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"You look great!": The effect of viewing appearance-related Instagram comments on women's body image

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ABSTRACT

Instagram is an increasingly popular social networking site where users post and share photos. The aim of the present study was to experimentally investigate the effect of viewing appearance-related comments accompanying Instagram images on women's body image. Participants were 128 female undergraduate students who viewed a set of attractive images paired with a brief positive comment. For half the participants, comments were related to appearance; the other half viewed the same images with place-related comments. As predicted, exposure to appearance comments led to greater body dissatisfaction than exposure to place comments. There was no significant effect on state self-objectification, but trait self-objectification predicted increase in body dissatisfaction regardless of experimental condition. It was concluded that comments form an important and integral part of Instagram imagery, one that has implications for body image in its own right.

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1. Introduction

Many women across a range of westerncountries experience dissatisfaction with their body shape and weight (Swami et al., 2010). Such widespread body dissatisfaction is generally attributed to sociocultural factors, in particular, family, peers, and the mass media (e.g., Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Tiggemann, 2011a). An extensive research literature has documented negative effects from exposure to idealised media images presented in fashion magazines or on television on women's body dissatisfaction and disordered eating (for meta-analyses, see Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Want, 2009). More recently, research interest has shifted toward the Internet and social media. Approximately 79% of all Australian adults use social networking sites, such as Facebook, Instagram, and Twitter, with 89% of young adults (18- to 29-year-olds) doing so on an at least daily basis (Sensis, 2017). These sites allow users to create personal profiles, to share photos and information, and to form on-line relationships with like-minded others. A small but growing body of research has shown a positive link between social networking use, most commonly Facebook, and body image and eating concerns (for a systematic review, see Holland & Tiggemann, 2016). This research also identifies photo-activity, such as posting photos and viewing or making comments on others' photos, as particularly problematic (Meier & Gray, 2014).

One photo-based social networking site that has in recent years increased markedly in popularity, especially among 18- to 29-year-olds, is Instagram (Sensis, 2017). Instagram is a unique platform in that it is purely dedicated to the posting and sharing of photos. Women and girls report spending considerable time in taking and selecting their "best" photos, which can then be further enhanced with Instagram filtering and editing tools, in order to manage their self-presentation (Chua & Chang, 2016; Dumas, Maxwell-Smith, Davis, & Giulietti, 2017). Accordingly, the Instagram environment presents somewhat unrealistic ideals for women. One recent correlational study showed that Instagram use was positively associated with young women's body dissatisfaction and drive for thinness through appearance comparison (Hendrickse, Arpan, Clayton, & Ridgway, 2017). Initial experimental research has also shown that acute exposure to idealised Instagram images (compared to control images) has a detrimental impact on the body image of young adult women (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015).

One theoretical framework often used to explain general media effects on body image is provided by objectification theory (Fredrickson & Roberts, 1997). This account holds that the female body in western societies is sexually objectified and construed primarily as an object to be inspected and evaluated in terms of appearance, a view strongly perpetuated in the visual mass media. It is argued that women and girls are gradually socialized to internalize this observer's perspective and thereby come to view themselves in objectified terms, a process known as self-objectification (Fredrickson & Roberts, 1997). Self-objectification

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is largely conceptualised as an individual difference or trait, and has been associated with a variety of negative body image outcomes, including body dissatisfaction and disordered eating (for a review, see Tiggemann, 2011b). Self-objectification can also be triggered or magnified in situations that accentuate an awareness of an observer's perspective of the body (Fredrickson & Roberts, 1997). A number of experimental studies have now elicited such state self-objectification and demonstrated negative effects, especially for women high on trait self-objectification (see Tiggemann, 2011b). For example, Fredrickson, Roberts, Noll, Quinn, and Twenge (1998) manipulated state self-objectification by asking participants to try on a swimsuit and demonstrated increased body shame for women scoring relatively high on trait self-objectification. In terms of media effects, one study showed that the viewing of thin-ideal fashion magazine advertisements led to increased state self-objectification and body dissatisfaction in young women (Harper & Tiggemann, 2008).

Objectification theory may be particularly relevant in the context of a photographic social media site like Instagram. Indeed, it might be argued that Instagram is inherently objectifying, in that individuals post photographs of themselves (and others) precisely to be looked at and commented on. As yet, there has been no experimental research investigating the potential triggering of state self-objectification by Instagram or other social media. However, any such effects might be expected to cumulate with continuing exposure. In support, recent correlational studies have shown a positive association between young women's Instagram use and trait measures of self-objectification (Cohen, Newton-John, & Slater, 2017; Fardouly, Willburger, & Vartanian, 2017; Feltman & Szymanski, 2018).

In contrast to the content of traditional media, social media content is largely peer-generated and designed to facilitate communication between people (Holland & Tiggemann, 2016). In particular, Instagram encourages users to make comments on others' photos, which then remain displayed below the photo for everyone to see. Thus, Instagram provides a unique platform from which to study the effects of peer appearance-related comments on women's body image. Research in other contexts shows that negative appearance commentary ("teasing") is strongly associated with body dissatisfaction, disordered eating, and poor psychological functioning (see reviews by Thompson, Herbozo, Himes, & Yamamiya, 2005; Webb & Zimmer-Gembeck, 2014). Perhaps somewhat paradoxically, positive appearance comments have also been shown to be associated with body dissatisfaction and (trait) self-objectification in adolescent and young adult women (Calogero, Herbozo, & Thompson, 2009; Slater & Tiggemann, 2015). In an experimental study, Tiggemann and Boundy (2008) found that appearance compliments improved mood in young women, but simultaneously led to an increase in body shame. Further, Tiggemann and Slater (2014) suggested that social networking may provide a pervasive and intense form of the "appearance conversations" among friends that have been shown in the off-line environment to be associated with the reinforcement of beauty ideals and poorer body image (Clark & Tiggemann, 2006; Jones, Vigfusdottir, & Lee, 2004), as well as self-objectification (Tiggemann & Slater, 2015). Recently, Trekels, Ward, and Eggermont (2018) developed a specific measure of appearance conversations on Facebook and found the frequency of these conversations to be related to adolescents' self-objectification and self-sexualizing behaviours.

In the present study, we were interested in the effect of viewing comments about others' photographs on women's own body image. While women spend considerable time choosing, filtering, and editing their own photos on Instagram, they also spend considerable time looking at the photos (including their accompanying comments) posted by others. Thus, the present study represents an experimental analogue of "browsing," which is the most common activity on Instagram (Frison & Eggermont, 2017). The major aim was to investigate the impact of exposure to Instagram images accompanied by one common type of comment, namely, a positive comment about appearance. Based on the logic of objectification theory and existing research in the off-line environment, we predicted that viewing images with an appearance-related comment would focus attention on appearance and lead to greater body dissatisfaction and state self-objectification than viewing the same images with a control (place-related) comment. In accord with Fredrickson et al. (1998), we expected this effect might be amplified for women high on trait self-objectification.

2. Method

2.1. Design

A between-subjects design with two levels of the independent variable of comment type (appearance, place) was used. The dependent variables were body dissatisfaction (controlling for baseline scores) and state self-objectification. Trait self-objectification was tested as a potential moderating variable.

2.2. Participants

Participants were 128 female undergraduate students from Flinders University (South Australia) aged between 18 and 30 years. The majority identified as Caucasian/White (59.4%), with 32.0% Asian, 3.1% African, and 5.5% 'other'. They were randomly allocated to one of the two experimental conditions of the design (subject to equal *n*), resulting in 64 participants per condition. This sample size was determined on the basis of ability to detect a medium-sized effect with power .80 (Cohen, 1992).

2.3. Materials

2.3.1. Stimulus materials

Participants viewed one set of 15 images. The images consisted of full body shots of women in various locations, including natural landscapes and recognisable travel destinations. Such images are common on Instagram and were located by searching for hashtags related to travel and nature (e.g., #travel, #backpacking, #beach) on public Instagram profiles.

The experimental images were selected from an initial pool of 40 images on the basis of ratings by three independent Caucasian female raters from the target age group (M = 21.3 years, SD = 1.15 years). They rated each image for the attractiveness of the woman and the attractiveness of the location displayed (1 = *very unattractive*, 5 = *very attractive*), as well as the relative focus of the image (1 = *100% person*, 5 = *100% place*). The final 15 images were selected to include moderately-attractive to attractive women (M = 3.27, SD = 0.80) in attractive places (M = 3.93, SD = 0.59) that were rated approximately equally on person vs place focus (M = 3.00, SD = 0.76). This was to ensure credibility of positive comments on either the person or the place.

Each image was presented within the Instagram frame with the Instagram logo, default profile picture icon, and a different profile name above the photo. There was a comment by a different mock user (e.g., Lozz_66, ChelseaW) under each image. The experimental manipulation consisted of two sets of 15 comments. One set contained appearance-related comments consisting of positive observations of the woman's appearance, e.g., "Great legs" or "You look amazing." The other set consisted of positive observations of the place or background, e.g., "Great beach" or "Venice looks amazing." All comments were positive in valence as is usually the case among peers on Instagram. Comments were similar in wording, style, and length across the two experimental conditions. All other

aspects of the stimuli were held constant. Images were presented to participants on an Apple iPad via a PowerPoint slideshow.

2.3.2. Social networking site usage

Participants were provided with a list of social networking sites and asked to indicate how often they use them (*never, rarely, sometimes, often, very often*). For Instagram and Facebook specifically, participants reported whether they had an account and how much time they spend per day on the respective site (*less than 10 min, 10–30 min, 31–60 min, over* 1 h). To assess additional incidental exposure to Instagram, participants were asked whether they see Instagram photos on other social networking sites such as Facebook.

2.3.3. Body dissatisfaction

Following Heinberg and Thompson (1995), visual analogue scales (VAS) were used to obtain measures of mood and body dissatisfaction before and after viewing the Instagram images. The five mood items (not analysed here) were included to divert the focus from appearance. The two body dissatisfaction items were 'weight dissatisfaction' and 'appearance dissatisfaction.' Each scale consisted of a 100-mm horizontal line, with endpoints labelled *none* and *very much*. Participants were instructed to indicate how they feel "right now" by placing a vertical mark on the line. Responses were measured from the left-hand pole to the nearest millimetre. Body dissatisfaction was calculated by averaging the scores on 'weight dissatisfaction' and 'appearance dissatisfaction' to produce a single index ranging from 0 to 100, with higher scores indicating greater body dissatisfaction. VAS are particularly useful for repeated measurement as they are difficult to recall and are sensitive to small changes. They have demonstrated validity as a measure of body dissatisfaction, correlating significantly with longer and more complex measures of body image disturbance (Heinberg & Thompson, 1995). In the present sample, internal reliability for body dissatisfaction was acceptable at both pre-exposure (α = .87) and post-exposure (α = .90).

2.3.4. State self-objectification

A modified version of the Twenty Statements Test (Fredrickson et al., 1998) was used as an implicit measure of state self-objectification. Following Tiggemann and Boundy (2008), participants were instructed to complete 10 (rather than the original 20) statements about themselves beginning with the phrase "I am . . ." Responses were initially coded into one of six categories (body shape and size, other physical appearance, physical competence, traits or abilities, states or emotions, uncodable or illegible). The number of responses in the two appearance-related categories (body shape and size, other physical appearance) were then summed to produce a score ranging from 0 to 10, with higher scores indicating greater state self-objectification. A second independent rater coded all initial responses into appearance-related vs not appearance-related. Inter-rater agreement on final state self-objectification score was high, $r = .95$, $p < .001$.

2.3.5. Trait self-objectification

Trait self-objectification was measured by the Self-Objectification Questionnaire of Noll and Fredrickson (1998). Participants were asked to rank a list of 10 body attributes in order of their importance to physical self-concept. The list contained five appearance-based attributes (weight, sex appeal, physical attractiveness, firm/sculpted muscles, measurements) and five competence-based attributes (physical coordination, health, strength, energy level, physical fitness level). The sum of the ranks for the appearance attributes was subtracted from the sum of the ranks for the competence attributes to produce a single index. Scores range from −25 to 25, with higher scores indicating a relatively greater emphasis on appearance, taken to indicate higher levels of trait self-objectification. The Self-Objectification Questionnaire has been shown as reliable and valid, and to measure self-objectification explicitly (Noll & Fredrickson, 1998).

2.4. Procedure

Following approval by the Institutional Research Ethics Committee, participants were recruited for a study entitled "Instagram: People and Places" and were tested individually or in small groups of two or three in the Psychology and Media research laboratory. After reading the Letter of Introduction and providing consent, participants completed the social networking use measure and the pre-exposure VAS measures of mood and body dissatisfaction. Participants were then presented with an iPad on which they viewed a slideshow of one of the two sets of experimental images. For half the participants, the images were accompanied by appearance comments. The other half viewed the same images, but with place comments. Each image was displayed for 15 s. To ensure participants attended to the images they were asked to rate the overall quality (e.g., blurriness, composition) of each photograph on a five-point scale (1 = *very poor,* 5 = *excellent*).

Following the slideshow, participants completed the post-exposure VAS, as well as the measure of state self-objectification. Finally, participants completed the trait self-objectification measure, before having their height and weight measured (with their consent).

Testing sessions lasted approximately 30 min. Participants received course credit for their participation and were debriefed following completion of data collection through an online system.

3. Results

3.1. Characteristics of the sample

The women in the sample were aged between 18 and 29 years, with a mean age of 20.12 years ($SD = 2.46$). Their mean Body Mass Index (BMI) was 22.76 ($SD = 3.94$). This fell within the "normal weight" range, as defined by Garrow and Webster (1985).

Almost all participants (97.7%) had a Facebook account. The majority (90.6%) also had an Instagram account. Only one woman did not have either a Facebook or Instagram account. Nearly all (98.4%) also reported that they saw Instagram photos on other social networking platforms such as Facebook. The modal use of Instagram was 31–60 minutes a day and Facebook was over 1 h a day.

Preliminary analyses indicated that the two experimental groups did not differ in age, $t(126) = 0.68$, $p = .496$, or time spent on Instagram, $t(126) = 1.07$, $p = .287$. The appearance- comment group reported a greater BMI ($M = 23.79$, $SD = 4.55$) than the place-comment group ($M = 21.68$, $SD = 2.84$), $t(123) = 3.10$, $p = .002$. It needs to be noted, however, that three visually larger women (all in the place-comment group) declined to be weighed, an option explicitly allowed in our approved ethical protocol. [When subsequent analyses were repeated controlling for BMI, the results remained the same]. More importantly, the groups did not differ on initial body dissatisfaction, $t(126) = 1.41$, $p = .160$. Nor did they differ on trait self-objectification, $t(126) = 0.10$, $p = .919$, demonstrating that this trait measure was not reactive to experimental manipulation.

3.2. The effect of comment type on body dissatisfaction

The means and adjusted means (controlling for pre-exposure) for body dissatisfaction are presented in Table 1. An initial 2 (comment type) × 2 (time) mixed ANOVA showed a significant main

Table 1
Means (SD) and Adjusted Means (SE) for Body Dissatisfaction by Comment Type.

	Comment Type	
	Appearance	Place
Pre-exposure *M*	42.77 (22.20)	37.04 (23.61)
Post-exposure *M*	51.52 (24.63)	41.45 (24.16)
Adjusted *M*	48.89 (1.54)	44.09 (1.54)*

Note. Body dissatisfaction scores range.0–100.
* $p < .05$.

effect of time, $F(1, 126) = 36.49$, $p < .001$, $\eta_p^2 = 0.23$, as well as significant comment type × time interaction, $F(1, 126) = 3.96$, $p = .049$, $\eta_p^2 = 0.03$, with no effect for comment type, $F(1, 126) = 3.82$, $p = .053$, $\eta_p^2 = 0.03$. As can be seen from the means in Table 1, body dissatisfaction increased following exposure to the images, with a greater increase for participants exposed to the appearance comments than the place comments.

To formally test the difference between conditions, an ANCOVA with pre-exposure body dissatisfaction entered as a covariate to control for individual differences was conducted. This confirmed a significant difference between conditions, $F(1, 125) = 4.80$, $p = .030$, $\eta_p^2 = 0.04$. The adjusted means in Table 1 show that, as predicted, participants who viewed images with appearance comments had significantly greater body dissatisfaction following exposure than those who viewed the same images with place comments.

3.3. The effect of comment type on state self-objectification

The means for state self-objectification lay in the predicted direction, being higher in the appearance ($M = 1.50$, $SD = 1.50$) than in the place comment condition ($M = 1.31$, $SD = 1.44$). However, an independent samples *t*-test showed that this difference was not statistically significant, $t(126) = 0.72$, $p = .471$, $d = 0.13$.

3.4. Moderation by trait self-objectification

A hierarchical multiple regression was conducted to test the predicted moderating role of trait self-objectification. Scores were centred to reduce multicollinearity (Aiken & West, 1991). Pre-exposure body dissatisfaction was entered on Step 1, then comment type (dichotomous variable) and trait self-objectification on Step 2, followed by the two-way product term (Step 3). Here the inclusion of the product term did not explain significant additional variance, $R^2_{change} = .001$, $F_{change}(1, 123) = 0.42$, $p = .519$. However, Step 2 was significant, $R^2_{change} = .031$, $F_{change}(2, 124) = 8.72$, $p < .001$, with trait self-objectification itself an independent predictor, $\beta = .16$, $t(124) = 3.49$, $p < .001$. Thus, trait self-objectification did not moderate the effect of experimental condition, but rather, was associated with an increase in body dissatisfaction regardless of experimental condition.

4. Discussion

The major aim of the present study was to investigate the effect of viewing appearance-related comments attached to Instagram images on women's body image. As predicted, exposure to appearance comments led to significantly greater body dissatisfaction than exposure to place (control) comments. There was no effect on state self-objectification. Nor did trait self-objectification moderate the effect of comment, although trait self-objectification did predict increased body dissatisfaction in response to viewing the images, regardless of experimental condition. Overall, the study has extended the experimental investigation of social media and body image to investigate an important and integral aspect of social media, namely the comments that people make on their peers' photos. The results provide a concrete demonstration of the peer-mediated nature of media effects that is unique to the social media context.

The major finding that viewing Instagram images with positive appearance comments led to significantly greater body dissatisfaction than viewing precisely the same images but with place comments is novel. It appears that just as appearance conversations among friends play a pivotal role in the reinforcement of appearance ideals (Clark & Tiggemann, 2006; Jones et al., 2004), so too may appearance comments on social networking sites, with negative consequences for women's body dissatisfaction. The finding also extends previous evidence for deleterious effects of positive appearance commentary in very different (off-line) contexts (Calogero et al., 2009; Slater & Tiggemann, 2015; Tiggemann & Boundy, 2008) to the on-line environment. Further, this effect was obtained with just one brief comment per image viewed for a total of less than 5 min on one occasion. Given that the women in the present study reported spending a half- to one hour on Instagram each day, as well as seeing Instagram photos on other platforms such as Facebook, they are likely to be exposed to this type of material (images and comments) multiple times over, and so one might expect cumulative effects over time.

Although not the major purpose of the study, the observed significant main effect of time adds to the existing small body of experimental literature demonstrating negative effects on body dissatisfaction from viewing attractive Instagram images (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). Indeed, it seems likely that the visual image itself, rather than any accompanying verbal text, will always be the most prominent and salient feature of any posting on Instagram. In that light, the present significant finding for comment type is all the more noteworthy.

The study was conducted within the framework provided by objectification theory (Fredrickson & Roberts, 1997). However, there was no effect of experimental condition on the implicit measure of state self-objectification; nor was there the predicted interaction between trait self-objectification with comment type on body dissatisfaction. Nevertheless, self-objectification could not be judged as irrelevant. Although trait self-objectification did not moderate the effect of comment type, it did predict increase in body dissatisfaction in response to viewing the images, regardless of comment type. Together, the results suggest that self-objectification may be more relevant to the posting and viewing of Instagram *images* (Cohen et al., 2017; Fardouly et al., 2017; Feltman & Szymanski, 2018), than to the accompanying comments (at least as manipulated here). Future experimental research might usefully compare the level of state self-objectification triggered by exposure to thin-ideal Instagram images versus control images, as well as investigate other potential mechanisms for the observed effect of comments. Perhaps the most obvious would be appearance-based social comparison, which has been implicated in previous more general Instagram studies (Brown & Tiggemann, 2016; Feltman & Szymanski, 2018; Hendrickse et al., 2017; Tiggemann & Zaccardo, 2015). Nevertheless, the results can be viewed as providing endorsement of objectification theory's contention that anything that focuses attention on external appearance, even a positive comment about another person as in the present case, can produce negative consequences.

Taken together, the results have some important practical implications. The simplest, but least realistic, would be for women to limit their exposure to social networking sites, especially those that are predominantly photo-based like Instagram. Alternatively, public health and educational interventions could aim to increase social media literacy. In this, peer influences will require a stronger

focus than in traditional media literacy programs, which have shown some efficacy (Levine & Murnen, 2009; Yager, Diedrichs, Ricciardelli, & Halliwell, 2013). Specifically, women might be educated about the potentially detrimental impact and dissuaded from making comments that revolve around appearance on their peers' Instagram photos. As positive appearance comments are undoubtedly intended as helpful, supportive, and affirming, women may be surprised (and appalled) to learn that they might unknowingly be perpetuating body dissatisfaction in this way. More generally, interventions targeted at decreasing trait self-objectification would also be helpful in reducing the negative effect of exposure to Instagram images. Such interventions aim to encourage women to view their bodies in more holistic and functional terms, that is, in terms of what their bodies can do rather than how they look (Tiggemann, 2013).

As with all studies, there are several limitations that should be acknowledged. First, the sample consisted of female university students and thus results may not generalize to adolescent girls or older women who may have different patterns of Instagram usage. Second, although the protocol was designed to have high ecological validity (images sourced from public Instagram accounts and presented on an iPad), the study still took place in a laboratory context where participants were asked to attend to the images in a way that they would not do normally. Third, trait self-objectification ideally would have been measured in a separate session, but was shown not to be reactive to the experimental manipulation here. In addition, a pre-measure of state self-objectification would have been useful for assessing change in response to viewing the images. Fourth, the viewed comments were on other (unknown) people's photos, rather than on participants' own friends or social network members. Further, although the protocol represents an experimental analogue of browsing, the most common form of Instagram activity (Frison & Eggermont, 2017), there is no doubt that the significance and implications of comments would be much greater had they been made about the participant's own photos. People put up photos (often "selfies") precisely to be looked and commented on (Chua & Chang, 2016; Dumas et al., 2017). It also seems likely that state self-objectification might be more readily triggered under these circumstances (Cohen et al., 2017). Fifth, we investigated only a positive brief comment. Although most Instagram comments are positive, comments can be negative or ambiguous (e.g., "you look tired") and Instagram photo posts are particularly vulnerable through the comments function to "trolling" (nasty and abusive comments, most frequently about appearance, made anonymously; Moreau, 2018). In addition, future studies might also choose to investigate other types of comment, for example, those related to capability or function, which might serve to be more protective of body image (Mulgrew & Tiggemann, 2016).

Despite the above limitations, the present study has made a start in investigating an integral aspect of Instagram, namely the comments made by individuals on other people's photos. The finding that viewing appearance comments led to increased body dissatisfaction is a clear illustration of the importance of the interactive aspects of social media. Accordingly, the study contributes to a greater understanding of the ever-increasing role of social media in women's lives.

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