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Twitter versus Facebook: Exploring the role of narcissism in the motives and usage of different social media platforms

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ABSTRACT

The amount of research on social networking sites (SNS) and narcissism is accumulating quickly requiring greater levels of variable specification and more fine-tuned hypothesis testing to clearly determine the relationships among key variables. The current investigation examines two of the most popular SNS, Facebook and Twitter, formulating hypotheses around the specific features of each site within college and adult samples. Unlike previous research that has focused almost exclusively on SNS usage, we focused on active usage (i.e., SNS content generation) as opposed to passive usage (i.e., SNS consumption) and included reasons for usage as a potential black box in the narcissism to SNS usage relationship. Results suggest that the features of Twitter make tweeting the preferred means of active usage among narcissists in the college sample, but not the adult sample, who prefer Facebook. In fact, we found no significant direct or indirect relationship with active usage on Facebook for the college sample, calling into question popular press articles linking Millennial narcissism with Facebook use. Additionally platform differences (i.e., microblogging versus profile-based) may explain the importance of active usage on Twitter relative to Facebook. That is, with Twitter, narcissistic motives for usage all manifest through tweeting while Facebook provides other mechanisms to achieve narcissistic motives.

1. Introduction

In recent years, the popular press has advanced the notion that social networking sites (SNS) and narcissism are tightly linked (Jayson, 2009; O'Dell, 2010). However, the research examining the relationship between narcissism and social networking has yielded modest and somewhat inconsistent findings (e.g., Bergman, Fearrington, Davenport, & Bergman, 2011; Carpenter, 2012; Nadkarni & Hofmann, 2012). This line of research has looked at a number of different SNS with a variety of different populations (teenagers, college students, young adults, etc.), and these differences may account for some of the variance in the findings. Thus, recent research has taken a more definitive approach to investigating social networking behavior by making hypotheses specific to different social media platforms (Chen, 2011; Panek, Nardis, & Konrath, 2013). Consistent with this approach, the current study sought to examine the potential differential relationships between narcissism and two highly popular, but different, SNS, Facebook and Twitter, within the context of two large and diverse samples. Further, unlike previous research that has focused almost exclusively on SNS usage, we examined reasons for usage as a potential black box in the narcissism to SNS usage relationship.

Currently, the two most popular SNS in the United States are Facebook and Twitter (eBizMBA, 2013). It is estimated that Facebook has 750 million visitors per month, while Twitter has 250 million visitors per month (eBizMBA, 2013). The usage statistics indicate growing popularity for both Twitter and Facebook, with Twitter growing significantly faster than Facebook (BCS, 2013). Twitter's recent surge makes it increasingly relevant in the discussion of narcissism. Additionally, Twitter has certain inherent characteristics that might make it more conducive to narcissistic motives and behaviors than other popular SNS, such as Facebook.

1.1. Narcissism

In this study, the term narcissism is used in reference to subclinical narcissism, a personality trait that has been demonstrated to exist at varying levels within the normal population (e.g., Emmons, 1984; Rhodewalt & Morf, 1995; Watson, Grisham,

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Trotter, & Biderman, 1984). Subclinical narcissism manifests in attitudes, beliefs, and behaviors that are similar to clinical narcissism, but to a lesser magnitude or intensity. Subclinical narcissists (hereafter referred to as "narcissists") believe themselves to be superior, unique or special and therefore exhibit entitled behaviors and beliefs, such as demanding special treatment. This is consistent with their generally elevated self-esteem and self-concept. Ironically, this higher-than-average self-esteem is unstable and must be maintained via outside sources (Campbell, Rudich, & Sedikides, 2002; Morf & Rhodewalt, 2001). Although narcissists seek affirmation and praise from others, they are incapable of reciprocating due to a lack of empathic understanding (American Psychiatric Association, 2013; Millon, 1996) and, in contrast, tend to exploit and use others, making deep, long-term relationships unlikely. To achieve these ends and effectively protect their inflated but fragile egos, narcissists engage in a host of behavioral strategies including exhibitionism and attention-seeking behavior (Buss & Chiodo, 1991) and dominance and competitiveness in social situations (Emmons, 1984; Raskin & Terry, 1988).

1.2. Social networking sites

A key issue plaguing current research on SNS is a lack of specification regarding the type of sites included under the umbrella of "social networking" and assumptions that variables such as personality have consistent effects across social media platforms. Such practices hinder efforts to replicate findings and make theory building difficult. Although we applaud recent efforts to be more deliberate and intentional in building hypotheses around the affordances of specific SNS (e.g., Hughes, Rowe, Batey, & Lee, 2012; Panek et al., 2013; Wilson, Gosling, & Graham, 2012), the overreliance on standard SNS "usage" variables also represents an oversimplification that should be addressed.

SNS usage has been operationalized in a number of different ways (e.g., time spent on the site, status updates, number of connections), which could help to explain the inconsistent findings with respect to personality and SNS usage. It may be more useful to clearly delineate usage as "active usage" or "passive usage". Active usage refers to engaging with the platform as a *creator* of content (e.g., status updates, tweets, picture posts, likes, comments, etc.). Passive usage refers to engaging with the platform solely as a *consumer* of content (e.g., reading posts or tweets, viewing pictures, etc.). Broad measures of usage, such as "time spent" on the platform, confound these two types of usage. This becomes particularly relevant with respect to narcissism, as narcissists would be expected to engage in more active than passive usage due to their strong need to maintain their inflated egos and garner attention from others. This may explain previous findings of weak or nonsignificant relationships between narcissism and broad measures of SNS usage.

Passive or active usage variables, however, are insufficient in answering the questions of *why* individuals engage or do not engage in specific behaviors, and, more specifically, may not differentiate between those high in narcissism and those low in narcissism (Bergman et al., 2011). For example, some users may update their status in order to check in with friends, while other users may update their status in order to brag or self-promote. Reasons for SNS usage may play an even greater role when they are matched with SNS that have specific affordances that fit with a user's desired end state. Within this context, the current study examines the two most popular SNS, developing hypotheses around how the features of each site might facilitate or hinder narcissistic motives.

1.2.1. Facebook

Facebook is considered the prototypical SNS (e.g., Bergman et al., 2011; Wilson et al., 2012). Facebook has a number of features available to users including friend requests, "tagging" others, posting comments, posting pictures, and creating status updates (Tong, Van Der Heide, Langwell, & Walther, 2008) with most features facilitating interaction between a user and his or her community of friends. The size of one's friend network is somewhat under the control of a user as he or she can send friend requests to users, and choose to accept (or not) friend requests. While users can accept or deny a request from another user, the friend request process in Facebook is a reciprocal one, where if a user accepts a request to join another's network, that user automatically joins the requester's network.

Previous research has routinely hypothesized and found a positive relationship between number of friends and narcissism (Bergman et al., 2011; Carpenter, 2012; Ong et al., 2011), with the rationale that having large numbers of friends would be attractive to narcissists as a measure of importance or popularity. Additionally, Facebook allows each user to post their own "status," a personal statement updating their friends on their activities or whereabouts. Although several studies have included a "status updates" variable, findings with respect to narcissism have been inconsistent (Bergman et al., 2011; McKinney, Kelly, & Duran, 2012; Ong et al., 2011; Panek et al., 2013) and few have directly assessed the reason for users frequency of active usage such as status updates.

1.2.2. Twitter

Unlike Facebook, few empirical investigations have been conducted using Twitter (e.g., Chen, 2011; Hughes et al., 2012; McKinney et al., 2012; Panek et al., 2013). Twitter is a microblogging SNS that, at its core, is different from profile SNS like Facebook, because users do not build a full profile on Twitter. Although "conversations" can occur using Twitter, the medium is designed for one-way interactions where users "tweet" information to their contacts (i.e., post a message to Twitter that contains a maximum of 140 characters). These contacts are labeled as "followers" in Twitter rather than the more egalitarian label of "friends" in Facebook. The process by which users gain followers is different than that of Facebook and does not require the users to send or accept friend requests nor does it require that users become followers of those following them. Thus, Facebook relationships are reciprocal, while Twitter relationships are not.

Given that narcissists have an inflated self-view and engage in a variety of strategies aimed at bringing attention to themselves (American Psychiatric Association, 2013), features unique to Twitter may be more appealing to narcissists than those on sites such as Facebook. Indeed, McKinney et al. (2012) found a significant relationship between narcissism and the number of user tweets, prompting the authors to opine that Twitter might be the preferred SNS platform for narcissists, and to call for additional research. We agree, and the current study, in part, answers that call as we believe the features listed above lend themselves directly to narcissistic motives and behaviors. Thus, a positive relationship between active usage on Twitter should not be surprising and, in fact, a deeper examination of the reasons for active SNS usage and motives of SNS users should reveal additional significant relationships with narcissism. In support of this position, Bergman et al. (2011) found that although overall SNS usage and behavior may not differ for narcissists versus non-narcissists, the reasons for those behaviors can be significantly different. The present study seeks to examine both the active usage and the reasons of narcissists for using Twitter and Facebook to determine if one platform is more conducive to narcissism than the other.

1.3. Hypotheses

Consistent with theory and previous SNS research (e.g., Carpenter, 2012; DeWall, Buffardi, Bonser, & Campbell, 2011;

McKinney et al., 2012; Panek et al., 2013), we believe that both Facebook and Twitter provide an easy way for narcissists to engage in the exhibitionistic, attention-seeking, and self-promoting behaviors that assist them in maintaining their inflated self-views (Buss & Chiodo, 1991). However, Twitter likely provides an even more attractive platform for narcissists because it lends itself more readily to frequent, self-centered updates and provides for the shallow, non-intimate, non-reciprocal relationships (i.e., one-way relationships) most likely desired by narcissists (Campbell & Foster, 2002). Finally, due to the fact that narcissists believe themselves to be superior, unique, or special (American Psychiatric Association, 2013), it is reasonable to propose that narcissists will engage in such active usage on Twitter, because they are motivated to gain attention and maintain self-esteem by regularly informing their followers of what they are doing or thinking.

H1. Narcissism will have a stronger positive relationship with Twitter active usage than Facebook active usage.

H2. Narcissism will have a stronger positive relationship with the users' desire to keep others up-to-date via Twitter than Facebook.

Also, consistent with theory and previous SNS research (e.g., Bergman et al., 2011; Ong et al., 2011), we propose that narcissists will have a large number of friends and followers in order to affirm their grandiosity and provide a visible measure of their popularity. We further propose that, due to narcissists' tendencies to seek attention and affirmation to maintain their unstable self-esteem and to engage in self-promoting behaviors (e.g., Buffardi & Campbell, 2008; Campbell et al., 2002; Morf & Rhodewalt, 2001), narcissists will desire an SNS presence that will continue to build their network of friends and followers who express admiration toward them. Moreover, given that narcissists tend to prefer superficial social connections over deeper interpersonal relationships (Bergman et al., 2011; Campbell & Foster, 2002), we expect narcissists to prefer social connections made through Twitter as compared with Facebook.

H3. Narcissism will have a stronger positive relationship with the number of Twitter followers than the number of Facebook friends.

H4. Narcissism will have a stronger positive relationship with the importance of creating a profile that makes others want to become a follower (Twitter) than the importance of creating a profile that makes others want to become a friend (Facebook).

H5. Narcissism will have a stronger positive relationship with the importance of being admired through Twitter than through Facebook.

2. Study 1 materials and methods

2.1. Participants and procedure

Participants were 521 undergraduate students who received course credit for completing a paper-and-pencil survey. Participants were asked if they had a Facebook ($n = 509$) or Twitter ($n = 220$) account; those that had neither were excluded from the analysis. The final sample included 515 participants with a mean age of 20.75 years ($SD = 1.47$), ranged from 18 to 29, was 60% female and was 90.7% Caucasian.

2.2. Measures

2.2.1. Narcissism

Narcissism was assessed using the 40-item Narcissistic Personality Inventory (NPI-40; Raskin & Terry, 1988), which contains paired statements. Respondents were asked to select the statement that best matched their own feelings and beliefs. Narcissistic responses were summed (ranging from 0 to 40) with higher scores indicating higher levels of narcissism (Cronbach's alpha = .85).

2.2.2. Active usage

Participants responded to two items that asked how often they updated their Facebook status (8-point scale, ranging from "never" to "7–9 times a day") and how often they 'Tweeted' (10-point scale, ranging from "never" to "more than 100 times a day").

2.2.3. Reasons for updates

Participants were asked two yes–no questions regarding why they use SNS. The questions asked if a primary motivation for using Facebook and Twitter was to "keep others up-to-date on your life".

2.2.4. SNS friends/followers

Participants were asked two open-ended questions: "How many Facebook friends do you have?" and "How many followers do you have on Twitter?".

2.2.5. Attracting friends/followers

Participants indicated their agreement with this statement for Facebook: "It is important that my profile makes others want to be my friend," and this statement for Twitter: "It is important that my profile makes others want to follow me" (5-point scale, ranging from "strongly disagree" to "strongly agree").

2.2.6. SNS admiration

Participants indicated their agreement with this Facebook statement: "It is important that my friends admire me," and this Twitter statement: "It is important that my followers admire me" (5-point scale, ranging from "strongly disagree" to "strongly agree").

3. Analytic strategy

The SNS usage and Likert-type data were treated as ordinal data, and the number of friends and followers were treated as continuous data. Analyses were conducted using Mplus 7.0 (Muthén & Muthén, 2012). Regressions utilized a Weighted Least Squares Means and Variances (WLSMV; Muthén, du Toit, & Spisic, 1997) estimator, while analyses with continuous outcome data utilized a Robust Maximum Likelihood (MLR) estimator due to the fact that the friends and followers measures were positively skewed. While the use of WLSMV and MLR relaxes many of the assumptions needed when conducting more traditional regression analyses, such as ordinary least squares (see Byrne, 2012), the standardized residuals histogram, normal P–P plot, and standardized predicted by standardized residual plot were examined to the extent to which deviations from normality should be further addressed.

Each regression analysis controlled for age and gender, because of their significant correlations with several outcomes. A dominance analysis (DA) was conducted for each regression (Azen & Budescu, 2003; Budescu, 1993) to determine the total and relative contribution of age, gender, and narcissism in predicting each outcome of interest. These DAs decomposed the overall model R^2 and for each predictor produced: (1) a general dominance weight (DW), which showed the total amount of variance for which each predictor accounted in the regression and summed to the overall model R^2, and (2) a relative importance score (RI) for each predictor,

which was the relative proportion of variance accounted for by a predictor and sums to 100% (each predictor's DW divided by the model R^2).

4. Study 1 results

Descriptive statistics and variable intercorrelations are presented in Table 1.

An examination of the standardized residuals histograms for the regression analyses revealed that the analyses using "FB Status", "FB Friends", "Tweets", and "TW Followers" had slight positive skews to their residuals. However, an examination of the other diagnostic plots (e.g., normal P–P plot and standardized predicted by standardized residual plot) revealed no deviations of concern. Additionally, removing cases that had standardized residuals greater than four did not alter the pattern of results. Thus, all of the cases were retained for the regression analyses used to test the study's hypotheses.

Results from the regression analyses indicated that narcissism was a significant, positive predictor for frequency of active usage on both Facebook ("FB Status") and Twitter ("Tweets"), and the size of the SNS audience on both Facebook ("FB Friends") and Twitter ("TW Followers"), see Table 2. Regression results also indicated that narcissism was a significant predictor of the importance of having a profile that would attract a large SNS audience on both Facebook ("Want Friends") and Twitter ("Want Followers"), and of being admired on Facebook ("FB Admire") and Twitter ("TW Admire"). However, narcissism was not a significant predictor of using Facebook or Twitter to keep others up-to-date ("FB Up-to-date" and "TW Up-to-date").

Examining the DA results revealed that narcissism played a stronger role in the prediction of "Tweets" compared with "FB Status", wanting followers on Twitter ("Want Followers") than wanting friends on Facebook ("Want Friends"), and "TW Admire" than "FB Admire". Results, however, did not indicate that narcissism was a stronger predictor for "TW Followers" than "FB Friends". Together the regression and DA results provided support for Hypotheses 1, 4, and 5, but failed to support Hypotheses 2 and 3.

5. Study 1 discussion

Results from the college student sample suggest that narcissism played a significant role in the predication of both active usage and number of friends/followers, and the prediction of two reasons for SNS usage: the importance of (1) a profile that attracts friends/followers and (2) being admired on both Facebook and Twitter. Additionally the DAs indicated that the relationship between narcissism and the variables of interest were stronger for Twitter than Facebook on three of these four variables. This pattern of results suggests that college narcissists prefer Twitter to Facebook and narcissism predicts reasons for usage as well as active usage.

Table 2
Regression results for Facebook and Twitter for Study 1 (college sample).

Outcomes	Predictors			R^2
	Age	Gender	Narcissism	
FB Status	−.08[a]	−.14[c]	.10[b]	.03
	26.3%(.01)	52.0%(.02)	21.7%(.01)	
Tweets	−.11	−.08	.19[b]	.05
	25.6%(.01)	9.3%(<.01)	65.1%(.03)	
FB Up-to-date	−.08	−.09	.06	.02
	40.7%(.01)	46.3%(.01)	13.0%(<.01)	
TW Up-to-date	−.21[a]	.05	.10	.05
	74.8%(.04)	3.3%(<.01)	21.9%(.01)	
FB Friends	−.10[b]	−.07[a]	.27[d]	.08
	7.5%(.01)	8.8%(.01)	83.8%(.06)	
TW Followers	−.10[a]	<−.01	.23[d]	.06
	15.8%(.01)	0.6%(<.01)	83.6%(.05)	
Want Friends	−.12[c]	.12[b]	.13[c]	.05
	25.7%(.01)	30.1%(.01)	44.2%(.02)	
Want Followers	−.17[b]	.14[a]	.19[c]	.08
	26.5%(.02)	24.7%(.02)	48.8%(.04)	
FB Admire	.07	.03	.15[d]	.03
	15.1%(<.01)	10.4%(<.01)	74.5%(.02)	
TW Admire	.04	.06	.17[b]	.04
	5.4%(<.01)	15.4%(.01)	79.2%(.03)	

Standardized coefficients of regressions are presented in the first line. The second line reports the relative importance score (which is the percentage of the R^2 value accounted for by the predictor) with the general dominance weight (which sum to the overall model R^2) presented in parentheses. Gender is coded: female = 1, male = 2.

[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

6. Study 2 materials and methods

6.1. Participants and procedure

Participants for Study 2 were recruited via MTURK. While MTURK has not been found to be an ideal outlet for getting a na-

Table 1
Descriptive statistics and correlations for Study 1 (college sample).

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Age	–												
2.	Gender	.21[d]	–											
3.	Narcissism	.05	.22[d]	–										
4.	FB Status	−.11[b]	−.13[c]	.07	–									
5.	Tweets	−.12	−.07	.18[b]	.25[c]	–								
6.	FB Up-to-date	−.09	−.10[a]	.04	.43[d]	.09	–							
7.	TW Up-to-date	−.19[a]	.03	.10	.07	.47[d]	.47[d]	–						
8.	FB Friends	−.08[a]	−.06	.24[d]	.12[b]	.16[b]	.07	.17[b]	–					
9.	TW Followers	−.10	.01	.22[d]	−.04	.49[d]	−.15[a]	.31[d]	.44[d]	–				
10.	Want Friends	−.09[a]	.10[c]	.15[d]	.08	.01	.16[c]	.12	.04	−.02	–			
11.	Want Followers	−.13[a]	.14[b]	.21[c]	.11	.47[d]	.12	.37[d]	.19[d]	.34[d]	.45[d]	–		
12.	FB Admire	.08	.08[a]	.16[d]	.01	−.11	.19[c]	−.03	−.03	−.15[b]	.40[d]	.17[c]	–	
13.	TW Admire	.05	.10	.18[c]	.00	.25[c]	.18[a]	.31[c]	.10	.14[a]	.44[d]	.56[d]	.57[d]	–
	Mean	*20.75*	*1.40*	*14.73*	*2.71*	*1.75*	*.35*	*.20*	*643.23*	*58.71*	*2.28*	*2.35*	*2.70*	*1.92*
	Standard deviation	*1.47*	*.49*	*6.71*	*1.30*	*.82*	*.48*	*.40*	*395.21*	*69.87*	*.98*	*1.05*	*1.09*	*1.00*

Sample sizes range from 509 to 220. Gender is coded: female = 1, male = 2.

[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

tional representative sample of U.S. adults (e.g., Mason & Suri, 2012), research suggests that the quality of the data collected on MTURK is comparable to that collected in typical American college samples (Buhrmester, Kwang, & Gosling, 2011) and that self-report data collected on MTURK possess good psychometric properties (Holden, Dennie, & Hicks, 2013). Thus, MTURK was used to recruit an adult sample to complete an online survey. The study's description on MTURK indicated that participants needed to have a Facebook or Twitter account and be from the United States. Participants were asked if they had a Facebook (n = 623) or Twitter (n = 388) account; those that had neither were excluded from the analysis. The final sample included 669 participants with a mean age of 32.54 years (SD = 11.84), ranged from 18 to 75, was 55% female, 78.6% Caucasian, and 46.7% possessed a bachelor's degree or greater.

6.2. Measures

Many of the questions and response options were not identical to those in Study 1. However, the questions and response options did provide similar assessments of participants' Facebook and Twitter usage and reasons for using SNS.

6.2.1. Narcissism

Narcissism was assessed using the same version of the NPI as was used in Study 1 (Crochbach's alpha = .89).

6.2.2. Active usage

Participants responded to two items that asked how often they updated their Facebook status (6-point scale, ranging from "never" to "more than 20 times a day") and how often they 'Tweeted' (6-point scale, ranging from "never" to "more than 20 times a day").

6.2.3. Reasons for updates

Participants indicated their agreement with two items that asked if the reason they used Facebook or Twitter was to "keep others up-to-date on your life" (5-point scale, ranging from "strongly disagree" to "strongly agree").

6.2.4. SNS friends/followers

Participants were asked the same open-ended questions as in Study 1 regarding how many Facebook friends and Twitter followers they had.

6.2.5. Attracting friends/followers

Participants indicated their agreement with the same statements as in Study 1 on the same 5-point scale.

6.2.6. SNS admiration

Participants indicated their agreement with the same statements as in Study 1 on the same 5-point scale.

7. Study 2 results

7.1. MTURK data check

Collecting the Study 2 data online allowed for an examination of survey completion time and a series of analyses were conducted to determine if completion time had a relationship with the study's variables. The average time to complete the MTURK survey was 13.98 min (SD = 6.27). Each participant's competition time was then correlated with the all of the study's variables of interest. Only age and gender were found to have zero-order correlations greater than .10 with completion time (age r = .18 and gender r = .11), indicating that that older and female participants took longer to complete the survey.

Mahalanobis distance measures were first computed for variables used in the Facebook and Twitter regression analyses to determine the distance these variables had from the centers of the multivariate distributions. Next, regression analyses were conducted to determine if completion time had a relationship with producing extreme multivariate values or outlier values. Results indicated that neither the Mahalanobis Facebook nor the Twitter distance measures had significant linear relationships, Facebook: $F(1,621) = 2.76$, $p = .097$ $R = .07$; Twitter: $F(1,386) = .07$, $p = .798$, $R = .02$, or "inverted U" relationships, Facebook: $F(2,621) = 1.45$, $p = .236$ $R = .07$; Twitter: $F(2,385) = .41$, $p = .798$, $R = .02$, with completion time. Thus, it was determined that completion time did not influence the response patterns in the current study.

7.2. Test of Study 2 Hypotheses

As with Study 1, data were analyzed using Mplus 7.0 and DA decomposed the model R^2 values. Descriptive statistics and variable intercorrelations are presented in Table 3.

An examination of the standardized residuals histograms for the regression analyses revealed that the analyses using "FB Sta-

Table 3
Descriptive statistics and correlations for Study 2 (adult sample).

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Age	–												
2.	Gender	.13[c]	–											
3.	Narcissism	−.24[d]	.19[d]	–										
4.	FB Status	−.15[d]	.01	.15[d]	–									
5.	Tweets	−.14[b]	.08	.18[d]	.09[a]	–								
6.	FB Up-to-date	−.08[a]	−.13[b]	.06	.42[d]	.03	–							
7.	TW Up-to-date	−.14[b]	.11	.12[b]	.08	.52[d]	.16[c]	–						
8.	FB Friends	−.25[d]	-.04	.23[d]	.17[d]	.05	.11[c]	.04	–					
9.	TW Followers	−.05	.06	.08	−.01	.34[d]	−.10[b]	.13	.03	–				
10.	Want Friends	−.06	.06	.15[d]	.23[d]	.13[b]	.39[d]	.32[d]	.17[d]	.08	–			
11.	Want Followers	.04	.02	.11[b]	.10[a]	.49[d]	.09[a]	.46[d]	.12[c]	.27[d]	.30[d]	–		
12.	FB Admire	−.13[c]	.03	.20[d]	.23[d]	.07	.32[d]	.18[d]	.12[d]	−.02	.55[d]	.28[d]	–	
13.	TW Admire	−.14[c]	.08	.17[d]	.08	.29[d]	.12[b]	.34[d]	.09[b]	.16[b]	.30[d]	.59[d]	.42[d]	–
	Mean	*32.54*	*1.45*	*13.57*	*1.97*	*1.78*	*3.62*	*2.77*	*315.65*	*201.61*	*2.97*	*2.77*	*3.03*	*2.88*
	Standard deviation	*11.84*	*.49*	*7.93*	*.97*	*1.07*	*1.12*	*1.35*	*339.18*	*795.72*	*1.17*	*1.25*	*1.08*	*1.12*

Sample sizes range from 623 to 388. Gender is coded: female = 1, male = 2.
[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

Table 4
Regression results for Facebook and Twitter for Study 2 (adult sample).

Outcomes	Predictors			R^2
	Age	Gender	Narcissism	
FB Status	−.13[c]	−.04	.14[c]	.04
	46.7%(.02)	6.5%(<.01)	46.7%(.02)	
Tweets	−.10	.02	.16[b]	.04
	30.2%(.01)	7.0%(<.01)	62.8%(.03)	
FB Up-to-date	−.09[b]	−.16[d]	.08[a]	.04
	21.0%(.01)	65.2%(.02)	13.8%(<.01)	
TW Up-to-date	−.11[a]	.06	.08	.03
	49.4%(.01)	19.4%(.01)	31.1%(.01)	
FB Friends	−.22[d]	−.10[c]	.20[d]	.10
	50.6%(.05)	5.9%(.01)	43.4%(.05)	
TW Followers	−.03	.03	.07	.01
	16.7%(<.01)	16.7%(<.01)	66.7%(.01)	
Want Friends	−.03	.02	.14[d]	.03
	10.0%(<.01)	6.0%(<.01)	84.0%(.02)	
Want Followers	.07	<−.01	.13[b]	.02
	13.7%(<.01)	4.9%(<.01)	81.4%(.01)	
FB Admire	−.09[b]	−.02	.18[d]	.05
	24.1%(.01)	2.7%(<.01)	73.1%(.04)	
TW Admire	−.11[a]	.03	.14[b]	.04
	37.1%(.01)	7.1%(<.01)	55.8%(.02)	

Standardized coefficients of regressions are presented in the first line. The second line reports the relative importance score (which is the percentage of the R^2 value accounted for by the predictor) with the general dominance weight (which sum to the overall model R^2) presented in parentheses. Gender is coded: female = 1, male = 2.

[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

tus" and "Tweets" had slight positive skews to their residuals, while "FB Up-to-date" had a slight negative skew. However, an examination of the other diagnostic plots (e.g., normal P–P plot and standardized predicted by standardized residual plot) revealed no deviations of concern. Additionally, removing cases that had standardized residuals greater than four did not alter the pattern of results. Thus, all cases were retained for the regression analyses used to test the study's hypotheses.

Narcissism was found to be a significant positive predictor of the active usage variables "FB Status" and "Tweets", see Table 4. Results also revealed that narcissism was a significant predictor of the importance of having a profile that would attract a large SNS audience on both Facebook ("Want Friends") and Twitter ("Want Followers") and of being admired on Facebook ("FB Admire") and Twitter ("TW Admire"). While narcissism was a significant predictor of the "FB Friends", it failed to predict "TW Follower" and was not a predictor of the "FB Up-to-date" or "TW Up-to-date" outcomes.

An examination of the DA results indicated that narcissism explained slightly more variance in "Tweets" than "FB Status". With the exception of wanting to keep others up-to-date, which was not significantly predicted by narcissism, DA results suggested that narcissism played a stronger role in the prediction of the Facebook outcomes compared with the Twitter outcomes. The regressions and DA results provided supported for Hypothesis 1, but failed to support Hypotheses 2, 3, 4, and 5.

8. Study 2 discussion

The initial findings from Study 2 suggest that narcissism predicts active usage of both Facebook and Twitter, and, just as in the college sample, it appears to have greater prediction for tweeting. Also consistent with Study 1 was the lack of a relationship between narcissism and either of the "Up-to-date" motives. Interestingly, for the remaining hypotheses, narcissism was a better predictor of the Facebook variables than the Twitter variables in the adult sample. This suggests that while narcissists generally prefer to actively use Twitter over Facebook, the reasons for a narcissist to use a SNS varied across the two samples. However, the tests of these initial hypotheses fail to capture of complexity of what narcissists hope to get out of active usage on SNS and how those reasons change across platforms.

9. Post hoc mediation model

A post hoc examination of the correlation and regression results across both studies revealed a number of interesting findings. First, it appeared that narcissism was a better predictor of *reasons* for usage (e.g., wanting to attract a lot of friends/followers and having others admire them) than it was for active usage. Second, active usage was better predicted by reasons for usage than by narcissism. Finally, active usage was more strongly linked to number of friends/followers than it was narcissism. Together, these findings suggest that narcissism may not directly drive active usage and number of friends/followers; rather, narcissism might indirectly relate to these outcomes by driving reasons for usage (such as desiring admiration).

This pattern of results is generally consistent with previous findings (Bergman et al., 2011; Chen, 2011) and led to the post hoc creation of a partial-mediation model, see Fig. 1. The depiction in Fig. 1 is a conceptual summary displaying both Facebook and Twitter variables together. However, the model was tested on the Facebook and Twitter data separately in both the college and adult samples. As with the regression analyses, age and gender were retained as control variables. A path-analysis was conducted in Mplus 7.0 to fit the data to the model and the indirect effects of narcissism on SNS active usage were tested using the delta method. Model fit was evaluated using the chi-square test of model fit (χ^2), root mean square error of approximation (RMSEA), the comparative fit index (CFI) and standardized root mean square residual (SRMR; see Byrne, 2012).

9.1. Facebook model: Post hoc analysis results

The results for the proposed Facebook mediation models for both the college and adult samples are presented in Table 5. The college Facebook model showed excellent fit to the data, $\chi^2_{(3)} = 3.100$, $p = .377$, RMSEA = .01, CFI = .99, SRMR = .01. Results indicated that only "FB Up-to-date" and gender were significant predictors of active usage. Narcissism did not have a significant direct or indirect effect, standardized estimate = .01, $p = .373$, on frequency of status updates. Results also indicated that narcissism and gender were significant predictors of "FB Friends". However, narcissism did not have a significant indirect effect, standardized estimate = .01, $p = .230$, on "FB Friends".

The adult Facebook model also showed good fit to the data, $\chi^2_{(3)} = 6.72$, $p = .081$, RMSEA = .05, CFI = .99, SRMR = .02, and indicated that narcissism and "FB Up-to-date" were the only significant predictors of active usage. Narcissism also had a significant indirect effect, standardized estimate = .04, $p = .012$, on frequency of status updates. Narcissism, age, and "FB Status" were significant predictors of "FB Friends". Narcissism did have a marginally significant indirect effect, standardized estimate = .01, $p = .086$, on "FB Friends".

9.2. Twitter model: Post hoc analysis results

The results for the proposed Twitter models for both the college and adult samples are presented in Table 6. While the college

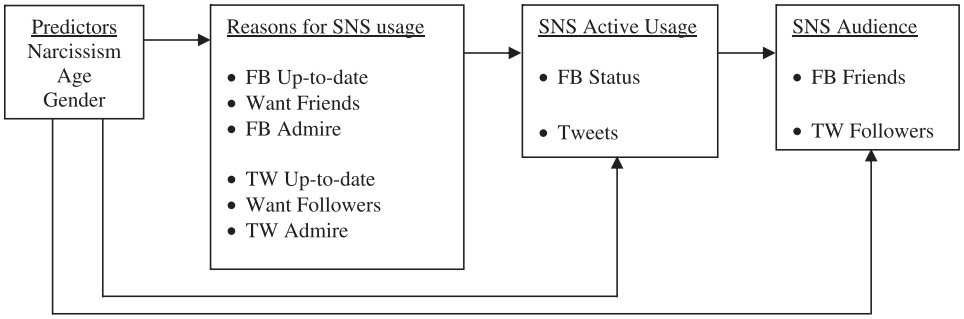

Fig. 1. Conceptual summary model of the relationships between narcissism, age, gender, active SNS usage, reasons for SNS usage, and number of friends/followers. *Note:* The figure above is a summary conceptualization of a proposed mediation model that displays the mediating variables and outcomes for both Facebook and Twitter in the same graphic. Separate Facebook and Twitter models were tested in both the college and adult samples. The proposed Facebook and Twitter models allowed each of the three reasons for SNS usage to be both predicted by age, gender, and narcissism and were predictive of active SNS active usage.

Table 5
Results from the proposed Facebook mediated model (college and adult samples).

Outcomes	Predictors							Model R^2
	Age	Gender	Narcissism	FB Up-to-date	Want Friends	FB Admire	FB Status	
FB Up-to-date	$-.06_{College}$[a]	$-.07_{College}$	$.05_{College}$					$.01_{College}$
	$-.10_{Adult}$[b]	$-.15_{Adult}$[d]	$.07_{Adult}$[a]					$.03_{Adult}$
Want Friends	$-.12_{College}$[c]	$.12_{College}$[b]	$.12_{College}$[c]					$.04_{College}$
	$-.03_{Adult}$	$.02_{Adult}$	$.14_{Adult}$[d]					$.02_{Adult}$
FB Admire	$.06_{College}$	$.03_{College}$	$.14_{College}$[c]					$.03_{College}$
	$-.09_{Adult}$[b]	$-.02_{Adult}$	$.17_{Adult}$[d]					$.04_{Adult}$
FB Status	$-.05_{College}$	$-.09_{College}$[b]	$.07_{College}$	$.31_{College}$[d]	$.03_{College}$	$-.03_{College}$		$.12_{College}$
	$-.07_{Adult}$[a]	$.01_{Adult}$	$.10_{Adult}$[b]	$.29_{Adult}$[d]	$.04_{Adult}$	$.07_{Adult}$[a]		$.14_{Adult}$
FB Friends	$-.07_{College}$	$-.10_{College}$[b]	$.26_{College}$[d]				$.07_{College}$[a]	$.08_{College}$
	$-.21_{Adult}$[d]	$-.10_{Adult}$[c]	$.18_{Adult}$[d]				$.10_{Adult}$[c]	$.11_{Adult}$

Note: The first line presents standardized coefficients from the college sample ($n = 509$). The second line presents standardized coefficients from the adult sample ($n = 623$). Gender is coded: female = 1, male = 2.

[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

Twitter model showed only marginally acceptable fit to the data, $\chi^2_{(6)} = 20.43$, $p = .002$, RMSEA = .10, CFI = .96, SRMR = .05, an examination of the modification indices revealed no substantively meaningful paths to free that would improve model fit. In predicting active usage, results indicated that narcissism, "Want Followers," and "TW Up-to-date" were significant predictors. Narcissism did not have a significant indirect effect, standardized estimate = .04, $p = .132$, on frequency of tweets. In predicting the number of followers, results indicated that "Tweets" was the only significant predictor. Narcissism had a marginally significant indirect effect, standardized estimate = .05, $p = .062$, on "TW Followers".

The adult Twitter model showed marginally acceptable fit to the data, $\chi^2_{(6)} = 26.08$, $p < .001$, RMSEA = .09, CFI = .92, SRMR = .02 with the modification indices revealing no substantively meaningful paths to free that would improve model fit. In predicting active usage, results indicated that narcissism, "TW Up-to-date," and "Want Followers" were significant predictors. Narcissism did have a significant indirect effect, standardized estimate = .05, $p = .049$, on "Tweets". In predicting "TW Followers," results indicated that "Tweets" was the only significant predictor. However, narcissism did have a significant indirect effect, standardized estimate = .05, $p = .015$, on "TW Followers".

10. General discussion

The current investigation had two primary purposes: to compare and contrast the role of narcissism in the usage of the two most popular SNS (Facebook and Twitter) across two large and diverse samples; and to examine the reasons for usage within these samples to gain a more complete understanding of the narcissism and SNS relationship. Although Facebook has been examined by a number of researchers in recent years, Twitter remains less understood and there is little consensus regarding the affordances it provides to narcissists (McKinney et al., 2012; Panek et al., 2013).

Tests of the initial hypotheses provided mixed results for the notion that narcissism would have a stronger positive relationship with Twitter variables than Facebook. In support of the proposition, narcissism was found to be a stronger predictor of Twitter active usage (i.e., tweets) than Facebook active usage (i.e., status updates) in both the college and adult samples. In opposition of the proposition, narcissism did not have a significant relationship with the desire to keep others up-to-date on either SNS and was a stronger predictor of Facebook friends than Twitter followers in both the college and adult samples. In partial support of the proposition, narcissism was a stronger predictor of followers and admiration on Twitter, but only in the college sample.

These results suggest that our initial hypotheses failed to capture the complexity of the relationship between narcissism and SNS. The study's post hoc mediation analyses took a first step in examining this complexity and revealed some interesting findings regarding how narcissism relates to SNS variables in the college and adult samples. The post hoc mediation results suggest that narcissistic college students prefer to post content on Twitter, while narcissistic adults prefer to post content on Facebook. This contention is consistent with previous research (Panek et al.,

Table 6
Results from the proposed Twitter mediated model (college and adult samples).

Outcomes	Predictors							Model R^2
	Age	Gender	Narcissism	TW Up-to-date	Want Followers	TW Admire	Tweets	
TW Up-to-date	$-.13_{College}$[b]	$.04_{College}$	$.06_{College}$					$.02_{College}$
	$-.10_{Adult}$[b]	$.06_{Adult}$	$.08_{Adult}$					$.03_{Adult}$
Want Followers	$-.15_{College}$[b]	$.14_{College}$[a]	$.17_{College}$[b]					$.07_{College}$
	$.07_{Adult}$	$-.01_{Adult}$	$.12_{Adult}$[b]					$.01_{Adult}$
TW Admire	$.03_{College}$	$.05_{College}$	$.17_{College}$[b]					$.04_{College}$
	$-.10_{Adult}$[a]	$.03_{Adult}$	$.12_{Adult}$[b]					$.03_{Adult}$
Tweets	$-.05_{College}$	$-.08_{College}$	$.14_{College}$[b]	$.13_{College}$[b]	$.25_{College}$[d]	$-.07_{College}$		$.12_{College}$
	$-.07_{Adult}$[a]	$.00_{Adult}$	$.09_{Adult}$[a]	$.31_{Adult}$[d]	$.29_{Adult}$[d]	$-.04_{Adult}$		$.26_{Adult}$
TW Followers	$-.06_{College}$	$.01_{College}$	$.16_{College}$[d]				$.38_{College}$[d]	$.20_{College}$
	$.01_{Adult}$	$.03_{Adult}$	$.01_{Adult}$				$.43_{Adult}$[d]	$.18_{Adult}$

Note: The first line presents standardized coefficients from the college sample (n = 220). The second line presents standardized coefficients from the adult sample (n = 388). Gender is coded: female = 1, male = 2.

[a] $p < .10$.
[b] $p < .05$.
[c] $p < .01$.
[d] $p < .001$.

2013) and is further supported by the relationship between narcissism and reasons for SNS usage across the two samples. Specifically, in the college sample, narcissism was a stronger predictor of wanting an SNS audience and admiration on Twitter than on Facebook. Conversely, in the adult sample, narcissism was a stronger predictor of wanting friends and an SNS audience and admiration on Facebook than on Twitter.

The post hoc model results call into question the barrage of press linking the rise in social networking to the rise in narcissism among Millennials, as narcissism had no significant direct or indirect relationship with active usage on Facebook for the college population (i.e., Millennials). However, narcissism was both directly and indirectly related to active usage among adults, suggesting that narcissistic active users of Facebook are now more likely to be of the Gen X and Baby Boomer generations than Millennials. Our findings might reflect the fact that Millennials grew up using Facebook as a part of their lives, as a means of communicating with others just as previous generations might have used a telephone. Older generations who have not grown up with this tool require a more intentional reason to "update status" as it is not part of their social norms, and narcissistic motives may be an intentional reason for adults' movement into active Facebook usage.

Regarding reasons for usage, surprisingly, in neither sample was narcissism related to a desire to keep others up-to-date using either platform. This may be indicative of the pervasive use of SNS in everyday communication, for both narcissists and non-narcissists. It may simply be that "everyone" using Facebook and Twitter does so because of a desire to keep others up-to-date. Our results suggest that there is nothing narcissistic about this desire and that SNS could now just be the way in which people across generations share what is going on in their lives.

While our findings suggest some interesting differences across generations, they also highlight some key differences between the platforms. As mentioned above, narcissism was a stronger predictor of Facebook friends than Twitter followers in both the college and adult samples. This may be a result of the affordances made by each platform. Facebook allows narcissistic users to make friend requests directly, while Twitter users typically acquire followers by garnering interest in the tweets that they generate. Thus, the narcissistic desire to accumulate Facebook friends may be accomplished simply by making direct requests; however, a desire to accumulate Twitter followers must be accomplished by creating interesting "tweets" so that others opt to follow you. Thus, active usage on Twitter becomes critical with respect to narcissism, and the results of the mediation analyses bore this out.

The mediation models reveal that the reasons for Twitter usage all manifested through tweeting (i.e., active usage). The importance of creating a profile that attracts followers was positively related to the number of tweets, and number of tweets predicted number of followers, as tweeting is *the* primary means for attracting followers. There are a host of variables that may determine whether or not the user actually acquires followers and these may attenuate the relationship between tweeting and followers, but narcissism does appear to be a primary driver for the desire for followers, which in turn drives tweets.

10.1. Strengths, limitations, conclusion

The greatest strengths of the current investigation include the large sample size and diverse cross section of participants, and the inclusion of reasons for usage allowing for the investigation of mediated models. Additionally, the inclusion of dominance weights allows for some comparison of the relative importance of predictors of Facebook versus Twitter.

Despite these advantages, some methodological limitations remain. Both studies relied on a self-report correlational design, hindering definitive statements about causality and requiring heavy reliance on the memory and honesty of participants in reporting. Future research should also strive for a greater balance of racial diversity among participants, as the college sample in the current investigation was heavily populated with Caucasian participants. Additionally, while we requested American adults in the MTURK sample, it is possible that individuals from outside of the United States completed the survey. Future research using MTURK should look to include a question to verify participants' demographics. Lastly, we concur with other researchers who have called for a greater use of experimental designs. Given the early stages of SNS research such methods would allow for greater control to isolate variables and allow for tests of causality.

Although we acknowledge limitations to the current research, we believe that the current findings regarding reasons for SNS usage will prompt researchers to include such motivational types of variables in future SNS studies rather than relying so heavily on usage only, as it appears that motivational variables add tremendous understanding to the significant relationships that emerge. Furthermore, it is clearly evident that not all SNS are created equal, and that different kinds of platforms (e.g., microblogging, profile-based) lend themselves to various types of motives and activities. As the field of SNS research moves forward,

researchers must engage in theory building that takes the affordances of the medium into account.

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