

Selfie Indulgence: Self-Favoring Biases in Perceptions of Selfies

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Abstract

People often perceive themselves as more attractive and likable than others do. Here, we examined how these self-favoring biases manifest in a highly popular novel context that is particularly self-focused—selfies. Specifically, we analyzed selfie-takers' and non-selfie-takers' perceptions of their selfies versus photos taken by others and compared these to the judgments of external perceivers. Although selfie-takers and non-selfie-takers reported equal levels of narcissism, we found that the selfie-takers perceived themselves as more attractive and likable in their selfies than in others' photos, but that non-selfie-takers viewed both photos similarly. Furthermore, external judges rated the targets as less attractive, less likable, and more narcissistic in their selfies than in the photos taken by others. Thus, self-enhancing misperceptions may support selfie-takers' positive evaluations of their selfies, revealing notable biases in self-perception.

Keywords

person perception, attractiveness, likability, narcissism, meta-perception

People are generally accurate in their assumptions about how others perceive them, even for perceivers who do not know them well (Carlson, Furr, & Vazire, 2010; Carlson, Vazire, & Furr, 2011; Laing, Phillipson, & Lee, 1966; Malloy, Albright, Kenny, Agatstein, & Winkquist, 1997). Importantly, these perceptions are not simply reproductions of how individuals view themselves. Rather, people are aware that their self-perceptions differ from how others view them (Carlson et al., 2011).

Despite exhibiting such “meta-accuracy” (i.e., accurate perceptions of how others view oneself), people do possess “blind spots” of traits that *others* perceive accurately but one does not (Gallrein, Carlson, Holstein, & Leising, 2013). For instance, individuals tend to globally overvalue their positive traits, considering themselves more attractive than the average person (Horton, 2003), and as more attractive than others see them (Epley & Whitchurch, 2008). This “illusory superiority” or “self-favoring bias” leads people to typically perceive themselves as possessing more *desirable* traits and fewer *undesirable* traits than they believe other people do (Alicke, 1985; Codol, 1975; Ruble, Eisenberg, & Higgins, 1994; see Hoorens, 1993, for review).

Such blind spots vary between individuals, however. One's level of narcissism predicts the gap between self ratings of attractiveness versus others' ratings of attractiveness (Gabriel, Critelli, & Ee, 1994). Similarly, although most individuals overperceive their likability (Alicke, 1985), they do so to varying degrees. For example, clinically depressed individuals and those with low self-esteem tend not to favorably misperceive other people's opinions of their personality but, rather, may

rate themselves more negatively than others do (Campbell & Fehr, 1990; Noles, Cash, & Winstead, 1985). Furthermore, individuals' narcissism scores predict how much they overestimate their performance compared to their peers' objective perceptions of them (John & Robins, 1994). Thus, not only do individuals have blind spots in their self-perceptions of attractiveness and personality traits, but these blind spots vary according to individual differences.

These individual differences in meta-accuracy may differ based on contextual factors as well. Past work suggested that people's self-favoring biases may be domain-specific (Gabriel et al., 1994; Swami, Stieger, Haubner, Voracek, & Furnham, 2009), and one contemporary context in which self-favoring biases may be particularly salient is the “selfie.” In recent years, selfies (photographs that one takes of oneself) have become a ubiquitous phenomenon among social media users of all ages (Steinmatz, 2012). The defining feature of the selfie is that it is taken by the intended target of the photograph. This allows for a level of self-presentation and personal control that is perhaps unattainable when requesting another to take a photo. The vast majority of selfies are thus photographed in an attempt to show the target in a positive way, usually by

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maximizing attractiveness or likability (Sanghani, 2014). Selfies may therefore produce the photographic equivalent of a meta-perceptual blind spot, as selfie-takers may believe their selfies to be more attractive or likable than others perceive them.

Alicke (1985) found greater self-favoring biases for likable characteristics that a person can control, such as being pleasant, considerate, and responsible; the self-control permitted by selfies may therefore also enhance self-favoring biases. The Internet is replete with various “selfie strategies” to optimize one’s attractiveness or likability, including manipulating camera angles and perspectives to maximize one’s most favorable features (e.g., Saltzman, 2014). Moreover, numerous “selfie filters,” or digital photo enhancement tools, available on smartphones allow one to computationally increase his or her attractiveness through automated photo editing (HISY, 2014). Selfie-takers not only may believe themselves to be attractive and likable but could also self-enhance by believing they possess the photography skills needed to capture these positive qualities better than others could. Indeed, if selfies are subject to self-favoring biases, then selfie-takers may overestimate how positively their selfies are perceived, creating a type of blind spot whereby others view targets’ selfies as less attractive or less likable than the target realizes.

Ironically, selfies might actually convey *negative* aspects of the taker’s personality, however. Despite their efforts to manage the impressions communicated by their selfies, practiced selfie-takers may unintentionally reveal aspects of their personality via selfie-taking behavior itself, such as vanity and narcissism. Indeed, research has demonstrated that more narcissism predicts the frequency of posting selfies to social networking sites (Fox & Rooney, 2015; Sorokowski et al., 2015; Weiser, 2015). Thus, selfie-takers may actually undermine their efforts to impress others by taking selfies.

Here, we hypothesized that regular selfie-takers’ positive evaluations of how they appear in their selfies would be a manifestation of self-favoring biases. Moreover, we expected that selfie-takers’ perceptions of their selfies may represent a meta-perceptual blind spot regarding how others view them. Thus, we propose that self-favoring biases are not just affected by individual traits like narcissism, but that they can be domain-specific and develop in new means of social presentation. We therefore examined individuals’ perceptions of attractiveness and likability from their selfies compared to photos taken by others. We also investigated how these judgments differed between people who defined themselves as “selfie-takers” and those who did not (non-selfie-takers), comparing levels of self-reported narcissism between the two groups. In addition, we compared how external judges perceived the attractiveness and likability of the selfies versus the photos taken by others as well as their perceptions of a relevant negative trait (i.e., narcissism). Finally, we contrasted the external judges’ ratings with the targets’ self-ratings, assessing whether selfie-takers have a more objective perspective on how people perceive their photos than non-selfie-takers do.

Method

A total of 198 undergraduates (95 men, 103 women; $M_{\text{age}} = 21.70$ years, $SD = 4.19$) completed the study for course credit. Power analysis based on a three-way within- and between-subjects interaction effect indicated that this sample would provide more than 99% power assuming a small correlation between our repeated measures ($r = .10$), a false-positive rate of 5%, and the average effect size in social psychology ($r = .21$; Richard, Bond, & Stokes-Zoota, 2003).

We escorted the participants into a laboratory room and handed them a smartphone with cameras on both the front and back of the phone, features that allow the user to photograph something in front of them (as in a regular camera), or to photograph their own face while viewing the image on their smartphone screen. We then asked participants to take a selfie with the instructions: “We would like you to take a selfie with the front camera, the kind you would usually post on social media sites.” The experimenters then left the room to allow the participants to take their selfies in private. Once the participants finished taking their selfie, the experimenter returned and took the participant’s photo using the same smartphone with the instructions: “Imagine that I am your friend who is taking a photo of you, and you will later post this photo on social media sites.”

Participants then completed the Narcissistic Personality Inventory (Raskin & Terry, 1988) on a computer, after which an experimenter showed the participants their experimenter-taken photo and selfie on the screen of the same smartphone. The experimenter left the room while the participants rated how attractive (1 = *Not very attractive*, 7 = *Very attractive*) and likable (1 = *Not very likable*, 7 = *Very likable*) they appeared in each photo using the computer’s number keys. The participants then completed another questionnaire with open-ended questions asking whether they regularly took selfies (and why, if applicable), what they think of other people who take selfies, the estimated number of selfies that they took in the past week, and how many selfies they posted on social networking sites.

A separate sample of 178 raters (67 men, 111 women; $M_{\text{age}} = 34.51$ years, $SD = 10.68$) recruited through Amazon’s Mechanical Turk then rated the selfies and experimenter-taken photos.¹ We programmed the images into Qualtrics experimental software (Qualtrics, 2015) in two blocks, each consisting of a combination of selfies and experimenter-taken photos. We counterbalanced the images, so that the same person was not presented in both a selfie and an experimenter photo in the same block and asked the raters to evaluate the faces for attractiveness (1 = *Not very attractive*, 7 = *Very attractive*), likability (1 = *Not very likable*, 7 = *Very likable*), or narcissism (1 = *Not at all narcissistic*, 7 = *Very narcissistic*) in a between-subjects design (i.e., 30 participants per condition).

Results

Roughly half of the target participants ($n = 100$; 44 men, 56 women; $M_{\text{age}} = 20.70$ years, $SD = 3.06$; henceforth called “targets”) reported regularly taking selfies, whereas the remaining

Table 1. Means, Standard Deviations, and Relationships Between Ratings of Attractiveness, Likability, and Narcissism.

	M	SD	α	1	2	3	4	5	6	7	8	9	10
Attractiveness													
1. Self-ratings of selfies	4.04	1.57			.44***	.18*	.20**	.78***	.40***	.24**	.19**	.06	.07
2. Self-ratings of exp. photos	3.94	1.47				-.10	.05	.37***	.85***	-.06	.05	-.11	.11
3. Others' ratings of selfies	3.20	0.75	0.93				.82***	.13	-.09	.60***	.56***	.39***	.19**
4. Others' ratings of exp. photos	3.27	0.71	0.92					.15*	.02	.56***	.65***	.39***	.27***
Likability													
5. Self-ratings of selfies	4.47	1.51							.48***	.26***	.17*	-.02	.06
6. Self-ratings of exp. photos	4.31	1.51								-.003	.15*	-.07	.14*
7. Others' ratings of selfies	4.01	0.85	0.94								.72***	-.04	-.004
8. Others' ratings of exp. photos	4.21	0.78	0.93									.13	.15*
Narcissism													
9. Others' ratings of selfies	3.11	0.81	0.91										.41***
10. Others' ratings of exp. photos	2.88	0.70	0.83										

Note. α = Cronbach's α ; Exp. = Experimenter-taken.

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

98 targets (51 men, 47 women; $M_{\text{age}} = 22.67$ years, $SD = 4.88$) reported little or no selfie-taking; we henceforth refer to these groups as selfie-takers and non-selfie-takers, respectively. Selfie-takers reported taking an average of 4.90 ($SD = 8.45$) selfies in the previous week, during which time they posted an average of 1.39 ($SD = 3.88$) selfies to a social networking site. Non-selfie-takers reported taking 0.37 ($SD = 1.10$) selfies in the previous week during which time they posted an average of 0.36 ($SD = 2.18$) selfies to a social networking site. Selfie-takers ($M = 16.13$, $SD = 6.20$) and non-selfie-takers ($M = 14.55$, $SD = 7.47$) reported similar levels of narcissism, $t(196) = 1.62$, $p = .11$, $r_p = .12$, 95% confidence interval (CI) $[-.02, .26]$,² and there was no correlation across all targets between narcissism scores and the reported number of selfies taken in the past week, $r(196) = .07$, $p = .35$, 95% CI $[-.07, .21]$.³

The external raters' judgments of the targets' attractiveness, likability, and narcissism reached acceptable levels of interrater reliability (all Cronbach's α s $\geq .83$; see Table 1 for a summary of descriptive statistics and correlations between variables). We therefore aggregated the ratings for each target's selfie and experimenter photo by averaging the scores across the raters, as noted above. We compared the targets' attractiveness and likability self-ratings to the external raters' judgments by conducting separate 2 (Rater: self, others') \times 2 (Photo Type: selfie, experimenter-taken photo) \times 2 (Group: selfie-taker, non-selfie-taker) analyses of variance (ANOVAs) with repeated measures on the first two factors. We then decomposed the interactions by conducting separate 2 (Photo Type: selfie, experimenter-taken photo) \times 2 (Group: selfie-taker, non-selfie-taker) ANOVAs with repeated measures on the first factor for the self-ratings and the others' ratings. As self-ratings of narcissism were not collected, we only conducted a 2 (Photo Type) \times 2 (Group) ANOVA.

Attractiveness

We observed a main effect of Rater, wherein targets rated themselves as more attractive than the external raters did,

$F(1, 196) = 58.98$, $p < .001$, $r_p = .48$, 95% CI $[.38, .67]$, and a main effect of Group, such that selfie-takers looked overall more attractive than non-selfie-takers, $F(1, 196) = 11.88$, $p = .001$, $r_p = .24$, 95% CI $[.10, .38]$; the main effect of Photo Type was not significant, $F(1, 196) = 0.05$, $p = .83$, $r_p = .02$, 95% CI $[-.13, .16]$. Significant interactions between Rater and Group, $F(1, 196) = 7.17$, $p = .01$, $r_p = .19$, 95% CI $[.05, .33]$, and between Group and Photo Type, $F(1, 196) = 4.99$, $p = .03$, $r_p = .16$, 95% CI $[.02, .30]$, qualified these effects, which were themselves further qualified by a marginally significant three-way interaction between Rater, Group, and Photo Type, $F(1, 196) = 3.47$, $p = .06$, $r_p = .13$, 95% CI $[-.01, .27]$. No other effects reached significance, all F s ≤ 2.35 , all p s $\geq .13$, all r_p s $\leq .11$, all 95% CI $[-.03, .25]$ (see Table 2 for a summary of the ANOVA results for attractiveness ratings).

Although we report the effects for self- and others' ratings separately below, given our primary interest in the differences between targets' self-ratings and external raters' judgments, we first also decomposed the three-way interaction by subtracting the external raters' consensus scores from the targets' self-ratings to test how these differences varied between the selfie-takers and non-selfie-takers for the selfies and experimenter-taken photos. This showed that the differences between the self- and others' ratings of selfies were significantly greater for selfie-takers ($M = 1.20$, $SD = 1.44$) than for non-selfie-takers ($M = 0.47$, $SD = 1.69$), $t(196) = 3.28$, $p = .001$, $r_p = .23$, 95% CI $[.09, .38]$, but that the differences between the selfie-takers ($M = 0.83$, $SD = 1.66$) and non-selfie-takers ($M = 0.51$, $SD = 1.53$) were about the same for the experimenter-taken photos, $t(196) = 1.40$, $p = .16$, $r_p = .10$, 95% CI $[-.04, .24]$. Thus, selfie-takers departed further from the external raters' objective perceptions of attractiveness than the non-selfie-takers did but only for impressions of their selfies (see Figure 1).

Self-ratings. Analyzing the data separately for the targets' self-ratings, we observed a significant main effect of Group,

Table 2. Summary of Attractiveness Ratings and ANOVA Results for the Between Rater, Photo Type, and Group Main Effects and Their Interactions.

Effect	Condition		M	SE	F	p	r _p , [95% CI]	
Rater (self- vs. others' ratings)	Self-ratings		3.99	.09	58.98	<.001	.48, [.33, .62]	
	Others' ratings		3.24	.05				
Photo Type (selfies vs. exp. photos)	Selfies		3.62	.06	0.05	.83	.03, [−.11, .17]	
	Exp. photos		3.60	.06				
Group (selfie-takers vs. non-selfie-takers)	Selfie-takers		3.79	.07	11.88	<.01	.24, [.11, .39]	
	Non-selfie-takers		3.43	.08				
Rater × Photo Type	Self-ratings	Selfies	4.04	.11	2.35	.13	.10, [−.04, .24]	
		Exp. photos	3.94	.10				
	Others' ratings	Selfies	3.20	.05				
		Exp. photos	3.27	.05				
Rater × Group	Self-ratings	Selfie-takers	4.30	.13	7.17	.01	.20, [.06, .34]	
		Non-selfie-takers	3.67	.13				
	Others' ratings	Selfie-takers	3.29	.07				
		Non-selfie-takers	3.18	.07				
Group × Photo Type	Selfie-takers	Selfies	3.87	.09	4.99	.03	.17, [.03, .31]	
		Exp. photos	3.72	.08				
	Non-selfie-takers	Selfies	3.37	.09				
		Exp. photos	3.49	.08				
Rater × Photo Type × Group	Self-ratings	Selfie-takers	Selfies	4.47	.15	3.47	.06	.14, [.001, .28]
			Exp. photos	4.13	.15			
		Non-selfie-takers	Selfies	3.60	.15			
			Exp. photos	3.75	0.15			
	Others' ratings	Selfies takers	Selfies	3.27	.08			
			Exp. photos	3.30	.07			
		Non-selfie-takers	Selfies	3.13	.08			
			Exp. photos	3.24	.07			

Note. Exp. = Experimenter-taken; ANOVA= analysis of variance; CI = confidence interval.

$F(1, 196) = 12.34, p < .01, r_p = .24, 95\% \text{ CI } [.11, .39]$ but not Photo Type, $F(1, 196) = 0.76, p = .39, r_p = .06, 95\% \text{ CI } [−.08, .20]$. The two did interact, however, $F(1, 196) = 4.54, p = .03, r_p = .15, 95\% \text{ CI } [.01, .29]$, suggesting that selfie-takers and experimenter-taken photos differently. We therefore calculated difference scores to decompose the interaction by subtracting the targets' ratings for their experimenter-taken photos from the ratings for their selfies. We contrast-coded group membership (non-selfie-taker = −1, selfie-taker = 1) and tested the simple effects by regressing the difference scores onto Group membership. This showed greater differences in attractiveness ratings between selfies and experimenter-taken photos for selfie-takers ($M = 0.34, SD = 1.66$) than for non-selfie-takers ($M = −0.14, SD = 1.52$), $B = 0.24, SE = 0.11, t(196) = 2.13, r_p = .15, 95\% \text{ CI } [0.01, 0.29], p = .03$ (see Figure 2).

We also tested whether these results would differ according to the number of selfies that targets reported taking in the previous week by conducting a separate regression with this measure in place of the dichotomous group membership variable. The number of selfies that the targets reported having taken in the past week related to the difference between their ratings of their selfies versus their experimenter-taken photos, paralleling the results found for Group membership above, $B = 0.65, SE = 0.29, t(196) = 2.25, r_p = .16, 95\% \text{ CI } [0.02, 0.30], p = .03$. In

other words, the more selfies a person took, the more favorably he or she rated his or her selfie versus experimenter-taken photo.

Others' ratings. To evaluate the external raters' judgments, we constructed a model with Group (non-selfie-taker = −1, selfie-taker = 1) and Photo Type (experimenter-taken photos = −1, selfies = 1) and the interaction between the two as fixed factors, attractiveness ratings as the outcome, and both participants and targets as random factors using an unstructured covariance matrix, so that all possible random effect covariances were estimated (see Judd, Westfall, & Kenny, 2012). This showed a main effect of Photo Type such that other people rated the targets' experimenter-taken photos ($M = 3.28, SE = 0.02$) as significantly more attractive than their selfies ($M = 3.20, SE = 0.02$), $B = −0.07, SE = 0.01, t(10,841.47) = −4.93, p < .001, r_p = .05, 95\% \text{ CI } [0.02, 0.07]$. Although there was no main effect of Group, $B = 0.02, SE = 0.05, t(241.34) = 0.46, p = .64, r_p = .03, 95\% \text{ CI } [−0.10, 0.16]$, Group and Photo Type interacted, $B = 0.13, SE = 0.04, t(10,844.37) = 3.14, p < .01, r_p = .03, 95\% \text{ CI } [0.01, 0.05]$. We recomputed these analyses replacing the dichotomous Group variable with the (continuous) number of selfies taken in the past week, again observing a main effect of Photo Type, $B = −0.07, SE = 0.01, t(11,036.13) = −4.93, p < .001, r_p = .05, 95\% \text{ CI } [0.02, 0.07]$, and an interaction between Photo

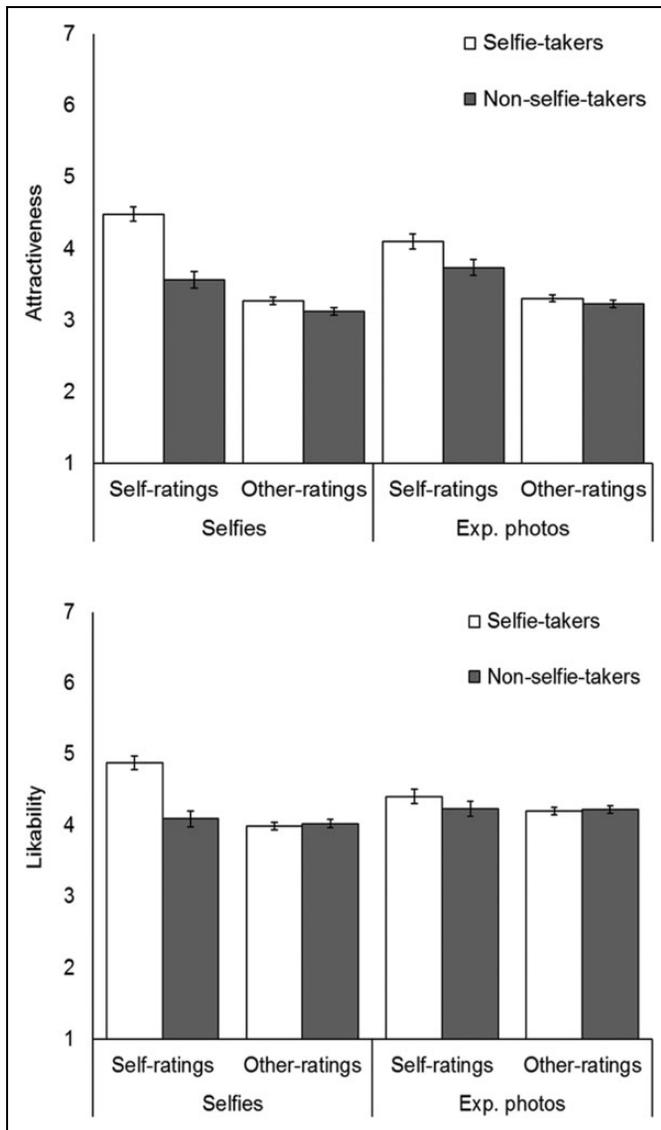


Figure 1. Means and standard error bars for self- and other ratings of attractiveness (top panel) and likability (bottom panel) for the targets' selfies and experimenter-taken photos.

Type and the number of selfies taken in the past week, $B = 0.13$, $SE = 0.04$, $t(10,898.95) = 3.14$, $p < .01$, $r_p = .03$, 95% CI [0.01, 0.05], but no main effect of the number of selfies taken in the past week, $B = 0.18$, $SE = 0.13$, $t(200.55) = 1.39$, $r_p = .10$, 95% CI [-0.04, 0.24].

To decompose the interaction, we examined the differences in others' ratings between selfies and experimenter-taken photos for selfie-takers and non-selfie-takers separately. Ratings of non-selfie-takers' experimenter-taken photos ($M = 3.24$, $SE = 0.03$) were higher than those for selfies ($M = 3.12$, $SE = 0.03$), $B = -0.06$, $SE = 0.01$, $t(5,403.78) = -4.34$, $p < .001$, $r_p = .06$, 95% CI [0.03, 0.09], whereas experimenter-taken photos ($M = 3.31$, $SE = 0.03$) and selfies ($M = 3.27$, $SE = 0.03$) were rated similarly for selfie-takers, $|B| < 0.01$, $SE = 0.01$, $t(5,396.20) = -0.11$, $p = .91$, $r_p < .01$, 95% CI [-0.03, 0.03]. These results suggest that

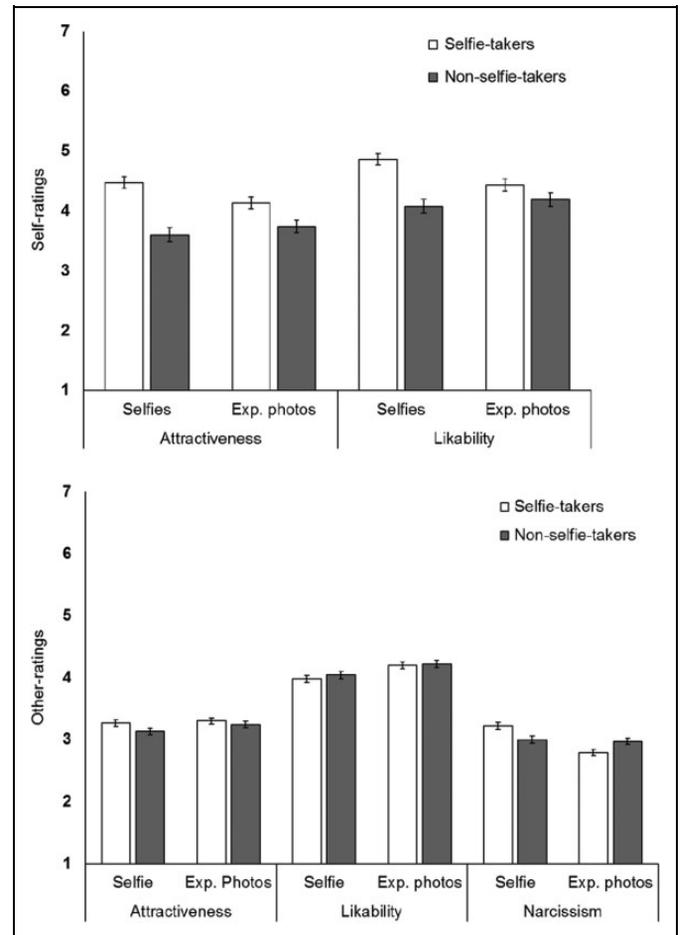


Figure 2. Means and standard error bars for the self- (top panel) and others' (bottom panel) ratings of attractiveness, likability, and narcissism for selfie-takers' and non-selfie-takers' selfies and experimenter-taken photos. Only the external raters made narcissism judgments.

external raters perceived selfies as less attractive than experimenter-taken photos for non-selfie-takers but perceived the two types of photos similarly for selfie-takers.

Likability

As with attractiveness, we also observed a main effect of Rater, in which targets rated themselves as more likable than the external raters did, $F(1, 196) = 8.63$, $p = .004$, $r_p = .21$, 95% CI [.07, .35], and a main effect of Group, whereby selfie-takers looked more likable than non-selfie-takers overall, $F(1, 196) = 4.19$, $p = .04$, $r_p = .14$, 95% CI [.005, .29]. Significant interactions between Rater and Group, $F(1, 196) = 8.09$, $p = .005$, $r_p = .20$, 95% CI [.06, .34], and between Rater and Photo Type, $F(1, 196) = 12.61$, $p < .001$, $r_p = .25$, 95% CI [.11, .39], qualified these effects, which were further qualified by a significant three-way interaction between Rater, Group, and Photo Type, $F(1, 196) = 8.24$, $p = .005$, $r_p = .20$, 95% CI [.06, .34]. No other effects reached significance, all $F_s \leq 3.69$, all $p_s \geq .06$, all $r_p_s \leq .13$, and all 95% CI [-0.01,

Table 3. Summary of Likability Ratings and ANOVA Results for the Rater, Photo Type, and Group Main Effects and Their Interactions.

Effect	Condition		M	SE	F	p	r _p , [95% CI]					
Rater (self- vs. others' ratings)	Self-ratings		4.39	.09	8.63	.004	.20, [.06, .34]					
	Others' ratings		4.11	.05								
Photo Type (selfies vs. exp. photos)	Selfies		4.24	.07	0.12	.73	.03, [-.11, .17]					
	Exp. photos		4.26	.06								
Group (selfie-takers vs. non-selfie-takers)	Selfie-takers		4.37	.08	4.19	.04	.14, [.001, .28]					
	Non-selfie-takers		4.13	.08								
Rater × Photo Type	Self-ratings	Selfies	4.47	.10	12.61	<.001	.24, [.11, .39]					
		Exp. photos	4.31	.11								
	Others' ratings	Selfies	4.01	.06								
		Exp. photos	4.21	.06								
Rater × Group	Self-ratings	Selfie-takers	4.65	.13	8.09	.005	.20, [.06, .34]					
		Non-selfie-takers	4.14	.13								
	Others' ratings	Selfie-takers	4.09	.08								
		Non-selfie-takers	4.13	.08								
Group × Photo Type	Selfie-takers	Selfies	4.42	.09	3.69	.06	.14, [.001, .28]					
		Exp. photos	4.32	.09								
	Non-selfie-takers	Selfies	4.06	.10								
		Exp. photos	4.21	.09								
	Rater × Photo Type × Group	Self-ratings	Selfie-takers	Selfies				4.86	.15	8.24	.005	.20, [.06, .34]
				Exp. photos				4.43				
Non-selfie-takers		Selfies	4.08									
		Exp. photos	4.19									
Others' ratings		Selfie-takers	Selfies	3.98								
			Exp. photos	4.20								
Non-selfie-takers	Selfies	4.04										
	Exp. photos	4.22										

Note. Exp. = experimenter-taken; ANOVA = analysis of variance; CI = confidence interval.

.27] (see Table 3 for a summary of the ANOVA results for the likability ratings).

As above, we initially decomposed this interaction by subtracting the external raters' consensus scores from the targets' self-ratings and tested how these differences varied between the selfie-takers and non-selfie-takers for the selfies and experimenter-taken photos. Similar to attractiveness, the differences between the self- and others' ratings of selfies were significantly greater for selfie-takers ($M = 0.88, SD = 1.42$) than for non-selfie-takers ($M = 0.04, SD = 1.52$), $t(196) = 4.02, p < .001, r_p = .28, 95\% CI [.15, .43]$, but about the same for the the selfie-takers' ($M = 0.23, SD = 1.59$) and non-selfie-takers' experimenter-taken photos ($M = -0.03, SD = 1.59$), $t(196) = 1.13, p = .26, r_p = .08, 95\% CI [-.06, .22]$. Thus, selfie-takers' judgments differed more from the external raters' assessments of how likable they looked in their selfies than the non-selfie-takers' judgments did (see Figure 1).

Self-ratings. Separate analysis of the targets' self-ratings showed a main effect of Group, $F(1, 196) = 7.80, p = .006, r_p = .20, 95\% CI [.06, .34]$, but not Photo Type, $F(1, 196) = 2.16, p = .14, r_p = .10, 95\% CI [-.04, .25]$. A significant Group × Photo Type interaction qualified the former main effect, suggesting differences in the way that selfie-takers and non-selfie-takers rated the likability of their selfies versus experimenter-taken photos, $F(1, 196) = 6.28, p = .01, r_p = .13, 95\% CI [.04, .32]$. We therefore

subtracted the ratings for the experimenter-taken photos from those for the selfies and regressed the difference scores onto group membership (selfie-taker vs. non-selfie-taker). This showed that the difference in likability ratings between selfies and experimenter-taken photos was greater for selfie-takers ($M = 0.43, SD = 1.47$) than for non-selfie-takers ($M = -0.11, SD = 1.58$), $B = 0.27, SE = 0.11, t(196) = 2.51, p = .01, r_p = .18, 95\% CI [0.04, 0.32]$ (see Figure 2), an effect that replicated when we replaced the Group variable with the number of selfies taken in the past week, $B = 0.77, SE = 0.28, t(196) = 2.76, p = .01, r_p = .19, 95\% CI [0.05, 0.33]$.

Others' ratings. We constructed a model parallel to that for attractiveness to examine the external raters' judgments of likability. This showed a main effect of Photo Type: Other people rated the targets as more likable in the experimenter-taken photos ($M = 4.21, SE = 0.02$) than in their selfies ($M = 4.00, SE = 0.02$), $B = -0.12, SE = 0.02, t(12,225.03) = -7.61, p < .001, r_p = .07, 95\% CI [0.05, 0.09]$. There were no significant effects of Group nor an interaction between Group and Photo Type $|B|s \leq 0.05, |t|s \leq 1.18, ps \geq .24, r_p s \leq .04, 95\% CIs [-0.13, 0.15]$. Replacing the Group variable with the number of selfies taken in the past week produced analogous results: We observed a main effect of Photo Type, $B = -0.12, SE = 0.02, t(12,418.58) = -7.56, p = .02, r_p = .07, 95\% CI [0.05, 0.09]$, but no main effect of number of selfies

taken in the past week nor an interaction with Photo Type, $|B|s \leq 0.07$, $|t|s \leq 1.04$, $ps \geq .30$, $r_{ps} \leq .04$, 95% CIs $[-0.10, 0.18]$.

Narcissism

We simultaneously regressed the targets' narcissism scores onto their group membership values (selfie-taker vs. non-selfie-taker) and the external raters' narcissism judgments from both the selfies and experimenter-taken photos, including all relevant interaction terms. Targets' self-reported narcissism scores did not relate to any of these variables, $|B|s \leq 1.65$, $|t|s \leq 1.05$, $ps \geq .30$, $r_{ps} \leq .08$, 95% CI $[-0.06, 0.22]$, suggesting that they did not purvey their narcissism through the selfies or experimenter-taken photos (regardless of whether they were selfie-takers or non-selfie-takers). We observed similar results when we regressed the targets' narcissism scores on the number of selfies taken in the past week, external ratings of narcissism judgments from both the selfies and experimenter-taken photos, and the relevant interaction terms, $|B|s \leq 6.76$, $|t|s \leq 1.56$, $ps \geq .12$, $r_{ps} \leq .11$, 95% CI $[-0.03, 0.25]$.

The results of a cross-classified model with targets and raters as random factors showed a main effect of Photo Type, such that the external raters perceived the targets as more narcissistic in their selfies ($M = 3.11$, $SE = 0.02$) than in the experimenter-taken photos ($M = 2.85$, $SE = 0.02$), $B = 0.14$, $SE = 0.07$, $t(194) = 2.06$, $p = .04$, $r_p = .15$, 95% CI $[0.01, 0.29]$. Perceptions of the targets' narcissism did not differ according to their Group, nor did Group significantly interact with Photo Type, $|B|s \leq 0.03$, $|t|s \leq .51$, $ps \geq .61$, $r_{ps} \leq .04$, 95% CIs $[-0.10, 0.18]$. Replacing the Group variable with the number of selfies taken in the past week similarly produced a main effect of Photo Type, $B = 0.15$, $SE = 0.06$, $t(194) = 2.33$, $p = .02$, $r_p = .16$, 95% CI $[0.02, 0.30]$, but no main effect of the number of selfies taken in the past week nor an interaction with Photo Type $|B|s \leq 0.06$, $|t|s \leq 0.41$, $ps \geq .68$, $r_{ps} \leq .03$, 95% CIs $[-0.11, 0.17]$. Thus, although raters did not perceive differences in narcissism between selfie-takers and non-selfie-takers, they did believe that the targets looked more narcissistic in their selfies than in the experimenter-taken photos.

Discussion

Selfie-takers generally overperceived the positive attributes purveyed by their selfies. Here, we found that selfie-takers believed their selfies to look more attractive and likable than photos of them taken by other people. In reality, though, external raters actually perceived the targets' selfies to look *less* attractive and *less* likable than the photos taken by others (as well as more narcissistic). This self-favoring bias did not extend to non-selfie-takers. Moreover, selfie-takers' ratings of their selfies were less calibrated with others' opinions than were non-selfie-takers' ratings of their selfies. Both groups were equally attuned to others' opinions of their experimenter-taken photos, however.

Selfie-takers' overvaluation of their selfies suggests a susceptibility to self-favoring biases (Hoorens, 1993). Most people

show self-favoring biases in attractiveness and personality judgments (Alicke, 1985; Epley & Whitchurch, 2008; Gabriel et al., 1994; Hoorens, 1995; Horton, 2003). Because selfies are pictures that one takes of oneself, a self-favoring bias concerning one's selfie not only suggests a positive impression of how one looks but perhaps also a positive impression of one's skills as a photographer. Self-favoring biases increase for judgments of controllable traits and abilities (Alicke, 1985), and, thus, the self-taken manner of selfies may indulge a selfie-takers' feelings of superiority in multiple ways.

Self-favoring biases and reduced meta-accuracy in attractiveness and personality judgments may therefore not be influenced only by personality; context may matter as well. Indeed, selfies are a relatively new cultural phenomenon, and we found that selfie-takers showed self-favoring biases for their selfies but not for their experimenter-taken photos (and despite self-reporting similar narcissism as non-selfie-takers—the narcissism implied by taking pictures of oneself notwithstanding). These results therefore extend research on self-favoring biases and meta-perception by showing that illusory superiority can be domain-specific and may adapt to novel conduits of social self-presentation.

Selfie-takers may believe that selfie strategies and selfie filters increase the attractiveness and likability of their selfies. Such beliefs may simply inflate the discrepancy against others' perceptions, however. Ironically, they might even exacerbate the difference. For instance, people who view selfies may disdain the self-promotion that they represent and therefore rate selfies negatively because they imply narcissism (as suggested by the current results). Given that Facebook—the world's largest photo-based social networking site—allows users to “like” particular photos but not to “dislike” them, people could come to overestimate others' favorable opinions of their selfies because the feedback they receive is uniformly positive (Ormus, 2014). If selfies are met with mass approval in the form of likes but never disapproval because the option is unavailable, it could lead to biased feedback that encourages self-favoring biases by inflating posters' self-assessments. Indeed, Luft and Ingham (1955) postulated that individuals' meta-accuracy would increase only with *honest* feedback about how others view them. The absence of a mechanism for negative responses may therefore hinder such feedback, skewing individuals' self-perceptions to become more positive.

Naive judges may therefore view selfies less positively than individuals intend because selfies foster a general impression of narcissism. Both selfie-takers' and non-selfie-takers' selfies were perceived as more narcissistic than experimenter-taken photos in the current work. This difference suggests that selfie-taking actually makes an individual appear more narcissistic. Thus, although people may post selfies to social media sites to convey themselves as attractive or likable, the very practice of selfie-taking may ironically hamper positive perceptions of the selfie-taker, subverting that goal.

Selfie-takers and non-selfie-takers did not actually differ in self-reported narcissism in our sample. Although one study also found no relationship between selfie-posting and narcissism

among women (despite posting more selfies than men; Sorokowski et al., 2015), and another found no relationship between selfie-posting and self-esteem (Sorokowska et al., 2016), others have recently found greater narcissism in male selfie-takers (Fox & Rooney, 2015) and in selfie-takers of both sexes (Weiser, 2015). The overall relationship between narcissism and selfie-taking is therefore somewhat unclear. Given that selfie-posting is a relatively new and rapidly growing social trend (Taylor, 2014), future research examining how demographic and personality characteristics correlate with selfie-taking and selfie-posting may be enlightening.

Beyond informing theoretical considerations of self-favoring biases and meta-accuracy, the current research may also have practical implications for social media use. Users may wish to exercise caution in selfie-posting, as their selfies may not be evaluated as positively as they expect. Selfie-posting and social networking site usage are both increasing at rapid rates (Boyd & Ellison, 2007; Duggan, Ellison, Lampe, Lenhart, & Madden, 2015; Taylor, 2014), and social network activity has ever-increasing consequences for social capital (Ellison, Steinfield, & Lampe, 2007) and career prospects (Chirico, 2014). Thus, both targets and perceivers may benefit from knowing about possible self-favoring biases in selfie perception. Indeed, society may still be in the infancy of the social network boom, and greater understanding of self-favoring biases and meta-accuracy in selfie perception may provide critical information to the majority of the population that indulges in selfie-taking.

Conclusion

Individuals' opinions of their selfies may therefore be biased toward positive impressions that are not shared by others. The present data thus extend knowledge on meta-perception and help to illuminate a new context in which self-favoring biases manifest for particular groups. This research also has practical implications for social media users and individuals wishing to impress others. Although people participating in the selfie trend within social media may not evince any greater narcissism than those who abstain from selfie-taking, others may perceive them this way. Their liability may therefore be one of misperception not of character.

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Notes

1. We excluded two additional raters from the analyses for failing an attention check question.
2. The statistic r_p represents the partial correlation effect size.

3. The distribution for selfies taken in the previous week was not normally distributed (skew = 3.23, $SE = .25$; kurtosis = 11.76, $SE = .49$); we therefore transformed this variable using the natural logarithm to approach normality (skewness = 1.84, $SE = .17$; kurtosis = 2.64, $SE = .34$) and used these transformed values in all relevant analyses.

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