Full Length Article

'Check Your Selfie before You Wreck Your Selfie': Personality ratings of Instagram users as a function of self-image posts

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ABSTRACT

This study considered the relation between self-image posts (i.e., selfies, posies) on Instagram and the personality and self-perception attributions made by unfamiliar perceivers based on those posts. Phase 1 involved 30 undergraduates who completed self-report inventories and whose Instagram posts were coded and then screenshot for the second phase. Phase 2 included 119 undergraduates from a different university. Phase 2 participants (perceivers) rated Phase 1 participants (targets) on 13 attributes (e.g., self-absorption, low self-esteem, extraversion, successfulness) based on these screenshots. Targets who posted more selfies were rated more negatively (e.g., more lonely, less successful). Although self-image posts on social media may not be clearly indicative of personality/self-perception, they may be cues for how the depicted person is *perceived* by others.

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1. Introduction

The personality and interpersonal factors underlying social media displays continue to capture the attention of the scientific community and society at-large. A presumption is often made that personality variables predict the extent to which a social media user will engage in certain behaviors (e.g., frequent status updates, hostile Tweets, posts of selfies). Perhaps no single social media behavior has generated more interest concerning personality correlates than the display of self-images, particularly selfies, on popular social media platforms. Much of this research has focused on the extent to which posting selfies on social media is reflective of one's exhibitionism specifically or narcissism more broadly (e.g., Barry, Doucette, Loflin, Rivera-Hudson, & Herrington, 2017; Fox & Rooney, 2015; McCain et al., 2016; Sorokowska et al., 2016). In this way, the designs of most studies on the personality correlates of social media behaviors are aligned with Coconstruction Theory (Underwood & Ehrenreich, 2017), which posits that an individual's social media posts are consistent with the personality attributes he/she exhibits offline.

Also inherent in social media posts are the perceptions of the audience that views them. This issue has elicited relatively little direct examination but is the primary focus of the present study. More specifically, the present study sought to extend prior work on the connection between self-image posts and personality variables, such as narcissism, by (a) considering perceivers' attributions of targets based on their actual Instagram posts; (b) widening the array of personality and self-perception variables considered in this work to include factors such as fear of missing out (FoMO) and loneliness; and (c) to further examine the association between self-reported personality and observed posts on Instagram, as most of this work has relied exclusively on self-reports of social media behavior.

From the perspective first offered by Brunswik (1952) and expanded by Kenny's Social Relations Model (Kenny, 1994), individuals (i.e., perceivers) may use certain cues to make judgments about the personality or behaviors of others (i.e., targets). An important present-day context for this cue utilization may be social media, with selfies serving as the cues through which others are viewed. For example, selfies, particularly those focused on oneself (McCain et al., 2016), may signal narcissism, self-absorption, or confidence. The research paradigms presented by Brunswik (1952) and Kenny (1994) are also concerned with self-other agreement. That is, if perceptions from social media posts are accurate, they should correspond to the target's self-reported personality. Thus,

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cues (i.e., self-image posts on social media; "selfies") may translate to self-other agreement between perceivers and targets on targets' personality, an additional issue considered in the present study.

1.1. Self-perception and others' perceptions as correlates of self-image posts

The emphasis on narcissism in this research is based on the idea that because social media offer unique ways to self-promote one's ideas, activities, or image to an audience (i.e., "followers"), individuals who are narcissistic may be particularly apt to do so (Buffardi & Campbell, 2008; Marshall, Lefringhausen, & Ferenczi, 2015). Specifically, narcissism includes a grandiose, attention-seeking, or arrogant self-presentation and involves being especially concerned with how one is viewed relative to others (Morf & Rhodewalt, 2001). Grandiose narcissism can be conceptualized as overt displays of vanity, authority, and superiority, as traditionally captured by the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). However, this approach does not fully capture more covert strategies to regulate self-esteem (e.g., hiding weaknesses from others, devaluating others) that belie a particular vulnerability to negative interpersonal feedback, which can be measured by the Pathological Narcissism Inventory (PNI; Pincus et al., 2009). Consistent with both of these approaches, for someone with narcissistic tendencies, the display of self-images on social media may provide an efficient platform for demonstrating one's superiority and for gaining affirmation of one's worth through positive comments or "likes."

However, results from previous studies on the link between posting selfies and narcissism are equivocal, with some reporting a positive association between selfie frequency and narcissism (e.g., Fox & Rooney, 2015; McCain et al., 2016; Sorokowska et al., 2016; Weiser, 2015) and others (e.g., Barry, Doucette et al., 2017; Barry, Reiter, Anderson, Schoessler, & Sidoti, 2019) showing no relation or only weak relations involving certain themes of self-image posts (e.g., physical appearance, affiliations with others, accomplishments). A key difference across these studies is the method used for measuring selfies or other self-images. The former studies relied largely on self-reports of selfie posting behaviors, whereas the latter studies involved direct coding of participants' actual social media accounts (i.e., Instagram) for assessing the frequency of participants' self-image posts. That is, in self-report paradigms, individuals may make inferences based on implicit notions that if they acknowledge narcissism, they must also be more likely to post selfies. In this way, self-reported estimates of self-image displays may not be objectively accurate or necessarily related to actual narcissistic or exhibitionistic motives.

Beyond personality factors, characteristics of one's social media audience may be important in predicting the frequency of self-image posts or how those are perceived. For example, grandiose narcissism is associated with posting a higher number of posies (i.e., images in which one poses for a picture that someone else takes) for Instagram users with a relatively high number of followers (see Barry et al., 2019). As alluded to above, grandiose narcissism includes characteristics focused on vanity, perceived superiority over others, and wanting to be the center of attention, perhaps explaining a greater tendency to post self-images when a larger audience is present. Additionally, McCain et al. (2016) noted that these features of narcissism were connected to self-presentational motives for posting selfies and with being recognized by observers as wearing make-up in selfies. However, that study did not directly test how individuals were rated by others on personality attributes as a function of self-image posts.

According to Leary (1995), impression management (i.e., behavior resulting from concern over public image) is crucial for successful social interactions. Thus, whether social media posts translate to positive or negative consensus in the impressions of others deserves further attention, as such perceptions may have a profound impact on subsequent social media behaviors and even offline interactions. Importantly, some types of social media content appear to generate differences in perceptions of the person making the post. For example, narcissistic Facebook status updates from hypothetical targets were associated with judgments of the target as being less successful, less likeable, and less friend-worthy relative to hypothetical individuals posting neutral (i.e., non-narcissistic) status updates (Kauten, Lui, Stary, & Barry, 2015). In another study, the likeability of hypothetical social media profiles was associated with a higher number of followers and likes on photos (Bradley, Roberts, & Bradley, 2017). However, this relation was diminished by the percentage of selfie posts by participants, such that social media profiles with more selfies were rated as less likeable, even if they had high numbers of likes on their posts or a large number of followers (Bradley et al., 2017). Similarly, individuals instructed to take selfies in a laboratory setting were rated by other participants as relatively less likeable based on those selfies (Re, Wang, He, & Rule, 2016). Therefore, existing research suggests that indicators of narcissism and selfies are each related to negative perceptions of hypothetical social media profiles, yet such relations have not been investigated in the context of actual social media profile content.

Other self-perception constructs besides narcissism may also be relevant for social media behavior and how that behavior is perceived. Self-esteem, or one's global self-evaluation (Bushman & Baumeister, 1998), may be one such variable. In general, lower self-esteem shows a small relation with social media activity (Liu & Baumeister, 2016), but self-esteem has not demonstrated clear associations with posting self-images (e.g., Barry, Doucette et al., 2017; McCain et al., 2016). A case could be made that high self-esteem/self-confidence translates to a willingness to post more images of oneself, yet on the other hand, lower self-esteem may induce a desire to post self-images on social media in an attempt to gain positive feedback (e.g., "likes") from one's friends or acquaintances. Regarding the latter model, additional individual difference factors such as FoMO and perceived loneliness may be key. A relatively new construct in the personality and social psychology literature, FoMO involves a preoccupation with being left out of activities in one's social circle (Przybylski, Murayama, DeHaan, & Gladwell, 2013). Being actively engaged on social media is associated with distress for individuals high in FoMO (Barry, Sidoti, Briggs, Reiter, & Lindsey, 2017), perhaps because social media present experiences of others that could be viewed as preferable to one's own activities. Although self-esteem and FoMO have not shown relations with self-image posts in prior research (Barry et al., 2019), a greater tendency to post selfies or posies may be viewed by others as attempts to mitigate lower self-esteem or feelings that one is missing out. That is, self-esteem and FoMO may lend themselves to self-other agreement when perceivers view targets' social media posts.

Further, although results from meta-analyses indicate that self-reported loneliness is related to higher social media engagement (Liu & Baumeister, 2016; Song et al., 2014), it is not clear how this engagement translates to posting images of oneself. Use of image-based social media applications, including Instagram, has been tied to relatively less loneliness than those formats that focus on verbal content (Pittman & Reich, 2016). Thus, it may be that individuals who feel a sense of loneliness may post self-images in an attempt to gain personal comments or feedback from others and, consequently, feel less lonely. However, the extent to which self-image posts are related to perceptions of loneliness on the part of observers is unclear. Therefore, one novel issue addressed in the present

study was whether (high or low) self-esteem, FoMO, or loneliness are attributed to individuals who post selfies or posies.

1.2. Self-perception and others' perceptions as correlates of self-image posts

The Big Five personality model has also been investigated in relation to general aspects of social media use (e.g., providing/getting information; connecting with others), yet many of the observed associations tend to be small (Hughes, Rowe, Batey, & Lee, 2012). Perhaps unsurprisingly, a meta-analysis showed relations between extraversion and various aspects of social media behavior, including posting photos and more general social media use (Liu & Campbell, 2017). Posting photos was also related to openness and agreeableness across studies. That is, some dimensions of the Big Five may be relatively more important for understanding social media displays and could translate to personality inferences made by observers, although this issue has not been directly examined.

Lastly, sensation seeking is linked to more risky online behavior and negative feedback from others regarding on-line displays (Koutamanis, Vossen, & Valkenburg, 2015). Sensation seeking has not been considered in relation to selfies or posies in any known peer-reviewed studies. However, insofar as posting self-images on social media may be considered a form of risky on-line behavior and disinhibition in young adults, sensation seeking could be predictive of posting selfies or posies, which in turn, could elicit negative reactions on the part of onlookers. Thus, to further extend prior research, sensation seeking was explored in the present study as a correlate of self-image posting behavior and as a potential attribution of others as a function of self-image posts.

1.3. Current study

Prior findings on the personality correlates of social media posts, particularly selfies, are equivocal and may be a function of methodology. However, consideration of how self-image posts are *perceived* by others may be important for gaining a more complete understanding of the link between these posts and personality. Although some motives for posting selfies may be narcissistic or exhibitionistic, other motives have been described (e.g., archiving events, communication with others, entertainment; Sung, Lee, Kim, & Choi, 2016). One's social media audience may be unaware of these varied motives and inclined to make attributions tied to personality or self-perception based on the visual content of a post. Although there presently is limited understanding of this issue, it is conceivable that these attributions could then translate in meaningful ways to the quality of further interactions between the individual posting social media content and his/her social media audience.

This study consisted of two phases: Phase 1 involved a small sample of participants who served as targets for ratings by Phase 2 participants (i.e., perceivers). The relations between self-reported personality and Instagram posts were also investigated by combining the two samples. This design llowed for consideration of the extent to which targets' self-image posts would be related to consensus among perceivers (Kenny, 1994), as well as the extent to which these posts might serve as cues for accurately rating targets' personality (Brunswik, 1952). In addition, this study attempted to replicate previous research that investigated the self-perception and personality correlates of self-image posts on Instagram. Of particular interest in the current study were self-reported and perceived levels of narcissism, self-esteem, FoMO, loneliness, Big 5 personality traits, and sensation seeking. Thus, the present study also sought to extend previous work that has examined these variables as correlates of social media activity.

1.4. Hypotheses and research questions

1.4.1. Research questions

Is the proportion of Instagram posts that are self-images (i.e., posies, selfies) related to attributions made by unfamiliar individuals?

Do attributions made of individuals who post self-images vary by the theme (e.g., physical appearance, affiliation with others) of the self-image?

1.4.2. Hypotheses

(1) The hypothesis that self-reported narcissism would be related to a higher proportion of Instagram posts that were selfies was tested. As noted above, this relation is supported in previous studies utilizing self-report methodology to measure selfie frequency (e.g., Fox & Rooney, 2015; Halpern, Valenzuela, & Katz, 2016; Sorokowska et al., 2016) but is unclear in research employing observations of social media posts (e.g., Barry, Doucette et al., 2017; Barry et al., 2019).

(2) It was hypothesized that individuals who post a relatively higher number of self-images (i.e., selfies, posies) would be perceived as self-absorbed and extraverted based on prior research (see Liu & Baumeister, 2016; see Liu & Campbell, 2017).

(3) Instagram profiles with a higher proportion of selfies were expected to be related to lower perceiver ratings of likeability based on prior research that used hypothetical social media profiles (Bradley et al., 2017).

(4) Significant self-other agreement on narcissism (i.e., target self-reported narcissism in relation to perceiver-rated self-absorption) was hypothesized based on previous research on narcissistic cues on social media (Buffardi & Campbell, 2008), including selfies (McCain et al., 2016).

(5) Dimensions of self-reported narcissism (i.e., grandiose narcissism, vulnerable narcissism) were expected to be associated with having more Instagram followers and making more frequent posts, replicating prior research (e.g., Buffardi & Campbell, 2008; McCain et al., 2016).

In addition to testing these hypothesized relations, the present study explored the connections of the personality/self-perception variables described above (e.g., self-esteem, FoMO, sensation seeking) with self-image posts, as well as perceivers' ratings of such constructs as a function of self-image posts.

2. Method Phase 1

2.1. Participants

2.1.1. Phase 1

Thirty (30) undergraduate students (8 males, 22 females) from one public university in the southern United States participated in the initial phase of the study. Participants ranged in age from 18 to 27 ($M = 20.07$, $SD = 1.96$), with 22 participants identifying as White/Caucasian and 8 identifying as Black/African-American. Participation in Phase 1 involved completion of the below questionnaires, having one's 30 most recent Instagram posts coded for self-images and themes, and the researchers taking a screenshot of these images to be available for perceivers to rate in Phase 2 (see below). Because screenshots were used as stimuli in Phase 2, participants were required to have a public Instagram account, as well as a minimum of 30 Instagram posts. During the course of the observation, one participant blocked the research account from

continuing to follow her Instagram profile; thus, full coding of this participant's posts was not available.

2.1.2. Phase 2

Participants in Phase 2 were 119 undergraduates (18 males, 101 females) from a university in the northwestern United States. Phase 2 participants ranged in age from 18 to 44 ($M = 21.08$, $SD = 4.7$; 89.1% of the sample was between 18 and 22 years of age). This sample of participants was selected so as to minimize any chance that perceivers (i.e., Phase 2 participants) would know any of the targets (Phase 1 participants) given that they attended college in different parts of the United States. Based on power analysis, the sample size across both phases was sufficient to detect moderate effects (Cohen, 1988) in the analyses described below.

2.2. Measures

2.2.1. Pathological narcissism Inventory (PNI; Pincus et al., 2009)

The PNI is a 52-item measure that assesses vulnerable narcissism. Responses to questions (e.g., "I am disappointed when people don't notice me") are made on a 6-point scale (0 = *not at all like me*; 5 = *very much like me*). Internal consistency of the total PNI score, as well as each of the other self-report scales are displayed in Table 1.

2.2.2. Narcissistic personality Inventory (NPI; Raskin & Terry, 1988)

The NPI is a widely used 40-item measure of grandiose narcissism. Respondents choose one of two statements (e.g., "I try not to show off vs. I am apt to show off if given the chance") as best describing them.

2.2.3. Rosenberg Self-Esteem scale (RSES; Rosenberg, 1965)

The RSES is a 10-item measure used to assess global self-esteem. Responses to items (e.g., "I am able to do most things as well as other people") are made on a 4-point scale (1 = *strongly disagree*; 4 = *strongly agree*).

2.2.4. Fear of missing out survey (FoMOS; Przybylski et al., 2013)

The FoMOS evaluates an individual's concern with missing events within his/her social circle through 10 items (e.g., "I get worried when I find out my friends are having fun without me"). Item responses are made on a 5-point scale from *not at all true of me* to *extremely true of me*.

2.2.5. UCLA loneliness Scale-Version 3 (UCLA-3; Russell, 1996)

The UCLA-3 is widely used to assess perceived loneliness. Responses to questions (e.g., "How often do you feel that you lack companionship?") are given on a 4-point scale (0 = *Never*; 3 = *Always*).

2.2.6. Brief Sensation-Seeking scale (BSSS; Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002)

The BSSS is an 8-item measure used to assess preferences for sensation-seeking activities. The BSSS uses a 5-point response scale (0 = *Strongly disagree*; 5 = *Strongly agree*) for each item (e.g., "I like to do frightening things").

2.2.7. Ten-Item personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003)

The TIPI consists of 10 items to assess the Big Five personality traits. Respondents rate themselves on a 7-point scale (0 = *Disagree strongly*; 6 = *Agree strongly*) based on how they perceive themselves (e.g., "I see myself as calm, emotionally stable") with 2 items devoted to each Big Five dimension.

2.2.8. Coding

The procedure for coding participants' Instagram posts was based on previous research (Barry, Doucette et al., 2017; Barry et al., 2019). Phase 1 participants provided their Instagram username and consented to having their 30 most recent photos coded. Four independent coders, who were blind to participants' ratings on self-report measures, recorded specific parameters of the participants' Instagram accounts (i.e., the length of time covered by participants' most recent 30 Instagram posts, total number of posts, number of followers, and number of users they follow). If participants had fewer than 30 posts on their profile, they were excluded from the study. Each post was coded as one of the following: a) selfie, b) posie, or c) photo that did not include the participant (i.e., not a self-image). For photos that were determined to be selfies or posies, the photos were further coded based on the theme that was depicted in the photo (i.e., physical appearance, affiliation with others, event/activity/location/accomplishment, collage, or other/undifferentiated), using the photo and available contextual information (captions, hashtags, location tags). If more than one theme appeared to be present, the more specific category was selected (e.g., physical appearance for posts if there was an explicit reference made to an aspect of one's physical appearance; event/activity/location/accomplishment if there was a location tag). Selfie or posie collages were posts that included at least two images that were selfies or posies, respectively. If a post included at least two selfies and two posies, selfie was coded. In any instance in which a specific theme could not be clearly discerned, "other/undifferentiated" was coded.

Table 1
Descriptive Statistics for Main Variables of Interest (Phase 1 and Phase 2 participants; n = 149).

Variable (possible range)	M	SD	Range	Skewness	α
Total Self-image Posts (out of 30)	21.60	8.69	0–30	−0.89	–
Selfies (out of 30)	5.54	5.19	0–24	1.09	–
Posies (out of 30)	16.05	9.81	0–30	−0.18	–
Vulnerable Narcissism (1–6)	3.44	0.77	1.68–5.20	−0.16	0.96
Grandiose Narcissism (0–40)	15.26	6.38	2–32	0.13	0.82
Self-esteem (0–30)	21.09	4.94	8–30	−0.15	0.87
FoMO (0–40)	14.95	7.87	0–37	0.47	0.88
Loneliness (0–60)	20.77	9.44	0–47	0.02	0.92
Sensation Seeking (0–32)	19.34	5.69	5–31	−0.19	0.76
Extraversion (0–12)	6.90	3.10	0–12	−0.21	–
Neuroticism (0–12)	4.70	2.90	0–11	0.24	–
Agreeableness (0–12)	7.86	1.98	3–12	0.09	–
Openness to Experience (0–12)	8.66	2.05	6–14	−0.13	–
Conscientiousness (0–12)	11.28	2.13	2–12	−0.63	–

Note: In all analyses, Vulnerable Narcissism = PNI total scores, which are based on mean item scores. Grandiose Narcissism = NPI total scores. Scales for Extraversion, Neuroticism, Agreeableness, Openness to Experience, and Conscientiousness consist of only two items each, so internal consistency was not a good indicator of reliability.

To establish interrater reliability, the four raters all coded the 30 most recent photos from the first five participants (i.e., 150 photos). The intraclass correlation (ICC) for classifying photo type (i.e., selfie, posie, or non self-image) for the four raters was 0.97. The ICC for the specific themes of selfies and posies was 0.86. Thereafter, each coder was responsible for coding one-fourth of subsequent participants across both phases of this study.

2.2.9. Ratings of photo stimuli

In addition, Phase 2 participants (i.e., "perceivers") were asked to rate Phase 1 participants on 13 attributes (e.g., "This person is self-absorbed;" "This person is lonely") on a 1–5 scale from *strongly disagree* to *strongly agree* based on the screenshots of Phase 1 participants' 30 most recent Instagram posts. Specifically, the set of 30 images for each Phase 1 target was shown to Phase 2 participants (i.e., perceivers) for 10 s on one screen followed by the prompt for perceivers to rate that target on the 13 attributes. We opted for 10 s to keep the viewing time uniform while keeping participation as short as possible given that perceivers were completing self-report inventories and providing 13 ratings of 30 targets. In addition, the level of additional informativeness gleaned by viewing pictures appears to be asymptotic after 10 s (Antes, 1974). Most characteristics (i.e., self-absorbed, low self-esteem, worries about being left out, likes adventure, lonely, outgoing, dependable, emotional, likes trying new things, considerate of others) were selected to mimic the constructs assessed in the self-report questionnaires with some additional attributes (i.e., successful, likeable, would make a good friend) based on other research on perceptions of social media posts (Kauten et al., 2015). Targets' scores on these variables were the average of ratings received by each of the 119 perceivers (i.e., Phase 2 participants).

2.3. Procedure

2.3.1. Phase 1

The Institutional Review Board (IRB) at the last author's affiliated university as well as the IRB at the first author's affiliated university approved the study prior to data collection. All participants were enrolled in a psychology course at the time of the study and received research credit for participation. Following consent, measures were completed entirely online via a secure platform. Participants also provided their Instagram account name so that their most recent 30 photos could then be coded. The account that the researchers used to "follow" and code participants' posts was set to "private." Participants and other Instagram users were unable to "follow" the account so that participation in the study was con-

fidential. Furthermore, Phase 1 participants were required to have "public" Instagram accounts so that the screenshots of their 30 most recent photos were of images that were already publicly available. These screenshots were images only and included no additional information, including usernames, locations, captions, or comments. Participants were unfollowed once their 30 most recent posts were coded.

2.3.2. Phase 2

Participants received research credit for the psychology course in which they were enrolled. Phase 2 participants completed the self-report questionnaires described above and consented to having their 30 most recent posts on Instagram coded by the researchers, following the same procedures described above for Phase 1. At the end of the self-report questionnaire battery, participants were shown the screenshots for each of the 30 Phase 1 participants as described above. The target screenshots were shown to each Phase 2 participant in a randomized order.

3. Results

3.1. Descriptive statistics and correlations between personality and types of Instagram posts (Hypothesis 1)

Descriptive statistics for overall self-images, posies, selfies, and personality variables for participants from both phases are shown in Table 1. Participants tended to have significantly more posies than selfies within their 30 most recent Instagram posts, $t(148)$ = 9.82, $p < .001$. Table 2 displays correlations between self-reported personality and observed self-image posts for participants in both phases. As shown in Table 2, posting self-images was generally not related to narcissism in contrast to Hypothesis 1. Grandiose narcissism was negatively correlated with posting selfies (in direct contrast to Hypothesis 1) and was positively correlated with posting posies, but each of these correlations were weak in magnitude. None of the other personality by self-image correlations were significant except for a weak negative correlation between openness to experience and overall self-image posts.

Personality variables were also investigated in relation to the specific themes of selfies and posies described above. A higher number of selfies conveying a physical appearance theme corresponded to lower levels of FoMO, $r = -0.30$, $p < .001$, and neuroticism, $r = -0.17$, $p = .04$, as well as higher self-reported conscientiousness, $r = 0.21$, $p = .01$. Selfies with an event/activity/location/accomplishment theme were positively correlated with neuroticism, $r = 0.19$, $p = .03$. Posies conveying event/activity/loca

Table 2
Correlations among selfies, posies, and personality variables for Phase 1 and Phase 2 participants (n = 149).

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Total Self-Images	–												
2. Total Selfies	0.07	–											
3. Total Posies	0.85***	−0.47***	–										
4. Vulnerable Narcissism	0.13	−0.05	0.14	–									
5. Grandiose Narcissism	0.08	−0.18*	0.17*	0.30***	–								
6. Self-esteem	−0.01	0.00	0.00	−0.50***	0.18*	–							
7. FoMO	0.12	−0.18*	0.20*	0.58***	0.22**	−0.54***	–						
8. Loneliness	−0.04	−0.09	0.01	0.38***	−0.09	0.44***	0.44***	–					
9. Sensation Seeking	0.04	−0.07	0.07	0.27**	0.37***	−0.09	0.21*	0.10	–				
10. Extraversion	0.19*	−0.07	0.21*	0.20*	0.53***	0.13	−0.23**	0.30***	–				
11. Neuroticism	0.19*	−0.04	0.18*	0.42***	0.08	−0.58***	0.48***	0.46***	0.04	0.16	–		
12. Openness to Experience	−0.13**	0.04	−0.13	−0.01	0.28**	0.22*	−0.12	−0.18*	0.35***	0.32***	−0.08	–	
13. Agreeableness	−0.10	0.10	−0.15	−0.32***	−0.33***	0.17*	−0.32***	−0.27**	−0.16*	−0.20*	−0.35***	0.12	–
14. Conscientiousness	−0.01	0.05	−0.04	−0.25**	−0.07	0.35***	−0.30***	−0.22**	−0.17*	−0.01	−0.33***	0.08	0.09

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

tion/accomplishment were positively associated with a number of self-reported variables in this study. Specifically, they were positively related to vulnerable narcissism, $r = 0.17$, $p = .04$, grandiose narcissism, $r = 0.17$, $p = .04$, FoMO, $r = 0.27$, $p = .001$, and neuroticism, $r = 0.24$, $p = .004$, and negatively related to openness, $r = -0.19$, $p = .02$, and agreeableness, $r = -0.30$, $p < .001$. Posies with an affiliation theme were negatively correlated with loneliness, $r = -0.19$, $p = .02$. Notably, each of these correlations was relatively weak.

To further examine the relations between self-reported personality and observed self-image posts, simultaneous regression analyses were conducted with the personality variables as predictors of posting selfies and of posting posies (see Table 3). The proportion of variance in posting selfies accounted for by this model was non-significant. The only significant main effect across both models was a negative effect for openness to experience in predicting posies, $\beta = -0.23$, $p = .01$ R^2 *model* = 0.14, $p = .04$.

These models were also run predicting variance in each of the self-image themes (i.e., physical appearance, affiliation, event/activity/location/accomplishment, collage) in separate models. Neuroticism predicted unique variance in event/activity/location/accomplishment selfies, $\beta = 0.32$, $p = .007$ R^2 *model* = 0.11, $p = .19$. FoMO had a unique inverse effect on physical appearance selfies, $\beta = -0.33$, $p = .003$ R^2 *model* = 0.18, $p = .008$. For selfie collages, sensation seeking negatively predicted unique variance, $\beta = -0.20$, $p = .03$, R^2 *model* = 0.11, $p = .24$. For activity/event/location/accomplishment posies, FoMO had a positive unique main effect, $\beta = 0.21$, $p = .048$, whereas openness to experience had a unique negative effect, $\beta = -0.23$, $p = .01$, R^2 *model* = 0.21, $p = .001$. Lastly, extraversion was uniquely related to posie collages, $\beta = 0.31$, $p = .006$, and grandiose narcissism was inversely related to posie collages, $\beta = -0.27$, $p = .02$, R^2 *model* = 0.11, $p = .22$. It is important to note that these models included several interrelated personality variables as predictors; thus, some of these unique effects may be an artifact of suppressor effects.

3.2. Perceptions of targets based on self-image posts (research questions & Hypotheses 2 & 3)

The primary novel aim of this study was to determine whether individuals' actual Instagram posts were related to personality ratings and other attributions by unfamiliar raters who were given no further contextual information. The data suggest that perceivers demonstrated adequate variability in their ratings across targets and across attributes (i.e., on a scale from 1 to 5, all attribute *means*

ranged from 2.62 to 3.60, *sd* ranged from 0.18 to 0.56). The results of correlations between targets' self-image posts and perceivers' ratings of them are shown in Table 4. Several moderate to strong correlations were evident. First, perceptions of targets as a function of their overall self-image posts were generally positive (i.e., relatively higher self-esteem, less loneliness, more outgoing, likes trying new things, more successful, more likeable, would make a good friend) while also being associated with perceptions of having FoMO.

However, these perceptions tended to vary substantially based on whether targets' Instagram posts had a relatively higher proportion of posies or selfies. As shown in Table 4, those targets with relatively more posies out of their 30 Instagram posts were rated as: relatively higher in self-esteem, more adventurous, less lonely, more outgoing, more dependable, relatively fond of trying new things, more successful, more likeable, and as potentially being a good friend. On the other hand, targets with more selfies in their 30 Instagram posts were rated, on average, as: having lower self-esteem, disliking adventure, more lonely, less outgoing, disliking trying new things, less successful, and less likeable. The magnitudes of significant correlations in these analyses ranged from 0.37 to 0.83 (i.e., moderate to strong; Cohen, 1988). Thus, Hypotheses 2 and 3 were partially supported, with evidence supporting expected relations with perceived extraversion for selfies and posies, as well as lower likeability connected to selfies.

To determine whether selfies or posies were associated with unique variance in perceiver ratings, simultaneous regression analyses were conducted with selfies and posies as the predictors of each of the 13 attributes rated by perceivers. The results of these analyses are shown in Table 5. Overall, posies tended to account for unique variance in predicting perceiver ratings, whereas selfies did not. The unique effects of posies were in the direction of positive views of targets (i.e., higher self-esteem, less loneliness, being more outgoing, liking to try new things, being successful, being more likeable, being more friend-worthy). Selfies and posies each uniquely and positively predicted variance in "worries about being left out," and selfies were uniquely associated with lower perceptions of liking adventure and trying new things.

It is worth noting that perceiver age was associated with making less positive overall ratings on the extent to which targets were successful, $r = -0.23$, $p = .01$, were considerate of others, $r = -0.22$,

Table 3
Simultaneous regression analyses predicting selfie and posie posts from self-reported personality variables.

	Targets' Total Selfies (out of 30) $R^2 = 0.08$	Targets' Total Posies (out of 30) $R^2 = 0.14^*$
Predictor Variables		
Vulnerable Narcissism	0.12	0.03
Grandiose Narcissism	−0.16	0.03
Self-esteem	−0.12	0.22
FoMO	−0.23	0.17
Loneliness	−0.13	−0.03
Sensation Seeking	−0.06	0.07
Extraversion	−0.01	0.16
Neuroticism	0.03	0.20
Openness to Experience	0.09	−0.23[*]
Agreeableness	−0.01	0.02
Conscientiousness	0.00	0.04

Note: Standardized regression weights are shown.
  [*] $p < .05$.

Table 4
Correlations between targets' (Phase 1 participants; n = 30) self-image posts and perceiver (Phase 2 participants; n = 119) ratings of targets' personality (i.e., consensus).

	Total Self-image Posts (out of 30)	Targets' Self-image Posts Total Selfies (out of 30)	Total Posies (out of 30)
Perceiver Ratings of Targets			
Is self-absorbed	0.32	0.17	0.14
Has low self-esteem	−0.45[*]	0.58[**]	−0.65[***]
Worries about being left out	0.56[**]	0.15	0.35
Likes adventure	0.29	−0.73[***]	0.63[***]
Is lonely	−0.52[**]	0.56[**]	−0.70[***]
Is outgoing	0.73[***]	−0.50[**]	0.83[***]
Is dependable	0.32	−0.22	0.37[*]
Is emotional	0.10	0.29	−0.08
Likes trying new things	0.41[*]	−0.72[***]	0.71[***]
Is considerate of others	0.32	−0.20	0.36
Is successful	0.58[**]	−0.49[**]	0.70[***]
Is likeable	0.49[**]	−0.37[*]	0.58[**]
Would make a good friend	41[*]	−0.34	0.51[**]

  [*] $p < .05$.
  [**] $p < .01$.
  [***] $p < .001$.

Table 5
Simultaneous regression analyses predicting perceiver ratings of targets' personality based on targets' self-image posts (i.e., consensus).

	Targets' Total Selfies (out of 30)	(Predictors) Targets' Total Posies (out of 30)	Model R^2
Perceiver Ratings of Targets (Criterion Variables)			
Is self-absorbed	0.46	0.47	0.12
Has low self-esteem	0.26	−0.48*	0.47***
Worries about being left out	0.67**	0.78**	0.37**
Likes adventure	−0.57**	0.23	0.51***
Is lonely	0.18	−0.57**	0.46***
Is outgoing	0.07	0.88***	0.69***
Is dependable	0.04	0.39	0.13
Is emotional	0.42	0.20	0.04
Likes trying new things	−0.45*	0.39*	0.59***
Is considerate of others	0.06	0.39	0.13
Is successful	−0.06	0.67**	0.50***
Is likeable	0.02	0.58*	0.32**
Would make a good friend	−0.02	0.48*	0.25*

Note: Standardized regression weights are shown.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

$p = .02$, liked to try new things, $r = −0.19$, $p = .04$, and were likeable, $r = −0.21$, $p = .02$. That is, older participants in Phase 2 tended to rate targets more negatively on those attributes. These correlations remained significant when partialing out self-image posts. Moreover, the average perceiver rating on each attribute was unrelated to perceivers' own number of selfies and posies, with the exception of a negative relation between perceived emotionality of targets and perceivers' selfies, $r = −0.19$, $p = .04$. That is, perceivers who posted more selfies tended to rate targets, independent of targets' self-images, as less emotional. However, the theoretical implications of this particular relation are unclear.

3.3. Perceivers' ratings of targets based on themes of self-image posts and Instagram use

Relations between selfie themes and perceiver ratings of targets are shown in Table 6, whereas those correlations for posies are shown in Table 7. As shown in Table 6, physical appearance selfies were associated with a number of perceiver ratings of targets (i.e., self-absorption, low self-esteem, not liking adventure, loneliness, being less outgoing, lower dependability, not being fond of trying new things, less consideration of others, lower successfulness,

Table 6
Correlations between themes of targets' selfie posts and perceiver ratings of targets' personality (i.e., consensus).

	Physical Appearance	Targets' Selfie Themes Event/Accomplishment/Activity/Location	Affiliation w/Others	Collage	Other
Perceiver Ratings of Targets					
Is self-absorbed	0.42*	−0.21	−0.12	0.05	0.19
Has low self-esteem	0.51**	0.12	−0.01	0.47*	0.45*
.Worries about being left out	0.03	−0.05	0.07	0.08	0.25
Likes adventure	−0.74***	−0.18	−0.09	−0.43*	−0.55**
Is lonely	0.71***	−0.04	−0.14	0.40*	0.47*
Is outgoing	−0.56**	−0.09	0.00	−0.28	−0.40*
Is dependable	−0.57**	0.18	0.13	−0.03	−0.21
Is emotional	−0.16	0.26	0.13	0.37*	0.24
Likes trying new things	−0.73***	−0.21	−0.08	−0.40*	−0.53**
Is considerate of others	−0.59**	0.21	0.14	−0.03	−0.17
Is successful	−0.63***	−0.05	−0.04	−0.23	−0.38*
Is likeable	−0.65***	0.07	0.09	−0.15	−0.29
Would make a good friend	−0.63***	0.11	0.07	−0.10	−0.30

Note: Themes are the number of images out of 30 posts that represents each theme. Only one theme was coded per selfie image.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 7
Correlations between themes of targets' posie posts and perceiver ratings of targets' personality (i.e., consensus).

	Physical Appearance	Targets' Posie Themes Event/Accomplishment/Activity/Location	Affiliation w/Others	Collage	Other
Perceiver Ratings of Targets					
Is self-absorbed	0.46*	−0.02	−0.01	−0.12	0.24
Has low self-esteem	−0.19	−0.65***	−0.19	−0.28	−0.19
Worries about being left out	0.18	0.19	0.41*	−0.14	0.25
Likes adventure	0.06	0.67***	0.21	0.39*	0.12
Is lonely	−0.01	−0.73***	−0.38*	−0.24	−0.10
Is outgoing	0.16	0.80***	0.40*	0.32	0.20
Is dependable	−0.25	0.46*	0.32	0.18	−0.06
Is emotional	−0.12	−0.09	0.15	−0.28	0.02
Likes trying new things	0.09	0.71***	0.28	0.40*	0.18
Is considerate of others	−0.22	0.44*	0.33	0.17	−0.06
Is successful	0.10	0.73***	0.30	0.25	0.10
Is likeable	−0.12	0.65***	0.39*	0.21	−0.01
Would make a good friend	−0.16	0.58***	0.33	0.24	−0.01

Note: Themes are the number of images out of 30 posts that represents each theme. Only one theme was coded per posie image.
* $p < .05$.
*** $p < .001$.

lower likeability, and would not make a good friend). Physical appearance posies were only associated with ratings of self-absorption (Table 7).

Even selfies that were coded as not having a specific theme (i.e., the other/undifferentiated category) were correlated with numerous perceiver ratings (i.e., lower self-esteem, not liking adventure, loneliness, being less outgoing, not being fond of trying new things, lower successfulness). As shown in Table 7, posies without a clear theme did not engender such significant relations with perceiver ratings. Collages with multiple selfies were associated with ratings of having lower self-esteem, being less fond of adventure, being lonelier, more emotional, and not liking to try new things. Collages with multiple posies were associated with ratings of adventurousness. Event/activity/location/accomplishment-themed posies were associated with perceptions of higher self-esteem, liking adventure, being less lonely, being more outgoing, enjoying new things, being considerate of others, being successful, being more likeable, and being more friend-worthy. Posies highlighting affiliations with others were related to perceptions of worrying about being left out, as well as being less lonely, more outgoing, and more likeable.

3.4. Perceivers' ratings of targets in relation to targets' self-reported personality (self-other agreement; Hypothesis 4)

Table 8 shows self-other agreement correlations (i.e., between targets' self-reported personality characteristics from Phase 1 and perceivers' ratings). That is, these analyses attempted to address the extent to which perceivers picked up on targets' self-reported personality characteristics based solely on images from targets' Instagram posts. As shown in Table 8, self-reported grandiose narcissism and self-esteem were significantly associated with being perceived as self-absorbed, consistent with Hypothesis 4 concerning self-other agreement for narcissism. Openness to experience was positively associated with ratings of loneliness. Self-reported openness to experience was negatively related to perceiver ratings of targets' being adventurous, liking to try new things, dependability, consideration of others, being outgoing, successfulness, likeability, and friend worthiness. Phase 1 participants who reported being relatively more neurotic were perceived as relatively less lonely, more considerate of others, more successful, more likeable, and more friend-worthy. Higher agreeableness was associated with being perceived as more emotional.

3.5. Associations between other parameters of instagram use, self-report variables, and perceiver ratings

Parameters of participants' Instagram use (i.e., number of followers, number of users following, total number of posts, and time since the first of the most recent 30 posts) were considered in relation to self-reported personality and self-perception. Grandiose narcissism was significantly associated with the number of followers, $r = 0.27$, $p = .001$, and number of accounts followed, $r = 0.18$, $p = .03$. Extraversion was also associated with the number of followers, $r = 0.31$, $p < .001$, and number of accounts followed, $r = 0.28$, $p = .001$. The same held for openness to experience (i.e., followers and number of accounts followed, $r = 0.24$, $p = .003$, $r = 0.28$, $p = .001$, respectively). FoMO was inversely related to number of accounts followed, $r = -0.47$, $p = .01$.

Correlations between perceiver ratings of targets and parameters of targets' Instagram accounts were also analyzed. Importantly, perceivers were unaware of any of these aspects of targets' Instagram usage. From these analyses, ratings of self-absorption were strongly associated with having more Instagram followers, $r = 0.70$, $p < .001$, and with following a higher number of other Instagram users, $r = 0.56$, $p = .001$. Perceptions that targets had low self-esteem were negatively correlated with the actual number of Instagram followers they had, $r = -0.40$, $p = .03$ (i.e., being rated as having higher high self-esteem corresponded to having more Instagram followers). Follow-up regression analyses indicated that the number of posies or selfies posted by targets did not moderate these relations.

4. Discussion

The primary aim of the present study was to investigate the extent to which self-image posts from active Instagram accounts were related to personality and self-perception attributions on the part of unfamiliar others. This study represents a meaningful extension of prior research (a) by using cues from real Instagram accounts rather than focusing on experimental manipulations or judgments of self-images in a lab setting (e.g., Bradley et al., 2017; Re et al., 2016); (b) by allowing perceivers to rate targets in the context of all recent Instagram posts rather than selfies specifically (McCain et al., 2016); (c) by considering posies in addition to selfies, as well as their themes; and d) by expanding the

Table 8
Correlations between targets' self-reported personality and perceivers' ratings of targets' Instagram posts.

	Vulnerable Narcissism	Grandiose Narcissism	Self-esteem	FoMO	Loneliness	Sensation Seeking	Extraversion	Neuroticism	Openness to Experience	Agreeableness	Conscientiousness
Perceiver Ratings of Targets											
Is self-absorbed	−0.20	0.43[*]	0.43[*]	−0.23	−0.04	−0.12	0.28	−0.32	0.24	−0.11	0.19
Has low self-esteem	0.14	−0.30	−0.11	−0.20	−0.24	0.18	−0.24	−0.20	−0.20	0.33	−0.02
Worries about being left out	−0.12	0.13	0.09	−0.18	−0.04	−0.18	−0.12	−0.04	−0.14	−0.01	0.03
Likes adventure	0.00	0.03	−0.06	0.28	0.09	0.06	0.16	0.25	−0.38[*]	−0.33	0.00
Is lonely	−0.04	−0.02	0.12	−0.30	−0.21	0.17	−0.06	−0.38[*]	0.55[**]	0.26	0.09
Is outgoing	0.00	0.24	0.05	0.21	0.23	−0.21	0.14	0.24	−0.51[**]	−0.34	0.06
Is dependable	0.03	−0.12	−0.17	0.13	0.13	−0.17	−0.12	0.42[*]	−0.46[*]	−0.03	0.05
Is emotional	0.13	−0.24	−0.14	0.11	0.06	−0.01	−0.29	0.22	−0.10	0.41[*]	−0.08
Likes trying new things	−0.02	0.11	−0.02	0.26	0.09	0.00	0.16	0.22	−0.43[*]	−0.29	0.03
Is considerate of others	0.10	−0.21	−0.28	0.21	0.16	−0.19	−0.19	0.46[*]	−0.52[**]	0.04	−0.09
Is successful	−0.03	0.15	0.00	0.19	0.24	−0.25	0.11	0.37[*]	−0.51[**]	−0.31	0.07
Is likeable	−0.03	−0.05	−0.12	0.18	0.18	−0.24	−0.07	0.40[*]	−0.55[**]	−0.13	−0.02
Would make a good friend	0.02	−0.08	−0.17	0.18	0.16	−0.20	−0.08	0.41[*]	−0.53[**]	−0.09	0.00

[*] $p < .05$.
[**] $p < .01$.

personality variables being considered (e.g., FoMO, loneliness, sensation seeking) and considering self-other agreement on these variables. A secondary aim was to attempt to replicate previous research that examined the connection between self-reported personality (e.g., narcissism) and self-image posts on Instagram (e.g., Barry, Doucette et al., 2017; Barry et al., 2019) rather than relying on self-reports of both personality and social media behavior (e.g., Fox & Rooney, 2015; Sorokowska et al., 2016).

4.1. Consensus and self-other agreement in perceivers' ratings of targets

In terms of the primary aim, the most notable finding was that targets' self-image posts were clearly related to inferences made by perceivers. That is, consistent with Brunswik's Lens Model (Brunswik, 1952), perceivers appeared to use self-image posts as cues to make judgments about targets' self-perception and personality. In general, consensus regarding targets with a high number of posies was favorable, whereas a higher proportion of selfies were viewed relatively unfavorably. As a whole, posies accounted for unique variance in many perceptions (e.g., having higher self-esteem, being outgoing, being successful and likeable, being a good potential friend), whereas selfies did not. Based on consensus ratings, selfies were related to being seen as less likeable, less successful, having lower self-esteem, being less outgoing, and being less open to experience. These negative attributions appeared to be particularly prominent for selfies with a physical appearance theme. Thus, selfies appear to be cues that connect to negative attributions by unfamiliar perceivers, whereas posies may relate to positive audience impressions. Moreover, the magnitudes of the effects generated from independent ratings of over 100 perceivers suggest that these findings were likely not based on idiosyncratic tendencies of the perceivers in this study.

The negative perceptions tied to selfies on qualities such as likeability are consistent with the findings of Bradley et al. (2017) for hypothetical social media profiles. However, these perceptions appear to go beyond the social exchange framework proposed by those authors, as no additional social media information (e.g., number of likes) was provided in the present study. The discrepancy in ratings between selfies and posies may be due to the more natural appearance of a posie (i.e., as if the audience sees the person in the picture in a way similar to how they would in person) and/or the fact that selfies were less frequently posted relative to posies, possibly signaling something relatively non-normative about the target. Further, selfies may *convey* a higher self-focus (Bradley et al., 2017), even if they are not necessarily posted as a function of self-reported narcissism.

Perceivers also seemed to pick up on some aspects of narcissism and self-confidence based on the correspondence (i.e., self-other agreement) between perceiver ratings of self-absorption and targets' self-ratings of grandiose narcissism and self-esteem. Therefore, there may be some aspects of the visual images that Instagram users post that convey self-assurance, even to the point of arrogance, that are not context-dependent (i.e., do not depend on verbal content/captions). Interestingly, targets who self-reported higher neuroticism were rated in a positive manner (i.e., less lonely, more dependable, more considerate, more successful, more likeable, more friend-worthy). Although speculative, such individuals may take great care to present an image on Instagram that is not off-putting or subject to social rejection; thus, they may be effective in conveying warmth and care toward others. The somewhat negative perceptions connected to targets involving openness made sense in that targets who were higher in openness tended to post fewer posies. That is, those posting fewer self-images may communicate limited personal information which could lead an unfamiliar audience to presume that targets are less

successful, caring toward others, or friendly. Of course, these findings are in need of replication and further theoretical exploration.

4.2. Associations between self-reported personality and self-Image posts

In terms of the secondary aim, self-reported personality and actual self-image posts on Instagram demonstrated limited convergence, and the magnitude of observed relations was small (Cohen, 1988). A simultaneous regression model also showed that the collection of personality variables examined in this study did not account for significant variance in posting selfies. Although weak, some of the correlations were theoretically straightforward in that, for example, participants who self-reported being extraverted were more likely to have posted photos of themselves, particularly posies. However, interestingly, selfies and posies showed divergent relations with grandiose narcissism, with selfies being associated with lower grandiose narcissism. This finding is in contrast to research based entirely on self-reports of narcissism and social media posts, which demonstrated a positive relation between grandiose narcissism and selfies (e.g., Fox & Rooney, 2015; Sorokowska et al., 2016). Instead, results showed that posting an image of oneself that is not a selfie (i.e., taken by another person) is more clearly connected to self-reported narcissism. The same pattern held for FoMO. It may be that posing for an image and then posting it is indicative of a desire to present a relatively crafted image and to feel part of one's social circle. Importantly, perhaps the main reason for the discrepancies across studies on narcissism and selfies has to do with the methodology used to assess social media posts, with self-reports of social media behavior showing more consistent convergence with self-reported narcissism than demonstrated when studies utilize observations of real social media posts.

Themes of self-image posts were also considered, again with relatively weak relations demonstrated with self-reported personality. Individuals with higher FoMO were particularly less likely to post physical appearance selfies, whereas posies highlighting an activity/event/location/accomplishment were connected to higher FoMO, grandiose narcissism, vulnerable narcissism, and neuroticism, as well as lower openness to experience. These relations seem to suggest that the latter self-image posts are indeed geared toward self-promotion and perhaps a need to gain affirmation from others in the form of positive feedback on one's life events.

Lastly, Instagram activity was correlated with personality variables in largely intuitive ways. Specifically, extraversion and openness to experience were related to following, and being followed by, more accounts. Grandiose narcissism was also related to following more users and having more followers, consistent with our hypothesis and with previous research that utilized self-reports of Instagram use (McCain et al., 2016). FoMO was associated with following fewer users, perhaps indicative of a desire to avoid being exposed to activities that one is missing. Notably, perceivers attributed more self-absorption and higher self-esteem to targets who followed, and were followed by, a higher number of users on Instagram. Essentially, these results imply that more outgoing or exhibitionistic personality tendencies are at least weakly associated with higher Instagram activity.

Taken as a whole, the present findings indicate that *perception* may be more important in appraising social media content than a person's communicative intent. Social media inherently involve communication between the person posting content and the audience that observes it. Prior research has been largely devoted to understanding what social media posts might mean about the personality, especially narcissism, of the person making the posts. However, it may be that social media posts are more relevant for understanding how a person is *perceived* by others than for what

they convey about the person's personality. Such considerations are critical for understanding the interpersonal consequences of this increasingly ubiquitous platform for interaction. Based on the present study, individuals form impressions of others, even strangers, based on superficial social media content (i.e., self-images). Further, even though self-reported personality and self-perception may not clearly relate to posting self-images, these images seem to be connected to positive or negative attributions from others.

4.3. Limitations and future directions

The findings of the present study should be evaluated in the context of several limitations. First, the overall sample size in this study was relatively small. More specifically, the sample for Phase 1 (i.e., targets) was small so as to facilitate a relatively feasible evaluation of these participants' Instagram posts during Phase 2. Thus, within-subjects correlations should be interpreted with caution in light of the sample size. The between subjects correlations (i.e., perceiver ratings of targets) were less susceptible to the low sample size, as they were based on 119 ratings of each attribute for each target, and the magnitudes of correlations discussed were generally quite large. An additional issue is that although the coding scheme was used in prior research (Barry, Doucette et al., 2017; Barry et al., 2019) and seemed to generally map onto ratings of others who had no contextual information (e.g., affiliation posies related to ratings of lower loneliness, being more outgoing; physical appearance images related to perceptions of self-absorption), there are likely additional communicative themes of social media posts that were not captured, particularly in light of how the uses and features of these applications continue to evolve.

Furthermore, consistent with some prior research on social media behavior (e.g., Barry, Doucette et al., 2017; Lee & Sung, 2016; McCain et al., 2016) and data regarding general social media activity (McAndrew & Jeong, 2012), the two samples were predominantly female. Therefore, interactions involving gender of perceiver and target could not be adequately tested. There was also somewhat of a self-selection bias in that Phase 1 participants were required to have public accounts and a minimum of 30 Instagram posts. Focusing on the 30 most recent Instagram posts addressed a limitation in previous research (Barry, Doucette et al., 2017; Barry et al., 2019) that examined current self-reported personality in relation to participants' entire history of participants' Instagram posts which could have spanned years. Nevertheless, caution is needed in generalizing the findings to social media users, particularly males. Lastly, additional variables that were not assessed (e.g., perceived similarity, perceived attractiveness) may have played a role in perceivers' ratings and are worthy of future research.

In summary, there may be a variety of motives behind self-image displays on social media platforms that do not directly reflect the intrapersonal characteristics of the person sharing the post. However, these displays appear to connect to personality attributions in the eyes of beholders. In addition, a great deal of popular media and empirical attention have been devoted to the presumed narcissism of selfies, but it may be that self-promotional content (i.e., images or words) is a more direct indicator of personality constructs such as narcissism. The overall self-promotional functions of social media posts as they relate to self-perception and personality deserve further research attention above and beyond mere self-image content.

As social media continue to be an integral part of daily life for many people, increased recognition of the complexity of interactions that occur on these platforms becomes more necessary. These interactions are necessarily bidirectional and include not only the factors that influence social media posts but also those that shape how others perceive those posts. The design of the present study was such that perceptions were based on images of Instagram users in isolation from other contextual information that would also presumably shape perceivers' attributions. Additional investigations should seek to incorporate that information to more closely mimic the various stimuli that might influence how others view individuals who post on social media. Because social media posts are presumably shared with, and directed toward, an audience, the inferences made by those who view them may be the critical interpersonal concern and could shape perceptions in ways that translate to face-to-face interactions between perceivers and targets. That is, self-image posts do not clearly align with self-reported personality, yet they may well connect to the judgments of others—an issue perhaps worth consideration before a social media display is shared.

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