Body Positivity, but not for everyone: the role of model size in exposure effects on women's mood, body satisfaction, and food choice

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Body Positivity, but not for everyone: The role of model size in exposure effects on women's

mood, body satisfaction, and food choice

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Acknowledgements

Abstract

Body Positivity (or 'BoPo') social media content may be beneficial for women's mood and body image, but concerns have been raised that it may reduce motivation for healthy behaviours. This study examines differences in women's mood, body satisfaction, and hypothetical food choices after viewing BoPo posts (featuring average or larger women) or a neutral travel control. Women (N = 167, 81.8% aged 18-29) were randomly assigned in an online experiment to one of three conditions (BoPo-average, BoPo-larger, or Travel/Control) and viewed three Instagram posts for two minutes, before reporting their mood and body satisfaction, and selecting a meal from a hypothetical menu. Women who viewed the BoPo posts featuring average-size women reported more positive mood than the control group; women who viewed posts featuring larger women did not. There were no effects of condition on negative mood or body satisfaction. Women did not make less healthy food choices than the control in either BoPo condition; women who viewed the BoPo images of larger women showed a stronger association between hunger and calories selected. These findings suggest that concerns over BoPo promoting unhealthy behaviours may be misplaced, but further research is needed regarding women's responses to different body sizes.

Keywords: body positivity; Instagram; social media; food choice; intuitive eating

Introduction

Growing societal awareness of the dangers of unrealistic body ideals has led to the emergence of the Body Positivity movement, or 'BoPo', on social media platforms. BoPo posts typically include messages of self-compassion and self-acceptance and feature images of women with a variety of body shapes and sizes (Cohen, Irwin, et al., 2019). Initial research suggests that self-compassion based messages alone (Slater et al., 2017) and combined with images of women (Cohen, Fardouly, et al., 2019) may promote positive mood and body satisfaction among young women. Recent research suggests that images of average-sized women on Instagram lead to better body image than images of thin women (Tiggemann et al., 2020). However, research has yet to explore the impact of featuring larger women in BoPo posts and whether viewing BoPo is linked to women's eating behaviours. The present experiment investigates these questions via an online experiment, including a hypothetical food choice task.

Although BoPo content promotes acceptance of all body shapes (Cohen, Irwin, et al., 2019), research suggests that the online spaces promoting body acceptance are not as accepting of larger bodies as they may first appear. Health at Every Size (HAES) is a movement that shares body acceptance goals with BoPo. However, the majority of HAES posts on Instagram feature women of high normal weight or low overweight, rather than women significantly larger than average; HAES posts also include weight stigmatising content (Webb et al., 2017). Larger women posting BoPo content also report receiving abuse related to their size and health and accusations of glorifying obesity (Kirschling, 2014). As such, critics have suggested that the BoPo movement represents a narrow range of acceptable bodies (Cwynar-Horta, 2016; Dalessandro, 2016), which are policed from both within and outside the movement (Sastre, 2014).

Existing research on BoPo messages and images has typically used only the messages themselves (e.g., Slater et al., 2017) or a mixture of body sizes in the same condition (Cohen, Fardouly, et al., 2019). Although these represent the range of content, without systematic manipulation of the model's body size, they cannot provide evidence on whether women respond differently to posts featuring women of different sizes. Tiggemann et al. (2020) found that Instagram images of average-sized women led to less body dissatisfaction and more body appreciation than images of thin women, regardless of whether they were accompanied by BoPo captions or not; however, no work has previously considered the contrast between average-sized and larger women. One possibility is that both 'average' and 'larger' images of women will be associated with the benefits observed by Cohen, Fardouly, et al. (2019) for body satisfaction, or that the posts with larger women will have greater benefits (in line with recent findings with traditional media from Williamson & Karazsia, 2018). However, given the discomfort that exists around BoPo images that include larger women (Kirschling, 2014), it may be that the benefits of BoPo for mood and body satisfaction only emerge when viewing 'less controversial' average size women.

Webb et al. (2017) suggest that the weight stigmatising messages included by some users alongside HAES content may be due to concerns outside the HAES movement that promoting positivity regardless of weight may reduce motivation to engage in healthy behaviours. These concerns are regularly aired in popular and academic discourse (see Muttarak, 2018, for a recent example; see also Flynn & Fitzgibbon, 1998; Heinberg et al., 2001), with suggestions that exposure to BoPo imagery may lead to excess energy consumption and food selections higher in sugar, saturated fat, and salt. In contrast, Bacon and Aphramor (2011) argue that weight-accepting approaches promote eating behaviours that reflects the body's needs and are associated with *improved* eating behaviours (Bacon et al., 2005), such as eating in response to internal signals of hunger, satiety, and appetite rather

than engaging in arbitrary dietary restraint. This association between body acceptance and intuitive eating is supported in positive body image research (Avalos & Tylka, 2006; Homan & Tylka, 2018). Despite these opposing positions, to date, there are no empirical studies examining links between BoPo content and women's eating-related decisions.

This experimental study therefore seeks to address the questions of whether there are differences in women's mood and body satisfaction after viewing average or larger BoPo models through the systematic manipulation of model body size. We also investigate whether exposure to BoPo images is associated with women's subsequent food-related decisions through the inclusion of a hypothetical food choice task. Given the strong associations between body mass index (BMI) and body image variables (Kantanista et al., 2017), we control for BMI throughout. We hypothesized that women who viewed BoPo images featuring women of average or larger size would report better mood and body satisfaction compared to those who viewed travel control images. However, we thought this difference from the control posts was more likely to occur for the posts featuring average women than for the posts featuring larger women, due to tensions around larger bodies within BoPo and society more broadly (Sastre, 2014).

In line with suggestions that weight-accepting approaches are likely to be associated with healthier eating behaviours (Bacon & Aphramor, 2011), we hypothesized that women who viewed BoPo images would report healthier eating behaviours than women who viewed control images, as represented by a greater percentage of nutritious choices in their food selection (foods identified by dieticians as good sources of nutrients, containing less saturated fat and/or added sugar and/or salt; Dodds et al., 2014); we additionally tested whether women who viewed BoPo images selected hypothetical meals that were higher in calorie content than those who did not, but predicted there would not be a difference. However, we predicted a stronger association between self-reported hunger and the calorie content of chosen meals for

women who viewed BoPo content compared to women who viewed control images,

reflecting selections more in tune with the body's energy needs as indicated by hunger

(Bacon et al., 2005).

Method

Participants

Women were recruited through social media advertisements and university mailing

lists at an institution in South East England ($N = 188$). Recruitment information suggested the

study related to travel images on Instagram. Entry into a £25 prize draw was offered as an

incentive. Participants ages ranged from 18 to 50+ (estimated $M = 27.74$)[1] and BMI ranged

from 16.69 to 56.92 ($M = 26.99$, $SD = 8.00$). Most participants had their own Instagram

account ($n = 166$, 88.3%).

Design and Procedure

The study was completed online via Qualtrics. Following informed consent,

participants reported demographic information (age, height, weight, Instagram use) and were

randomly assigned to one of three image conditions: control, body positivity with an average

size model (BP-Average), or body positivity with a larger model (BP-Larger). Participants

then completed measures of mood, body satisfaction, and a hypothetical menu task; these

measures were completed only post-test. The study took approximately 15 minutes to

complete and participants could access the survey at any time of day. Afterwards, participants

were debriefed and reminded of their right to withdraw. Appropriate ethical guidelines were

adhered to throughout (British Psychological Society, 2014).

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[1] Age data were collected using a fixed response format with possible options of 18-29
(81.8%), 30-39 (7.1%), 40-49 (3.5%), and 50+ years (7.6%). This estimated mean is
calculated by midpoint coding (using the middle of each category as the score for each
participant, with 55 used for the open-ended highest bracket).

We utilised a post-test only design to avoid repeated body image questions resulting in sensitization to these constructs pre-exposure. Demand characteristics are a potential pitfall of media and body image research (Krawczyk et al., 2012); we judged that the effects of body positivity posts might be particularly likely to be vulnerable to these.

Materials

Body positivity images. Participants viewed three images from the same condition (control, BP-average, BP-larger). The Qualtrics survey was set up to ensure participants spent 2 minutes on the page before the option to continue appeared. Images were drawn from existing body positive posts on Instagram to ensure realistic content (Slater et al., 2017); permission was sought from owners before use.

Control images did not include people and depicted holiday destinations. Both BoPo conditions used identical captions and hashtags.[2] All women pictured wore swimwear (5 in bikinis, 1 swimsuit) and were pictured in similar holiday destinations (beach or pool). We aimed to match women across conditions for skin colour and age, using photos of good quality and brightness. Each BoPo post showed one woman, and pictured at least her upper legs, torso, and head. The only intended difference between these conditions was the body size of the model. The first author identified images for the BP-larger condition from self-descriptions on Instagram (e.g., women's own descriptions of themselves as 'fat' or 'plus-size', self-reported clothes sizes over UK size 18, McCrum, 2016). Identifying 'average' images was more difficult as these women seldom referenced their size; the first author identified women from body positive accounts who were estimated to be UK size 14-16 (in line with the UK average; Hosie, 2017). Data collected from a small sample of women with

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[2] These hashtags were taken from existing BoPo posts, and aimed to both capture body acceptance messages of BoPo (e.g., #celebrateallbodies, #proudofthisbody) and to reinforce the travel image cover story (e.g., #sunshine, #holidayswim). The full set of images and hashtags are available from the corresponding author.

two or more years' experience of shopping for themselves in the UK ($N = 36$; aged 19-35 years, $M = 29.03$, $SD = 4.10$; UK clothes size 6-16, $M = 10.39$, $SD = 2.86$) confirms that the women in the BP-larger condition are perceived as larger than women in the BP-average condition ($t(35) = 20.02$, $p < .001$), and that the women pictured were appropriate body sizes for our conditions (BP-average: $M = 13.80$, $SD = 1.25$; BP-larger: $M = 20.19$, $SD = 2.41$).

Mood. Mood was measured using the Positive and Negative Affect Scale (PANAS; Watson et al., 1988), featuring 10 positive and 10 negative items. Participants rated how much they were experiencing these feelings "at the present moment" on a five-point scale (*Very slightly* to *Extremely*). Means of the subscales were used in the analyses (Negative mood: $\alpha = .89$; Positive mood: $\alpha = .90$).

State body satisfaction. Body satisfaction was measured using the Body Satisfaction Scale (BSS; Slade et al., 1990). Participants rated how satisfied they were with 15 areas of their bodies right now on a seven-point scale (*Very dissatisfied* to *Very satisfied;* $\alpha = .91$), with a mean taken of responses to provide an overall satisfaction score.

Hypothetical food choice and hunger. Participants were asked to select a hypothetical lunch for themselves from a 17-item menu, including drinks, mains, sides, and desserts. Previous research suggests that people behave in similar ways towards hypothetical and real food choice situations (Robertson & Rasmussen, 2018), making this an appropriate measure for an online study. The items, classifications, and calorie information were drawn from an existing hypothetical fast food menu (Dodds et al., 2014), supplemented by vegetarian options from a popular fast food restaurant's menu (McDonald's UK, n.d.). The Dodds et al. (2014) food items are categorised as a good source of nutrients, having some nutritional value, or as lacking nutritional value (in accordance with traffic light food

labelling systems relating to saturated fat, added sugar, salt, and excess calories)[3]. We

classified a selection as a 'nutritious choice' if it belonged to the first category. Participants

were not shown nutritional ratings or calorie content and could select as many items as they

wished. Participants selected between 1 and 12 items in total ($M = 3.70$, $SD = 1.45$, $mode = 3$)

and between 0 and 5 nutritious choices ($M = 1.50$, $SD = 1.00$, $mode = 1$). We calculated two

variables for each participant: their total selected energy intake (in kcal; range: 0 to 2467.97,

$M = 720.45$, $SD = 388.17$) and the percentage of their choices classified as nutritious (range 0

to 100, $M = 43.48$, $SD = 29.35$). Due to the low modal items selected in total, nutritious

choice percentage was coded as a categorical variable (0-33.4%, 33.41-67%, 67.1-100%;

category divides selected around the modal response of 3 total food choices). For control

purposes, participants also reported dietary requirements (e.g., vegetarian, intolerances),

when they last ate, and how hungry they felt. The hunger item asked participants "how

hungry do you feel right now?" and offered them a 4-point scale to respond on (*not hungry at

all* through to *extremely hungry*).

Data Analysis

Eighteen participants were removed due to significant missing data (>50%). Three

participants were excluded from the analyses as they did not provide information to compute

BMI. After removing these participants, the participants were still evenly balanced across the

conditions (control: $n = 57$; BP-average: $n = 55$; BP-larger: $n = 55$; overall $N = 167$).

Available item analysis was used to deal with any further missing data points, resulting in

small variations in the participants available for any given analysis.

ANCOVAs were used to examine differences between conditions on mood, body

satisfaction, and calories selected, while controlling for BMI. Planned contrasts compared

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[3] The Dodds et al. (2014) items were classified by a dietician in the original paper. For the supplementary vegetarian items, the first author classified these according to their nutritional information, and comparative items on the Dodds et al. (2014) menu.

BP-larger and BP-average conditions with the control condition to explore differences between conditions, with bootstrapped confidence intervals to correct for non-normality. Our overall N was sufficient to detect partial eta-squared values of medium size ($\eta_p^2 > .06$, $\alpha = .05$, $\beta = .20$; required N = 158; calculated in GPower v3.1). Chi-square was used to assess the percentage of nutritious choices due to the categorical nature of this outcome variable. Our overall N was sufficient to detect a medium Cohen's W value in the chi-square (W > .30, $\alpha = .05$, $\beta = .20$; required N = 133). Non-parametric correlations (Spearman's rho) were used to assess the relationship between participants' self-reported hunger and number of calories selected across the three conditions; in this case our N per condition was not sufficient to detect a medium effect size ($\rho > .30$; $\alpha = .05$, $\beta = .20$; required N per condition = 82) but was sufficient to detect a large effect size ($\rho > .50$; required N per condition = 21). The data and analysis scripts are openly available in Figshare (Simon & Hurst, 2021).

Results

Positive mood was significantly different across image conditions, controlling for BMI, $F(2, 163) = 5.57$, $p = .005$, $\eta_p^2 = .064$. Planned contrasts revealed that the BP-average condition had higher positive mood compared to the control but the BP-larger condition did not (see Table 1 for all estimated marginal means and planned contrasts); a post-hoc t-test confirmed that the BoPo conditions were not significantly different from one another, $t(108) = 1.63$, $p = .11$. Negative mood did not vary by significantly by image condition, controlling for BMI, $F(2, 163) = 0.80$, $p = .45$, $\eta_p^2 = .010$.

Body satisfaction did not vary by image condition, when controlling for BMI, $F(2, 163) = 0.36$, $p = .70$, $\eta_p^2 = .004$. There was a significant effect of BMI as a covariate on body satisfaction, $F(1, 163) = 10.69$, $p = .001$, $\eta_p^2 = .062$, with those with higher BMI experiencing lower body satisfaction.

When examining food choices, self-reported hunger, time since last eaten, and dietary limitations were added as further co-variates for the total calories ANCOVA. There were no differences between conditions on either total calories selected, $F(2, 155) = 0.73$, $p = .48$, $\eta_p^2 = .009$, or percentage of nutritious choices, $\chi^2 = 4.13$, $df = 4$, $p = .39$, W = .16. In the correlations between participants' self-reported hunger and number of calories selected, the control condition showed the weakest correlation between hunger and calories selected, $\rho = .01$, $p = .97$, followed by the BP-average, $\rho = .15$, $p = .27$, and the BP-larger condition, $\rho = .31$, $p = .02$.

Discussion

This study explored whether women's mood and body satisfaction after exposure to BoPo varied between models with average and larger bodies and whether exposure to these images was associated with women's subsequent food-related choices. Women who viewed BoPo posts that featured average-sized women had more positive mood, compared with women exposed to the neutral travel images. Women who viewed BoPo posts featuring larger women did not have more positive mood compared to the neutral travel images; however, the two BoPo conditions were not significantly different from one another on this or any of the other main study variables. One potential explanation for the lack of difference between women viewing BoPo images featuring larger women and women viewing the neutral travel images is that BoPo content with larger models may elicit conflicting thoughts and feelings for women, restricting its positive effect on mood (relative to neutral travel images) to being smaller than the medium-sized effect our study could identify. We would not consider this a 'negative feature' of BoPo content featuring larger women, but a reflection of ongoing stigma around weight and health, even in contexts where we would expect greater acceptance (Kirschling, 2014; Webb et al., 2017). However, the issue of model size in BoPo content

would benefit from further investigation, particularly given the large sample sizes necessary to confirm a small effect.

There were no differences between either BoPo condition and the control condition on the outcomes of negative mood and body satisfaction. In contrast, previous studies examining the effects of self-compassion messages and body positivity content on women's mood and body image *have* found positive effects on body satisfaction (Cohen, Fardouly, et al., 2019; Slater et al., 2017), and viewing images of average-sized women in BoPo content has been linked to lower body dissatisfaction and more body appreciation (Tiggemann et al., 2020). It is possible that limitations in our design are the source of our different findings. Cohen, Fardouly, et al. (2019) presented 20 posts per condition for a minimum of 10 seconds each, in contrast with three posts per condition for 2 minutes total here; it may be that there is a required 'dose' or number of BoPo posts that must be viewed in order to see differences from neutral posts. Our images, captions, and hashtags may also not have had as great an emphasis on self-compassion as those in previous studies. Future research should seek to explore these issues in body positivity further, to identify the true causes behind these differences and the exposure necessary to elicit them.

This study is the first to examine associations between body positivity content and women's food choices, despite frequent claims in some academic work and in online discourse that BoPo will lead to more unhealthy behaviours (Kirschling, 2014; Muttarak, 2018). We found no evidence that viewing body positivity posts was associated with less healthy food choices, both with regards to the total calorie content of the meal and the proportion of healthy choices in the meal. In fact, our finding that the relationship between self-reported hunger and the total calories selected was stronger (and indeed only significant) for women who had viewed posts featuring larger women supports the opposing viewpoint: body positivity may encourage selections more consistent with the principles of intuitive

eating (Avalos & Tylka, 2006; Homan & Tylka, 2018). However, to interpret our findings in this way, participants must have accurately recognised *homeostatic* hunger (a drive to consume food due to genuine energy deprivation), as opposed to *hedonic* hunger (a drive to consume palatable foods for pleasure; Lowe & Butryn, 2007); the phrasing of our hunger measure means we cannot guarantee this, particularly as our participants made a lunch selection but could participate at any time of day. Furthermore, although hypothetical and real food choices are strongly associated, food-related choices do differ in these tasks (Medic et al., 2016; Robertson & Rasmussen, 2018). A hypothetical selection may overestimate the healthiness of food choices, due to social desirability and the lack of immediate hedonic cues, showcasing intentions not behaviour. Hunger and food choices are influenced by complex psychological and physiological processes; extending these findings into real choices would provide stronger support for the suggestion that viewing body positivity content does not result in poorer health behaviours.

In interpreting both the body image and food choice findings, we note that the context of the BoPo exposure in this study (online, within questionnaire software) and other similar experimental work (e.g., Cohen, Fardouly, et al., 2019; Slater et al., 2017) may underestimate the benefits of BoPo content in the real world. Such content may be more beneficial when embedded in women's regular social media consumption. Future research should seek to explore body positivity (and social media) influences within real world contexts, including their interactive elements.

Beyond the limitations identified above, we note also the lack of pre-test measures. Although this may avoid pre-test sensitisation, it does remove the possibility of examining *changes* in body image, and thus depends on random assignment to conditions eliminating initial variation between groups. Our analyses of body image included only body satisfaction, when other outcomes more focused on positive body image (e.g., body appreciation) may be

more closely tied to body positivity exposure.[4] Future research would benefit from addressing these issues. We also add a statistical caveat on the association between calories selected and hunger: due to dividing the sample into condition for these analyses, we did not retain sufficient power to detect a medium-strength effect (e.g., $\rho = .30$); as such, it may be that we have incorrectly concluded this link is not significant in the BP-average condition ($\rho = .15$); future research would require larger samples across conditions in order to confirm these absence of medium (or small) effects. More broadly, our analyses had sufficient power to detect *medium* effects on calories selected and proportion of healthy choices by condition; however, if the true effects are *small* (but genuine), our sample size would have missed these.

Conclusion

In contrast to previous literature, this study only found differences in positive mood (and not negative mood or state body satisfaction) between women who viewed body positivity posts featuring women with average-sized bodies and those who viewed control travel images. Women who viewed body positivity posts featuring women with larger bodies did not have different positive mood than those who viewed control images *or* those who viewed posts with average-sized bodies. These differences may be due to methodological variation across studies or due to substantive issues around the depiction of larger women in the body positivity movement; we hope future investigations in this area can shed further light on this issue. Additionally, our findings suggest that women's food choices are *not* less

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[4] The full questionnaire included a measure of body appreciation (Body Appreciation Scale 2 (Tylka & Wood-Barcalow, 2015), but only at the trait level, thus restricting us from analysing this as a potential outcome. We are grateful to the comments of the reviewers that led to the identification of this issue. We examined the moderation of the effects reported in this Brief Report by trait body appreciation; these analyses showed no moderation for positive mood, body satisfaction, and calories selected but a minor moderation for negative mood (where there *was* an effect of the BP-larger condition on negative mood, but only for women low in trait body appreciation). The moderation analyses are presented in Supplementary Material due to space limitations in the main paper.

healthy after viewing body positivity content and may in fact be more closely aligned with

intuitive eating principles. While future research should seek to confirm this finding in real

world food selections, we believe that our work offers the first evidence-based response to

media, online, and academic claims that body positivity content has a negative influence on

women's health behaviours.

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Table 1. Estimated marginal means and planned contrasts between Body Positivity conditions.

				Planned Contrasts							
				BP-average vs. Control				BP-larger vs. Control			
	Estimated Marginal Mean					BCa 95% CI				BCa 95% CI	
Dependent Variable	Control	BP-average	BP-larger	Estimate	SE	LB	UB	Estimate	SE	LB	UB
Positive mood	2.16 (0.10)	2.71 (0.12)	2.42 (0.14)	0.55	0.15	0.28	0.84	0.25	0.16	-0.06	0.59
Negative mood	1.52 (0.09)	1.39 (0.07)	1.41 (0.08)	-0.13	0.11	-0.35	0.09	-0.11	0.11	-0.33	0.11
Body satisfaction	4.47 (0.14)	4.45 (0.16)	4.61 (0.16)	-0.02	0.21	-0.43	0.39	0.14	0.21	-0.27	0.56
Food choice: Total Calories*	736.66 (56.22)	672.04 (42.05)	760.23 (59.27)	-64.62	69.63	-204.59	73.86	23.57	82.46	-134.22	192.18
Food choice: Healthy choices (%)*	44.51 (4.19)	39.41 (3.49)	45.92 (4.39)	-5.11	5.49	-15.28	5.05	1.41	6.02	-10.42	13.34

Notes. Standard errors shown in parentheses for estimated marginal means. Bootstrapping: Bootstrapped standard errors reported for estimated marginal means and contrasts; confidence intervals are bias-corrected and accelerated (Field, 2013). Estimated marginal means corrected for BMI. * Estimated marginal means corrected for BMI, dietary limitations, time since last eaten, and self-reported hunger.