Social media is not real: The effect of 'Instagram versus reality' images on women's social

comparison and body image

Abstract

One recent trend on Instagram consists of posting 'Instagram versus reality' images containing side-by-side photographs of the same woman, one an idealized depiction and the other a more natural depiction. The present study aimed to experimentally investigate the effect of such images on body image. Participants were 305 women aged 18-30 years who were randomly assigned to view one of three sets of Instagram images: 'Instagram vs reality' images, the 'ideal' side alone, or the 'real' side alone. As predicted, viewing the 'Instagram vs reality' and real images resulted in decreased body dissatisfaction relative to the ideal images. Further, the detrimental effects of appearance comparison were much less marked for the 'Instagram vs reality' and real images than for the ideal images. It was concluded that 'Instagram versus reality' and real posts have the potential to bolster women's body satisfaction, but more research is needed to assess their longer-term impact.

Keywords: Body dissatisfaction; body appreciation; body image; Instagram; social media; social networking sites; appearance comparison; social comparison; idealized images; interventions

A casual scroll through Instagram will reveal a large number of pictures of near-perfect and seemingly flawless women. Corresponding research has demonstrated that Instagram use is related to a variety of body image concerns, including body dissatisfaction and self-objectification (Cohen, Newton-John, & Slater, 2017; Fardouly, Willburger, & Vartanian, 2017; Feltman & Szymanski, 2018; Hendrickse, Arpan, Clayton, & Ridgway, 2017). One emerging social media trend to counter such negative effects is 'Instagram versus Reality' posts. These consist of two side-by-side photographs of the same woman, one presenting an idealized depiction and the other a more natural depiction of the woman. In this way, 'Instagram versus Reality' posts seek to expose the falseness of social media and thereby discourage women from comparing themselves with idealistic and unrealistic images. While a small body of experimental research has shown that viewing more realistic photos on Instagram has positive benefit in evoking less appearance concern that viewing highly-enhanced or edited photos (Kleeman, Daalmans, Carbaat, & Anschütz, 2018; Fardouly & Rapee, 2019; Tiggemann & Zinoviev, 2019), as yet there has been no explicit study of 'Instagram vs reality' posts. Thus the present study aimed to extend the existing literature by investigating the impact of viewing such 'Instagram versus reality' images on women's body image.

Social media and body image

An extensive body of research has documented detrimental effects on women's body image from exposure to idealized images displayed in traditional media formats such as fashion magazines and television, especially for women with already high levels of body concern (for meta-analyses, see Ferguson, 2013; Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2001; Want, 2009). A more recent but growing body of research has demonstrated parallel negative effects resulting from social media exposure, most commonly Facebook (for a systematic review, see Holland & Tiggemann, 2016). However, social media

are very different from traditional media formats in that most of the content is generated by peers and is interactive. Not only can users create their own personal profiles and post photos and information, but they can also 'browse' the posts of and interact with other users. Of these activities, those surrounding the posting and viewing of photos have been identified as particularly salient to body image and eating concerns (Cohen, Newton-John, & Slater, 2018; Holland & Tiggemann, 2016; Meier & Gray, 2014).

Accordingly, recent research attention has turned specifically to Instagram, which is a social media platform dedicated purely to the posting and sharing of photos. Users are able to 'follow' other people's accounts and also search for particular content using hashtags. Instagram is also one of the most popular social networking sites worldwide, with more than one billion active users (Statista, 2019a). In the United States it is especially popular with young adults aged 18-29 years (Statista, 2019b). Instagram use has been linked to body dissatisfaction and body surveillance among women in correlational studies (Cohen, Newton-John, & Slater, 2017; Fardouly et al., 2017; Feltman & Szymanski, 2018; Hendrickse et al., 2017). Limited experimental research has also shown that acute exposure to idealized Instagram images (relative to control images) negatively impacts women's state body satisfaction (Brown & Tiggemann, 2016; Cohen, Fardouly, Newton-John, & Slater, 2019; Tiggemann, Hayden, Brown, & Veldhuis, 2018; Tiggemann & Zaccardo, 2015).

The negative effects of social media, like traditional media (Levine & Murnen, 2009; Want, 2009), have generally been attributed to the process of social comparison. Indeed, it has been argued (e.g., Tiggemann et al., 2018) that social comparison is particularly pertinent to social media because comparison targets are largely peers, in contrast to the models appearing in fashion magazines. According to social comparison theory (Festinger, 1954), the quest for self-evaluation drives individuals to seek out comparisons with similar rather than dissimilar others. However, Instagram users tend to upload only their "best" photos, ones that

have been carefully taken and selected to maximize attractiveness and which can be further enhanced by filters and digital alteration (Chua & Chang, 2016; Dumas, Maxwell-Smith, Davis, & Giulietti, 2017). In this, they are engaging in a reciprocal process termed 'social surveillance' by Marwick (2012), whereby individuals not only closely examine the content uploaded by others, but also critically examine their own posts from other people's points of view. Such social surveillance is important because, in viewing the content generated by others, users come to "formulate a view of what is normal, accepted, or unaccepted in the community" (Marwick, 2012, p.384), and modify their own posts accordingly. The end result is that comparisons with Instagram 'peers' are most often upward in direction (Fardouly, Pinkus, & Vartanian, 2017), resulting in dissatisfaction with one's own body and appearance. In support, some experimental studies have shown that state appearance comparison mediates the observed effects of idealized Instagram images on body dissatisfaction (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015).

Instagram versus reality

As argued above, although Instagram material is peer-generated and thus could potentially be beneficial, much of it is highly staged and not realistic. People spend many hours arranging the lighting, getting the best angle, taking multiple photos, and applying filters or Photoshop in order to produce the best representation of themselves possible (Chua & Chang, 2016; Dumas et al., 2017). As a result, the Instagram world seems inhabited largely by people who, unlike the viewer, have seemingly perfect bodies, perfect lives, and perfect relationships (Victoria, 2019).

The growing recognition (and accompanying frustration) that so much of Instagram is unrealistic has given rise to the Instagram versus reality movement. This is a form of online social activism where women post two images of themselves side-by-side: an ideal 'Instagram' version that is perfectly lit and posed (e.g., stomach muscles held taut) to show

their best attributes; and a more realistic version with more natural pose (e.g., visible stomach rolls). The comparison shows how camera angle, lighting, posing in a particular way, and flexing particular muscles, can dramatically alter perceived weight and appearance. The rationale is that the contrasting images serve to remind women that social media is fake, that no one is perfect, that it is normal to have flaws, and that they should never compare themselves with others on social media (Beauty by Disaster, 2019; Messina, 2017). The underlying logic is that if women can be dissuaded from comparing themselves to the unrealistic and idealised images presented on Instagram, then body satisfaction will be preserved.

A small body of experimental research has investigated the impact of viewing Instagram images intended to disrupt social comparison processing. Fardouly and Rapee (2019) compared the effect of makeup (idealized) and no-makeup (more natural) selfies as posted by three makeup artists. They found that exposure to a small number of no-makeup selfies interspersed with a larger number of makeup selfies alleviated the negative effect on facial dissatisfaction obtained following exposure to makeup selfies only. Similarly, Tiggemann and Zinoviev (2019) showed that exposure to enhancement-free natural photos resulted in lower facial dissatisfaction than exposure to standard Instagram photos of the same women. In addition, Slater, Cole, and Fardouly (2019) compared the effect of thin-ideal celebrity images and humorous parody images of the same celebrity posts. They found that the parody images resulted in decreased body dissatisfaction relative to the thin-ideal images. As yet, however, there has been no explicit evaluation of 'Instagram vs reality' pictures and women's body image.

In addition to potential protective effects against body dissatisfaction, exposure to 'Instagram vs reality' images may also promote body appreciation, an index of positive body image. Positive body image is a multidimensional construct referring to love, respect, and

acceptance of one's body, including aspects inconsistent with sociocultural ideals (Tylka, 2011; Tylka & Wood-Barcalow, 2015a). Importantly, it is conceptualized as something more than the mere absence of negative body image. In support, a number of studies have shown body appreciation to be uniquely associated (over and above body satisfaction or dissatisfaction) with a range of positive outcomes, including self-esteem, adaptive eating, and self-care health behaviours (Andrew, Tiggemann, & Clark, 2016a,b; Tylka & Wood-Barcalow, 2015b). A recent study by Cohen et al. (2019) showed that exposure to a broad range of body positive material led to increased body appreciation as well as decreased body dissatisfaction.

The present study

The present study aimed to experimentally investigate the effect of exposure to 'Instagram vs reality' images on women's body dissatisfaction and appreciation. 'Instagram vs reality' images were compared to idealised images seen on Instagram, as well as to more natural images. The two comparison groups were derived from the two respective sides of the 'Instagram vs reality' images. On the basis of previous experimental work with Instagram images (Brown & Tiggemann, 2016; Cohen et al., 2019; Tiggemann et al., 2018; Tiggemann & Zaccardo, 2015), it was predicted that the 'Instagram vs reality' and 'real' images would lead to lower body dissatisfaction and greater body appreciation than the 'ideal' images. More tentatively, it was predicted that the 'Instagram vs reality' images might offer the greater benefit because of their specific message. In addition, the role of social comparison was investigated. It was predicted that the influence of social comparison on body dissatisfaction and body appreciation would be reduced in the 'Instagram vs reality' and 'real' image conditions, relative to comparison with 'ideal' images. This prediction was based on the expectation that comparisons with 'Instagram vs reality' and 'real' images would be relatively more lateral or downward than comparisons with 'ideal' images, which have been

shown to be upward in direction and therefore more damaging (Fardouly et al., 2017). Finally, as the first study to investigate any aspect of 'Instagram vs reality' images, we were interested in how these would be perceived and interpreted by the women.

Method

Participants

Participants were 305 women aged between 18 and 30 years, the largest demographic group of Instagram users (Statista, 2019b). They were recruited using the crowdsourcing platform TurkPrime (Litman, Robinson, & Abberbock, 2016), which utilises data collected online via Mechanical Turk (MTurk). MTurk samples are more demographically diverse than other Internet samples or samples of undergraduate college students (Buhrmester, Kwang, & Gosling, 2011). Buhrmester et al. (2011) also present reliability information to show that the data obtained are at least as reliable as those collected through more time-consuming traditional methods (e.g., individual testing in the laboratory). A sample size of 305 was deemed to provide sufficient statistical power to detect a moderate-sized effect in a three-group experimental design with measures taken at two time points. The sample had a mean age of 25.34 years ($SD = 2.98$), and their mean BMI was 26.98 ($SD = 7.59$), indicating a slightly overweight sample. The majority of participants identified as Caucasian (69.2%), followed by Latino/Hispanic (11.8%), African-American (10.2%), Asian (6.6%), Native American (0.3%), and 'other' (2.0%). Most participants had completed an undergraduate degree (55.4%) or were current college students (23.6%).

Design

The study employed a randomised between-subjects experimental design to investigate the effect of Instagram image type (ideal, real, 'Instagram vs reality') on body dissatisfaction and body appreciation (controlling for baseline scores). Relationships with state appearance comparison were also examined across conditions.

Materials

  Stimulus materials. Three sets of 15 images each were used in the study. One set contained 'Instagram vs reality' images sourced from public Instagram profiles using the hashtags #instagramversusreality and #instagramversusreallife. The owners of the profiles were contacted to ask their permission to use their pictures in a research study. The images consisted of paired side-by-side photographs of the same attractive woman wearing the same clothes and in the same setting. One side depicted an idealized representation of the woman, for example, in a flattering pose with flattering lighting and digital enhancement. The other side depicted a more realistic representation, for example, showing cellulite or rolls of fat in a less flattering posture with less flattering lighting. The 'Instagram vs reality' images were presented intact exactly as posted, including any overlain text (e.g., 'Instagram', 'real life') and in either order (left/right). The other two sets of images consisted of either the idealized side of the image or the realistic side presented separately (without any text). Thus, across conditions (here termed 'ideal', 'real', and 'paired'), images depicted the same women in the same settings, thereby providing a greater degree of experimental control than typically achieved in media studies.

  Using Adobe Photoshop, each image was placed within the Instagram frame inside an iPhone shaped border. The Instagram logo, icons and actual profile name for the image were presented at the top, but number of likes and any captions or comments were not included.

  Social networking use. Participants were asked whether or not they had a Facebook and/or Instagram account, and how much time they spend on each account per day (*less than 10 minutes, 10-30 minutes, 30-60 minutes, 1-2 hours, 2+ hours*). Participants were also asked how many friends they have on Facebook and followers on Instagram (*0-10, 10-50, 50-100, 100-500, 500-1000, 1000-2000, 2000+*).

Body dissatisfaction. Following Heinberg and Thompson (1995), visual analogue scales (VAS) were used to assess state body dissatisfaction before and after viewing the Instagram images. The two items were 'weight dissatisfaction' and 'appearance dissatisfaction'. These were preceded by five mood items not analysed here, to divert focus from appearance. Participants were instructed to drag the marker along a line from 0 (*none*) to 100 (*very much*) to indicate how they feel 'right now' for each item. The score for body dissatisfaction was calculated by averaging scores on the two body dissatisfaction items, to produce an index ranging from 0 to 100, with higher scores indicating greater dissatisfaction. VAS are quick to administer, sensitive to small changes, and have been found to correlate well with longer measures of body dissatisfaction (Heinberg & Thompson, 1995). In the present sample, internal reliability was good at both pre-exposure ($\alpha = .88$) and post-exposure ($\alpha = .92$).

Body appreciation. State body appreciation was measured before and after viewing the images by VAS developed by Slater, Varsani, and Diedrichs (2017). Participants were asked how they were feeling 'right now' for three items (e.g., "Despite my flaws, I accept my body for what it is", "My feelings towards my body are positive for the most part") on a scale from 0 (*not at all*) to 100 (*extremely*). These items were adapted from the Body Appreciation Scale (Avalos, Tylka, & Wood-Barcalow, 2005) which measures trait body appreciation. Scores were averaged to produce a measure ranging from 0 to 100, with higher scores indicating greater body appreciation. Slater et al. (2017) reported good internal reliability for their state measure ($\alpha = .90, .92$). In the present sample, internal reliability was also good at pre-exposure ($\alpha = .85$) and post-exposure ($\alpha = .90$).

Appearance comparison. The extent to which participants engaged in appearance comparison while viewing the images was assessed by the 3-item State Appearance Comparison Scale of Tiggemann and McGill (2004). The first item asks participants to rate

how much they thought about their own appearance, and the second and third items ask how much they compared their overall appearance and specific body parts, respectively, with the women in the photographs. Response options ranged from 1 (*no thought/comparison*) to 7 (*a lot of thought/comparison*). Scores were averaged to produce an index ranging from 1 to 7. Tiggemann and McGill (2004) reported good internal reliability ($\alpha = .91$). Internal reliability in the present sample was similarly high ($\alpha = .94$).

Perceived realism, thinness, and attractiveness. In order to assess perceived differences between the experimental images, participants were asked to rate the realism, thinness and attractiveness of the images. These measures serve as a manipulation check that the ideal and real images included on 'Instagram vs reality' posts are indeed perceived differently. Perceived realism of the images was measured by the 4-item Perceived Realism Scale developed by Tiggemann, Slater, Bury, Hawkins, and Firth (2013). Agreement with items (e.g., "The women in the images were realistic"; "The women in the images looked like they would in person") was indicated on a 7-point Likert scale (1 = *strongly disagree,* 7 = *strongly agree*). The four items were averaged to create a score from 1 to 7, with higher scores indicating greater belief that the images were realistic. Tiggemann et al. (2013) reported adequate internal reliability for the measure ($\alpha = .79$). In the present sample, internal reliability was somewhat higher ($\alpha = .90$). For perceived thinness and attractiveness, participants were asked to rate on a 7-point scale how thin (1 = *not at all thin*, 7 = *very thin*) and attractive (1 = *not at all attractive*, 7 = *very attractive*), on average, the women in the images were.

Nature of the message. Participants were asked whether or not (*yes/no*) they thought the women were trying to portray a message in their images. If yes, they were provided with a small space to briefly describe the message. These open-ended responses were subsequently examined for major themes.

Procedure

Participants were recruited for an online research study simply entitled 'Instagram study.' After reading the Letter of Introduction, they were asked to confirm that they were female and aged 18-30 years (the only selection criteria), and using a desktop or laptop computer, before providing consent. Participants then completed the general social networking questions and pre-exposure VAS measures of mood, body dissatisfaction, and body appreciation.

Next, the Qualtrics software randomly allocated participants to one of the three experimental conditions (ideal, real, paired) in which they viewed 15 Instagram images. Each image was displayed for 5 seconds. This exposure time was chosen as sufficient to see the image, but not so long that participants would become bored or be tempted to simultaneously engage in other activities (e.g., mobile phones). To ensure attention, participants were then asked to rate the visual quality of the image (1 = *very poor*, 5 = *excellent*) while the image remained on screen, as well as to answer a simple question (e.g., "Where was this photograph taken?" [answer *beach*]; "What colour is the woman's hair?) about the 1st, 4th, 7th, 10th and 13th photographs. The latter also served as an attention check.

Following the image task, participants completed the post-exposure VAS, as well as measures of state appearance comparison and the manipulation check items where an additional attention check item was embedded. They then completed the nature of the message item. Finally, demographic information (age, ethnicity, level of education, height, weight) was collected. The protocol had been approved by the Institutional Research Ethics Committee.

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Results

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Sample characteristics

Data from five participants who failed the attention checks were removed. This left a total sample of 300, distributed into the ideal condition ($n = 99$), real condition ($n = 99$), and paired condition ($n = 102$). Nearly all participants had a Facebook (91.7%) and an Instagram account (95.0%). Modal use of Facebook was 1-2 hours and Instagram was 30-60 minutes per day. Modal number of both Facebook 'friends' and Instagram 'followers' was 100-500.

A series of one-way ANOVAs showed that the experimental conditions did not differ significantly in age, $F(2, 297) = 0.19$, $p = .827$, BMI, $F(2, 297) = 1.39$, $p = .250$, or time spent on Facebook, $F(2, 297) = 1.99$, $p = .137$, or Instagram, $F(2, 297) = 1.60$, $p = .205$. Nor did they differ significantly on pre-exposure measures of body dissatisfaction, $F(2, 297) = 1.93$, $p = .147$, or body appreciation, $F(2, 297) = 2.65$, $p = .072$.

The effect of image type on body dissatisfaction

Table 1 presents the pre- and post-exposure means for body dissatisfaction. It can be seen that body dissatisfaction increased in the ideal condition, but decreased in response to viewing the real and paired images. An initial 3 (image type) x 2 (time) repeated-measures ANOVA confirmed a significant interaction between condition and time, $F(2, 297) = 3.43$, $p = .034$, $\eta_p^2 = .02$.

In order to test the specific predictions concerning image type, an ANCOVA (pre-exposure score entered as covariate) with orthogonal planned comparisons using the LMatrix subcommand was conducted. The first planned comparison compared the ideal images against the real and paired images (contrast: +2 -1 -1), while the second planned comparison compared the latter two against each other (contrast: 0 +1 -1). The resulting adjusted means are presented in Table 1. The first planned comparison proved significant, $F(1, 296) = 4.70$, $p = .031$, $\eta_p^2 = .02$. As predicted, the real and paired images resulted in less body dissatisfaction than the ideal images. Although the adjusted means lie in the predicted direction, the second

planned comparison showed that there was no significant difference between the real and paired images, $F(1, 296) = 0.94$, $p = .333$, $\eta_p^2 = .00$.

The effect of image type on body appreciation

The means in Table 1 also show that body appreciation decreased in response to viewing the ideal images, and increased in response to viewing the real and paired images. However, the interaction between condition and time failed to reach significance, $F(2, 297) = 1.55$, $p = .213$, $\eta_p^2 = .01$, indicating that the observed change in body appreciation was not significantly different across conditions. Likewise, the first planned comparison only approached significance, $F(1, 296) = 3.04$, $p = .082$, $\eta_p^2 = .01$, and the second planned comparison was clearly non-significant, $F(1, 296) = 0.51$, $p = .475$, $\eta_p^2 = .00$.

Perceived realism, thinness, and attractiveness

A one-way ANOVA showed that there was a significant difference between conditions on perceived realism, $F(2, 297) = 63.23$, $p < .001$, $\eta_p^2 = .30$. Post-hoc analysis confirmed what can be seen from the means in Table 2, that the real and paired images were seen as more realistic than the ideal images (both ps $< .001$), with the real images more realistic than the paired images ($p < .001$).

There were also significant differences between conditions on the perceived thinness $F(2, 297) = 42.94$, $p < .001$, $\eta_p^2 = .22$, and attractiveness, $F(2, 297) = 7.76$, $p = .001$, $\eta_p^2 = .05$, of the women in the images. As can be seen in Table 2, the women in the real images were perceived as less thin and attractive than the ideal images (ps $< .001$). They were also less thin and attractive than the paired images (ps $< .001$), with no significant difference between the ideal and paired images (ps $= .083, .896$). Together, these results confirms that the ideal and real sides of 'Instagram vs reality' images are indeed perceived very differently.

The role of state appearance comparison

Table 2 shows that the real and paired images did not evoke less appearance comparison processing than the ideal images. Indeed, the means are higher for the real and paired images than the ideal images. However, the ANOVA showed that state appearance comparison did not differ significantly between the three image conditions, $F(2, 297) = 2.09$, $p = .126$, $\eta_p^2 = .01$.

To determine whether engaging in appearance comparison processing predicted change in body dissatisfaction or appreciation, hierarchical regression analyses were conducted. Pre-exposure body dissatisfaction (appreciation) was entered on Step 1 and state appearance comparison on Step 2. Post-exposure body dissatisfaction (appreciation) was the dependant variable. It was found that appearance comparison explained significant additional variance in both body dissatisfaction, $R^2_{Change} = .018$, $F_{Change}(1, 297) = 29.47$, $p < .001$, and body appreciation, $R^2_{Change} = .007$, $F_{Change}(1, 297) = 8.57$, $p = .004$. The signs of the associated regression coefficients (βs = .15, -.10, respectively) indicate that comparison to the women in the images was associated with increased body dissatisfaction and decreased body appreciation.

In order to test the prediction that the influence of social comparison would depend on image type, further hierarchical regressions were conducted. Following the recommendations of Aiken and West (1991), the pre-exposure variable was entered on Step 1, dummy coded variables for image type with ideal as the reference (1, 0, 0; 0 0 1) and centred state appearance comparison were entered on Step 2, and the product terms on Step 3. An interaction is established when the product term(s) (Step 3) offer significant additional prediction over and above the prior variables. Results showed Step 3 was significant for body dissatisfaction, $R^2_{Change} = .005$, $F_{Change}(2, 293) = 3.88$, $p = .022$, and close-to-significant for body appreciation, $R^2_{Change} = .005$, $F_{Change}(2, 293) = 3.01$, $p = .051$. In the latter case, the

individual product term contrasting ideal and real images was significant, $b = .20$, $p = .016$. Thus the influence of social comparison did vary according to image type.

To clarify the changing nature of the relationship with appearance comparison, Table 3 provides the correlations between appearance comparison and body dissatisfaction and body appreciation change (post – pre) for each experimental condition. It can be seen that these correlations were significant ($ps < .001$) in the ideal condition, but not in the real and paired condition ($ps > .10$). Amount of appearance comparison engaged in was associated with an increase in body dissatisfaction and corresponding decrease in body appreciation in response to viewing the ideal images, but had no significant effect on responses to real or paired images.

Nature of the message by condition

As expected, the great majority of women (95.1%) recognised that the paired (Instagram vs reality) images intended to portray a message. Perhaps less expectedly, 81.6% of women who viewed the real images and 61.6% of women who viewed the ideal images also thought that the images were trying to portray a message. Nevertheless, a X^2 test showed that significantly more women judged the paired images as portraying a message than the other conditions, $X^2(2) = 35.03$, $p < .001$.

Table 4 provides the major themes identified for each image type, together with exemplar comments. It can be seen that for the paired images, the major message was indeed that Instagram is not realistic (80.4%). For the real images, the major theme was body acceptance and positivity (86.3%). The ideal images produced more varied responses. Participants mostly described the women positively as promoting confidence and looking good (44.3%), but also negatively as showing off their bodies or trying to gain attention for their appearance (24.6%).

Discussion

The overall aim of the present study was to investigate the effect on women's body image of exposure to 'Instagram versus reality' images, an emerging contemporary social media trend. As predicted, it was found that exposure to paired ideal-real images, as well as to real images, resulted in lower body dissatisfaction than did viewing idealized Instagram images. While there was no experimental effect on the amount of appearance comparison engaged in, appearance comparison did predict increase in body dissatisfaction and decrease in body appreciation in response to viewing the ideal images, but not the paired and real images. Finally, women did interpret the paired images as conveying the intended message. Taken together, these findings extend existing research on general Instagram use and body image to a focused examination of one particular trend, namely the posting of 'Instagram versus reality' images.

The major finding of the study was that exposure to the paired 'Instagram vs reality' and real images resulted in a decrease in body dissatisfaction, relative to exposure to the ideal images. The finding of a positive effect for 'Instagram versus reality' images is a novel one with significant practical implications. Viewing these posts does seem to go some way to counteracting the usually obtained negative effect of viewing idealized Instagram imagery. Accordingly, women can be encouraged in this trend to both upload such images for others to view and to seek out and follow accounts that post Instagram versus reality material. The finding of a positive effect for real images is broadly consistent with two previous Instagram studies that found beneficial effects of exposure to average-weight as opposed to thin images (Tiggemann et al., 2018) and for body positive posts more generally (Cohen et al., 2019), but refines these by depicting the same women in the same settings across each condition. Thus the obtained effects cannot be attributed to differences between women in facial features, colouring, or clothing. The finding is also consistent with the larger body of research on

negative effects of traditional media ideals (Grabe et al., 2008; Groesz et al., 2001; Want, 2009).

Although the means lay in the predicted direction, in contrast to body dissatisfaction, the results for body appreciation were not significant. This is the same pattern of results as obtained by Slater et al. (2019) for their humorous parody images of thin-ideal celebrities. As a newly developed measure, the state body appreciation measure has not yet been subject to psychometric evaluation and so may be insufficiently sensitive to small changes. In addition, both 'Instagram versus reality' and parody images point out the unrealistic nature of the typically idealized Instagram image, with a view to reminding viewers that these images are not relevant for comparison and self-evaluation. Thus their aim is to counter or ameliorate the negative effect on body dissatisfaction usually obtained from viewing idealized images. Although they form a small part of the wider body positive movement (Cohen, Irwin, Newton-John, & Slater, 2019), these particular types of image do not of themselves actively promote love, acceptance, and respect for the body, and so may not be as relevant to the fostering of body appreciation as other forms of body positive material.

In our investigation of the effect of 'Instagram vs reality' images, we also sought to examine underlying cognitive processes. In particular, one of the avowed aims of the Instagram versus reality movement is to dissuade women from comparing themselves with the images they see on Instagram (Messina, 2017). Here we found that the paired (and real) images did not evoke less social comparison than the ideal images; indeed, if anything, they tended to evoke more. This is not surprising in that the paired and real images were seen as more realistic and thus their perceived similarity and self-relevance likely increased. According to the logic of social comparison theory (Festinger, 1954), this would increase their value as comparison targets. Likely more important than the amount of comparison, is the direction of comparison. Idealized Instagram images have been shown to elicit upward

appearance comparison (Fardouly et al., 2017). In the case of the 'Instagram vs reality' and real images, comparisons are being made with more realistic, less thin, and less attractive women, and thus are more likely to constitute lateral or downward comparisons. In support of this reasoning, we showed that the influence of appearance-based social comparison varied depending on image type. As predicted, appearance comparison was much more detrimental in the case of viewing ideal images than viewing real or paired images. Specifically, for the ideal images, the amount of appearance comparison engaged in predicted the level of subsequent body dissatisfaction (and body appreciation), as is usually found for media in general (e.g., Tiggemann, Polivy, & Hargreaves, 2009; Tiggemann & Polivy, 2010) and Instagram in particular (Tiggemann et al., 2018). In contrast, there was no significant relationship for real and paired images. The making of lateral or downward comparisons with less thin and attractive targets seemingly effectively neutralizes the effect of social comparison. This finding not only offers insight into how 'Instagram vs reality' images might operate, but also confirms more broadly the important role played by social comparison *with idealized images* in negative media effects (Levine & Murnen, 2009; Want, 2009).

Another way to gain insight into how 'Instagram vs reality' images deliver their beneficial effect is to see how these images are interpreted by their viewers. More specifically, we wished to see whether the message received matched the message intended. Indeed, nearly all women (> 95%) reported that the paired posts were portraying a message. By far the majority of responses indicated that Instagram is not real or that no one is that perfect. Thus the received message was in accord with the avowed aims of the Instagram versus reality movement. Somewhat surprisingly, although significantly less so, many women also thought the real and ideal images were presenting a message. However, the content of these messages was quite different – largely body acceptance and positivity for the

real images, and confidence and attractiveness for the ideal images. It seems that uploading any self-image on Instagram might be construed as a statement. It involves a deliberate act of putting oneself out there for scrutiny and thus may carry different implications from posting pictures of pets, hobbies, nature, or travel.

Limitations and future directions

In the present study, in contrast to prediction, the 'Instagram vs reality' images offered no significant additional benefit over viewing the real images. Thus it is possible that the observed positive effect derives simply from viewing the 'reality' half of the 'Instagram vs reality' image, rather than from the specific underlying message. Indeed, both 'Instagram vs reality' and real images were seen as challenging current societal beauty ideals and promoting body acceptance. However, the real test of the effectiveness of the educational content of 'Instagram vs reality' images lies in the extent to which women will or will not compare themselves with thin idealized images that they encounter subsequently. Future studies should aim to test whether this kind of intervention can successfully inoculate individuals against the negative effect of exposure to Instagram content. In this way, 'Instagram versus reality' posts can be conceptualized as a brief online form of social media literacy training. Recent research has shown that, at the trait level, social media literacy skills can be protective for women (Tamplin, McLean, & Paxton, 2018). Thus the effectiveness of specifically 'Instagram vs reality' posts awaits a fuller and longer-term test.

Like all studies, the present study carries a number of limitations. First, the sample consisted of young adult women resident in the United States and thus results may not generalize to other groups. Second, although the experimental protocol was designed to have high ecological validity (real images sourced from public Instagram accounts), in order to ensure attention, participants were asked to view the images differently from how they would do at home. Third, we tested only immediate responses to brief exposure (a total of less than

5 minutes) to the images. Given that our sample spend between one-half and one hour on Instagram daily, future studies might study the effect of longer or cumulative exposure. Fourth, we presented only images. Although it has been suggested that the visual image will invariably be the most prominent and salient feature of any posting on Instagram (Tiggemann & Barbato, 2018), in actuality, many 'Instagram vs reality' posts also contain sometimes lengthy captions (text), for example, explaining what was involved in producing the idealized image. In one study, Fardouly and Holland (2018) found that more general disclaimer comments had little effect on body image. Nevertheless, future research should seek to delineate the effect of the verbal messages accompanying 'Instagram vs reality' imagery.

A different kind of limitation to the study reflects a limitation of the Instagram versus reality movement as a whole. Here all images were of thin and attractive women. Even though they were judged as less thin and attractive in the real condition, they were still seen as moderately thin and attractive. In some ways, the movement relies on women being able to make their photos look good and 'Instagram-worthy', and so the strategy is not really relevant to women who are further away from the societal beauty ideal. As one of our respondents said "They were trying to show that their Instagram pictures aren't really as 'real' as they are in actual life… but the 'bad' versions of all their photos still look a million times better than I do!" Accordingly, the movement has been criticized for being inherently anti-fat in that posts showing that even thin attractive people can have stomach rolls of fat clearly position fat as intrinsically bad (Weiss, 2017). Weiss suggests that many people see the movement as consisting of "hot, skinny women posing in bad lighting to show barely existent cellulite".   Nevertheless, the present study did show positive benefits of viewing the 'Instagram vs reality' images in what was a slightly overweight sample.

Despite the above limitations, the present study provides a novel contribution to the small but growing experimental literature surrounding Instagram and women's body image.

It was found that 'Instagram vs reality' images led to lower body dissatisfaction than did ideal images, and also markedly reduced the negative impact of appearance-based social comparison. Taken together, the findings show that viewing 'Instagram vs reality' images has an immediate beneficial effect on body image, although more research is required to assess their longer term effect.

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Table 1

Means (SD) and Adjusted Means (SE) for Body Dissatisfaction and Body Appreciation by

Image Type

	Condition		
	Ideal (*n* = 99)	Real (*n* = 99)	Paired (*n* = 102)
Body dissatisfaction			
Pre exposure	42.61 (32.41)	41.31 (32.28)	49.52 (31.03)
Post exposure	43.74 (33.47)	39.65 (32.64)	45.15 (31.92)
Adjusted mean	45.50 (1.48)	42.60 (1.48)	40.58 (1.46)
Body appreciation			
Pre exposure	52.79 (26.14)	59.23 (27.24)	50.88 (27.11)
Post exposure	51.45 (29.09)	61.42 (29.46)	51.99 (29.62)
Adjusted mean	52.86 (1.45)	56.69 (1.50)	55.22 (1.43)

Table 2

Means (SD) for Perceived Realism, Thinness, Attractiveness, and Appearance Comparison

by Image Type

	Condition		
	Ideal ($n = 99$)	Real ($n = 99$)	Paired ($n = 102$)
Perceived realism	3.89 (1.19)	5.38 (1.06)	4.67 (1.09)
Thinness	5.37 (1.21)	3.83 (1.29)	5.07 (1.24)
Attractiveness	5.51 (1.24)	4.85 (1.48)	5.48 (1.26)
Appearance comparison	4.05 (2.03)	4.55 (1.90)	4.51 (1.85)

Table 3

Correlations between Appearance Comparison and Change in Body Dissatisfaction and

Body Appreciation by Image Type

	Appearance comparison		
Change	Ideal	Real	Paired
Body dissatisfaction	.424**	.074	.164
Body appreciation	-.324**	.014	-.122

** *p* < .001

Table 4

Themes and Exemplar Messages by Image Type

Image type	Theme	Exemplar responses
Paired (*n* = 97)	Social media is not real (80.4%)	"Instagram can be fake" "Instagram pictures are staged so people look their best and may not always be realistic" "Real bodies aren't perfect/super thin like they appear on social media"
	Body acceptance (11.3%)	"They love their bodies despite their flaws" "You don't have to be super skinny to be beautiful" "Natural is still beautiful"
Real (*n* = 80)	Body acceptance (86.3%)	"Feel confident in your own body" "Body positivity" "No matter what your body looks like it is beautiful"
	Representation of 'real' bodies (8.8%)	"How real women look when not staged or edited" "Real women" "Women come in all shape and size"
Ideal (*n* = 61)	Confidence (44.3%)	"Self-confidence" "I look good"
	Attention seeking (24.6%)	"Look at my body" "They wanted to show off their bodies"
	Fitness and health (14.8%)	"That they are into fitness" "Healthy carefree lifestyle"
	Importance of attractiveness (8.2%)	"In order to be successful in life and loved by many, it is important to be beautiful and skinny" "The importance of beauty and physical attraction"