Narcissism and romantic relationship presentation on social media: The role of motivations and partner attractiveness

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ABSTRACT

Two studies assessed the associations that narcissistic admiration (an agentic form of narcissism characterized by assertive self-enhancement and self-promotion) and narcissistic rivalry (an antagonistic form of narcissism characterized by self-protection and self-defense) have with self-enhancing and communal motivations for sharing romantic relationship information on social media, and how the partner's physical attractiveness relates to the likelihood of sharing this information. In Study 1, 248 participants reported on their actual relationships. In Study 2, 423 participants evaluated hypothetical partners whose physical attractiveness was experimentally manipulated. In both studies, narcissistic rivalry was associated with greater self-enhancing motivations. In Study 1, narcissistic admiration was associated with greater self-enhancing and communal motivations for sharing the relationship. In both studies, narcissistic individuals were not more likely to share their relationships if their partners were physically attractive. Study 2 provided some evidence that both narcissistic admiration and narcissistic rivalry were associated with a preference for sharing sexy photographs of one's partner, depending upon the operationalization of the preference.

1. Introduction

During the past 10 years, social networking sites (SNS) – including Facebook, Twitter, and Instagram – have become a common part of people's lives. Approximately 69% of American adults have a profile on a SNS, amounting to a greater than three-fold increase in 10 years (Pew Research Center, 2018). About 60% of Instagram and Snapchat users and 74% of Facebook users visit these sites daily, with about half visiting them multiple times each day (Smith & Anderson, 2018). The tremendous popularity of SNS, along with the opportunities they provide for self-presentation and self-enhancement, have led both popular media and psychologists to take an interest in how narcissism relates to SNS use (Campbell & McCain, 2018).

Narcissism is characterized by a grandiose view of oneself, self-centeredness, and a sense of entitlement (e.g., Dowgwillo, Dawood, & Pincus, 2016; Miller, Lynam, Hyatt, & Campbell, 2017; Morf & Rhodewalt, 2001). A large body of research concerning narcissism has focused on its connections with various aspects of romantic relationships. Narcissism is associated with numerous difficulties in long-term relationships (e.g., Brunell & Campbell, 2011; Wurst et al., 2017), such as taking a game-playing approach to relationships (Campbell, Foster, & Finkel, 2002), devaluing romantic partners (Campbell, Rudich, &

Sedikides, 2002), and pursuing self-enhancement at the cost of personal relationships (Sedikides, Campbell, Reeder, Elliot, & Gregg, 2002).

Despite great interest in how narcissism relates to both SNS use and romantic relationships, no research has closely examined how narcissists present their romantic relationships on SNS. The only study to touch on this subject asked participants about the frequency with which they posted about their relationship on Facebook and found no association with narcissism (Marshall, Lefringhausen, & Ferenczi, 2015). This is an important issue because an emerging literature shows that SNS play a significant role in romantic relationship processes (Billedo, Kerkhof, & Finkenauer, 2015; LeFebvre, Blackburn, & Brody, 2015). The question of how narcissistic individuals present their romantic relationships on SNS is still open. On the one hand, they may choose not to present their relationships because it would pull focus away from themselves. On the other hand, they may want to use their successful relationships or desirable partners to seek admiration from others. This suggests that motivations of narcissistic individuals for sharing relationship information may be an important factor in understanding how they present their relationships on SNS.

According to the Agency Model of Narcissism (Campbell, 1999; Campbell, Brunell, & Finkel, 2006), narcissistic individuals choose physically attractive partners to enhance their status. Social media

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provides an excellent testing ground for this hypothesis. Narcissistic individuals prefer more physically attractive partners and are more satisfied when they obtain attractive partners (Seidman, 2016). These findings generally support the notion that attractive partners help narcissistic individuals achieve self-enhancement goals. However, narcissistic individuals may prefer attractive partners simply because they find them more inherently appealing, rather than because they satisfy self-enhancement goals. Because social media allows users to publicly display their relationship, it contains a strong self-presentational element. In addition, narcissistic individuals may be more willing to admit that their motives for sharing relationship information on social media are self-enhancing than they would be to admit that self-enhancement is a reason for being in a relationship with their partner.

Given the need to directly assess narcissists' motivations for SNS use (Campbell & McCain, 2018), the present research will examine self-enhancing and communal motives for sharing relationship information on SNS and the extent to which they are associated with narcissism. In a test of the agency model (Campbell et al., 2006), this research will also examine the role of partner physical attractiveness in predicting relationship presentation on SNS.

1.1. Agency model of narcissism

According to the Agency Model, narcissistic individuals employ a self-regulatory system designed to enhance and protect their grandiose sense of self (Brunell & Campbell, 2011; Campbell et al., 2006). Thus, much of their social interaction is in service of impressing others. According to this model, narcissistic individuals have a preference for agency over communion. That is, they prioritize achieving status and dominance and are less concerned with goals involving the development of emotional intimacy or caring for others. They value agentic personal qualities, such as intelligence, success, and dominance more than communal qualities, such as morality, sensitivity, caring, and warmth (Brunell & Campbell, 2011; Campbell et al., 2006). Narcissistic individuals not only believe they possess high levels of these agentic traits (Campbell, Rudich, & Sedikides, 2002), but also desire more agentic traits in their romantic partners (Campbell, 1999; Seidman, 2016). Associating with people of high status – which is an important agentic characteristic – increases the sense of self-esteem and importance experienced by narcissistic individuals (Campbell, 1999). Thus, their ability to attract a desirable "trophy" partner helps them maintain inflated self-views.

1.2. Narcissism on social media

SNS allow users to selectively present themselves to their social network by maintaining a static profile and posting updates and photographs that can be viewed by other users in their network. Although some research has shown a correlation between narcissism and frequency of SNS use, a recent meta-analysis suggests that narcissistic individuals are not necessarily especially heavy SNS users (Gnambs & Appel, 2018). However, narcissism is associated with using SNS for specific reasons that involve expanding their social network and getting positive attention from others (Bergman, Fearrington, Davenport, & Bergman, 2011).

Research has demonstrated that narcissistic individuals engage in self-promotion on social media. Carpenter (2012) found that narcissism was associated with self-presentational behaviors, such as posting photos of oneself and status updates. In a meta-analysis of studies examining social media use and narcissism, Gnambs and Appel (2018) found that self-presentation behaviors, as compared to other SNS activities, had the strongest associations with narcissism. There is also evidence that narcissistic individuals not only share a lot of self-focused information, but also share specific content that is self-promoting. Buffardi and Campbell (2008) found that narcissistic individuals engage in self-enhancing Facebook activity, such as having an attractive photograph and posting self-enhancing information. Mehdizadeh (2010) coded information on Facebook pages for self-promoting features, and found that such content was associated with narcissism. Narcissism is related to taking selfies (photographs of oneself that involve holding the camera at arm's length), especially those that reveal the body and do not include others in the photograph (Barry, Doucette, Loflin, Rivera-Hudson, & Herrington, 2017; McCain et al., 2016). In sum, there is ample evidence that narcissistic individuals use SNS for self-promotion.

1.3. Romantic relationship presentation on social media

There are several SNS behaviors that involve romantic partners. Some sites, including Facebook, allow users to indicate their relationship status and link it to their partner's profile, sometimes referred to as making the relationship "Facebook official." When a relationship is "Facebook official", it allows one's social network to know who the user's romantic partner is. Linked profile status is associated with higher relationship satisfaction and commitment (Lane, Piercy, & Carr, 2016; Papp, Danielewicz, & Cayemberg, 2012). SNS users may also choose a dyadic profile photograph, which is associated with greater relationship satisfaction (Papp et al., 2012; Saslow, Muise, Impett, & Dubin, 2013). Users can share photographs or other information about their relationship on a regular basis, and this too is associated with greater satisfaction (Saslow et al., 2013; Seidman, Langlais, & Havens, 2019).

There is evidence that these relationship displays are used to achieve relationship goals. Linked profile status is believed by social media users to be a sign of commitment and intensity (Fox & Warber, 2013). Frequent social media relationship displays are also associated with perceptions that social media can increase relationship closeness (Seidman et al., 2019). These findings suggest that improving or validating the relationship is a key motive for these displays.

1.4. The current research

Campbell and McCain (2018) propose that social media serves self-regulatory functions for narcissistic individuals. According to this view, narcissistic individuals use SNS for either self-enhancement or self-protection. In addition, given that narcissistic individuals prioritize themselves over their partners (Sedikides et al., 2002), their relationship-oriented SNS behavior is likely to reflect their own self-promotion more than their desire to enhance relationship quality. Often these self-enhancement motives are assumed by researchers assessing the behavioral manifestations of self-enhancement that occur on SNS (Campbell & McCain, 2018). In fact, in a recent review of the literature, Campbell and McCain (2018) argue that researchers need to target motives more directly. Thus, the present research will assess the extent to which narcissism is associated with self-enhancing or communal motivations for sharing relationship information on social media.

In the present research, we assess narcissism with the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013), a relatively new instrument designed to capture two separate, but related, dimensions of grandiose narcissism. Back et al. (2013) developed the Narcissistic Admiration and Rivalry Concept (NARC), which proposes two dimensions of narcissism: narcissistic admiration, which is agentic and characterized by active self-promotion and enhancement, and narcissistic rivalry, which is antagonistic and characterized by defensiveness and self-protection. Both narcissistic admiration and narcissistic rivalry help to maintain grandiose self-views. Narcissistic admiration is generally associated with relatively positive behaviors and outcomes, including stable self-esteem, positive self-perceptions on communal qualities, agentic interpersonal behaviors, and short-term personal appeal, whereas narcissistic rivalry is associated with relatively negative behaviors and outcomes, including unstable self-esteem, negative self-perceptions on communal qualities, malicious envy, hostile behaviors, and long-term relationship difficulties (e.g., Back et al.,

2013; Geukes et al., 2017; Wurst et al., 2017). Moreover, narcissistic admiration is associated with greater long-term relationship quality and satisfaction, whereas narcissistic rivalry is associated with relatively poor outcomes for long-term relationships (Wurst et al., 2017). With its focus on narcissists' attitudes toward themselves and others, The NARC framework has been especially useful for understanding narcissists' behavior in and attitudes toward romantic relationships (Wurst et al., 2017), and thus will be the focus of the present investigation.

Although both narcissistic admiration and narcissistic rivalry are associated with self-enhancing tendencies, those individuals with higher levels of narcissistic rivalry may be especially prone to presenting their relationships on social media as a way to self-enhance because they may be aware that social media facilitates social comparison (e.g., Steers, Wickham, & Acitelli, 2014). Thus, social media would give individuals with higher levels of narcissistic rivalry an excellent opportunity to make their rivals feel inferior and to feel superior to their rivals. In addition, narcissistic rivalry is associated with more unstable self-esteem (Geukes et al., 2017), which may lead to social comparison reactions to others' SNS content that then prompt them to show off their relationships.

The Agency Model (Campbell et al., 2006) proposes that narcissistic individuals use their romantic partners as a way to bolster themselves via association with a desirable partner. Thus, narcissism should be associated with self-enhancing motives for sharing one's relationship on social media. In addition, the self-serving attitudes toward relationships that characterize narcissistic individuals should lead them to be especially unlikely to share their relationship on social media for the sake of enhancing or affirming their relationship. However, because narcissistic admiration is associated with more positive relationship attitudes (Wurst et al., 2017), it may be related to relationship-enhancing, communal motives for SNS activity.

Together, this existing research led us to two hypotheses regarding associations between narcissism and motivations for sharing relationship content on SNS:

Hypothesis 1. Narcissistic admiration and narcissistic rivalry will be positively associated with self-enhancing motives for sharing relationship information on SNS.

Hypothesis 2. Narcissistic admiration will be positively associated with communal motivations, whereas narcissistic rivalry will be negatively associated with communal motivations.

According to the Agency Model, narcissistic individuals desire attractive romantic partners because they believe these "trophy" partners will bring them admiration from others (Brunell & Campbell, 2011; Campbell et al., 2006). However, it is also possible that narcissistic individuals prefer these partners simply because they inherently value the trait and enjoy being with physically attractive partners. Social media provides a setting for testing the theory behind the Agency Model. If individuals with higher levels of narcissism are more likely than those with lower levels of narcissism to share relationship information to impress others or are more likely to share photographs of physically attractive partners, this suggests that their romantic partners are serving a self-enhancement purpose. This led us to the following hypotheses:

Hypothesis 3. Individuals with higher levels of narcissistic admiration and narcissistic rivalry will be more likely to share romantic relationship content on social media if their partner is physically attractive.

Hypothesis 4. Narcissistic admiration and narcissistic rivalry will be associated with a greater willingness to share photographs of one's partner wearing sexy rather than modest attire.

2. Study 1

2.1. Method

2.1.1. Participants and procedure

Participants were 371 community members recruited from Mechanical Turk (MTurk). Participants were required to be currently involved in a romantic relationship, have a SNS account, and be under age 45. Data from 116 participants were eliminated for problematic response patterns: 16 for not completing the survey, 77 for failing at least one attention check, 26 for indicating they were single, three for stating that they do not use SNS, four for indicating that they were over 45, and 11 for not completing all measures used in the analysis. The final sample included 248 participants (119 men, 129 women) with a mean age of 30.26 years ($SD = 4.74$). The racial/ethnic composition of the sample was 69.4% White/Caucasian, 13.7% Black/African American, 8.5% Asian or Pacific Islander, 3.2% Native American, 2.8% Hispanic/Latino/a, and 2.4% other. The average length of relationship was 6.16 years ($SD = 4.66$ years). Eleven participants were casually dating, 46 in a committed relationship, 68 cohabiting, and 123 married.

Participants reported spending an average of 9.75 h per week on social media ($SD = 9.64$). Most participants (86.7%) were users of multiple SNS with the average number of sites being 3.29 ($SD = 1.57$). The most popular SNS were Facebook (96% of participants maintaining a profile), Instagram (64.5%), Twitter (47.6%), Snapchat (37.1%), and Pinterest (35.1%). The majority (73.8%) indicated Facebook was their primary SNS.

Participants completed an online survey assessing narcissism, partner perceptions, SNS activity, and other measures not relevant to the present analysis.[1]

2.1.2. Materials
2.1.2.1. *Narcissism*. Narcissistic admiration and narcissistic rivalry were assessed with the NARQ (Back et al., 2013) which contains 18 items rated on scales that ranged from 1 (*not agree at all*) to 6 (*agree completely*). Nine items assess narcissistic admiration (e.g., "I am great," "I enjoy my successes very much") and nine items assess narcissistic rivalry (e.g., "most people are somehow losers," "I want my rivals to fail"). According to Back et al. (2013), the predictive validity of the NARQ for behavior exceeds that of the Narcissistic Personality Inventory (Raskin & Hall, 1979) which is the most commonly used measure of narcissism. Additionally, the NARQ has been shown to have levels of self-other agreement similar to other personality measures (e.g., the Big 5), and high internal consistency (α's > 0.85 for both subscales).

2.1.2.2. *Partner perceptions*. Participants rated their romantic partners on traits from Fletcher, Simpson, Thomas, and Giles (1999) using scales that ranged from 1 (*not at all like my partner*) to 7 (*very much like my partner*). Because the focus of the present investigation was physical attractiveness, the three items assessing attractiveness (i.e., "attractive," "nice body," and "sexy") were averaged to create a physical attractiveness index.

2.1.2.3. *Social media activity*. Participants answered questions regarding their tendency to share their relationship on SNS. Participants were asked if their primary SNS account photograph included their partner (Yes or No), and if they linked to their partner's profile in indicating their own relationship status, such as making the relationship "Facebook official" (Yes, No, or N/A). Participants indicated how frequently they shared photographs on

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Table 1
Factor loadings for SNS motivation items for Studies 1 and 2.

Item	Study 1		Study 2	
	1	2	1	2
It shows my appreciation toward my partner	**0.892**	0.113	**0.946**	0.089
It displays my commitment to my partner	**0.855**	0.166	**0.859**	0.090
It shows how much I love my partner	**0.823**	0.218	**0.886**	0.123
It allows me to show off that I am in a happy relationship	**0.701**	**0.375**	**0.461**	**0.500**
It allows me to show off how attractive my partner is	**0.628**	**0.481**	**0.550**	**0.394**
It shows that I have a better life than others	0.169	**0.868**	0.057	**0.821**
It will make other people jealous	0.158	**0.834**	0.056	**0.854**
It would increase my social status	0.264	**0.810**	0.174	**0.754**
It will impress others	0.288	**0.805**	0.234	**0.810**

Note. Loadings represent rotated factor solution using varimax rotation and maximum likelihood extraction. Loadings > 0.3 are bolded.

social media of any kind, of themselves, and of their partners, using a scale that ranged from 1 (*never*) to 7 (*extremely often*).

2.1.2.4. Motivations for sharing relationship on SNS. Participants indicated how well each of nine statements reflected their reasons for posting about their romantic partner on social media, using scales that ranged from 1 (*not at all*) to 7 (*extremely*). Six items were designed to assess self-enhancing motivations that involve displaying the relationship to impress others. Three items were designed to assess communal motivations that involve expressing warm sentiments toward one's partner and affirming commitment. See Table 1 for all items. We examined the factorability of these items, consistent with recommendations to establish factorability (Bryant & Yarnold, 1995; Tabachnick & Fidell, 2007). First, 34 out of 36 inter-item correlations were at least 0.3, suggesting reasonable factorability. Second, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.89, which is greater than the recommended 0.6 (Cerny & Kaiser, 1977). Finally, Bartlett's test of sphericity was significant ($\chi^2[36] = 1694$, $p < .001$). Thus, we determined that exploratory factor analysis was appropriate for all nine items. We used maximum likelihood extraction and varimax rotation. As shown in Table 1, the items loaded onto two factors. We eliminated two items because they had loadings above 0.3 on both factors. This left four items in the self-enhancing motivations subscale and three in the communal motivations subscale. Descriptive statistics and reliability coefficients for all measures are reported in Table 2.

2.2. Results

2.2.1. Motivations for sharing relationship

To test Hypotheses 1 and 2, examining associations between

Table 3
Regression coefficients predicting motivations for sharing relationship information on SNS.

Predictors	Outcome	
	Self-enhancing motives	Communal motives
Gender	−0.060	0.065
Relationship length	−0.039	−0.014
Narcissistic admiration	0.184**	0.239**
Narcissistic rivalry	0.525***	0.039
R^2	0.465***	0.066**

Note. Coefficients are standardized betas.
** $p < .01$.
*** $p < .001$.

narcissism and motivations for sharing romantic relationship information on SNS, we conducted two multiple regression analyses, one using self-enhancing motivations as the outcome variable, and the other using communal motivations as the outcome. In both models, we controlled for gender and relationship length. See Table 2 for bivariate correlations of all Study 1 variables. See Table 3 for standardized regression coefficients. Each column of the table represents results of a different regression model.

Consistent with Hypothesis 1, narcissistic admiration and narcissistic rivalry were positively associated with self-enhancing motives. Consistent with Hypothesis 2, narcissistic admiration was positively associated with communal motives. Contrary to Hypothesis 2, narcissistic rivalry was unrelated to communal motives.

2.2.2. Partner physical attractiveness and photo-sharing on social media

To examine whether narcissistic individuals would be especially likely to share their relationships on SNS if they perceived their partners as high in physical attractiveness (Hypothesis 3), we conducted three separate analyses, using each of our measures of relationship sharing: frequency of posting partner photos, linking one's profile to the partner's profile, and using a dyadic profile photo.

First, we ran a multiple regression model predicting frequency of posting partner photos from narcissism and partner attractiveness. We controlled for the general frequency of posting photos because narcissism is related to greater social media use (McCain & Campbell, 2018) and photo posting frequency was expected to be related to frequency of posting a specific type of photo. We also controlled for gender and relationship length. Control variables were entered in Step 1 of the model. Main effects for narcissistic admiration, narcissistic rivalry, and partner attractiveness were entered in Step 2. Interactions between each narcissism dimension and partner attractiveness were entered in Step 3. Results are displayed in Table 4.

Hypothesis 3 predicts an interaction between narcissism and partner

Table 2
Study 1: intercorrelations between variables.

	1	2	3	4	5	6	7	8	9
1. Gender (0 = male, 1 = female)									
2. Narcissistic admiration	−0.254***								
3. Narcissistic rivalry	−0.285***	0.608***							
4. Self-enhancing motivation	−0.260***	0.526***	0.655***						
5. Communal motivation	−0.008	0.242***	0.158*	0.402***					
6. Posting partner photos	−0.118	0.254***	0.309***	0.442***	0.453***				
7. Profile linked to partner	0.002	−0.063	0.046	0.080	0.274***	0.342***			
8. Dyadic profile photograph	−0.127*	0.059	0.237***	0.243***	0.143*	0.405***	0.393***		
9. Partner attractiveness	−0.143*	0.239***	−0.039	0.014	0.220***	0.065	0.063	0.031	
Mean	0.52	3.44	2.68	2.95	4.59	3.44	0.73	0.47	5.44
SD	0.50	1.17	1.24	1.71	1.76	1.67	0.45	0.50	1.27
α		0.908	0.921	0.918	0.904				0.859

* $p < .05$.
*** $p < .001$.

Table 4
Regression results predicting frequency of posting partner photos.

Predictors	Step 1	Step 2	Step 3
Gender	−0.161**	−0.134*	−0.134*
Relationship length	−0.041	−0.026*	−0.024
Posting photos generally	0.690***	0.679***	0.681***
Partner attractiveness	–	0.053	0.044
Admiration	–	−0.119†	−0.119†
Rivalry	–	0.180**	0.189**
Admiration × partner attractiveness	–	–	−0.017
Rivalry × partner attractiveness	–	–	−0.035
ΔR^2	0.488***	0.018*	0.002

Note. Coefficients are standardized betas.
† $p < .10$.
* $p < .05$
** $p < .01$.
*** $p < .001$.

attractiveness. Thus, we used G-Power (Faul, Erdfelder, Lang, & Buchner, 2007) to calculate a priori power for the ΔR^2 due to the interaction, based on the variance explained by the main effects. Without clear guidelines from previous research, we assumed a small to medium effect size of $R^2 = 0.03$. To achieve 90% power, the required sample size is 176. Our sample size of 248 exceeds this estimate. Contrary to Hypothesis 3, there was no significant interaction between either narcissism dimension and partner attractiveness. However, there was a positive association between narcissistic rivalry and frequency of posting partner photos and there was a marginally significant negative association between narcissistic admiration and posting frequency.

Given the findings from our first analysis, regarding motivations for sharing relationship content on SNS, and the surprising associations between narcissism and posting frequency, we conducted mediation analyses to determine if the associations between the NARC dimensions and posting frequency could be explained by these motives. We used Hayes (2013) PROCESS macro for SPSS, model 4, to determine if narcissism had an indirect association with sharing partner photographs on social media through self-enhancing and communal motives. PROCESS uses a bootstrap sampling procedure 10,000 times to create a 95% confidence interval for the indirect effect. This model also allowed us to test associations between posting frequency and the mediating variables (i.e., self-enhancing and communal motives).

See Fig. 1 for model. Self-enhancing motivations ($B = 0.163$,

$SE = 0.063$, $t = 2.60$, $p = .010$, 95%CI [0.040, 0.287]) and communal motivations ($B = 0.191$, $SE = 0.050$, $t = 3.85$, $p < .001$ 95%CI [0.093, 0.288]) were positively associated with posting photographs of one's partner. Narcissistic admiration had a negative direct association with posting photos ($B = -0.143$, $SE = 0.056$, $t = -2.57$, $p = .011$, 95%CI [−0.253, −0.034]), whereas narcissistic rivalry had no direct association with posting photos ($B = 0.079$, $SE = 0.063$, $t = 1.25$, $p = .212$, 95%CI [−0.045, 0.203]). Tests of simple mediation showed that narcissistic admiration had a positive indirect association with photo posting through self-enhancing motives ($B = 0.021$, $SE = 0.015$, 95%CI [0.001, 0.065]). There was some evidence that this association was also mediated by communal motives at a trend level, but the association did not reach significance ($B = 0.026$, $SE = 0.018$, 95%CI [−0.004, 0.071]). In addition, narcissistic rivalry had a positive indirect association with posting photos through self-enhancing motives ($B = 0.082$, $SE = 0.043$, 95%CI [0.007, 0.175]) but no indirect association through communal motives ($B = -0.001$, $SE = 0.016$, 95%CI [−0.033, 0.039]).

To test Hypothesis 3, using profile linkage and dyadic profile photos as the dependent variables, we conducted binary logistic regression analyses. Gender and relationship length were entered in Step 1 as control variables. Partner attractiveness and narcissism were entered in Step 2. Interactions between partner attractiveness and the narcissism dimensions were entered in Step 3. Table 5 shows regression coefficients, standard errors, and odds ratios predicting profile linkage and dyadic profile photos.

For logistic regression, a small effect is around 1.5 (Olivier, May, & Bell, 2017). Thus, we used StudySize software (Creostat, 2013) to estimate a priori power to detect an effect of 1.5 using a total R^2 based on the actual model. To achieve 90% power a sample size of 242 is required for predicting profile linkage and a sample size of 290 for predicting dyadic profile photograph. Our sample size was close to the size needed to detect relatively small effects.

Not surprisingly, those in longer relationships were more likely to have their profile linked to their partner's profile, with each year of involvement associated with a 1.78 times greater likelihood of profile linkage. Consistent with the results of the frequency of photo-posting, partner attractiveness was not associated with profile linkage. Consistent with the results of the photo-posting, narcissistic admiration was associated with a 33% lower likelihood of profile linkage and narcissistic rivalry with a 55% higher likelihood. However, adding an interaction with partner attractiveness to the model reduced the
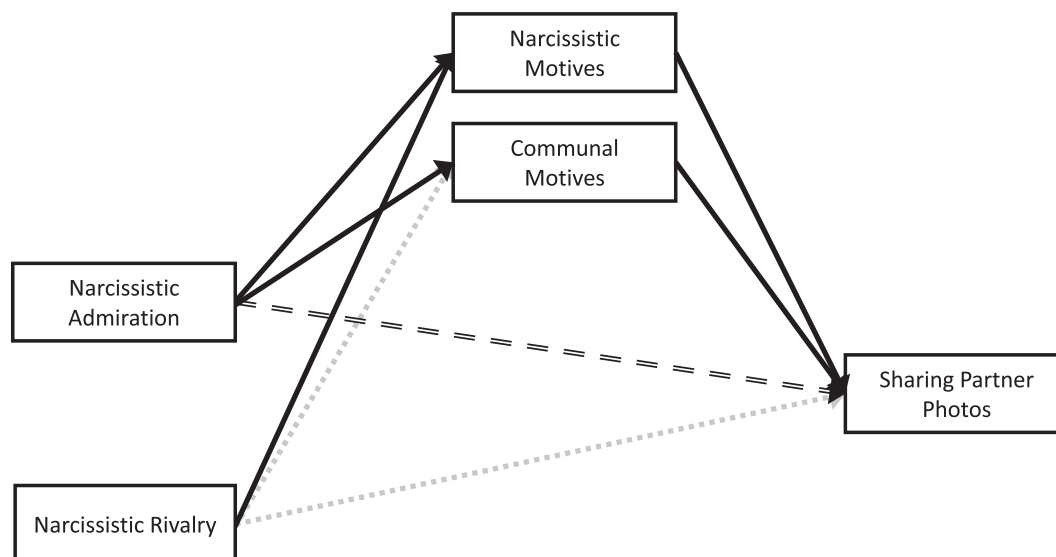

Fig. 1. Results of mediational model. Solid lines represent positive associations, dashed line represents negative association, and dotted line represents no association.

Table 5
Logistic regression predicting profile linkage and dyadic profile photograph.

| | Profile linkage | | | | | | Dyadic profile photograph | | | | | |
| | Step 1 | | Step 2 | | Step 3 | | Step 1 | | Step 2 | | Step 3 | |
	B(SE)	e^β	B(SE)	e^β	B(SE)	e^β	B(SE)	e^β	B(SE)	e^β	B(SE)	e^β
Gender	0.149 (0.304)	1.16	0.076 (0.325)	1.08	0.008 (0.334)	1.01	0.563 (0.261)*	1.76	0.412 (0.282)	1.51	0.415 (0.285)	1.51
Relationship length	0.491 (0.181)**	1.63	0.554 (0.190)**	1.74	0.675 (0.198)**	1.78	0.119 (0.130)	1.13	0.177 (0.136)	1.19	0.198 (0.138)	1.22
Partner attractiveness	–	–	0.273 (0.167)	1.31	0.179 (0.177)	1.2	–	–	–0.031 (0.145)	0.97	–0.082 (0.153)	0.92
Admiration	–	–	–0.398 (0.202)*	0.67	–0.348 (0.222)	0.71	–	–	–0.315 (0.188)†	0.73	–0.312 (0.190)	0.73
Rivalry	–	–	0.438 (0.202)*	1.55	0.402 (0.214)†	1.49	–	–	0.668 (0.189)***	1.95	0.737 (0.196)***	2.09
Admiration × partner attractiveness	–	–	–	–	–0.472 (0.187)*	0.62	–	–	–	–	–0.089 (0.173)	0.92
Rivalry × partner attractiveness	–	–	–	–	0.122 (0.211)	1.13	–	–	–	–	–0.249 (0.200)	0.78
Omnibus χ²	8.38*		6.34†		7.92*		5.08†		15.54**		4.32	

† $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

narcissistic admiration effect to non-significance and the narcissistic rivalry effect to marginal significance. Narcissistic rivalry did not interact with partner attractiveness. Narcissistic admiration did interact with partner attractiveness, but the pattern was the reverse of our prediction. For those high in narcissistic admiration, partner attractiveness was related to a lower likelihood to profile linkage, but for those low in narcissistic admiration, partner attractiveness was related to a greater likelihood of profile linkage.

There was weak evidence that women were slightly more likely to use a dyadic profile photograph than men. Relationship length was unrelated to use of a dyadic profile photo. Consistent with the previous analysis, narcissistic admiration was associated with a 33% lower likelihood of having a dyadic profile photo, and narcissistic rivalry was associated with a two times greater likelihood of having a dyadic photo. There was no main effect of partner attractiveness and no interaction between partner attractiveness and either NARC dimension.

2.3. Discussion

Survey data showed that those high in both narcissistic admiration and narcissistic rivalry reported more self-enhancing motives for sharing relationship information on social media, whereas narcissistic admiration was associated with having more communal motives for relationship sharing. In addition, narcissistic admiration was related to more and narcissistic rivalry to less relationship sharing on social media for all three measures of relationship sharing. Partner physical attractiveness was not related to relationship-sharing in a systematic way. It is possible that narcissistic individuals are reluctant to share the spotlight with highly attractive partners. However, because this study relied on self-report, it is difficult to interpret these results. Individuals in relationships often idealize their partners, overestimating their attributes, including physical attractiveness (e.g., Murray, Holmes, & Griffin, 1996). This complicates matters in the case of narcissism because narcissistic individuals devalue their partners (Campbell, Rudich, & Sedikides, 2002), especially those high in narcissistic rivalry (Wurst et al., 2017; Zeigler-Hill & Trombly, 2018). Without an objective assessment of partners' attractiveness, it is difficult to determine the effects of partners' attractiveness. Therefore, Study 2 manipulated the physical attractiveness of a hypothetical partner. Study 2 also provided a more direct assessment of the extent to which narcissism was associated with a tendency to display an attractive partner on social media by examining how likely participants would be to share a sexy photograph of their hypothetical partner, compared to a photograph of the partner in normal clothing, in a test of Hypothesis 4.

3. Study 2

3.1. Method

3.1.1. Participants

Participants were 466 undergraduates recruited from the subject pool at a large public university in the Midwestern United States. Data were eliminated for 41 participants due to problematic response patterns: 15 for not completing the entire survey and 26 for failing at least one attention check. The final sample included 425 participants (79 men, 345 women, 1 transgender) with a mean age of 19.94 years ($SD = 3.08$). The racial/ethnic composition of the sample was 76.1% White/Caucasian, 9.8% Black/African American, 5.7% Asian or Pacific Islander, 0.5% Native American, 3% Hispanic/Latino/a, and 5% other.

Participants reported spending an average of 15.46 h per week on social media ($SD = 17.94$). Most participants were users of multiple SNS (81.8%) but 3.6% did not use any SNS. The average number of SNS used by participants was 3.85 ($SD = 1.84$). The most popular were Snapchat (86.8% of participants maintaining a profile), Instagram (82.3%), Facebook (67.3%), Twitter (55.5%), and Pinterest (45.9%).

Table 6
Study 2: intercorrelations between variables.

	1	2	3	4	5	6	7	8
1. Gender (0 = male, 1 = female)								
2. Narcissistic admiration	0.093							
3. Narcissistic rivalry	0.135*	0.287*						
4. Self-enhancing motivation	0.026	0.200*	0.349*					
5. Communal motivation	0.018	0.051	0.019	0.246*				
6. Posting partner photos	−0.122***	−0.035	−0.001	0.259*	0.353*			
7. Likelihood of sharing relationship	−0.002	−0.022	−0.095***	0.144*	0.410*	0.501*		
8. Photo preference	−0.153***	0.022	0.051	0.166***	−0.069	0.046	−129***	
Mean	0.19†	3.39	2.10	2.60	4.54	3.39	4.53	−2.24
SD	0.396	0.92	0.82	1.38	1.74	1.37	1.84	2.46
α		0.851	0.850	0.892	0.927		0.832	

† $p < .10$.
* $p < .05$.
*** $p < .001$.

3.1.2. Procedure

Participants completed an online experiment, where they first indicated which gender they were most attracted to and likely to date, so that they would evaluate potential partners of their preferred gender. Participants then completed measures of narcissism. Participants were asked to imagine that the person depicted in a photograph was their romantic partner. Participants were assigned to view one of four different photographs, two for the attractive condition and two for the unattractive condition. Participants answered a series of questions regarding their likelihood of sharing photographs of the romantic partner on social media and their motivations for doing so. Participants rated the physical attractiveness of the partner on a 7-point Likert scale, as a manipulation check. Following this, participants in the attractive condition only, simultaneously viewed two additional full-body photographs of the hypothetical partner, one featuring the partner in standard clothing and the other featuring the partner in revealing clothing. Participants were asked how likely they would be to share each photo on social media. Finally, participants answered a series of demographic questions, including rating their own physical attractiveness on a 7-point Likert scale, and general questions about their social media use.

3.1.3. Materials

3.1.3.1. Photographs of hypothetical partners.
Two attractive and two unattractive photographs were selected for each gender. All piloted photographs were headshots and all targets were assumed to be in their 20s. Pilot testing was conducted online, using a sample of undergraduate students at a small liberal arts college in the Northeastern US. Photographs were obtained from publicly open social media and dating website profiles. In the initial pilot test, 19 photographs of women were rated by 14 heterosexual men and 17 photographs of men were rated by 45 heterosexual women. However, ratings for attractive targets were not sufficiently high, so we conducted a second round of pilot testing, using photographs of professional models from stock photo websites, six women and five men, rated by 15 heterosexual men and 27 heterosexual women, respectively. In the second round of pilot testing, participants rated the attractiveness of full body photographs of the targets in normal or sexy attire. Participants rated the targets' physical attractiveness, using a scale that ranged from 1 (*not at all*) to 10 (*extremely*).

The unattractive female headshots were rated an average of 4.53 (SD = 2.0) and 5.13 (SD = 0.92). The attractive female headshots were rated an average of 7.47 (SD = 1.51) and 8.47 (SD = 1.13). The sexy attire female photographs both depicted the woman on a beach, wearing a bikini. The attractiveness ratings for these photos were 8.27 (SD = 1.03) and 8.13 (SD = 1.55). The normal attire photographs depicted the woman in clothing that was fitted, but not revealing. The attractiveness ratings for these photos were 7.80 (SD = 1.32) and 7.93 (SD = 1.03). We initially planned to use average attractiveness male headshots, but variability was too high, such that it was not possible to find male photographs with mean attractiveness ratings around 5 that did not have a substantial proportion of ratings above 6. Therefore, we selected two low attractiveness photographs with an average of 2.84 (SD = 1.54) and 3.02 (SD = 1.37). The attractive male headshots were rated an average of 7.70 (SD = 1.96) and 6.81 (SD = 1.57). The sexy attire male photographs both depicted the man at a beach or pool, wearing swim trunks. The attractiveness ratings for these photos were 7.18 (SD = 1.86) and 6.41 (SD = 1.97). The normal attire photographs depicted the man in a button-down shirt and pants with attractiveness ratings of 7.07 (SD = 2.04) and 7.11 (SD = 1.84).

3.1.3.2. Evaluation of hypothetical romantic partner.
Participants rated how likely they would be to use a social media profile picture that included the partner and how likely they would be to link their profile to their partner's on SNS (e.g., making the relationship "Facebook official"). Participants responded on a scale that ranged from 1 (*not at all likely*) to 7 (*extremely likely*). Participants answered three questions about how frequently they post photographs on SNS of any kind, of themselves, and how often they believed they would post photographs of the hypothetical partner. Participants responded on scales that ranged from 1 (*never*) to 7 (*extremely often*).

Participants in the attractive condition also evaluated the normal and sexy attire photographs, labeled as Photo A and Photo B, respectively. Participants were asked to choose which of the two photographs they would be most likely to post on social media. They then rated the extent to which they would favor each photograph if they could only choose one photograph to post, using the responses *strongly prefer photo A*, *moderately prefer photo A*, *slightly prefer photo A*, *neutral*, *slightly prefer photo B*, *moderately prefer photo B*, and *strongly prefer Photo B*. Participants then rated how likely they would be to post each photograph, individually, if they intended to post a photograph of their partner on social media, using a scale ranging from 1 (*not at all likely*) to 7 (*extremely likely*).

3.1.3.3. Motivations for relationship sharing.
The items from Study 1 were rephrased to pertain to the specific hypothetical partner. See Table 6 for descriptive statistics and reliability.

3.1.3.4. Narcissism.
As in Study 1, participants completed the NARQ (Back et al., 2013). See Table 6 for descriptive statistics and reliability.

3.2. Results

Study design and analysis plan were pre-registered at: https://osf.io/qsc89/?view_only=8e9aee0e1277480a89a09881a63f2371/

Table 7
Regression coefficients for Study 2.

Predictors	Self-enhancing motives	Communal motives	Likelihood of sharing relationship	Posting partner photos
Gender	−0.025	0.016	0.024	0.006
Photo posting frequency	–	–	–	0.457***
Condition	0.062	0.041	0.250***	0.167***
Admiration	0.121	0.124	0.063	−0.009
Rivalry	0.294***	0.042	−0.086	0.027
Admiration × condition	−0.011	−0.085	−0.073	−0.116
Rivalry × condition	0.033	−0.110	−0.028	0.000
R^2	0.138	0.017	0.074	0.253

Note. Coefficients are standardized betas. $^{\dagger} p < .10$ $*p < .05$.

3.2.1. Manipulation check

An independent samples *t*-test confirmed that participants in the attractive condition rated the target higher in attractiveness ($M = 4.85$, $SD = 1.4$) than participants in the unattractive condition ($M = 3.31$, $SD = 1.5$), $t(425) = −10.62$, $p < .001$.

3.2.2. Motivations for sharing relationship

To test Hypotheses 1 and 2, that there is an association between narcissism and motivations for sharing romantic relationships on SNS, two multiple regression analysis were conducted, one predicting self-enhancing and one predicting communal motivations. We assessed the association between narcissism and SNS motivations, controlling for experimental condition and allowing condition to interact with both NARC dimensions. See Table 6 for bivariate correlations of all variables. See Table 7 for standardized regression coefficients. Each column of the table represents the results of a different regression model.

Consistent with Hypothesis 1, narcissistic rivalry was positively associated with self-enhancing motives. Contrary to Hypothesis 2, narcissistic admiration and narcissistic rivalry were unrelated to communal motives. There were no main effects of experimental condition and condition did not interact with narcissism.

3.2.3. Partner physical attractiveness and photo-sharing

To examine whether narcissistic individuals would be more willing to share their relationships on SNS if their partner was physically attractive (Hypothesis 3), we conducted several analyses. We had three measures of relationship sharing: frequency of posting partner photos, linking one's profile to the partner's profile, and using a dyadic profile photo. We computed a new measure, likelihood of sharing relationship, from the two items that used the same response scale: linking one's profile to the partner's profile and using a dyadic profile photo. We conducted analyses with the two measures of relationship sharing, likelihood of sharing relationship and frequency of posting partner photos, as outcome variables.

First, we conducted a multiple regression analysis predicting the likelihood of relationship sharing from narcissism and attractiveness condition, controlling for gender. The control variable was entered in Step 1 of the regression model along with the main effects of narcissistic admiration, narcissistic rivalry, and condition. In Step 2, we entered the interactions between narcissism and condition. Results are displayed in Table 7.

As in Study 1, we used GPower to determine the sample size needed to achieve 90% power for detecting a small to medium effect ($\Delta R^2 = 0.03$), based on the total model R^2. The required samples size was 328 for the relationship sharing composite variable and 266 for the photo posting variable. Our sample size exceeded these estimates. There was no significant effect for either NARC dimension, or interaction between either NARC dimension and attractiveness. Participants in the attractive condition were more likely to share the relationship than those in the unattractive condition.

Secondly, we conducted a multiple regression analysis predicting the frequency of posting partner photos from narcissism and

attractiveness condition. The model was identical to the one used to predict relationship sharing, but we also controlled for how frequently participants reported posting photos on SNS, in general. Results are displayed in Table 7. There was no significant effect for either NARC dimension, or interaction between either NARC dimension and condition. Consistent with the previous analysis, participants in the attractive condition reported a greater likelihood of sharing partner photos than those in the unattractive condition.[2]

3.2.4. Preference for sharing sexy photographs

To test Hypothesis 4, we examined whether narcissism was associated with the likelihood of sharing the sexy, rather than normal attire photo of the partner for participants in the attractive condition. Preference for this photo was assessed in three ways: 1) participants rated their overall comparative preference between the two photos on a bipolar scale, such that higher scores represented a greater preference for the sexy photo, 2) participants made a forced-choice of which photo they preferred, and 3) participants individually rated how likely they would be to share each photo. For this last measure, we computed a difference score (rating of sexy photo – rating of normal photo) to assess relative preference ($M_{diff} = −2.24$, $SD_{diff} = 2.46$). We conducted two multiple regression analyses predicting the extent to which participants favored the attractive targets from narcissism, using each of the two quantitative measures described above. In both models, we controlled for gender.

There was no significant effect of narcissistic admiration ($\beta = 0.085$, $t = 1.29$, $p = .198$) or narcissistic rivalry ($\beta = 0.051$, $t = 0.77$, $p = .443$) in the favoring of the attractive photo on the bipolar rating scale. When predicting the difference between the likelihood of sharing the sexy and the normal photos, there was a marginally significant positive association with narcissistic rivalry ($\beta = 0.131$, $t = 1.94$, $p = .054$), but no association with narcissistic admiration ($\beta = −0.008$, $t = −0.126$, $p = .900$).

In addition, we conducted a logistic regression analyses that examined whether narcissism was associated with participants selecting the sexy or normal clothing photo as their preferred choice. Again, we controlled for gender. Narcissistic admiration was associated with a greater likelihood of choosing the sexy photo ($B = 0.410$, $SE = 0.196$, $e^{\beta} = 1.51$, Wald $= 4.35$, $p = .037$). This indicates that for each 1 point increase in narcissistic admiration, participants were 50% more likely to select the sexy photo. Narcissistic rivalry was unrelated to the likelihood of choosing the sexy photo ($B = −0.127$, $SE = 0.230$, $e^{\beta} = 0.881$, Wald $= 0.31$, $p = .580$).

3.3. Discussion

Consistent with Study 1, narcissistic rivalry was associated with greater self-enhancing motives for relationship sharing. However, contrary to Study 1, narcissistic admiration was not associated with

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[2] The results reported here did not differ when participants' self-rated attractiveness was included in the model.

either self-enhancing or communal motivations. Consistent with Study 1, we found no evidence that narcissism was associated with a greater likelihood of sharing one's relationship on social media, when the partner is physically attractive. However, we did find some evidence that narcissistic admiration and narcissistic rivalry were associated with a stronger preference for sharing a photo in which an attractive partner is wearing sexy, rather than normal, attire. However, whether or not this effect reached significance depended upon the precise way this preference was measured, such that narcissistic admiration was associated with a greater likelihood of selecting the sexy photo in a forced-choice context and narcissistic rivalry was associated with a higher relative likelihood of sharing the sexy photo than the normal photo.

4. General discussion

Two studies assessed the extent to which narcissism was associated with self-enhancing and communal motivations for sharing one's romantic relationship on social media, and the extent to which the partner's physical attractive relates to the likelihood of sharing that relationship. In Study 1, participants reported on their actual relationships. In Study 2, participants evaluated a hypothetical partner whose physical attractiveness was experimentally manipulated, and for those evaluating a physically attractive partner, they indicated their preference for sharing a sexy photograph of that partner, compared to a photograph of the partner in normal attire.

Both studies showed that narcissistic rivalry was associated with a greater likelihood of sharing one's relationship for self-enhancing reasons. Narcissistic admiration was positively associated with self-enhancing and communal motivations for sharing information about the relationship in Study 1, but not Study 2. However, it should be noted that this association was much smaller than the association between narcissistic admiration and self-enhancing motives, and could represent socially desirable responding or a desire to enhance themselves in their partners' eyes. Past research has shown that narcissistic admiration is associated with certain positive relationship outcomes (e.g., Wurst et al., 2017), but it is possible these tendencies only emerge in the context of actual relationships where the feelings participants have for their partners are salient, rather than the hypothetical relationships in Study 2 where participants had no emotional attachment to the imaginary partner. It should also be noted that narcissistic rivalry did not have the expected negative association with communal motivations for sharing information about one's relationship.

There was no evidence that narcissistic individuals were more likely to share information about their relationships if their partners were physically attractive. This was true for actual relationships and when evaluating a hypothetical romantic partner. The association between narcissism and relationship sharing may be complex, in the sense that narcissists may be conflicted between self-enhancing by focusing on themselves or self-enhancing by showing off their relationships which runs the risk of pulling attention away from themselves. Unexpectedly, Study 1 revealed a consistent pattern in which narcissistic rivalry was associated with a greater likelihood of sharing information about one's relationship on social media, and a trend toward narcissistic admiration being associated with sharing less relationship information. The association between narcissistic rivalry and sharing information about the romantic relationship was partially mediated by self-enhancing motives. This suggests that individuals with higher levels of narcissistic rivalry may display information about their relationship in an effort to counteract their somewhat negative self-perceptions.

Although partner attractiveness did not interact with narcissism in either study, there is some evidence from Study 2 that partner attractiveness plays a role in how narcissists share their relationships on SNS. Study 2 showed that narcissistic admiration and narcissistic rivalry were somewhat associated with a preference for sharing sexy, objectifying photographs of physically attractive hypothetical romantic partners. In general, participants did not strongly endorse sharing sexy

photographs on SNS, presumably because they felt it was inappropriate or that it would violate their partner's privacy. However, narcissistic individuals indicated a greater willingness to share this type of photo, but whether or not this association was significant – or at least approached significance – depended on the way this willingness was measured.

The present studies provide insight into the connections that narcissism has with how individuals present their relationships through social media, but it would be helpful for future studies to expand on these results. Our results provide some limited support for the possibility that individuals with narcissistic personality features may be more willing than other individuals to consider displaying sexy photographs of attractive hypothetical partners via social media. This is consistent with the idea that narcissistic individuals may sometimes view romantic partners as something akin to "trophies" (e.g., Campbell, 1999). It would be helpful if future studies examined whether narcissism has similar associations with willingness to publicly display sexy photographs of romantic partners in actual relationships where individuals have real feelings for their partners rather than asking participants to predict their behavior in hypothetical relationships.

Campbell and McCain (2018) have called for more examination of the motives that drive narcissistic individuals to share content on SNS. This is important because much of the research concerning individuals sharing information about their relationships on SNS has focused on specific behaviors, but has neglected to consider motivation. Our results showed that self-enhancing motives play an especially important role in how narcissistic individuals decide to portray their romantic relationships. This is consistent with previous research showing that narcissism is intimately linked with agentic behaviors and motivations (e.g., Campbell, 1999; Campbell et al., 2006; Grove, Smith, Girard, & Wright, 2019). Future research should continue to explore the potential roles that motivational forces may play in how narcissistic individuals portray their romantic relationships through SNS.

Our examination of the motivations behind sharing romantic relationship information on SNS also has implications for research on this topic, outside of the domain of narcissism. Our findings that there are two distinct motivations for sharing relationship information on SNS, self-enhancing and communal, adds to the understanding of relationship presentation as reflective of a merged couple identity (e.g., Saslow et al., 2013). The presence of these motivations is also consistent with research suggesting that SNS use generally serves two needs: belonging and self-presentation (Nadkarni & Hofmann, 2012; Seidman, 2013).

Although the present studies had a number of strengths (e.g., utilized both undergraduate and community samples, considered the reported attractiveness of romantic partners in Study 1 and experimentally manipulated attractiveness of hypothetical partners in Study 2), it is important to acknowledge their potential limitations. First, the present studies relied heavily on self-report measures, which makes it possible that these results may be distorted by socially desirable responding. Future research would benefit from utilizing strategies that are designed to capture these variables without being so reliant on self-reports (e.g., actually examining the SNS posts of participants). The present research also relied on the reports of only one individual in the relationship; thus we cannot determine how the partners of those high in narcissism perceive their partners' SNS behaviors or motives. There were also limitations regarding the generalizability of the results. Study 2 relied on a predominantly female undergraduate sample, and both studies used US-based samples. Thus, these findings may be a better representation of the connections between narcissism and sharing information about romantic relationships through SNS for women than men, for younger adults than older adults, and for those in individualistic than collectivistic cultures. This limits the generalizability of these findings because it is possible that connections between narcissism and sharing information about romantic partners may vary between men and women as well as across developmental periods, and cultures. Future research would benefit from examining these

associations in more diverse samples.

5. Conclusion

The present studies investigated whether narcissism was associated with how individuals share information about their romantic relationships through SNS. Our results showed that narcissistic rivalry was associated with a greater likelihood of sharing one's relationship for self-enhancing reasons. In contrast, narcissistic admiration was associated with self-enhancing and communal motivations for sharing information about the relationship when considering actual (Study 1) but not hypothetical romantic partners (Study 2). There was no evidence that narcissism was associated with sharing information about physically attractive partners in either study but there was a tendency for narcissistic individuals to be more willing than other individuals to consider posting sexy photos of attractive hypothetical partners.

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