Instability. *International Journal of Emergency Mental Health and Human Resilience*, 19(3), 1–5.
- Liu, D., & Baumeister, R. F. (2016). Social networking online and personality of self-

- worth: A meta-analysis. *Journal of Research in Personality*, 64, 79–89. <https://doi.org/10.1016/j.jrp.2016.06.024>.
- Liu, C., & Ma, J. (2018). Development and validation of the Chinese social media addiction scale. *Personality and Individual Differences*, 134, 55–59. <https://doi.org/10.1016/j.paid.2018.05.046>.
- Lyvers, M., Narayanan, S. S., & Thorberg, F. A. (2018). Disordered social media use and risky drinking in young adults: Differential associations with addiction-linked traits. *Australian Journal of Psychology*, 1–9. <https://doi.org/10.1111/ajpy.12236>.
- Malik, S., & Khan, M. (2015). Impact of Facebook addiction on narcissistic behavior and self esteem among students. *Journal of the Pakistan Medical Association*, 65, 260–263.
- Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). A Comprehensive Meta-Analysis on Problematic Facebook Use. *Computers in Human Behavior*, 83, 262–277. <https://doi.org/10.1016/j.chb.2018.02.009>.
- McCain, J. L., & Campbell, W. K. (2018). Narcissism and social media use: A meta-analytic review. *Psychology of Popular Media Culture*, 7(3), 308–327. <https://doi.org/10.1037/ppm0000137>.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS medicine*, 6(7), e1000097. doi:10.1371/journal.pmed.1000097.
- Moor, L., & Anderson, J. R. (2019). A systematic literature review of the relationship between dark personality traits and antisocial online behaviours. *Personality and Individual Differences*, 144, 40–55. <https://doi.org/10.1016/j.paid.2019.02.027>.
- Morf, C. C., & Rhodewalt, F. (2001). Unravelling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry*, 12(4), 177–196. https://doi.org/10.1207/S15327965PLI1204_1.
- Müller, K. W., Dreier, M., Beutel, M. E., Duven, E., Giral, S., & Wölfling, K. (2016). A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. *Computers in Human Behavior*, 55, 172–177. <https://doi.org/10.1016/j.chb.2015.09.007>.
- Nadkarni, A., & Hofmann, S. G. (2012). Why do people use Facebook? *Personality and Individual Differences*, 52, 243–249. <https://doi.org/10.1016/j.paid.2011.11.007>.
- Panek, E. T., Nardis, Y., & Konrath, S. (2013). Mirror or Megaphone?: How relationships between narcissism and social networking site use differ on Facebook and Twitter. *Computers in Human Behavior*, 29, 2004–2012.
- Pincus, A. L., Ansell, E. B., Pimentel, C. A., Cain, N. M., Wright, A. G. C., & Levy, K. N. (2009). Initial construction and validation of the Pathological Narcissism Inventory. *Psychological Assessment*, 21, 365–379. <https://doi.org/10.1037/a0016530>.
- Pontes, H. M., Kuss, D. J., & Griffiths, M. D. (2015). Clinical psychology of Internet addiction: A review of its conceptualization, prevalence, neuronal processes, and implications for treatment. *Neuroscience & Neuroeconomics*, 4, 11–23. <https://doi.org/10.2147/NAN.S60982>.
- Seo, S. H., & Jo, G. H. (2013). An Exploratory study on factors related with SNS addiction proneness: Focus on covert narcissism, self-presentational motivation, and sense of alienation. *Korean Journal of Health Psychology*, 18, 239–250.
- Shin, M., Lee, J., Chyung, Y. J., Kim, P. W., & Jung, S. Y. (2016). Integrating psychosocial and cognitive predictors of social networking service addiction tendency using structural equation modeling. *Psychologia*, 59, 182–201.
- Slater, M. D. (2007). Reinforcing spirals: The mutual influence of media selectivity and media effects and their impact on individual behavior and social identity. *Communication Theory*, 17(3), 281–303. <https://doi.org/10.1111/j.1468-2885.2007.00296.x>.
- Statista (2020). Number of social media users worldwide from 2010 to 2021 (in billions). Retrieved from < <https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/> > .
- Thiagarajan, S., Venkatchalam, Y., & Sebastian, K. (2017). What's Feeding Your Monster? A Look at Narcissistic Tendency and Low Self-Esteem as Driving Forces behind the Growth of Social Media Dependency. *The International Journal of Indian Psychology*, 4(3), 80–88.
- Thomaes, S., Stegge, H., Bushman, B. J., Olthof, T., & Denissen, J. (2008). Development and validation of the childhood narcissism scale. *Journal of Personality Assessment*, 90(4), 382–391. <https://doi.org/10.1080/00223890802108162>.
- Tutgun-Ünal, A., & Deniz, L. (2015). Development of the social media addiction scale. *Online Academic Journal of Information Technology*, 6(21), 51–70.
- van den Eijnden, R. J., Lemmens, J. S., & Valkenburg, P. M. (2016). The social media disorder scale: Validity and psychometric properties. *Computers in Human Behavior*, 61, 478–487. <https://doi.org/10.1037/t53980-000>.
- Wang, C. W., Ho, R. T., Chan, C. L., & Tse, S. (2015). Exploring personality characteristics of Chinese adolescents with internet-related addictive behaviors: Trait differences for gaming addiction and social networking addiction. *Addictive Behaviors*, 42, 32–35. <https://doi.org/10.1016/j.addbeh.2014.10.039>.
- Wink, P. (1991). Two faces of narcissism. *Journal of Personality and Social Psychology*, 61(4), 590–597. <https://doi.org/10.1037/0022-3514.61.4.590>.
- Zheng, Y., & Huang, L. (2005). Overt and covert narcissism: A psychological exploration of narcissistic personality. *Psychological Science (China)*, 28, 1259–1262.