

# Self-Perception, Personality, and Observed Activity on Snapchat

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This study investigated the frequency of Snapchat activity (i.e., posting stories, change in user score) and the content of Snapchat stories in relation to self-perception (i.e., narcissism, self-esteem, fear of missing out (FoMO), loneliness). Participants were 138 undergraduates (19 males, 119 females) with active Snapchat accounts. FoMO and some aspects of narcissism were related to certain indices of Snapchat activity (i.e., posting stories, using captions, including videos in stories), but these relations were relatively weak in magnitude. This

study indicates that for more immediate, short-term social media formats, relatively stable personality or self-perception constructs may be of limited relevance. To the extent that narcissism and FoMO are relevant for Snapchat use, they may reflect self-enhancement or connectedness motives, respectively.

*Keywords: Snapchat, narcissism, FoMO*

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**S**napchat is a somewhat unique social media application that involves time-limited instant messaging that relies on photos and videos and allows users to post stories that are displayed to one's friends for 24 hours. Snapchat is increasingly popular among younger generations of social media users, and thus, there is a need to understand the correlates and content of Snapchat use given its specific features (Utz, Muscanell, & Khalid, 2015). Further, "the narrative, conversation-like, and intimate nature of Snapchat...becomes a preferred medium to playfully socialise" (Piwek & Joinson, 2016, p. 365). Indeed, Snapchat activity is associated with extraversion and lower conscientiousness (Langstedt & Hunt, 2017), as well as self-expression motives (Alahabash & Ma, 2017). Snapchat also serves entertainment and functional (e.g., to

reduce loneliness) needs (Punyanunt-Carter, De La Cruz, & Wrench, 2017). However, the personality factors, particularly in the realm of self-perception, that make it more likely for individuals to use Snapchat remain largely unknown.

## **LITERATURE REVIEW**

The present study extended previous research by considering specific personality and self-perception variables in relation to Snapchat activity that align with the self-enhancement or need to belong motives described by Nadkarni and Hoffman (2012) in their theoretical model of Facebook use. Despite the utility of prior studies on Snapchat, they are hindered by a reliance on self-report methodologies rather than direct observation of Snapchat activity. Moreover, they do not address the self-perception or social motivational factors that might be related to Snapchat activity. Constructs such as narcissism, self-esteem, fear of missing out (FoMO), and loneliness may differentially align with these motives. Social media applications that rely on immediacy may increasingly shape how users communicate with each other, underscoring a need to understand the interplay between individual differences and behaviors on applications such as Snapchat.

Narcissism is perhaps foremost among the personality constructs that have been investigated in relation to social media activity and is linked to more frequent Facebook and Twitter updates, with narcissistic exhibitionism demonstrating a relation with the former and narcissistic superiority with updates on the latter (Panek, Nardis, & Konrath, 2013). Individuals high on grandiose narcissism (e.g., exhibitionism, vanity, sense of superiority, grandiose fantasies) tend to post more frequently on social media and have relatively more friends/followers (McCain & Campbell, 2018). These associations may reflect the self-enhancement motivation for Facebook described by Nadkarni and Hofmann (2012). Snapchat stories are visible to all of a user's followers and may be seen as a means to achieve self-enhancement, particularly if the posts are self-focused (e.g., selfies; McCain & Campbell, 2018).

However, because Snapchat tends to be more private, and users may have a smaller network of followers (Utz et al., 2015), certain elements of self-perception that convey vulnerability may also increase the likelihood of posting on Snapchat as a means of increasing belongingness or connecting with close others (Ozimek, Bierhoff, & Hanke,

2018), an additional motive for social media use highlighted by Nadkarni and Hofmann (2012). Indeed, young adults tend to perceive Snapchat as a means for maintaining or improving important relationships (Vaterlause, Barnetta, Rocheb, & Young, 2016). FoMO has been described as an important factor in predicting social media engagement (Blackwell, Leam, Tramosch, Osborne, & Liss, 2017), but it has not been investigated in regard to Snapchat activity. Similarly, some evidence supports the idea that individuals higher in loneliness are more active on social media (Kross et al., 2013; Yang, 2016). More specifically, individuals who experience FoMO or feel lonely might increase their activity on Snapchat in an effort to connect with others. According to some evidence with Instagram, such an approach may be perceived as effective (Pittman & Reich, 2016), perhaps further motivating social media interactions for individuals who feel lonely or left out.

Similarly, vulnerable narcissism (i.e., fragile self-esteem, hiding weaknesses from others, anger following ego threats; Roche, Pincus, Lukowitsky, Ménard, & Conroy, 2013) may predict greater Snapchat activity in an attempt to derive self-esteem benefits from receiving responses to one's posts. Individuals with vulnerable narcissism tend to use Facebook to fulfill narcissistic goals such as self-esteem regulation, gaining admiration from others, and fostering favorable views from others (Ozimek et al., 2018). Such a process stands in contrast to the self-enhancement/exhibitionistic motives for immediate, time-limited posts on Snapchat that might be emblematic of grandiose narcissism. Lastly, motives for belongingness may apply to individuals with low self-esteem who may be more willing to share information on social media to connect with others than they do in off-line interactions (Forest & Wood, 2012).

### **Hypotheses**

1) It was expected that, consistent with a self-enhancement motive of social media use (Nadkarni & Hofmann, 2012), grandiose forms of narcissism would be related to more Snapchat activity (i.e., increased Snapchat scores and more Snapchat stories over a 10-day observation period).

2) It was hypothesized that variables indicating a sense of insecurity (e.g., FoMO, low self-esteem, loneliness, vulnerable narcissism, physical appearance concerns) would

positively relate to Snapchat activity, consistent with the desire to belong (Nadkarni & Hofmann, 2012).

3) It was expected that variables indicative of a self-enhancement motive would relate to more personal displays (i.e., selfies), whereas constructs connected to a need to belong would relate to fewer such posts. That is, even though both sets of variables were expected to relate to greater Snapchat activity (Hypotheses 1-2), they were expected to diverge in the content of Snapchat stories.

## **METHODS**

### **Participants**

Participants were one hundred thirty-eight undergraduates (19 males, 119 females) attending a public university in the northwestern United States and ranging in age from 18 to 28 ( $M = 20.24$ ,  $SD = 2.94$ ). The racial composition of the sample was as follows: 92 participants identified as White/Caucasian, 10 identified as Asian, 16 as Hispanic/Latinx, 6 identified as Black/African-American, 2 as American Indian/Alaskan Native, 3 as Native Hawaiian/Pacific Islander, 6 as multi-racial, 2 as other, and 1 not reported.

### **Measures**

**Snapchat Coding.** Participants provided their Snapchat account username and consented to have their account observed for 10 days. Participants were sent a follow request from a research lab Snapchat account. Four coders, who were blind to participants' ratings on self-report measures, recorded participants' Snapchat scores. Every 24 hours, during the 10-day period, coders recorded the number of posts made by a participant to his/her Snapchat story. Additionally, the coders recorded whether a participant's story contained specific components: a) a selfie (i.e., an image taken by the participant of themselves with other people), b) a solo selfie (i.e., a selfie of only the participant), c) a filter (i.e., a lens or overlay added to a Snap), d) a video, or e) a caption. Coders also recorded whether posts included a theme of affiliation with others (i.e., a caption that highlighted one's connection to another person depicted in the post). To establish interrater reliability, all four raters coded the same nine participants during an initial 10-day period.

The intraclass correlation coefficient (ICC) for number of days in which participants posted a story was .95 and .98 for the number of posts within Snapchat stories. Any rater discrepancy on the latter variable was likely due to a) slight differences in the time of day that raters viewed Snapchat stories (as each post was only viewable for 24 hours); or b) because users could set the time of an individual post to a Snapchat story, raters may have disagreed on content that was only visible for a short duration (e.g., 1-2 seconds). Interrater agreement was also high for whether the story included a selfie (.93), included a solo selfie of the participant (.90), highlighted affiliations with others (.84), utilized a filter (.86), included a video (.90), and included a caption (.94). Following this initial reliability phase, each rater was randomly assigned 25% of the participants to code.

**Pathological Narcissism Inventory** (PNI; Pincus et al., 2009). The PNI consists of 52 items with responses on a 6-point scale from 1 (*not at all like me*) to 6 (*very much like me*). The Grandiose Narcissism scale (e.g., “I find it easy to manipulate others”) taps into feelings of exceptionalism, willingness/ability to manipulate others, and unique ability to do good things for others. The Vulnerable Narcissism scale (e.g., “I get mad when people don’t notice all that I do for them”) reflects fragile self-perception that is bolstered through devaluing relationships with others, refraining from showing weakness, and getting upset when one does not receive what he/she deserves (Pincus et al., 2009; Roche, Pincus, Lukowitsky, Menard, & Conroy, 2013). The internal consistency of Grandiose Narcissism and Vulnerable Narcissism scores were each  $\alpha = .96$ .

**Narcissistic Personality Inventory** (NPI; Raskin & Terry, 1988). The NPI is a 40-item inventory that measures so-called “normal” features of narcissism (e.g., “I like to have authority over other people”) that are also often considered grandiose (Miller, Lynam, Hyatt, & Campbell, 2017). For each item, respondents choose one of two statements as being more like them. In the present sample, NPI scores had an internal consistency of  $\alpha = .83$ .

**Rosenberg Self-esteem Scale** (RSES; Rosenberg, 1965). The RSES consists of 10 items (e.g., “I take a positive attitude toward myself”) and measures global self-esteem. Responses to items are made on a 4-point scale from *strongly disagree* to *strongly agree*. The internal consistency of the RSES in the present sample was  $\alpha = .88$ .

**Fear of Missing Out Survey (FoMOS)** (Przybylski, Murayama, DeHann, & Gladwell 2013). The FoMOS is a 10-item (e.g., “I fear my friends have more rewarding experiences than me”) measure of one’s concern with missing activities among one’s peer group. Item responses are on a 5-point scale from *not at all true of me* to *extremely true of me*. The FoMOS demonstrated good internal consistency in the present sample,  $\alpha = .87$ .

**UCLA Loneliness Scale-3 (UCLA-3)** (Russell, 1996). The UCLA-3, a 20-item inventory, was used to measure participants’ subjective sense of loneliness. Responses (e.g., “How often do you feel that you are no longer close to anyone?”) are made on a 4-point scale from *Never* to *Often*. The internal consistency of UCLA-3 scores in the present sample was  $\alpha = .92$ .

### **Procedure**

This study was approved by the Institutional Review Board (IRB) at the authors’ affiliated university. Following informed consent, participants completed the self-report surveys on-line via Qualtrics, a secure platform for survey-based research. At that time, participants also provided their Snapchat user name. Coders (see above) followed participants’ Snapchat account for 10 days from a research account established for this study. Because Snapchat stories are active for 24 hours unless deleted by the user, coders checked for participants’ Snapchat stories at the same time each day for the 10-day observation period and then discontinued following the participants.

### **RESULTS**

Descriptive statistics for the self-report personality variables are displayed in Table 1. The number of posts made to Snapchat stories and the change in Snapchat scores in the 10-day period were each positively skewed. There were 4 individuals who scored  $> 3 sd$  above the sample mean on number of posts, and 2 individuals who scored  $> 3 sd$  above the sample mean on change in Snapchat score. Analyses involving these two variables were conducted with and without these outliers.

Table 1.  
*Descriptive Statistics for Main Variables of Interest.*

Variable (possible range)	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>
Frequency of Snapchat Stories (0-10)	4.29	3.08	0-10	.26
Number of Posts (0-unlimited)	12.16	16.10	0-101	2.70
Change in Snapchat Score (0-unlimited)	899.21	1131.85	6-6640	2.19
Grandiose Narcissism (1-6)	3.81	.78	1.80-5.50	-.25
Vulnerable Narcissism (1-6)	3.14	1.00	1.08-5.23	-.05
NPI Narcissism (0-40)	15.18	6.36	3-35	.63
Self-esteem (0-30)	20.64	5.00	0-30	-.38
FoMO (0-40)	13.59	7.56	0-34	.39
Loneliness (0-60)	19.68	10.73	0-46	.25
Physical Appearance Concerns (0-20)	9.72	4.42	0-18	-.12
Societal Appearance Concerns (0-120)	58.10	22.28	7-104	-.39
Impulsivity (0-90)	32.60	11.69	6-70	.36

*Notes:* Frequency of Snapchat stories = the number of days out of 10 that a participant posted a Snapchat story; Number of Posts = the total number of individual photos or videos posted in Snapchat stories over the 10-day observation period; Change in Snapchat Score = the difference in a participant's score on Snapchat (as tracked by the Snapchat application) from the beginning to the end of the 10-day observation period.

Correlations among study variables are shown in Table 2 including the outliers. Consistent with Hypothesis 1, NPI narcissism, an indicator of grandiose narcissism, was associated with posting more Snapchat stories and with a higher number of posts. PNI grandiose narcissism was not related to posting more stories, in contrast to Hypothesis 1. FoMO was correlated with posting more stories, in support of Hypothesis 2. However, contrary to Hypothesis 2, self-esteem, loneliness, and vulnerable narcissism did not show such relations. No self-perception variables were correlated with change in Snapchat scores in the 10-day observation period, which is an indicator of overall Snapchat activity (i.e., posting stories and sending/receiving private images). When outliers on number of posts were excluded, the correlations involving frequency of Snapchat stories shown in Table 2 remained significant, but the correlation between NPI narcissism and number of posts was no longer significant. In addition, vulnerable narcissism was significantly correlated with number of posts, albeit, weakly,  $r = .17$ ,  $p = .049$ .



Table 2.  
*Correlations among Snapchat activity and personality variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Frequency of Snapchat Stories	-								
2. Number of Posts	.77***	-							
3. Change in Snapchat Score	.25**	.20*	-						
4. Grandiose Narcissism	.05	.01	-.05	-					
5. Vulnerable Narcissism	.15	.12	-.03	.71***	-				
6. NPI Narcissism	.21*	.19*	.07	.44***	.20*	-			
7. Self-esteem	-.05	-.02	-.06	-.22**	-.49***	.20*	-		
8. FoMO	.27**	.13	.03	.50***	.64***	.16	-.34***	-	
9. Loneliness	.06	.11	-.02	.37***	.59***	-.04	-.60***	.43***	-

*Note:* Frequency of Snapchat stories = number of days out of 10 that a participant posted a Snapchat story; Number of Posts = total number of individual photos or videos posted in Snapchat stories over the 10-day observation period; Change in Snapchat Score = the difference in a participant's score on Snapchat (as tracked by the application) from the beginning to the end of the 10-day observation period. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Six features of Snapchat stories (i.e., inclusion of videos, inclusion of captions, use of filters, selfies, solo selfies, images of friends/others) were coded. Use of filters, selfies, and selfies with no other people shown were significantly positively skewed, suggesting that most participants did not include these features in their posts. Further, the majority of the sample did not use filters or post selfies of only themselves during the observation period. Therefore, captions, images of friends/others, and videos were analyzed continuously, whereas the remaining Snapchat variables were dichotomized (i.e., 0 = no use; 1 = any use) for analyses. The interrelations among Snapchat features were all significant (i.e.,  $r = .29-.65$ ) suggesting that individuals who used any of the coded features were relatively more likely to also use the others.

The associations between self-reported variables and features of Snapchat stories are displayed in Table 3. NPI narcissism was correlated with solo selfies (in support of Hypothesis 3), and loneliness was negatively correlated with selfies. In contrast to Hypothesis 3, grandiose narcissism was not related to posting selfies in Snapchat stories. NPI narcissism and FoMO were each significantly related to using captions in Snapchat stories, using videos in stories, images that depicted affiliations with others, and using filters. Vulnerable narcissism was also positively correlated with use of filters, perhaps as an attempt to alter the content posted to something that would be viewed more favorably by followers.

Table 3.

*Correlations between Snapchat story content and personality variables*

	Snapchat Content					
	Caption	Video	Selfie	Solo Selfie	Affiliation	Filter
Grandiose Narcissism	.04	-.03	-.10	.01	.07	.17
Vulnerable Narcissism	.16	.08	-.07	.06	.13	.19*
NPI Narcissism	.23**	.20*	.09	.22*	.20*	.19*
Self-esteem	-.03	.02	.03	-.04	-.04	-.10
FoMO	.26**	.18*	.08	.05	.18*	.23**
Loneliness	.09	.05	-.21*	-.04	.06	.00

*Note:* Each Snapchat content variable represents the number of Snapchat stories in the 10-day observation period that included these elements. Selfies, solo selfies, and use of filters were scored dichotomously based on whether any of a participant's Snapchat stories included those features. \* $p < .05$ , \*\* $p < .01$ .

Lastly, *post hoc* simultaneous multiple regression analyses were conducted for any Snapchat variables for which there were more than one significant personality correlate (see Tables 2 and 3). These analyses allowed for consideration of different and unique intrapersonal processes that may be involved in Snapchat activity. For frequency of Snapchat stories, FoMO and NPI narcissism were entered as predictors,  $R^2 = .10$ ,  $p = .001$ , with each demonstrating unique effects,  $\beta = .25$ ,  $p = .004$ , and,  $\beta = .17$ ,  $p = .04$ , respectively. These predictors were also examined for captions, videos, and images depicting affiliations. For captions,  $R^2 = .10$ ,  $p = .001$ , there were unique effects for both FoMO,  $\beta = .23$ ,  $p = .007$ , and NPI narcissism,  $\beta = .19$ ,  $p = .02$ . Only NPI narcissism demonstrated a significant effect in the model predicting use of videos,  $\beta = .17$ ,  $p = .04$ ,  $R^2$

= .06,  $p = .01$ . The same pattern held for images showing affiliations with others, as the effect for NPI narcissism, but not FoMO, was significant,  $\beta = .18$ ,  $p = .04$ ,  $R^2 = .06$ ,  $p = .02$ . In the model with the dichotomous filter variable as the criterion, there were no significant unique effects.

## DISCUSSION

Of the variables investigated in the present study, NPI narcissism and FoMO seemed most relevant to posting Snapchat stories. NPI narcissism, with its inclusion of wanting to be the center of attention, superiority over others, and vanity may be indicative of individuals who are willing to post stories of their activities on Snapchat for others to see. Thus, individuals high on these features of narcissism may be motivated to post stories as a means of self-enhancement consistent with Nadkarni and Hofmann (2012). Similarly, the associations of NPI narcissism with more frequent use of videos, captions, selfies showing only oneself, and selfies showing affiliations with others may involve a similar process.

A motive to connect with others may help explain the observed relations between FoMO and Snapchat activity, as well as with other story features (e.g., videos, captions). Those who are concerned with missing out on others' activities may take the opportunity to post on Snapchat to convey their own activities and/or to elicit responses. The design of this study was such that Snapchat activity was indexed by how much individuals posted stories to their audience of followers and not how much they viewed others' posts. Therefore, it could be that FoMO plays an even greater role in Snapchat use as an observer of others' posts than was captured. Follow-up regression analyses further indicated that NPI narcissism and FoMO belie different motives in their relation to posting Snapchat stories.

It should also be noted that NPI narcissism and FoMO were correlated with the use of various features on Snapchat stories (i.e., videos, captions, filters) and with themes of affiliation in the story content. Although these relations may point to different motives, they again suggest that NPI narcissism and FoMO were particularly relevant for Snapchat use as coded in this study. In addition, vulnerable narcissism was correlated with the frequency of using filters in Snapchat stories. This finding may reflect a desire

for individuals with these tendencies to alter posted content in ways that might be viewed more favorably by followers.

It is important to emphasize that the relations of the self-perception and personality variables with Snapchat activity were weak in magnitude. Because Snapchat is based on short-term, instant messages to specific friends, it may be that more state- than trait-like constructs are relevant for this platform. The valence of the emotion may be less important than the intensity of the emotion for Snapchat use, as an individual may feel compelled to send images on Snapchat if experiencing a particularly happy, sad, or exciting occasion. Relatedly, although past research indicated that interactions on Snapchat tend to be positive (Puyanunt-Carter et al., 2017), social media users reported that they would experience more partner jealousy viewing certain content (e.g., image of a partner with his/her previous partner) on Snapchat than on Facebook (Utz et al., 2015). Snapchat users tout the immediacy of interactions therein and the ability to convey emotions within those interactions (Vaterlaus, Barnetta, Rocheb, & Young, 2016), perhaps indicating that in-the-moment feelings and attitudes are salient for Snapchat.

In contrast, a wealth of research (e.g., Buffardi & Campbell, 2008; McCain & Campbell, 2018; Wang & Stefanone, 2013) concludes that presumably more stable self-perception constructs such as narcissism are relevant for behaviors on Facebook, which is geared toward longer-term archiving of images and posts. Of note, the self-perception and personality variables examined in this study were significantly interrelated with the exception of NPI narcissism (see Table 2). That is, although variables such as FoMO, loneliness, and low self-esteem may share a common underlying self-perception, they did not translate similarly to the measured indices of Snapchat activity. FoMO seems particularly relevant for on-line/social media behavior (e.g., Scott & Woods, 2018), as social media, including instant applications like Snapchat, are forums in which fears of being socially excluded are realized. Snapchat may also serve specific interpersonal functions for individuals who feel disconnected from others (Puyanunt-Carter et al., 2017). Therefore, it is not surprising that FoMO was the only of these constructs that was related to Snapchat activity in this study.

The present study represents a meaningful extension of previous work on Snapchat and is still relatively unique for personality research on social media in general. Specifically, the use of direct observation of Snapchat posts allows for examination of intrapersonal variables in relation to actual social media displays rather than inferences of a self-informant. The observational method employed in this study was unique among empirical studies on Snapchat, yet further adjustments appear warranted. For example, an Experience Sampling Method (ESM) may be useful for capturing personality, emotional, or self-perception factors related to in-the-moment posts or responses on Snapchat given its emphasis on content that is focused on immediate experiences of users.

There are several limitations of the present study. First, the sample was predominantly female and consisted of undergraduates from one institution. Thus, the generalizability of these findings to the overall population of active Snapchat users may be limited. Social media studies of college undergraduates likely capture a group which is particularly engaged in social media, and previous studies indicate that females are particularly likely to use social media and participate in research on its applications (e.g., Barry, Doucette, Loflin, Rivera-Hudson & Herrington, 2017; McAndrew & Jeong, 2012). Still, more studies on a more diverse sample of Snapchat users are needed. In addition, the observational period in the present study was relatively short (i.e., 10 days) and was limited only to stories posted to all of participants' followers. Much activity on Snapchat is private between two users or a select group of one's followers. The present method was unable to account for these interactions; thus, future research should address this issue as well. Lastly, as noted above, the variance unaccounted for in Snapchat activity in the present study was substantial. Therefore, the potential scope of future work in this area should be broadened to account for other constructs (e.g., personality dimensions, internalizing problems, state levels of affect) that might relate to Snapchat activity.

Although narcissism and FoMO may be relevant for Snapchat use, many questions remain unanswered, particularly regarding numerous possible motives for Snapchat use and relevant intrapersonal constructs. A continued challenge will be to account for adaptive and maladaptive uses of social media as applications emerge and evolve. These issues remain important to address insofar as social media will likely remain an ever-present element of daily lives for many individuals.

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