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# Effects of COVID-19 specific body positive and diet culture related social media content on body image and mood among young women



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## ABSTRACT

During the COVID-19 pandemic, social media content emerged that included explicit weight and shape pressure. In addition, however, body positive social media content that was pandemic-specific appeared. This study aimed to examine the effects of body positive and diet culture COVID-19 body-related social media content on the body image and mood of young women. A sample of 387 female identifying participants aged 18–25 were allocated to view one of three sets of social media images: body positive or diet related content specific to the COVID-19 pandemic, or a travel condition. Body image and mood before and after viewing the images were assessed. Trait level social media literacy and current social distancing and isolation restrictions were examined as moderators. Exposure to the body positive content was associated with improved body image and mood as compared to the diet culture content. No support was found for moderating effects although social media literacy was associated with improved body image after exposure. Findings suggest that even in the context of the COVID-19 pandemic, body positive content may be helpful to body image. Further work examining inter-individual differences in the effects of social media on body image and mood are warranted.

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## 1. Introduction

The onset of quarantine restrictions in the U.S. in March 2020 prompted increased reports of stress, anxiety, and social media consumption (Czeisler et al., 2020). During this time, social media content specific to the COVID-19 pandemic also emerged that has been described as containing weight stigmatizing content and being aligned with mainstream diet culture (Lucibello et al., 2021; Pearl, 2020)—therefore potentially harmful to body image and related dimensions. However, others aimed to encourage acceptance and self-care including as related to the body and appearance, and might therefore be helpful to individuals experiencing stressful, unprecedented circumstances during this period. The aim of this study, conducted during the COVID-19 pandemic, was to examine the differential effects of COVID-19 body-related social media content on the body image and mood of young women.

Quarantine restrictions in the U.S. began in the spring of 2020 and were associated with increased use of social media among youth (Hamilton, Nesi, & Choukas-Bradley, 2021). Within social media content, the ‘Covid-15’ hashtag emerged, centered on a common fear of gaining 15 pounds during isolation due to marked restrictions in choices regarding exercise, movement, and food (Lucibello et al., 2021). This hashtag fueled a new social media trend known as “Quarantine 15”, on various social media platforms, such as Instagram and Twitter, with posts mostly by young women between the ages of 18–25. Content analyses of the posts associated with this hashtag have revealed that they strongly promoted the thin-ideal and weight bias, mostly portraying smaller bodied individuals with low weight, and weight stigmatizing commentary (Lucibello et al., 2021). Given the documented negative effects of thin-ideal social media content on the body image and mood of young women (de Valle, Gallego-García, Williamson, & Wade, 2021), this content had the potential to be harmful to the young women who were viewing it during the pandemic.

In parallel to this trend, other social media content also emerged that was related to the body positivity movement and focused on body acceptance, self-compassion, and self-care during an

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unprecedented time. This content offered a counter narrative in which the focus was on taking care of the self and others, while resisting pandemic-related anxiety related to weight and appearance. Although no content analyses of this content specifically during the COVID-19 pandemic are available, previous work has shown that body positive content tends to portray a somewhat broader array of individuals in terms of body shape and size as well as other demographic characteristics (Lazuka, Wick, Keel, & Harriger, 2020). In addition, although the types of content labeled as body positive are heterogeneous, accumulating evidence is emerging for body positive social media content as supportive of positive body image. Indeed, a scoping review that included 24 studies specifically focused on the effects of body positive social media concluded that compared to idealized appearance content, body positive content was more helpful for body image (Rodgers, Paxton, & Wertheim, 2021). Thus, it is possible that body positive COVID-19 specific social media content would have a positive effect on the body image and mood of young women.

Body image is a multifaceted construct (Cash, 2004). Although historically, a strong focus has been placed on dissatisfaction or satisfaction with body weight and shape, increasingly, positive body image has been identified as an independent and important dimension (Tylka & Wood-Barcalow, 2015a, 2015b). Given the independent importance of both of these constructs, the present study aimed to investigate experimental effects on both state weight and shape satisfaction as well as on state body appreciation which is a core dimension of positive body image (Holsen, Kraft, & Røysamb, 2001; Tylka & Wood-Barcalow, 2015a, 2015b). In addition, as an exploratory outcome, we included state levels of broad conceptualizations of beauty. Broad conceptualizations of beauty have been suggested to be another important aspect of maintaining positive body image and shown to be associated with other facets of positive body image as well as wellbeing (Tylka & Iannantuono, 2016). Given that the social media content explored was anticipated to affect both positive and negative body image, these dimensions were included as outcomes to capture the full range of potential effects.

In addition, positive and negative mood were included as outcomes. Previous experimental work has frequently included these dimensions as outcomes as mood and body image are understood to be tightly related (Holsen et al., 2001). In addition, the effects of social media on mood may in turn impact behavioral outcomes of body image (Christensen et al., 2021; Rodgers et al., 2020), therefore these dimensions were also important to include.

Increasing interest has been paid to factors that may modulate the effects of exposure to social media content on body image and mood. One of those explored has been social media literacy, which is the extent to which individuals engaged in critical appraisal of social media content and are aware of its unrealistic nature, as well as the intent behind postings (Paxton, McLean, & Rodgers, 2022). Social media literacy has been positioned as a protective factor for body image, and some empirical evidence from experimental and qualitative work has supported this (Burnette, Kwitowski, & Mazzeo, 2017; Rodgers, Lowy, Kodama, & Bujold, 2021; Tamplin, McLean, & Paxton, 2018). Moreover, social media literacy has been suggested to be a modifiable factor through intervention, and therefore is a variable of high interest in terms of its protective capabilities (Paxton et al. 2022) Consistent with this, in this study, social media was examined as a moderator of the effects of exposure to the social media content. In addition, given the unique conditions created by the COVID-19 pandemic, which could potentially increase an individual's reactivity to pandemic related social media content, individuals' levels of social restriction at the time of the study were also considered as a moderator. Indeed, social restrictions and isolation may contribute to both increased social media use and

reliance on it as a source of body image related information due to limited opportunities for face-to-face interaction.

The present study therefore aimed to build upon and extend previous research focused on the effects of thin-ideal and body positive social media content on body image and mood, by examining the effects of COVID-19 specific social media content [(1) COVID-19 body positive content and (2) COVID-19 diet culture content] as compared to (3) a neutral condition among young women at pre- and post-exposure. Young women are disproportionate users of photo-based social media, and experience high rates of body image concerns (Saiphoo & Vahedi, 2019) and therefore constituted an important target group. Although the effects of general appearance-focused and positive social media on body image and mood have previously been investigated, extending these findings to COVID-19 specific content is of interest given its popularity and with a view to providing context for other work exploring changes in body image during the COVID-19 pandemic (Robertson et al., 2021; Vall-Roqué, Andrés, & Saldaña, 2021). Specifically, it was hypothesized (hypothesis 1) that exposure to the body positive COVID-19 social media content would be associated with higher levels of indicators of positive body image (state weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty) and positive mood, and lower negative mood as compared to the other two conditions, with net improvements on these variables, and decreases in negative mood. In contrast, it was hypothesized (hypothesis 2), that individuals allocated to view the thin-ideal COVID-19 specific content would report lower levels of indicators of positive body image and mood, and lower negative mood as compared to the other two conditions, with net decreases in positive indicators and increases in negative mood. Finally, given findings regarding individual level moderators of the effects of exposure to social media, it was hypothesized (hypothesis 3) that these effects would be moderated by social media literacy and levels of COVID-19 related social restrictions such that those with higher levels of social media literacy would report smaller effects of the images when allocated to the thin-ideal group, but greater benefits from the body positive content, and that those with greater social restrictions would report larger effects across conditions.

## 2. Methods

### 2.1. Participants

A sample of 387 female identifying participants aged 18–25, mean age = 21.04 (SD = 2.35), The majority, 63.3 %, of participants identified as White, 14.5 % as Asian, 7.7 % as mixed race, 6.2 % as Hispanic or Latino, 3.1 % as Black, 0.6 % as Native Hawaiian or other Pacific Islander, 0.6 % as American Indian or Alaska Native, 1.5 % as other, and 2.5 % who preferred not to label. The majority of participants reported as currently being a student (67.9 %).

Participants also reported on their current situation in terms of isolation and social distancing. Thus, 39.6 % of participants reported as social distancing but not staying home, 31.9 % as staying at home despite the absence of regulations or controls, and 13.9 % as confined to home but allowed outside for brief individual exercise. Smaller proportions of participants reported being confined to home and not allowed to go outside to exercise (5.3 %), not social distancing (4.6 %), in quarantine due to high-risk contact (3.1 %), and in quarantine due to testing positive (1.5 %).

### 2.2. Design

The study was based on a between-subjects design with three experimental conditions: (1) a body positive condition, (2) a diet culture condition, and (3) a travel condition that were compared to examine the effects of these distinct types of social media, with the

travel condition serving as a control. State weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty, state negative mood, and state positive mood were measured as dependent variables using Visual Analogue Scales (VAS) both pre-test and post-test. Trait social media literacy and COVID-19 related restrictions were measured post-test following the VAS as possible moderators.

### 2.3. Procedure

Women between the ages of 18–25 years were recruited to participate in the online survey hosted on Qualtrics from June 2020–July 2021. Given the popularity of social media among young people and the accumulating evidence that younger individuals might be most susceptible to its effects on body image (Saiphoo & Vahedi, 2019), young women were selected as the target population of the study. The study was approved by the institutional review board of Northeastern University and was presented to participants as a research study on “Social Media Use and COVID-19” to decrease demand characteristics. Participants provided informed consent before accessing the study and were debriefed about the full aims of the study at the end of the survey. No incentives were offered to participants for survey completion. Participants were recruited by advertising the study on a variety of university-related social networking sites, as well as by student networks.

After entering confirming eligibility, participants were asked to complete pre-exposure measures of state weight and shape satisfaction, body appreciation, broad conceptualizations of beauty, negative mood, and positive mood. Participants were then randomly allocated to one of the three experimental conditions and viewed one of the three sets of stimuli (see description below: body positive, diet culture, and travel). Each image was presented alongside questions that prompted the participant to consider how representative the photo was of a typical post (“How typical do you think this post is of what you have seen on social media recently?”). Following exposure to the stimuli, participants answered post-exposure VAS measures of the previously mentioned state variables, as well as trait social media literacy, and reported on their current social restrictions due to the COVID-19 pandemic.

### 2.4. Materials

Participants within the three conditions were shown images from Instagram that were discovered through the hashtag search feature on the Instagram mobile application. For example, hashtags used to identify body positive stimuli included #selflove, #bodyappreciation and #confidence, whereas #quarantinebody, #Covid15 and #weightgain were used to search for diet culture stimuli. For both the body positive and diet culture conditions, roughly half the stimuli were photos with people—all of whom were women—and the other half text-based or animated content, such a mixture has been used in previous research and aims to increase ecological validity (Betz & Ramsey, 2017). The women portrayed in both experimental conditions were diverse in terms of age (from apparent college aged to middle aged), skin tone, and hair texture. The username of the Instagram users whose photos were used as stimuli were not shown, although the caption and number of ‘likes’ that the image received were viewable by participants. The number of likes were not altered, and varied substantially within each condition, although were roughly equal across conditions. The number of hashtags varied across the images as these are not a reflection of a post’s reach or popularity and therefore it was decided to preserve ecological validity. The stimuli were selected from a larger initial pool derived from the hashtags that were the focus, and were chosen as providing strong examples of the conditions they represented based on consensus among the research team.

Images in body positivity category ( $n = 29$ ) encouraged women to accept one’s body for its unique purposes, appreciate its current state (for example, “All we can do is our best right now to stay healthy and happy and don’t let anyone make you feel bad about that...”), and reject pressure to be hyper-productive during quarantine, including diet culture or encouragement of weight loss. Diet culture images ( $n = 23$ ) generally promoted weight loss, endorsement of rigid workout regimens and active lifestyles, diet regimens and idealized slim and toned bodies. The stimuli captions contained more critical sentiment regarding appearance and weight, such as “In just 35 short days I’ve managed to be careless, unfocused, and lazy. Which in turn resulted in 15 lb weight gain!” Travel images ( $n = 20$ ) for the control were searched using hashtags such as #traveling, #vacation, and #adventures and consisted of images that included various travel destinations across the world including a variety of landscapes and sceneries.

### 2.5. Measures

#### 2.5.1. State weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty, state negative mood, and state positive mood

State levels of body image and mood were assessed pre- and post-exposure to the visual stimuli using adapted VAS (Heinberg & Thompson, 1995). State weight and shape satisfaction was assessed using three items rated on parallel scales ranging from 0 (Not at All) to 100 (Extremely). An example item is, “How satisfied with your weight do you feel right now?”. The three items were summed yielding a total score with higher scores indicating greater state weight and shape satisfaction. Internal reliability was good with Cronbach’s alpha = 0.86 pre-exposure and 0.91 post-exposure.

State body appreciation was measured using two items rated on a scale ranging from 0 (Not at All) to 100 (Extremely), asking participants to rate their current self-love and acceptance of their appearance. An example item is, “Right now, despite my flaws, I accept my body for what it is.” The two items were summed to create a composite score, with higher values indicating greater body appreciation. Internal reliability was good with Cronbach’s alpha = 0.92 pre-exposure and 0.93 post-exposure.

State broad conceptualizations of beauty were assessed using two VAS items evaluating the individual’s appreciation and acceptance of various body shapes and sizes in others. An example prompt is, “Right now, I define beauty differently than how it is portrayed in mainstream media.” The two items were rated on a scale ranging from 0 (Not at All) to 100 (Extremely) and summed yielding a total score with higher scores indicating a broader appreciation of beauty. Internal reliability was good with Cronbach’s alpha = 0.83 pre-exposure and 0.87 post-exposure.

In addition, as in previous research (e.g. (Prichard, Kavanagh, Mulgrew, Lim, & Tiggemann, 2020; Tiggemann & Zaccardo, 2015)), participants also rated their current feelings on three negative mood dimensions—anxiety, depression, and anger—and two positive mood dimensions—happiness and confidence. Participants responded using a scale ranging from 0 (Not at All) to 100 (Extremely), with higher scores indicating both greater negative and positive mood. Internal reliability was good with Cronbach’s alpha = 0.75 pre-exposure and 0.78 post-exposure for negative mood, and 0.70 pre-exposure and 0.73 post exposure for positive mood.

#### 2.5.2. Social media literacy

Social media literacy was evaluated using ten items (Rodgers, Lowy, et al., 2021) assessing awareness of the influence of social media, the marketing intent, and awareness of the unrealistic nature of social media content. Items were scored on a 4-point scale ranging from 1 = *Never* to 4 = *Always*. An example item was “When you view advertising and commercial social media (including images, text,



video content) how often do you think that most media messages give a biased view of reality?" The internal reliability of the scale was strong with  $\alpha = 0.85$ .

### 2.5.3. COVID-19 related restrictions

COVID related restrictions were assessed using a single item created for the purpose of this study asking individuals to describe their current situation, rated on a 7-point scale ranging from 1 = Confined to home, not allowed to go outside to exercise, to 7 = no social restrictions. Thus, higher scores indicated fewer social restrictions.

### 2.5.4. Manipulation check questions

Participants responded to a set of questions designed to assess the success of the experimental allocated. Specifically, questions that asked participants to rate the extent to which they judged the images as promoting appearance ideals, more strongly emphasizing the importance of looking attractive, promoting diverse types of attractiveness, and inspiring them to be more compassionate and accepting of their bodies. Items were rated on 5-point scale from 1 = *Not at all*, to 5 = *A great extent*.

## 2.6. Data analyses

During the survey there was an attention check question that asked the participant to answer a question checking a particular box ("Please select the number 2"). Participants who did not answer this question correctly were then excluded from the data analysis. In addition, one outlier was identified and removed from the data set due to response patterns indicating unlikely responses. Missing data were replaced using mean replacement where possible, as only a small amount of missing data was present in the cases retained for the analyses (3 %). The relative effects of condition on body image and mood were tested using  $2 \times 3$  (time x condition) repeated measures ANOVA. In addition, as in previous research ((Tiggemann & Brown, 2018), planned comparisons were conducted to test specific hypotheses regarding between group differences. These contrasts were conducted using  $2 \times 2$  ANOVAs. Finally, change across time within conditions was tested using repeated measures t-tests. Moderated effects were examined using the PROCESS macro (model 1), with for each state outcome variable the post-exposure level entered as the predictor variable, the pre-exposure level as a covariate, the condition as a multicategorical predictor, and the moderating factor (social media literacy or COVID-19 related restrictions) as the moderator. Continuous variables were centered to avoid multicollinearity. No a priori power analysis was conducted.

## 3. Results

### 3.1. Participant characteristics and manipulation check

Means and standard deviations for pre- and post-exposure state weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty, state negative and positive mood, as well as for trait moderators for each experimental condition are presented in Table 1. No pre-exposure differences were found between conditions in terms of body mass index (BMI), state mood, body appreciation, or broad conceptualization of beauty. However, differences did emerge in pre-exposure state weight and shape satisfaction,  $F(2, 367) = 3.93, p = .020$ , such that the travel condition reported higher scores as compared to the body positive condition. Only a small proportion of participants were currently not allowed to go out an exercise at all due to restrictions or quarantine (10 %), while 14 % were allowed outside for brief physical activity and 32 % reported recommendations to stay home in the absence of specific regulations, and only 4.6 % reported no current social restrictions.

In support of the success of the experimental manipulation, differences were found across conditions in the extent to which participants judged the images as promoting appearance ideals,  $F(2, 375) = 65.61, p < .001$  with participants who viewed the diet -culture condition scoring higher than the body positive and travel conditions. Similarly, participants in the diet-culture condition rated the images are more strongly emphasizing the importance of looking in attractive as compared to the other two conditions,  $F(2, 375) = 67.94, p < .001$ . Moreover, participants who viewed the body positive images reported agreeing to a greater extent than those in the other two conditions and that the images they saw promoted diverse types of attractiveness,  $F(2, 375) = 93.53, p < .001$ , and inspired them to be more compassionate and accepting of their bodies  $F(2, 375) = 42.43, p < .001$ .

### 3.2. Effect of exposure on state outcomes

The  $2 \times 3$  (time x condition) repeated measures ANOVA examining change in state weight and shape satisfaction across the three conditions revealed a significant time x condition interaction effect,  $F(2, 364) = 3.23, p = .041$ . Planned comparisons revealed a significant interaction between the diet culture and body positive conditions,  $p = .011$ , such that those allocated to view the body positive images reported greater increases in weight and shape satisfaction as compared to those allocated to view the diet culture images. Similarly, an interaction emerged such that those allocated to the travel condition reported greater increases in weight and shape satisfaction as compared to those viewing the diet culture images,  $p = .032$ . However, no differences emerged between the body positive and travel conditions,  $p = .37$ . Within condition paired sample t-tests revealed no change in weight and shape satisfaction among participants who viewed the diet culture images,  $p = .62$ , while participants in both the body positive,  $p = .005$ , and the travel conditions,  $p = .005$ , reported increases in weight and shape satisfaction.

The  $2 \times 3$  (time x condition) repeated measures ANOVA examining change in state body appreciation across the three conditions revealed a significant time x condition interaction effect,  $F(2, 380) = 3.23, p = .028$ . Planned comparisons revealed a significant interaction between the diet culture and body positive conditions,  $p = .015$ , such that those allocated to view the body positive images reported greater increases in state body appreciation as compared to those allocated to view the diet culture images. However, the interaction was not significant when comparing the diet culture and travel conditions,  $p = .064$ ; nor did differences emerge between the body positive and travel conditions,  $p = .35$ . Within condition paired sample t-tests revealed no change in state body appreciation among participants who viewed the diet culture images,  $p = .19$ , or the travel condition,  $p = .21$ , while participants in the body positive condition reported significant increases in state body appreciation,  $p = .047$ .

The  $2 \times 3$  (time x condition) repeated measures ANOVA examining change in state broad conceptualizations of beauty across the three conditions revealed a significant time x condition interaction effect,  $F(2, 380) = 3.28, p = .039$ . Planned comparisons revealed a significant interaction between the diet culture and body positive conditions,  $p = .014$ , such that those allocated to view the body positive images reported greater increases in state broad conceptualizations of beauty as compared to those allocated to view the diet culture images. However, the interaction was not significant when comparing the diet culture and travel conditions,  $p = .090$ ; nor did differences emerge between the body positive and travel conditions,  $p = .27$ . Within condition paired sample t-tests revealed no change in state broad conceptualizations of beauty among participants who viewed the diet culture images,  $p = .08$ , or the travel condition,  $p = .75$ , or the participants in the body positive condition,  $p = .079$ .

**Table 1**  
Descriptive statistics by study conditions.

	Diet culture Mean (SD)	Body positive Mean (SD)	Travel Mean (SD)
State exposure measures			
State weight and shape satisfaction			
Pre-exposure	113.17 (73.58)	110.29 (75.75)	130.92 (75.49)
Post-exposure	107.62 (82.34)	121.51 (77.79)	139.76 (79.18)
State body appreciation			
Pre-exposure	103.95 (63.20)	104.04 (59.59)	111.90 (58.60)
Post-exposure	99.62 (68.52)	109.51 (60.64)	114.20 (57.62)
State broad conceptualizations of beauty			
Pre-exposure	137.99 (51.01)	136.91 (49.05)	135.29 (50.95)
Post-exposure	133.93 (54.89)	140.98 (48.21)	140.24 (51.64)
State negative mood			
Pre-exposure	96.88 (65.68)	96.53 (66.28)	97.39 (65.78)
Post-exposure	108.91 (73.77)	88.67 (62.20)	95.63 (67.32)
State positive mood			
Pre-exposure	88.18 (41.84)	91.06 (44.83)	98.68 (44.94)
Post-exposure	86.03 (49.63)	95.16 (46.67)	101.22 (45.81)
Trait measures			
Social media literacy	30.88 (5.50)	30.51 (5.67)	31.28 (4.86)
COVID-19 related restrictions	2.72 (0.98)	2.97 (1.08)	2.86 (1.08)

The  $2 \times 3$  (time  $\times$  condition) repeated measures ANOVA examining change in state negative mood across the three conditions revealed a significant time  $\times$  condition interaction effect,  $F(2, 375) = 12.35, p < .001$ . Planned comparisons revealed a significant interaction between the diet culture and body positive conditions,  $p = .014$ , such that those allocated to view the diet culture images reported greater increases in state negative mood as compared to those allocated to view the body positive images,  $p < .001$ . Similarly, those in the diet culture condition reported greater increases in state negative mood as compared to those who viewed the travel images,  $p < .001$ . However, no significant interaction emerged between the body positive and the travel condition,  $p = .23$ . Within condition paired sample t-tests revealed increases in state negative mood among participants who viewed the diet culture images,  $p < .001$ . The change was not significant in the body positive condition, nor was there a significant change in the travel condition,  $p = .57$ .

The  $2 \times 3$  (time  $\times$  condition) repeated measures ANOVA examining change in state positive mood across the three conditions revealed that the interaction was not significant,  $F(2, 375) = 2.75, p = .065$ . Planned comparisons revealed a significant interaction between the diet culture and body positive conditions,  $p = .024$ , such that those allocated to view the body positive images reported greater increases in state positive mood as compared to those allocated to view the diet culture images,  $p < .001$ . However, the interaction between the body positive and travel conditions was not significant,  $p = .46$ , and neither was the interaction between the diet culture and travel conditions,  $p = .12$ . Within condition paired sample t-tests revealed no significant change in state positive mood among participants who viewed the diet culture images,  $p = .08$ . Similarly, the change was not significant in the body positive condition,  $p = .14$ , or the travel condition,  $p = .62$ .

### 3.3. Moderated effects

As described above, moderating effects were examined by testing interactions between the moderator and condition on the post-exposure level of outcomes, controlling for the pre-exposure level.

#### 3.3.1. Social media literacy

The model examining the moderating effect of social media literacy revealed no significant interactions with condition allocation in terms of state weight and shape satisfaction, standardized coeff = 0.84, SE = 0.88,  $p = .34$ , and standardized coeff = 0.92, SE = 0.95,

$p = .33$ . In addition, the main effect of social media literacy was non-significant, standardized coeff = 0.40, SE = 0.61,  $p = .51$ .

The parallel model examining change in state body appreciation similarly revealed no significant interaction standardized coeff =  $-0.57$ , se = 0.67,  $p = .39$  and standardized coeff =  $-1.17$ , se = 0.73,  $p = .11$  respectively. However, a main effect did emerge standardized coeff = 1.42, se = 0.46,  $p = .002$ , such that higher levels of social media literacy were associated with higher levels of state body appreciation after exposure to the images when controlling for pre-exposure levels.

Similarly, the model examining change in state broad conceptualizations of beauty revealed non-significant interaction effects standardized coeff =  $-1.11$ , SE = 0.68,  $p = .10$  and standardized coeff =  $-0.58$ , SE = 0.73,  $p = .43$ . However, again a main effect of social media literacy emerged, standardized coeff = 1.33, SE = 0.47,  $p < .005$ , such that higher social media literacy was associated with higher levels of state broad conceptualizations of beauty after exposure to the images when controlling for pre-exposure levels.

The model examining change in state negative mood revealed non-significant interaction effects, standardized coeff = 1.20, SE = 0.85,  $p = .16$  condition and standardized coeff =  $-0.27$ , SE = 0.92,  $p = .77$ . Again, though, a main effect of social media literacy emerged such that higher social media literacy was associated with lower state negative mood at post-exposure when controlling for pre-exposure levels, standardized coeff =  $-1.63$ , SE = 0.58,  $p = .006$ .

The model examining change in state positive mood revealed non-significant interaction effects, standardized coeff =  $-0.83$ , SE = 0.63,  $p = .17$  condition and standardized coeff =  $-0.06$ , SE = 0.67,  $p = .93$ . In addition, a main effect of social media literacy emerged such that higher social media literacy was associated with higher state positive mood at post-exposure when controlling for pre-exposure levels, standardized coeff = 0.99, SE = 0.42,  $p = .021$ .

#### 3.3.2. COVID-19 related restrictions

The model examining the moderating effect of COVID-19 related restrictions revealed no significant interactions with condition allocation in terms of state weight and shape satisfaction, standardized coeff =  $-7.67$ , SE = 4.91,  $p = .12$ , and standardized coeff =  $-4.26$ , SE = 4.86,  $p = .38$ . The main effect of COVID-19 related restrictions was also non-significant, standardized coeff = 2.75, SE = 3.47,  $p = .43$ .

The parallel model examining state body acceptance revealed no significant interaction for state body appreciation, standardized coeff =  $-1.39$ , SE = 3.79,  $p = .71$  and standardized coeff =  $-1.49$ , SE = 3.77,

$p = .69$ ; nor was there a main effect, standardized coeff = 0.12, SE = 2.68,  $p = .96$ .

Similarly, no significant interaction for state broad conceptualization of beauty, standardized coeff =  $-3.36$ , SE = 3.80,  $p = .37$  and standardized coeff =  $-0.73$ , SE = 3.77,  $p = .84$ ; nor was there a main effect, standardized coeff = 2.02, SE = 2.70,  $p = .45$ .

No significant interaction was present for state negative mood, standardized coeff = 1.27, SE = 4.80,  $p = .79$ , coeff =  $-5.32$ , SE = 4.72,  $p = .26$ ; nor was there a main effect, standardized coeff = 3.47, SE = 3.39,  $p = .31$ . Finally, no significant interactions emerged for the model examining change in state positive mood, standardized coeff =  $-0.87$ , se = 3.52,  $p = .80$  and standardized coeff = 1.94, SE = 3.52,  $p = .58$ . Nor was there a main effect, standardized coeff =  $-2.64$ , SE = 2.50  $p = .29$ .

### 3.4. Findings summary

In sum, participants allocated to the body positive condition reported greater increases in all three indices of state body image (weight and shape satisfaction, body appreciation, and broad conceptualizations of beauty) as compared to those allocated to the diet culture condition, and smaller increases in negative affect. In addition, participants in the travel condition reported greater increases in state weight and shape satisfaction as compared to the diet condition. Moreover, participants in the body positive condition reported net gains in state body appreciation while those in the diet culture condition reported increases in negative affect. Neither social media literacy nor COVID-19 related restrictions were found to moderate any of the effects of condition on body image or mood.

## 4. Discussion

The aim of this study was to examine the effects of exposure to diet culture and body positive COVID-19 specific social media content on the body image and mood of young women. Overall, findings provide support for previous evidence of the comparative detrimental effects of exposure to thin-ideal images on body image and mood among young women as compared to other types of social media (de Valle et al., 2021; Saiphoo & Vahedi, 2019), as well as the positive effects of body positive social media content (Rodgers, Paxton, et al., 2021). Interestingly, however, it should be noted that the differences between conditions were mostly driven by gains in the body positive condition. Moreover, findings provided support for social media literacy as a factor that might promote the positive effects of social media content on body image. These findings extend previous work examining the effects of social media content that promotes or resists diet culture and appearance ideals to content specific to the COVID-19 pandemic, and suggests that additional work to clarify the inter-individual factors that may modulate these effects is warranted.

In support of our first hypothesis, exposure to body positive COVID-19 social media content was associated with higher levels of indicators of positive body image (state weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty) and positive mood, and lower negative mood as compared to the diet condition. In addition, individuals exposed to the body positive images reported net improvements in state weight and shape satisfaction, and state body appreciation from pre to post exposure. These findings are consistent with previous work documenting positive effects of body positive social media content on the body image and mood of young women (Rodgers, Paxton, et al., 2021) and extend them to body positive social media content specific to the COVID-19 pandemic. The fact that these effects were replicated during a time of heightened anxiety, including pre-occupation related to weight and shape, provides some additional support for the capacity body positive content to be helpful for body image in the short term. Further work should aim to explore the

extent to which these benefits can endure and accumulate with exposure. However, it is also important to note that the majority of the contrasts between the body positive and the travel condition were not significant. This finding is also consistent with previous work highlighting how images that do not center bodies and appearances may also be useful in the context of supporting positive body image (Rodgers, Paxton, et al., 2021), as well as findings regarding the positive impact of nature on body image (Swami et al., 2019). Further work helping to determine for whom these different types of content may be helpful would be important.

Similarly, in support of our second hypothesis and consistent with extant research (de Valle et al., 2021), young women allocated to view the thin-ideal COVID-19 specific content reported poorer body image and mood compared to the other two groups. Specifically, they reported lower state weight and shape satisfaction, state body appreciation, state broad conceptualizations of beauty, and positive mood, and higher negative mood as compared to those who viewed the body positive content, and lower state weight and shape satisfaction compared to those who viewed the travel images. In addition, participants who viewed the diet culture images reported net decreases in weight and shape satisfaction and increases in negative mood. These findings extend previous work documenting the comparative detrimental effects of thin-ideal images and the promotion of the pursuit of body ideals through diet and exercise on body image and mood as compared to other types of social media content (de Valle et al., 2021; Saiphoo & Vahedi, 2019), to content specific to the COVID-19 pandemic context. This is notable as previous work has highlighted the presence of weight stigmatizing messages in pandemic-related social media content (Lucibello et al., 2021; Pearl, 2020). However, this study is the first to document the negative effects of such content on body image and mood.

Our third hypothesis posited that the effects of the COVID-19 specific social media content on body image and mood would be moderated by both social media literacy and pandemic-related social restrictions. The findings together provided little support for this. The moderation effects for social media literacy were all non-significant, which may have been due to statistical power. In addition, a main effect of social media literacy emerged for many of the outcome variables suggesting that individuals with higher levels of social media literacy were associated with more positive body image following exposure to the images regardless of condition. These findings are consistent with previous work documenting the role of media literacy and social media literacy in protecting individuals from the negative effects of media exposure on body image (McLean, Paxton, & Wertheim, 2016; Paxton et al., 2022).

These findings have several important implications. First, they extend the findings regarding the helpfulness of body positive social media content, to content specific to the pandemic, a time of heightened anxiety including related to shape and weight. This provides additional support for the robustness of these effects in the face of strong social pressures to control shape and weigh. Second, they extend previous findings to additional dimensions of positive body image, such as state broad conceptualizations of beauty. Although not exclusively (Rodgers, Paxton, et al., 2021), most of the previous literature related to body positive social media content has focused on body satisfaction as an outcome. Broad conceptualizations of beauty are an important aspect of positive body image and it is promising that this dimension seems to be modifiable in the short term as indicated by the present findings. Finally, the findings highlight the need for additional work capable of clarifying the role of social media literacy and its capacity for promoting positive body image and emphasize the need for work aiming to identify the inter-individual moderators of the effects of social media on body image, and specifically body positive social media content. Understanding which types of social media content may be most helpful for whom is an important direction for future work (Rodgers et al., 2022).

Several study limitations should be noted. First, in terms of the methodology, it is important to note that the number of images varied across conditions, with the body positive condition including one less image portraying a body that the diet culture condition, which reduced the comparability of the condition. Second, it is important to note that the data were collected over a span of multiple months during the pandemic, as restrictions waxed and waned, with more severe measures related to quarantine and isolation mid 2020 versus in early 2021. Although baseline differences were found in terms of weight and shape satisfaction, these differences were present between the travel and body positive condition, and in favor of the travel condition, meaning that this difference was unlikely to impact our capacity to detect differences between the two conditions of interest, or changes in the body positive condition. This could have influenced our findings by leading to different social media experiences with social media at different points in time. In addition, our study focused only on individuals identifying as young women, and it would be important for future work to be inclusive of other groups in terms of age, gender, and other dimensions, as well as examining these effects in other cultural contexts, given the global nature of the pandemic. Finally, it is possible that our findings were influenced by demand characteristics, and developing more robust cover stories for such experimental work, or alternatively using more ecologically valid designs would be useful in the future.

Despite these limitations, our study is the first to experimentally examine the effects of COVID-19 related body positive and diet culture social media content on the body image and mood of young women. Our findings contribute to the extant research documenting the comparative helpful nature of body positive social media content for body image, as compared to idealized content. In addition, our findings add to the growing body of evidence regarding the helpfulness of body positive social media content for body image mood. These findings are important as they provide avenues for understanding some of the mechanisms leading to increases in body image concern during the COVID-19 period. Further work aiming to identify the inter-individual factors that may make individuals more or less susceptible to the effects of social media content on body image is warranted as well as expanding these findings to other groups.

### Author statement

All three authors conceptualized and developed the study. **LP** and **SJ** led participant recruitment and data management and curation. Formal analyses were conducted by **RR**. All three authors drafted and edited the final version of the manuscript.

### Data availability

Data will be made available on request.

### Conflict of interest

The authors have no financial conflicts of interests to declare.

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