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'She should not be a model': The effect of exposure to plus-size models on body dissatisfaction, mood, and Facebook commenting behaviour

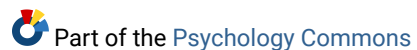
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Abstract

Objectives: The present study investigated the exposure effect of plus-size models on body dissatisfaction and mood, and the nature of participants' commenting behavior toward images of plus-sized models.

Method: The study was comprised of 92 female university students who were exposed to Facebook photos of plus-size models. Participants were randomly allocated to having the exposed photo paired with positive, negative, or neutral comments, and participants were asked to leave an anonymous comment on each picture.

Results: Results showed that participants had less body dissatisfaction and better mood after exposure to plus size models regardless of the comment condition. Additionally, comment condition significantly influenced the type of comments participants contributed - in photos paired with negative comments, participants were significantly more likely to leave negative comments themselves, with 40% of participants leaving negative comments compared to 4% in the positive condition, and 12% in the neutral condition.

Conclusion: This study provides evidence that negative comments of plus size models can encourage bystanders to contribute negative comments themselves; reinforcing the need to develop better protocols to oppose cyberbullying and encourage an online environment of positivity.

Introduction

Body image is a multidimensional concept that encompasses both positive and negative perceptions, behaviors, and attitudes towards one's own body (Wood-Barcalow et al., 2010). A harmful aspect of body image is body dissatisfaction - the negative subjective evaluations of one's physical body, including weight, body shape, and body composition (Stice & Shaw, 2002). Body dissatisfaction is prevalent, with some studies documenting that approximately 66% of women in the United States reported feelings of dissatisfaction with their weight (Friedman et al., 2002; Sypeck et al., 2006; Wood-Barcalow et al., 2010). Additionally, body dissatisfaction has been implicated as a risk and maintenance factor for eating disorders (Stice & Shaw, 2002), and has been associated with depression (Presnell et al., 2004), poor quality of life (Mond et al., 2013), and obesity (Mond et al., 2011; Wardle & Cooke, 2005).

Media, Body Dissatisfaction, and the Thin Ideal. The media has been identified as a key factor in influencing body dissatisfaction (Carels et al., 2010; Grogan, 2016; Stice & Shaw, 2002). Western media, including traditional and social media, is saturated with images of 'ideal' female bodies – typically a thin but muscularly-toned, underweight figure (MacNeill & Best, 2015). The consequences of exposure to ideal bodies has been greatly considered in the extant literature through the lens of *social comparison theory* (Festinger, 1954). *Social comparison theory* posits that humans have an innate predisposition to compare themselves to others in their immediate social environment. These comparisons can be either “upward” (i.e., comparisons against another who is perceived to have a more desirable or acceptable body) or “downward” (comparisons against another who is perceived to have a less desirable or acceptable body; Collins, 1996). Thus, exposure to these 'ideal' and often unrealistic body images typically induces an instantaneous upward comparison (i.e., judging one's own body as less attractive or less sufficient compared to another body). Of concern,

the frequency of upward comparisons is positively associated with body dissatisfaction (Myers & Crowther, 2009) and elevated eating disorder symptoms (Corning et al., 2006; Leahey et al., 2011).

Many studies have examined the relationship between exposure to thin 'ideal' female body types and body dissatisfaction. Exposure to ideal bodies have been shown to induce increased negative affect (such as depression, shame, guilt, and decreased confidence), as well as significantly predicting greater disordered eating and body dissatisfaction in female viewers when compared to exposure to neutral pictures (Allison & Lee, 2015; Cohen, 2006; Friedman et al., 2002; Hawkins et al., 2004; Mills et al., 2002; Stice & Shaw, 1994; Yamamiya et al., 2005).

Weight Bias and Cyberbullying. Whilst a great number of women strive toward the thin 'ideal', many simultaneously reject bodies at the opposite end of the weight spectrum. This attitude often manifests as *weight bias* - negative attitudes towards, and beliefs about, others because of their weight (Brownell et al., 2005). Weight bias is pervasive across much of Western society, evidenced by constant negative messages, attitudes, and discrimination towards people who are overweight or obese (Allison & Lee, 2015; Carels & Musher-Eizenman, 2010; Schwartz & Brownell, 2004). Weight bias carries consequences for individuals who are overweight or obese across their lifespan and in everyday life. For instance, overweight and obese individuals are less likely to be hired, helped after an accident, and tend to be viewed as lazier, more unattractive, and lonelier than thin people (Cramer & Steinwert, 1998; Carels & Musher-Eizenman, 2010). In addition, those who internalize the weight stigma are more likely to be distressed, binge eat, show depressive symptoms, experience negative self-esteem, and experience greater body dissatisfaction (Friedman et al, 2002; Schwartz & Brownell, 2004; Carels & Musher-Eizenman, 2010).

Furthermore, weight bias can often result in weight-based victimization - teasing and bullying relating to one's weight (Puhl & King, 2013). Weight-based victimization is not limited to face-to-face encounters, but perhaps occurs more frequently online through social media platforms. This avenue of bullying is known as *cyberbullying* - the aggressive, deliberate, and repeated harm inflicted through the use of electronic devices against a victim (Patchin & Hinduja, 2010; Ojedokun & Idemudia, 2013). Cyberbullying differs from traditional bullying in that (1) due to anonymity afforded by many online platforms, it is easier to engage in (Suler, 2004), (2), it is more pervasive as, due to smart technology, a victim can be contacted at any time and in any place (Tokunaga, 2010), and (3) online comments are often permanent and can be viewed multiple times by the victim and their peers (Patchin & Hinduja, 2010). Cyberbullying may present as the most common form of weight-based bullying among overweight adolescents. Puhl and colleagues (2013) conducted a study that examined the bullying experiences of weight-loss-treatment-seeking young people and found that 61% had received mean or embarrassing posts online, and 59% had received mean texts, e-mails, or instant messages.

An important factor in understanding cyberbullying process is the role of bystanders – those who witness bullying. Bystanders, who, in an online space, are likely shared users of a social media application or website (e.g., Facebook), can either reinforce the cyberbully and thus increase the negative impact on the victim, remain passive, or intervene (Van Cleemput et al., 2014). Preliminary research shows that most online bystanders do not engage when they witness cyberbullying (Gahagan, Vaterlaus, & Frost, 2016). However, in some circumstances, observing cyberbullying can encourage bystanders to participate in cyberbullying (Bastiaensens et al., 2014; Bastiaensens et al., 2016; Van Cleemput et al., 2014). Bastiaensens and colleagues (2016) account for this behavior through consideration of *normative social influence theory* (i.e., ‘conformity to a group norm brought by a desire to be

liked by the group members'; Schultz et al., 2008, p. 386). In their study, they found that bystanders' perception of friends approving of cyberbullying was associated with a higher experience of social pressure to join in, and subsequently, higher levels of joining in cyberbullying (Bastiaensens et al., 2016).

Online Body Positivity Content. Although the media has been discussed as a platform for disseminating images of the thin 'ideal' and weight bias, and the online environment presents as a fertile space for weight-based cyberbullying, there has been a recent proliferation of body-positive content on social media. Cohen and colleagues (2019a) highlight that body-positive Instagram hashtags elicit millions of posts and responses, including images of women proudly displaying their larger bodies with body-positive captions. This emergence of body-positive content has coincided with a theoretical shift in body image research, namely, the exploration of positive body image (Tylka, 2012). Positive body image is a multifaceted construct that encompasses acceptance and appreciation of one's own body, and an understanding that self-worth is not significantly depend on body appearance (Tylka & Wood-Barcalow, 2015). Of note, recent research shows that positive body image is associated with a number of psychological and physical health benefits, including greater emotional, social, and psychological well-being (Swami et al., 2018), and physical activity and intuitive eating (Andrew et al., 2016). Additionally, Cohen and colleagues (2019a) examined the exposure effect of body-positive Instagram posts, compared to thin-ideal and neutral posts. They found that exposure to body positive posts was associated with improvements in women's positive mood, body satisfaction and body appreciation, relative to other conditions (Cohen et al., 2019a). Congruently, Betz and Ramsey (2017) found that images that encouraged body acceptance were favored over those that idealized any specific body type. However, this study also found an increase in self-

objectification irrelevant of whether participants were exposed to thin, athletic or curvy ideals (Betz & Ramsey, 2017).

Undeniably, online exposure can result in both positive and negative outcomes. With the high prevalence of weight-related cyberbullying, a greater need for understanding the role of these images and the associated comments is required. Current research has predominantly focused on the impact of body type ideals, body-positivity and the effects of appearance-focused text paired with these images (Betz & Ramsey, 2017; Cohen et al., 2019a; Prichard et al., 2018; Slater et al., 2017; Webb et al. 2017). However, given the saturation of social media in modern society, as well as its endless interactive components, it is important to explore the implications of these images paired with personalized comments. Therefore, the present study aimed to investigate the influence of comments relating to the images of plus-size models, on commenting behavior, social media users' body dissatisfaction and mood. Images of plus-size models were presented on the social media site Facebook, in conjunction with either body-positive (*positive* condition), body-negative (*negative* condition), or neutral (*neutral* condition) comments attached to each set of images. Theoretically, it was anticipated that images of a plus-size model paired with positive comments would most closely align with typical body positivity content (compared to the other two conditions), effectively representing user-generated body positivity content (Cohen et al., 2019b). During exposure to images of plus size models and paired comments, participants were also asked to leave an anonymous comment themselves. In this way, participants were actively encouraged to participate as bystanders to online interactions.

First, it was hypothesized (*H1*) that overall, participants would experience a decrease in body dissatisfaction and an increase in mood after exposure to the photos of plus size models. Second, given that the association between exposure to body positive content and increased mood (Cohen et al., 2019a), as well as the relationship between body positive

content, positive body image, and greater emotional, social, and psychological well-being (Swami et al., 2018), it was hypothesized (*H2*) that participants assigned to the *positive* condition (i.e., images were paired with positive comments about the plus-size model, most closely representing body positive content) would experience a significantly greater decrease in body dissatisfaction and a greater increase in mood than those assigned to the negative condition and control condition. Third, as observation of cyberbullying has been shown to encourage bystanders to participate in cyberbullying themselves (Bastiaensens et al., 2014; Bastiaensens et al., 2016; Van Cleemput et al., 2014), it was hypothesized (*H3*) that participants would leave comments more congruent with their assigned condition (i.e., participants would leave more negative comments in the negative comment condition and participants would leave more positive comments in the positive comment condition) potentially demonstrating an effort to ‘fit in’ with the other perceived viewer of the presented image.

Method

Participants

The study was comprised of 92 female university students studying at an Australian university (age ranged from 18 - 48 years old, $M = 22.1$, $SD = 5.7$). The majority of the sample identified as White/Caucasian (52%), single (65%), and reported living with friends or family (74%). The sample also comprised of women who identified as Asian (22%), Middle Eastern (13%), and African/Indigenous Australian/Other (11%). In addition, part of the sample reported to be in a relationship (11%) or married (9%). Body Mass Index (BMI) scores ranged from 18 – 42 ($M = 25.62$, $SD = 5.73$).

Materials

Profile of Mood States – Adolescents (POMS-A). Individual differences in mood were measured using the POMS-A (Terry et al., 1999). These scores were used to assess

whether each experimental group had equivalent mood at baseline. The POMS-A is comprised of 24 items on a five-point Likert scale (0 = “not at all”; 4 = “extremely”). The POMS measures six factors: Tension-Anxiety, Depression-Dejection, Anger-Hostility, Fatigue-Inertia, Vigour-Activity, and Confusion-Bewilderment. Total mood disturbance is the addition of all five factors minus the Vigour-Activity factor. Higher scores indicated a worse mood state. The POMS-A has been shown to display psychometric integrity when measuring mood in adolescent and adult populations (Terry et al., 2003). In the present study, Cronbach’s α were .86 and .84 for the pre- and post-POMS-A, respectively.

Physical Appearance State and Trait Anxiety Scale – Weight Related (PASTAS-W). The PASTAS-W state version was used to measure the amount of state body dissatisfaction experienced by participants before and after viewing the Facebook photos (Reed et al., 1991). It is comprised of a list of 8 specific body parts and requires participants to rate how anxious they feel about those parts “right now” on a five-point scale ranging from “not at all” (0) to “exceptionally so” (4). Higher scores indicate higher levels of state body dissatisfaction. In the present study, Cronbach’s α were .92 and .93 for the pre- and post-PASTAS-W, respectively. muscularity, body fat, and height subscales, respectively.

Body Mass Index (BMI). BMI was used to ensure participants in the different experimental groups did not have significantly higher or lower BMIs as this could influence the variable of body dissatisfaction. BMI is calculated by dividing an individual’s weight in kilograms by their height in meters squared and is used to differentiate individuals into weight categories (i.e., underweight, normal weight, overweight or obese). A higher BMI indicates a higher body mass. A stadiometer was used to calculate participants BMI without their shoes on.

Procedure

Participants were sourced via an online university recruiting system and were offered either course credit or \$20AUD for participation. The study was advertised as an investigation into the effect of marketing through social media and the true purpose of the study was not disclosed in order to ensure participants' bias and expectations of the study did not influence the results. The advertisements informed potential participants of the nature of the tasks they would need to perform and what would be expected of them if they chose to participate, as well as informing participants that their responses would be anonymous.

Participants completed all measures on a computer alone in a private room. Participants first completed a demographic questionnaire, followed by the (pre-) POMS-A and (pre-) PASTAS-W to obtain a baseline measure of mood and body dissatisfaction. Participants were randomly assigned to one of the three group conditions: (1) positive comments, (2) negative comments, and (3) control. Each condition was presented with the same four Facebook photos of plus size models and five comments on each picture. In the *positive comments* condition, all five comments made positive assessments of the photos (e.g., "she's so beautiful"). Similarly, negative comments were presented with photos in the *negative comments* condition (e.g., "she's so ugly"), and neutral comments were presented with the photos in the *control* condition (e.g., "that handbag looks practical"). These comments were taken from or inspired by real public Facebook comments.

Participants were instructed to look at the four Facebook photos and evaluate the photo, model, and outfit. They were asked to then leave a comment expressing their opinions on each photo under the other comments, which they were told were left by previous participants. Photos were displayed on screen until participants had posted a comment. Two researchers independently rated the comments to determine if they were positive, negative, or neutral in nature. This was determined by judging the comment as a whole and the overall tone and meaning of the comment, such as whether we believed the comment to be

complementary in nature or not. The researchers discussed and agreed upon this method for coding before undertaking the coding process. The reliability of coding between the two researchers was 1.0.

Once participants had viewed all the photos and left comments, they were asked to complete the (post-) POMS-A and (post-) PASTAS-W again to assess whether their mood and body dissatisfaction had changed due to exposure to the photos/comments. Lastly, participants' BMI was measured. Participants were then debriefed about the true nature of the study and the need for deception. Participants were again asked for their consent to include their data, and informed that withdrawal without consequence was also an option.

Statistical analysis

Two between-subjects ANOVAs were conducted to assess whether there were differences between condition groups in BMI and age, respectively. If there were any differences, the construct would be used as a control variable in main analyses. In order to examine the first two hypotheses, that (1) exposure would increase mood and decrease body dissatisfaction, and (2) that participants' level of body dissatisfaction and mood change would be influenced by comment condition, two repeated measures ANOVAs with comment condition as the between subjects factor and body dissatisfaction and mood as three repeated measures factors were employed, respectively.

Additionally, to test the hypothesis that participants would leave different types of comments (dependent on what condition they were assigned) required their comments to be coded. Each participant left one comment per photo (four comments in total). These comments were independently scored as either positive (1), negative (-1), or neutral (0) in content by two researchers (intraclass correlation coefficient = 1.0). The coding was defined as whether the comment was overall negative or positive in tone. If it was neither, it was coded as neutral. Examples of positively coded comments written by participants included

“beautiful woman, lovely stance and elegant outfit” and “love her smile and confidence!”. Examples of negatively coded comments included “ugly photo and outfit overall” and “she should not be a model, she is not as beautiful. I don’t like her outfit as well”. Examples of neutrally coded comments included “that looks like a pretty view, where is it?” and “the location fits with the outfit”. Overall comment scores were then generated by summing all individual comment scores, with larger scores indicating a greater proportion of positive comments and lower scores indicating a greater proportion of negative comments. To examine the effect of exposure to respective photos, a between-subjects ANOVA was conducted with comment condition as the independent variable and overall comment score as the dependent variable, averaged across all four photos. Planned contrast tests were conducted to examine for differences between comment conditions (i.e., positive, negative, and control).

Post-Hoc Tests. To explore the interaction between BMI, mood, body dissatisfaction, and commenting behavior, several post-hoc tests were utilized. To achieve this, a new binary variable labelled *BMI category* was constructed, consisting of two levels: (1) participants with a BMI of 25 kg/m² or lower (underweight/healthy weight) and (2) participants with a BMI greater than 25 kg/m² (overweight/obese). Additionally, another new binary variable indicating whether or not participants had contributed at least one negative comment on any of the photos of plus-size models was generated.

First, to explore the interaction between BMI and the exposure effect on body dissatisfaction and mood, two repeated measures ANOVAs with BMI category as the between subjects factor and body dissatisfaction and mood as the repeated measures factors were employed, respectively. Then, an independent samples *t*-test comparing the BMI of those who had left at least one negative comment to those who had not left any negative

comments was utilized to explore the differences in commenting behavior between weight categories.

Results

Between-subjects ANOVA showed no significant difference in BMI between comment condition groups ($F[2, 89] = .546, p = .581$), nor age ($F[2, 89] = .117, p = .889$). Thus, groups were equivalent in BMI and age at baseline.

To examine the effect of exposure on body dissatisfaction (PASTAS-W) and mood (POMS-A), and the interaction of comment condition on exposure, two repeated measures ANOVAs were conducted. Results showed that there was a significant main effect of PASTAS-W score ($F[1, 77] = 10.51, p = .002, \eta^2 = .13$), indicating that Post-PASTAS-W scores ($M = 10.3, SD = 7.9$) were significantly lower than Pre-PASTAS-W scores ($M = 11.7, SD = 8.2$), suggesting a decrease in body dissatisfaction. However, there was no significant interaction between PASTAS-W scores and comment condition ($F[2, 76] = 2.36, p = .101$), meaning that comment condition did not significantly influence change in PASTAS-W scores. Similarly, results showed that there was a significant main effect of POMS-A score ($F[1, 88] = 64.07, p < .001, \eta^2 = .42$), indicating that Post-POMS-A scores ($M = 14.3, SD = 8.7$) were significantly lower than Pre-POMS-A scores ($M = 21.3, SD = 9.2$), suggesting an increase in mood. However, there was no significant interaction between POMS-A scores and comment condition ($F[2, 87] = .09, p = .914$), meaning that comment condition did not significantly influence change in POMS-A scores.

To test the hypothesis that participants would leave comments more congruent with their assigned condition (i.e., participants would leave more negative comments in the negative comment condition), a between-subjects ANOVA was conducted. Results revealed a significant effect of comment condition, ($F[2, 89] = 17.805, p < .001$). Planned contrast tests were conducted to examine for differences between comment condition using Tukey

comparisons. Taken across all photos, the positive condition was significantly higher in comment score, signifying a greater number of positive comments than the negative ($p < .001$) and control condition ($p < .01$), and the negative condition was significantly lower in comment score than the control condition ($p < .05$). Means and standard deviations of comment scores for each photo across all comment conditions are shown in Table 1. Frequency and percentage of comment types left by participants are presented in Table 2.

Table 1.

Means and standard deviations of comment score by condition for each photo

	Comment Condition Mean (SD)		
	Positive	Negative	Neutral
Photo One	.90 (.30)	.33 (.88)	.74 (.45)
Photo Two	.65 (.66)	-.23 (.86)	.10 (.75)
Photo Three	.81 (.54)	-.03 (.92)	.32 (.75)
Photo Four	.97 (.18)	.17 (.95)	.36 (.71)
Photos Combined	.83 (.28)	.06 (.73)	.38 (.42)

Note: Comments types left by participants coded as Negative (-1), Positive (1), Neutral (0).

Table 2.

Frequency and percentage of comment types left by participants by condition for each photo

	Condition assigned		
	Positive Condition	Negative Condition	Neutral Condition
	N (%)	N (%)	N (%)
Positive Comments	108 (87.1%)	54 (45.0%)	63 (50.8%)
Negative Comments	5 (4.0%)	47 (39.2%)	16 (12.9%)
Neutral Comments	11 (8.9%)	19 (15.8%)	45 (36.3%)

Note: percentages were rounded to one decimal place. Positive condition total $N = 31$, negative condition $N = 30$, control condition $N = 31$.

Post-Hoc Tests. Two repeated measures ANOVAs were conducted to explore the interaction between BMI and the exposure effect on body dissatisfaction and mood. Results showed the expected significant main effect of body dissatisfaction change ($F [1, 79] = 9.76, p = .002, \eta^2 = .15$). However, the interaction between body dissatisfaction change and BMI category was non-significant ($F [1, 79] = .82, p = .368$). Similarly, the main effect of mood change was significant ($F [1, 87] = 67.20, p < .001, \eta^2 = .44$), however there was no significant interaction between mood change and BMI category ($F [1, 79] = 3.62, p = .061$). To explore the relationship between BMI and commenting behavior, and independent samples t -test comparing the BMI of those who had left at least one negative comment to those who had not left any negative comments was conducted. Results showed that there was no significant difference in BMI ($t[90] = 1.21, p = .088$) when comparing participants who left at least one negative comment ($M = 24.7, SD = 4.92$) to those who did not ($M = 26.2, SD = 6.16$).

Discussion

This study aimed to examine the effects of exposure to plus size models on body dissatisfaction and mood, and investigate whether different types of social media comments attached to pictures of plus size models would influence the type of comment the reader would leave themselves. The first hypothesis, that participants would experience a decrease in body dissatisfaction and an increase in mood after exposure to photos of plus size models, was supported. All participants scored significantly lower on the PASTAS-W and POMS-A after exposure to images of plus-size models compared to their baseline scores, indicating that they experienced a reduction in body dissatisfaction and an increase in mood. Of note, the exposure effect had a greater impact for mood ($\eta^2 = .42$) compared to body dissatisfaction ($\eta^2 = .13$) as indicated by effect sizes. The second hypothesis, that participants assigned to the *positive* condition would experience a significantly greater

decrease in body dissatisfaction and a greater increase in mood than those assigned to the negative condition and control condition was not supported. No significant difference in body dissatisfaction or mood was observed between comment conditions. Finally, the hypothesis that participants would leave comments more congruent with their assigned comment condition was supported. Participants that were exposed to images paired with negative appraisals of the plus-size models were more likely to contribute negative comments themselves. Similarly, participants who were exposed to images paired with positive appraisals of the models were more likely to contribute positive comments. These effects were consistent when examining the results of individual photos, and taken across all photos.

With regards to the first hypothesis, this finding demonstrates the expected opposite effect when compared to previous studies that have demonstrated increases in body dissatisfaction and decreases in mood after exposure to thin ‘ideal’ female body stimuli (Allison & Lee, 2015; Cohen, 2006; Friedman et al., 2002; Hawkins, et al., 2004; Mills, Polivy, et al., 2002; Robinson et al., 2017; Stice & Shaw, 1994; Tiggemann & Zaccardo, 2015; Yamamiya et al., 2005). *Social comparison theory* (Festinger, 1954) provides a potential explanation for this result: exposure to images of plus-size models may have induced downward comparisons (i.e., participants comparing their bodies to a body higher in body fat percentage – a body traditionally classified as ‘un-ideal’, thus having a positive self-appraisal of their body). Prior research has shown consistent links between higher mood and downward comparisons (Aspinwall & Taylor, 1993; Lyubomirsky & Ross, 1997; Wills, 1981) and demonstrated a causal relationship (i.e., downwards comparisons inducing improvement in mood states; Gibbons & Gerrard, 1989). Downward comparisons have also been shown to decrease body and weight dissatisfaction, anxiety about appearance, and desire to lose weight (Lew et al., 2007). To complement these findings, a post-hoc analysis exploring the interaction between this exposure effect and participants’ BMI was undertaken.

However, results showed that participants' BMI did not impact how much their body dissatisfaction decreased, nor how much their mood increased after exposure. Of note, there was a non-significant trend ($p = .061$) showing that underweight/healthy weight participants displayed a greater increase in mood due to exposure. This trend possibly reflects a greater magnitude of difference between the bodies of underweight and healthy weight participants compared to the plus-size models, and thus a greater degree of downwards comparison compared to that experienced by overweight and obese participants. (Festinger, 1954).

With regards to the second hypothesis, our results were inconsistent with past studies that have demonstrated relationships between body positive content and increased mood and psychological well-being (Cohen et al., 2019a; Swami et al., 2018). This finding may be accounted for by the lack of salience of the comment content, or lack of attention given to the comment by participants. This result was similar to that of Prichard and colleagues (2018), who conducted a study where they exposed female participants to "fitspiration"-inspired images of women. In some conditions, images were accompanied by appearance-focused text. Despite finding inverse exposure effects compared to the present study (i.e., increase in body dissatisfaction and decrease in mood), no effect of text presence was observed. Prichard and colleagues (2018) offer that this lack of effect may be accounted for by an overall focus on appearance and thinness within the task. Similarly, as our task prompted participants to appraise the images and leave comments, the overall focus for participants was likely the appearance of the plus-size. However, alternate explanation is apparent through considering *social comparison theory* (Festinger, 1954). It may be that downward comparisons were in fact enhanced by negative comments, meaning that participants in the negative comment condition experienced a greater increase in mood and decreases in body dissatisfaction than we initially expected, thus undermining potential between-condition differences.

With regards to the third hypothesis, in relation to comments in the *negative* condition, results are consistent with prior studies that show the witnessing of cyberbullying can encourage bystanders to join in (Bastiaensens et al., 2014; Bastiaensens et al., 2016; Van Cleemput et al., 2014). Through the lens of *normative social influence theory* (Schultz et al., 2008), this result may reflect that participants were attempting to conform to the comment paired with the plus-size model image. Alternatively, exposure to the negative comments may have made participants feel more comfortable expressing their honest (negative) opinion about the image of the plus-size model, as opposed to participants in other conditions, who may have resisted in contributing their true opinion about the images out of fear of negative evaluation.

This behavioral result, although not directly emulating an incident of cyberbullying, shows that the presence of negative body-related comments aimed at an image increases the likelihood of more negative comments. When generalizing this result to social media, it might mean that bystanders may be more likely to join in and contribute their own negative comments when observing weight-based bullying, ultimately resulting in a greater stream of negative comments. This is a notable finding as the relationship between quantity of bullying and adverse outcomes is clear in the extant literature, with prior research finding that repeated and chronic abuse of bullying victims can lead to significantly more negative outcomes including higher levels of anxiety (Campbell et al., 2012), depression (Bonanno & Hymel, 2013), and suicidal ideation (Gini & Espelage, 2014).

An examination of the commenting behavior of participants provides another notable result. Overall, 4% of participants left a negative comment relating to the appearance of a model in the *positive* condition, and 13% of participants left a negative comment relating to the appearance of the model in the *neutral* condition. These results cannot be accounted for by influence of another user's negative comment and could reflect the weight biases of a

small number of individuals in our sample. That is, when participants did not have either positive or negative peer comments as a guideline, their commenting behavior may have been more directly driven by anti-fat attitudes. However, the majority of comments left across *positive* (87%), *negative* (45%) and *neutral* (50%) conditions were positive. This is an encouraging result that evidences that participants in our sample were far more likely to contribute affirming, body-positive comments, echoing the sentiment of the body-positive movement (Cwynar-Horta, 2016; Sastre, 2014), and suggesting a low presence of weight stigma in our sample.

To further explore the commenting behavior of our participants, a post-hoc examination of BMI and commenting behavior was performed. Results showed that there was no significant difference in BMI between participants who left at least one negative comment and participants who did not. Although on average those who made at least one negative comment were in the healthy weight BMI range (BMI = less or equal to 25 kg/m²), and those who did not make a negative comment were on average in the overweight range (BMI = greater than 25 kg/m²), the difference in BMI between the groups was minimal (1.5 kg/m²). Thus, our results suggest that BMI category did not impact the likelihood of leaving negative comments on plus-size models.

Limitations of the study are noted. First, our study employed a W.E.I.R.D (i.e., Western, educated, industrialized, rich, and democratic) sample (Henrich et al., 2010). This may limit the generalizability of findings to Western society as past studies have emphasized differences in body ideals across cultures (e.g., Furnham & Baguma, 1994). Thus, our characterization of Western plus-size models as typically ‘un-ideal’ would be potentially confounded. However, when examining cross-cultural patterns of body size ideals, Swami (2015) observed that there was now little difference in body ideals between Western and non-Western populations, and that both Westernization and modernization have brought cultural

changes that promote a thin ideal. Second, as outcome variables were only tested directly before and after exposure, we cannot speak to the permanency of our observed effect (i.e., reduction in body dissatisfaction and increase in mood). Third, our study did not include a neutral image control group (i.e., a condition in which participants were exposed to a neutral image such as a non-body-related image). This limits the certainty to which the increase in mood and body dissatisfaction can be directly attributed to the reported exposure effect. Fourth, as participants were exposed to images of plus-size models, aspects of the models' body image may have met criteria for the Western 'ideal'. Additionally, the BMI of participants ranged from 18-42, meaning that some participants may have been exposed to bodies with less body fat than themselves. Therefore, it is possible that some participants may have made upward as opposed to downward body comparisons. Fifth, participants were required to leave comments on images. This is not representative of how people interact with social media in real life; therefore, the ecological validity of our results may be limited. Sixth, we did not formally record whether participants predicted the true nature of the study. Although the true purpose of the study was disguised, participants commenting behavior may still have been impacted by social desirability (DeMaio, 1984).

Future studies should seek to replicate this procedure with male models and participants, and within sexual minority groups. For men, body dissatisfaction is prevalent and increasing (Frederick et al., 2007; Talbot et al., 2019a; Watkins et al., 2008). Furthermore, sexual minorities report significant and often higher body dissatisfaction than heterosexual participants (Frederick & Essayli, 2016; Talbot et al., 2019b; Watson, et al., 2015). Therefore, it would be worth examining our demonstrated exposure effect in heterosexual and sexual minority groups separately. Additionally, the longevity of the exposure effect should be examined.

The present study demonstrated that exposure to images of plus-size models increased women's mood and decreased body dissatisfaction, irrespective of the comments associated with the images. Furthermore, exposure to positive comments increased the likelihood of a participant to leave a positive comment, and exposure to negative comments increased the likelihood of participants to leave negative comments. Of note, although a small percentage of participants left negative comments, the majority left positive, affirming comments across all conditions. Our results highlight the potential benefits of propagating body-positive images on social media and potentially evidence the high rate of body acceptance in Australian undergraduate students.

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