

# Disentangling Text from Image Effects in #Bopo and #Fitspo Media: An Experimental Study

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Fitspiration is online content that shows text with images of idealized bodies as desirable and achievable through exercise. In contrast, bopo displays bodies of varying shapes and sizes often with accompanying text that emphasizes diversity. This research tested the differences between six combinations of fitspiration and bopo (image only, text only, both) on implicit body image, explicit attitudes, and believability, and examined relationships to exercise intentions. Fitspiration-related cognitive errors were examined as a possible moderator of the relationships. Women aged 18–30 years (N=460) completed a questionnaire measure of fitspiration-related cognitive errors and then viewed condition-specific stimuli and rated them on likeability (explicit attitudes). Participants then completed measures of implicit body image, believability, intentions, and

demographics. Participants with low (effect=-.28) and mean levels of fitspiration-related cognitive errors (effect=-.18), who reported disliking the fitspiration images with text, had greater intention to exercise. Conversely, participants with the low fitspiration-related cognitive errors who reported liking the bopo images more, reported greater intention to exercise, (effect = .15 [SE = .08]). The bopo images alone were the most positively received. Interventions to reduce the negative impacts of Fitspiration among women prone to making fitspiration-related cognitive errors may be warranted.

*Keywords: fitspiration, body positivity, believability, implicit body image, text, images, attitudes, cognitive bias*

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**S**ocial media have become ubiquitous over the past decade, giving rise to trends in health and wellness, including exercise. Prior work has demonstrated the potential for exercise social media in particular, to represent distorted or harmful content, or maladaptive forms of exercise (Boepple et al., 2016; Nuss et al., 2023; Pryde et al., 2024). Among women, social media consumption has been linked to self-objectification (Lee & Lee, 2021; Seekis et al., 2020), which may be of concern as women frequently experience social pressure related to their appearance (Haferkamp et al., 2012). Indeed, exercise-based social media may perpetuate body image concerns, focusing overtly on appearance outcomes, body objectification, and fit or thin

body ideals (Deighton-Smith & Bell, 2018; Pryde et al., 2024). Evidence suggests body objectification may be more pronounced among users of image-based platforms such as Instagram, as the imagery focuses on physical appearance, and has been associated with appearance comparisons and self-objectification (Couture Bue, 2020; Vandebosch, Fardouly & Tiggemann, 2022). This may lead to body dissatisfaction (Prichard et al., 2018; Ratwatte & Mattacola, 2021; Rounds & Stutts, 2021), lowered mood state after viewing exercise social media such as fitness inspiration (c.f., #fitspo), and state appearance comparisons (Prichard et al., 2018; Pryde & Prichard, 2022).

Fitspiration, known colloquially as fitspo, is online content that shows idealized bodies as desirable and achievable through exercise, accompanied by text that often implies that exercise is hard work but necessary to achieve an appearance ideal (Boepple et al., 2016; Tiggemann & Zaccardo, 2018). For example, an image of a thin and toned woman, wearing a bikini or crop top, may be overlaid with text such as “and yes, it is possible. And no, it isn’t easy.” The combined image and text may reinforce the idea that achieving a certain appearance requires sacrifice and hard work. Such images and text are often “tagged” so they are easily searchable using hashtags such as #fitspiration or #fitspo, thus, fitspiration is almost ubiquitously viewed and shared via social media. Prior work suggests that women exposed to fitspiration rated themselves as less attractive and had lower weight satisfaction than those viewing control images of travel destinations (Fioravanti et al., 2021). Others have reported that viewing fitspiration images was related to higher inspiration to be fit, but not actual immediate exercise behaviour, compared to viewing travel images (Prichard et al., 2020). However, the mechanisms through which fitspiration images and text may influence consumers is still not completely understood (Vandebosch et al., 2022).

In contrast to fitspiration, another social media trend is related to body positivity (i.e., bopo), searchable through hashtags such as #bopo. Body positivity social media was created in part as a reaction to the limited representations of beauty portrayed by fitspiration (Vendemia et al., 2021). Bopo displays bodies of varying shapes and sizes, often with accompanying text that emphasizes diversity (e.g., “all bodies are beautiful”; Rodgers et al., 2022). Researchers have found that body-positive captions, regardless of whether they were shown with images of thin women or average-sized women had no

effect on body dissatisfaction or body appreciation (Tiggemann et al., 2020). However, there were main effects where images of average-sized women, compared to thin women, resulted in lower body dissatisfaction and higher body appreciation. Some bopo text may be exercise-related (e.g., “exercise is to be enjoyed, not endured”) and researchers found that weight-inclusive Instagram images, such as those seen in bopo resulted in higher exercise intentions, but so too did fitspiration-type images, with no significant difference between them (Wood & Pila, 2022). Both fitspiration and bopo images emphasize body appearance in particular for women (Rodgers et al., 2022; Tiggemann & Zaccardo, 2018). It may be that women perceiving similarity between the self and fitspiration, may engage in social comparisons with these images (Festinger, 1954).

Indeed, some prior work suggests that fitspiration social media may contribute to body dissatisfaction (Prichard et al., 2018; Seekis et al., 2020). Correspondingly, it has also been found that including body positive text with images of thin or average-sized women did not affect body dissatisfaction, and the authors concluded that the image portion of bopo likely has a more powerful effect than the text (Tiggemann et al., 2020). A scoping review similarly concluded that positive captions had little effect on negative outcomes (Rodgers et al., 2021). Several authors (Rodgers et al., 2022; Tiggemann et al., 2020) have advocated for research designed to disentangle the effects of images compared to text in bopo media. Further, although appearance comparisons have been shown to be one mechanism through which bopo may influence body image, further work is needed to understand the mechanisms through which bopo may influence the decision to be active (Rodgers et al., 2022). Given there are questions regarding the mechanisms through which fitspiration or bopo may influence the decision to be active, and that the images and text may have different effects, this research was designed to investigate both fitspiration and bopo images and text. Also, since the purported purpose of fitspiration and some bopo are to inspire people to exercise, this research investigated their effects on intentions to exercise.

### **Theoretical approach**

There is a rich history of how both impulsive and reflective processes influence human behaviour (Strack & Deutsch, 2004). As these authors highlight, impulsive, often emotional, responses may underpin issues such as compulsive behaviour or anxiety. At the

same time, being overly reflective (e.g., through rumination or over-thinking issues) may also be problematic. For example, the cognitive errors framework addresses some possible consequences of being overly reflective, wherein cognitive errors cause individuals to perceive situations through a distorted or biased lens (Milman & Drapeau, 2012).

The current research is guided by the Reflective Impulsive Model (RIM; (Strack & Deutsch, 2004)) because it allows for the consideration of the immediate, impulsive effect of fitspiration and bopo images and text as well as the effects of the media on reflective processes. According to the RIM, the impulsive system includes associative clusters that represent concepts. For example, mental associations related to fitspiration or bopo could include representations of how an active body “should” look or how a person should feel about exercise. These associations can include affective states which may spread to motivational processes and behavioural schemata linked to approaching or avoiding a behaviour. So, if fitspiration leads to feelings of disliking one’s body because it does not match the images shown, this may result in avoiding exercise. According to RIM tenets, representations activated within the impulsive system are translated into reflective propositions that have a truth value. That is, if fitspiration leads to a negative impulsive evaluation of one’s own body, it may lead to the proposition: “I do not intend to exercise.”

The relatively automatic associations occurring in the impulsive system are most frequently conceptualized as implicit attitudes towards a given concept. Implicit attitudes represent the strength and valence of the automatic association between a concept being good or bad (e.g., a strong negative association to fitspiration; Berry et al., 2023). The thoughts occurring in the propositional system are frequently conceptualized as explicit attitudes commonly assessed using survey-based measures of attitudes (e.g., “for me, participating in exercise is...”; Berry, 2016; Ori et al., 2021), and focus on a given concept (e.g., fitspiration or bopo). According to Brand and Ekkekakis (2018), physical activity may be influenced by both implicit and explicit processes. Thus, understanding cognitive processes related to fitspiration and body positivity media should include both implicit and explicit measures.

### **Implicit attitudes about body image in social media**

As identified by the authors of a scoping review of bopo social media, one possible mechanism by which bopo influences consumers is the activation of self-related feelings

(Rodgers et al., 2021). In keeping with the RIM, the current research takes this idea to examine impulsive body-related perceptions elicited by fitspiration and bopo. Impulsive processes are typically measured with implicit measures, such as the implicit association task (IAT). Gumble and Carels (2012) developed a measure of implicit body image, based on the IAT. In their task, participants were asked to categorize words as related to the self (e.g., me), others (e.g., them), attractive (e.g., beautiful), or unattractive (e.g., ugly). They found that this task was negatively related to an implicit measure of self-esteem.

However, examining social media, like fitspiration and bopo media, through a dual process model is relatively new. Research using tv media found that adolescents exposed to weight loss reality television showed more negative implicit bias towards individuals with obesity (Karsay & Schmuck, 2019).

Jansen et al. (2022) used a dual processing approach to examine body image and social media use, demonstrating that a slight positive pro-slim implicit bias was present only when the low BMI category was perceived as being healthy. A more recent study examined the extent to which implicit and explicit attitudes about fitspiration mediated or moderated physical activity intentions (Berry et al., 2023). For women, the prediction of intention was mediated by implicit attitudes about fitspiration, which may implicate implicit attitudes about social media as an important factor in determining whether fitspiration or bopo motivate individuals to be active. Little research has examined impulsive processes in relation to fitspiration or bopo, yet these impulsive processes may serve as a basis for controlled, reflective and thoughtful evaluations (Brand & Ekkekakis, 2018). For example, a person may have automatic negative thoughts about their bodies after seeing fitspiration content but they still may believe the message contained in fitspiration, resulting in higher exercise intention. Thus, a dual process approach to understanding fitspo and bopo may expand on our understanding of these media and associated cognitive influences.

### **Explicit attitudes about fitspiration and bopo**

Explicit attitudes can be conceptualized as how something is evaluated, be it favorably or unfavorably (De Houwer et al., 2017). They can relate to intentions by influencing how a situation or concept is perceived (Strack & Deutsch, 2004). Researchers have found that the believability of social issue advertisements was related to attitudes

and subsequent intention to comply with the advertising messages (O’Cass & Griffin, 2006). Similarly extant research has shown that explicit exercise attitudes is related to exercise intentions after viewing exercise social media (Ori et al., 2021). Thus, it is of interest whether fitspiration of bopo text and media are evaluated – that is, how much they are disliked or liked – as that may help inform how the social media influence intentions to be active. Further, in keeping with the RIM, implicit and explicit attitudes toward the same issue can differ and it is therefore important to measure both.

### **Possible mechanisms influencing the relationship between implicit and explicit attitudes and physical activity**

There have been consistent calls for studies to examine the underlying mechanisms of behaviour – moderators or mediators (Carey et al., 2019; Nielsen et al., 2018). In their meta-review of reviews on individual intervention strategies to improve physical activity, healthy eating, or weight loss ( $K = 30$ ;  $N = 409,185$ ), the authors concluded there is an urgent need to understand the mechanisms of behavior change (Spring et al., 2020). Within a dual process model, Locke & Berry (2021) have demonstrated that exercise-related cognitive errors moderated the relationship between implicit exercise approach tendency and intentions, such that the tendency to approach exercise was only related to intention when cognitive errors were low. Given these findings, it may be that exercise-related cognitive errors are a key element to understanding how fitspo and bopo are related to physical activity. To this end, we built on previous correlational research by examining whether implicit attitudes, explicit attitudes, and media believability mediated the relationship between type of fitspiration/bopo media and physical activity intention. We also examined whether cognitive errors moderated these relationships in line with past research (Berry et al., 2023).

### **Fitspiration-related cognitive errors**

The cognitive errors model suggests that some individuals view situations through a biased lens that causes them to exaggerate and focus solely on the challenging aspects of a situation (Lefebvre, 1981). Locke and Brawley (2016, 2018) extended this model to the exercise domain and established that exercise-related cognitive errors represent a biased view of exercise-relevant information that distorts how individuals perceive it. For example, cognitive errors could be identified when deciding whether to go to the gym or

not, a person thinks: “it’s been so long since I’ve exercised that I’m going to be painfully sore for days.” A measure of cognitive errors that reflect the exaggerated messages promoted in fitspiration has been developed (Berry et al., 2023) to measure the extent to which people endorsed the exercise-related ideas represented in fitspiration (e.g., sacrifice is needed; Boepple et al., 2016; Tiggemann & Zaccardo, 2018). For example, a fitspiration-related cognitive error (FCE) may be demonstrated by agreeing with a statement such as “If you had a mediocre workout you think to yourself, ‘I’m never going to accomplish my fitness goals this way.’” Whereas an exercise-related cognitive error would result in an exaggerated perception of the barriers to exercise, an FCE would result in magnifying the impact of not exercising hard enough on one’s physique. The FCE items clearly discriminated from items from the validated exercise-related cognitive errors questionnaire. Cognitive errors are a reflective process that may exaggerate the reactions evoked from fitspiration and impact how these reactions are translated into exercise intentions. Images have been shown to elicit a stronger affective reaction compared to text (Holmes et al., 2008). As such, FCEs may differentially impact the effects of fitspiration or bopo on the other constructs depending on whether text or image is viewed. For example, it is possible that those who focus on extreme aspects of exercise, as commonly shown in fitspiration, will have lower implicit body image after viewing the fitspiration images compared to the text alone.

### **Believability**

This research also examined whether the believability of the media mediated the relationship between viewing fitspiration/bopo and physical activity intention. Believability was examined rather than credibility, because whereas credibility often is tied to a specific source (Johnson & Kaye, 2009), message believability is a broader conceptualization referring to whether people find the actual content of messages to be truthful and trustworthy (Beltramini & Evans, 1985). Many people may simply not believe the fitspiration message because they find it too extreme (Easton et al., 2018). Others have stated concern that bopo is also objectifying, uses filters to enhance the images, or contains commercial messages (Vandenbosch et al., 2022). Researchers have also found that images created to positively represent diverse bodies being physically active elicited negative, disbelieving comments in people who were not obese nor had close friends or

family who were obese (Berry & Myre, 2021). Thus, the believability of fitspiration and bopo images and text was examined as a mediator of exercise intentions with lower believability negatively influencing intention.

### **Purpose**

The current research had two primary purposes with seven corresponding hypotheses. The first purpose was designed to test the independent effects of the different combinations of fitspiration and bopo images and/or text (i.e., (a) fitspiration images, (b) fitspiration text, (c) fitspiration images with text, (d) bopo images, (e) bopo text, and (f) bopo images with text) on implicit body image, explicit attitudes toward the stimuli, and believability of the stimuli. Based on research by Tiggemann et al., (2020)) and Rodgers et al., (2021) suggesting a minimal impact of image text on outcomes, the following three hypotheses were made:

**Hypothesis 1a.** The fitspiration images with text would result in lower implicit body image, explicit evaluations, and believability compared to the fitspiration images alone, which in turn would result in lower ratings than the fitspiration text alone.

**Hypothesis 1b.** The bopo images with text would result in higher implicit body image, explicit evaluations, and believability compared to the bopo images alone, which in turn would result in higher ratings than the bopo text alone.

**Hypothesis 1c.** Overall, the fitspiration stimuli (i.e., images with text, images, or text) would result in lower implicit body image, explicit attitudes, and believability compared to the bopo stimuli.

The second purpose of this study was to examine a model testing the extent to which FCEs moderated the relationship between condition and implicit body image, explicit attitudes, and believability and whether these relationships mediated exercise intention. See Figure 1 for a visual representation of the conceptual model being tested. The following four hypotheses were made regarding the predictive relationships in the model:

**Hypothesis 2a.** The overall model would account for a significant proportion of variance in exercise intention.

**Hypothesis 2b.** Implicit body image, explicit attitudes, and believability would be positively related to exercise intentions.

**Hypothesis 2c.** FCEs would moderate the relationship between condition and the three mediating variables such that participants who made more FCEs who viewed the fitspiration images with text, images alone, or text alone would have lower implicit body image, explicit attitudes toward the fitspo/bopo media, and believability.

**Hypothesis 2d.** Moderated mediation will be observed such that the moderated relationships of FCEs on implicit body image, explicit attitudes, and believability will significantly mediate the association between condition and exercise intention.

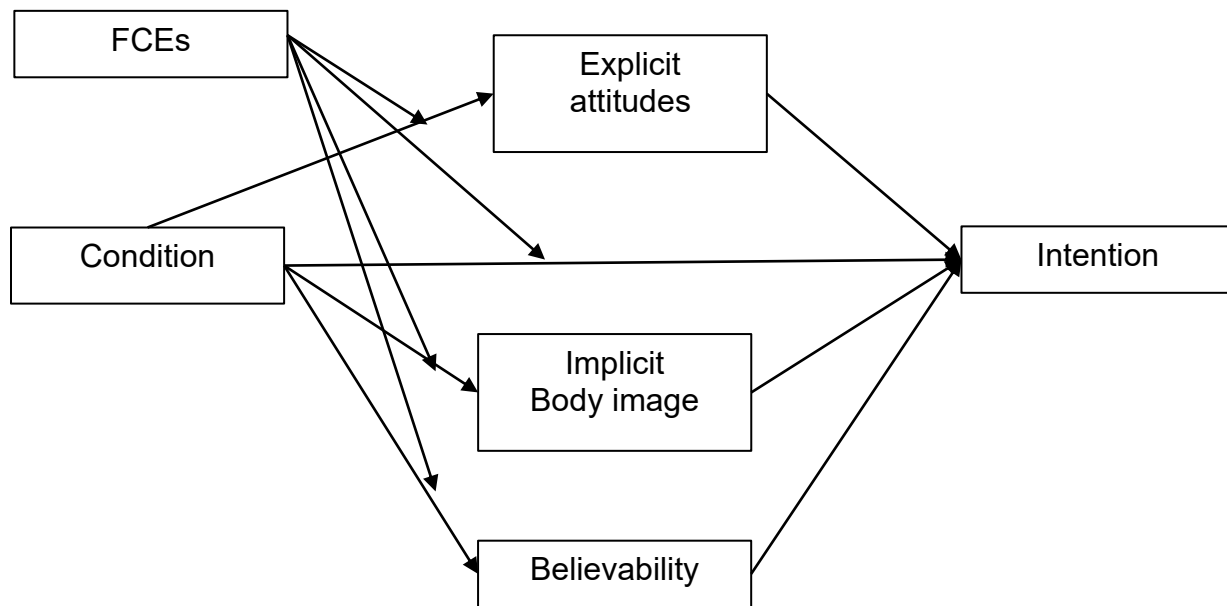


Figure 1. Pathways tested in the mediated moderation models

## METHODS

### Participants

Self-identified women, aged 18 – 30 years, from the United Kingdom, the United States, Canada, New Zealand, and Australia were recruited using Prolific, a research-focused platform that adheres to transparency using guidelines based on research ethics. Participants who started the study received £5. They were randomly assigned to one of six conditions: fitspiration images, fitspiration text, fitspiration images with inlay text, bopo images, bopo text, or bopo images with inlay text. A sample size of 366 was calculated

using G\*Power 3.1.9.2 for an Analysis of Variance (ANOVA) test with six groups, power ( $1 - \beta = .9$ ), a priori  $\alpha = .01$ , and medium effect size assumed.

## Procedures

All procedures were approved by a university ethics board; all participants provided informed consent before starting the study. The experiment was presented using Inquisit software. Participants first completed a questionnaire measure of fitspiration-related cognitive errors and then viewed the stimuli within their condition. Ten stimuli were shown in each condition (i.e., fitspiration images, fitspiration text, fitspiration images with text, bopo images, bopo text, or bopo images with text). Each stimulus was shown for five seconds before participants rated it on a 7- point Likert scale ranging from strongly dislike to strongly like. The next stimuli was not shown until the rating was made. After viewing and rating all the condition specific stimuli, participants completed the implicit body image task, followed by a questionnaire measuring believability, intentions, and demographics including prior exposure to similar media. The study took about 20 minutes to complete.

## Stimuli

Examples of fitspiration and bopo media were found by searching Instagram, Facebook, and the Google search engine using #fitspiration, #fitspo, #bopo, or #curvyandfit. The Fitspiration media were used in previous research (Berry et al., 2023). The bopo images and text were unique to the present research. Each item found was discussed by the research team and the final images and text were selected through consensus. Each image, text, or image with text presented to participants was 850 by 850 pixels. The images were in colour and showed one woman engaged in exercise (e.g., doing yoga, holding a basketball, strength training). The fitspiration images showed women who were, subjectively, between the ages of 18 and 30, 4 were Black and 6 White, with thin, toned bodies and bared midriffs. The bopo images showed women who were, subjectively, between the ages of 18 and 30, 3 were Black, 3 Asian, and 4 White, and with larger bodies. Four had bare midriffs and six did not. Example fitspiration text was “If you don’t work for it you probably don’t deserve it.” Example bopo text was “be happy in your own skin. You are unique, beautiful, and worthy.” Text stimuli were shown in large font on a colorful background. The images with text stimuli were created using the images and text from the

other conditions by overlaying the text on the images. Sample stimuli are shown in the supplementary files.

### **Implicit body image task**

The categories and attribute words were those used by Gumble and Carels (Gumble & Carels, 2012). In this task participants categorize attribute words as quickly as possible into the categories: self, other, attractive, and unattractive. The script was modified from one available through millisecond. Paired categories were shown in the top right and left corners of the screen and the words to be categorized appeared in the middle of the screen. Participants were instructed to respond by hitting the 'e' key on the keyboard for words from the categories shown in the top left and the 'i' key on the keyboard for words from the categories shown in the top right of the screen. Following practice trials, there was a block with 20 trials of 'self' category words paired with 'attractive' category words on one response key and 'other' category words paired with 'unattractive' category words on the other response key. For example, the categories 'self' and 'attractive' were in the top right and words from those categories were responded to by hitting the 'i' key on the keyboard as quickly as possible. After a short break and reminder, a second block with the same pairings was conducted with 40 trials. There was another 20 trial block with 'self' category words paired with 'unattractive' category words and 'other' category words paired with 'attractive' category words on the other response key followed by a final block of 40 trials with similar pairings. In all the blocks the words were selected randomly. The block order was counterbalanced across participants so that half started with 'self' and 'unattractive' categories first. The 'self' words were: I, me, my, mine, and self. The 'other' words were: they, them, their, theirs, and others. The 'attractive' words were: beautiful, pretty, good-looking, cute, and gorgeous, and the 'unattractive' words were: ugly, hideous, homely, bad-looking, and unappealing. The intra-class correlations were .85 for congruent trials ('self' paired with 'attractive' or 'other' paired with 'unattractive') and .71 for incongruent trials ('self' paired with 'unattractive' or 'them' paired with 'attractive').

### **Survey measures**

**Explicit attitudes.** These were the ratings of each piece of stimuli on the 7-point Likert scale ranging from strongly dislike to strongly like, as described in the procedures section. The internal reliability was  $\alpha = .87$ .

**Fitspiration-related cognitive errors.** Seven vignettes that depict cognitively errored responses to exercise challenges typically depicted in fitspiration were used to measure fitspiration-related cognitive errors. For example, one item states “When thinking about whether or not you’re going to go to the gym you think to yourself, ‘if I miss a day, I’m going to lose everything I worked for.’” All items are rated from 1 (not at all how I would think) to 9 (almost exactly how I would think). This questionnaire was adapted in a previous study (Berry et al., 2023) from the validated exercise-related cognitive errors questionnaire (Locke & Brawley, 2016). The internal reliability of the items in the current study was  $\alpha = .84$ .

**Believability.** This is a 9-item scale used to measure the believability of the media (as a group, not individually). The questionnaires asked participants to “Please judge the pictures you saw according to how YOU perceived them” on items including believable/unbelievable, trustworthy/untrustworthy, convincing/ not convincing, and honest/dishonest (Beltramini & Evans, 1985). A mean of all items was used; items were scored so that a higher score indicates finding the media more believable. The internal reliability was  $\alpha = .94$ .

**Intention.** The strength of exercise intention was measured with the item “I intend to exercise for at least 150 minutes a week” rated from 1 (extremely unlikely) to 7 (extremely likely).

**Prior exposure to fitspiration media.** This was assessed with the question, “Have you seen images like this before?” (yes/no). If yes, three additional questions were presented: 1) Do you actively search for these images (e.g., using #fitspiration on Instagram or Twitter)? (yes/no); 2) How frequently do you see images like these? (from ‘once a month or less’ to ‘daily’) and 3) Would you consider sharing images like this on social media sites such as Instagram or Twitter? (no, maybe, yes).

**Demographics.** Prolific participants were restricted to women aged 18 – 30 years. To confirm, the questionnaire asked participants to report age, and gender, as well as education, ethnicity, and height and weight (which was used to calculate body mass index). Exercise behaviour was measured with the moderate and vigorous items from the Godin leisure-time exercise questionnaire (Godin et al., 2009). MVPA score was calculated by multiplying the number of strenuous bouts by nine (approximate MET value) and the

number of vigorous bouts by five (approximate MET value) and summing the two scores. A score < 14 is categorized as inactive, scores between 14 and 24 are moderately active, and scores > 24 are considered active (Godin et al., 2009).

### **Data analysis**

Implicit body image was calculated as a d-score by Millisecond software, according to the improved scoring algorithm (Greenwald et al., 2003). Purpose 1 was tested using ANOVA tests with condition as the independent variable and implicit body image, explicit attitudes, and believability as the dependent variables. Alpha was set to .01 because of multiple tests. Purpose 2 was tested using Hayes conditional process analysis (using the PROCESS macro for SPSS; model 8 for a moderated mediation model; (Hayes, 2017). 5000 bootstrap models with a confidence interval of 95 were conducted. Independent and moderator variables were standardised prior to the analyses. Hayes' moderated mediation used a stepwise approach to determine whether moderated mediation was present. First, we assessed whether there was a significant proportion of variance accounted for in the outcome variable (exercise intention; hypothesis 2a). Next, the model assessed whether the independent variable (condition), the moderator (FCE), or their interactions significantly predicted each of the three individual mediators (implicit body image, explicit attitudes, and believability; hypothesis 2b and 2c). Finally, it assessed whether moderated mediation was present by examining whether any of the observed indirect effects were moderated by FCEs to predict exercise intention (hypothesis 2d).

## **RESULTS**

**Demographics and data management.** Five hundred and ten participants started the study. Demographic information is reported in Table 1. Data from participants with missing data were removed. Most of the missing data were from participants who missed entire measures including believability (N = 29), FCE (N = 13), IAT (N = 6) or intention (N = 2); twenty-nine did not complete the study. This left 460 participants for analysis. The raw data for the main constructs (FCEs, implicit body image, attitudes, believability, and intention) were normally distributed. Skewness ranged from -.67 to -.20 and kurtosis ranged from -.8 to .32. Correlations between the main constructs are shown in Table 2 and the results of the ANOVAs testing hypotheses 1 -3 are shown in Table 3.

Table 1.

*Demographic Information.*

Variable	Mean/Frequency	
Age M (SD)	24.50 (3.42)	
BMI M (SD); 26 did not report	25.79 (8.56)	
MVPA N (%); 12 did not report	Inactive	136 (29.6)
	Moderately active	70 (15.2)
	Active	242 (52.6)
Education N (%); 33 did not report	High school	111 (24.1)
	College/vocational	68 (14.8)
	Undergraduate	145 (31.5)
	Graduate or professional	103 (22.4)
Ethnicity N (%); 2 did not report	White	279 (60.6)
	Black	29 (6.3)
	Asian	68 (14.8)
	Other or mixed	82 (17.8)
Use social media daily or more N (%)	436 (94.5)	
Seen similar images N (%)	334 (72.6)	
Search for similar images N (%)	32 (7.0)	
Consider sharing similar images – yes or maybe N (%)	124 (26.9)	

Note: moderate-to-vigorous physical activity = MVPA.

Table 2.

*Correlations Between Key Constructs*

	FCEs	Implicit body image	Attitude toward media	Believability
FCEs	-			
Implicit body image	-.027	-		
Attitudes toward media	.276**	-.024	-	
Believability	.078	.033	.525**	-
Intention	.251**	.091	.199**	.073

Notes: FCE = fitspiration-related cognitive error. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Purpose 1: Examining differences between fitspiration and bopo conditions.**

**Group differences in implicit body image (hypothesis 1a).** There were no significant differences in implicit body image between conditions ( $F(5, 454) = .45, p = .82$ ).

Table 3.  
*Differences By Group On Key Constructs.*

	Fitspiration		Bopo			ANOVA results	
	Images N=79	Text N= 68	Images + text N = 72	Images N = 84	Text N = 73		Images + text N = 84
Implicit body image	.57 (.42)	.58 (.34)	.56 (.34)	.63 (.33)	.61 (.45)	.58 (.36)	F (5, 454) = .45, $p = .82$
Attitudes toward media	4.60 (.96)	4.48 (.93)	3.78 (1.23)	4.85 (1.01)	5.16 (1.04)	5.08 (1.00)	F (5, 454) = 17.55, $p < .001$
Believability	4.45 (1.18)	4.35 (1.10)	3.56 (1.20)	5.32 (1.06)	4.58 (1.19)	4.66 (1.29)	F (5, 454) = 18.11, $p < .001$

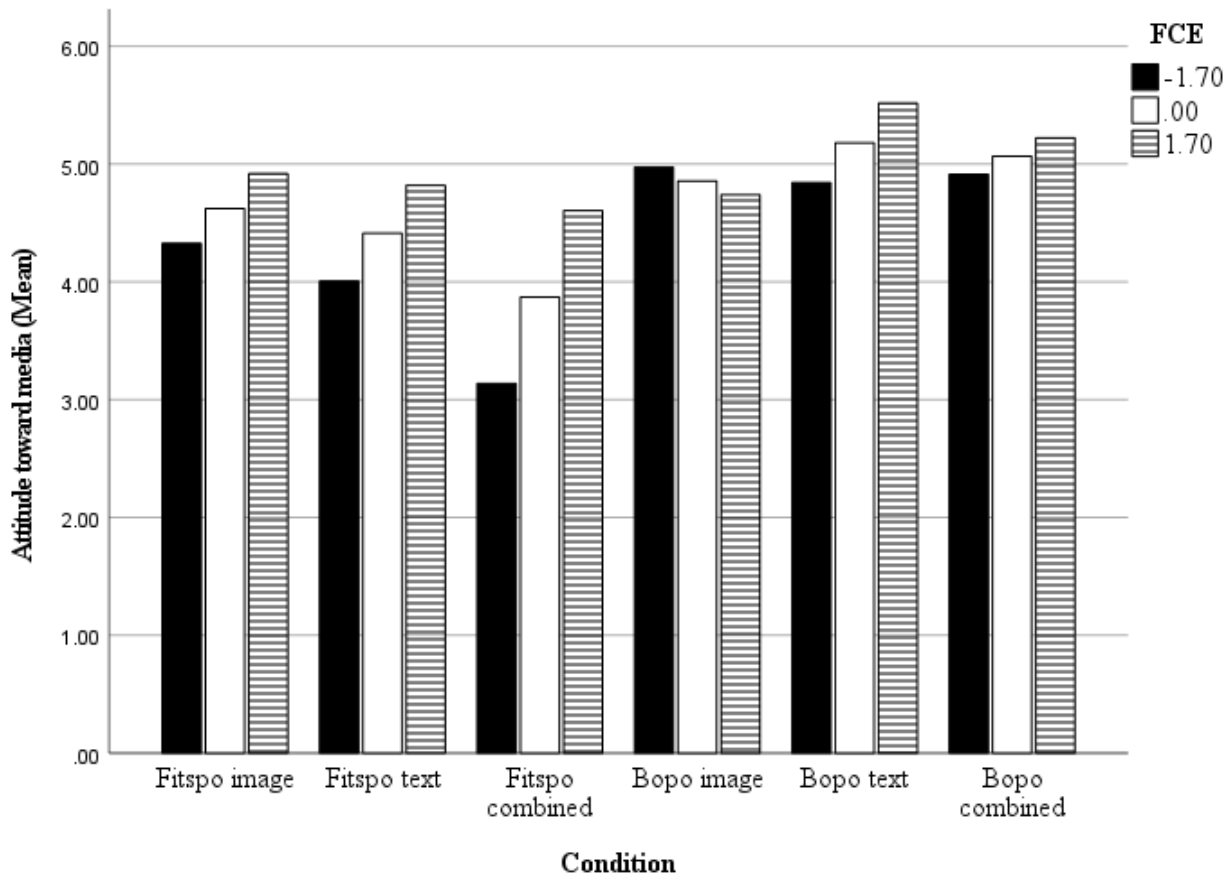
**Group differences in explicit attitudes (hypothesis 1b).** There was a significant difference in explicit attitudes between conditions ( $F(5, 454) = 17.55, p < .001$ ). Post-hoc tests of differences between groups (all  $p < .01$ ) showed that the fitspiration images with text were rated lower on explicit attitudes and believability compared to every other condition with effect sizes ranging from Cohen's  $d = .69$  to 1.55. The fitspiration images were disliked more than the bopo text, Cohen's  $d = .56$ , or bopo images with text, Cohen's  $d = .49$ , but were not significantly different than the fitspiration text. The fitspiration text was disliked more than the bopo text, Cohen's  $d = .70$ , or bopo images with text, Cohen's  $d = .62$ . The bopo text were liked more than stimuli from all the fitspiration conditions, Cohen's  $d = .56$  to 1.21, but did not differ in liking from other bopo stimuli.

**Group differences in believability (hypothesis 1c).** There was a significant difference in believability between conditions ( $F(5, 454) = 18.11, p < .001$ ). Post-hoc tests of differences between groups (all  $p < .01$ ) showed that the fitspiration images with text were rated lower on explicit attitudes and believability compared to every other condition with effect sizes ranging from Cohen's  $d = .69$  to 1.76. The bopo images were rated as more believable than stimuli from every other condition with effect sizes ranging from Cohen's  $d = .67$  to 1.76. The fitspiration images were also disbelieved more than the bopo images, Cohen's  $d = .78$ . The fitspiration text were disbelieved more than the bopo images, Cohen's  $d = .90$ .

**Purpose 2: Testing a model predicting physical activity intention.**

The results of the moderated mediation model, testing hypotheses 2a-d are reported in Table 4. For parsimony of space, only significant results are included and the full results are available in the supplemental file. In support of hypothesis 2a, the model accounted for a significant proportion of variance in exercise intention ( $F(14, 445) = 3.62, p < .001; R^2 = .10$ ). In partial support of hypothesis 2b, implicit body image ( $\beta = .51, p = .03$ ), explicit attitude ( $\beta = .23, p = .004$ ), and FCE ( $\beta = .40, p = .001$ ) were all significantly and positively associated with exercise intention. Higher scores on all of these constructs were related to greater intention to exercise. Believability was not significantly associated with intention ( $p > .05$ ).

Hypothesis 2c was partially supported. FCEs did not moderate any of the relationships between condition and implicit body image ( $p = .89, R^2 = .01$ ). FCEs significantly moderated the relationship between condition and explicit attitudes (i.e., how much they liked or disliked them), accounting for 28% of the variance ( $F(11, 448) = 15.78, p < .001$ ). FCEs were a significant predictor with higher FCEs indicating greater liking of the stimuli across conditions, but FCEs also significantly moderated the effects of the fitspiration images with text on explicit attitudes. Participants with low or moderate FCEs reported low attitudes, indicating they disliked the fitspiration images with text. Participants with low FCEs were more likely to report higher attitudes toward the bopo images, bopo text, or bopo images with text. Participants with mean FCEs were also more likely to report higher attitudes toward the bopo text, or bopo images with text. Figure 2 shows the mean attitude by condition at different levels of FCE.



*Figure 2.* Differences in explicit attitudes toward the stimuli by condition at different levels of FCEs

Notes: FCE = fitspiration-related cognitive error.

FCEs significantly moderated the relationship between condition and believability, accounting for 21% of the variance ( $F(11, 448) = 10.77, p < .001$ ). FCEs significantly moderated the effects of the fitspiration images with text on believability; participants with low or mean FCEs reported lower believability. Participants with low FCEs in the bopo image and bopo images with text conditions were more likely to report higher believability; participants with mean FCEs in the bopo images condition were more likely to report higher believability. Figure 3 shows the mean believability by condition at different levels of FCE.

Table 4.

*Summary of significant findings from moderated mediation analysis with FCEs as the moderator.*

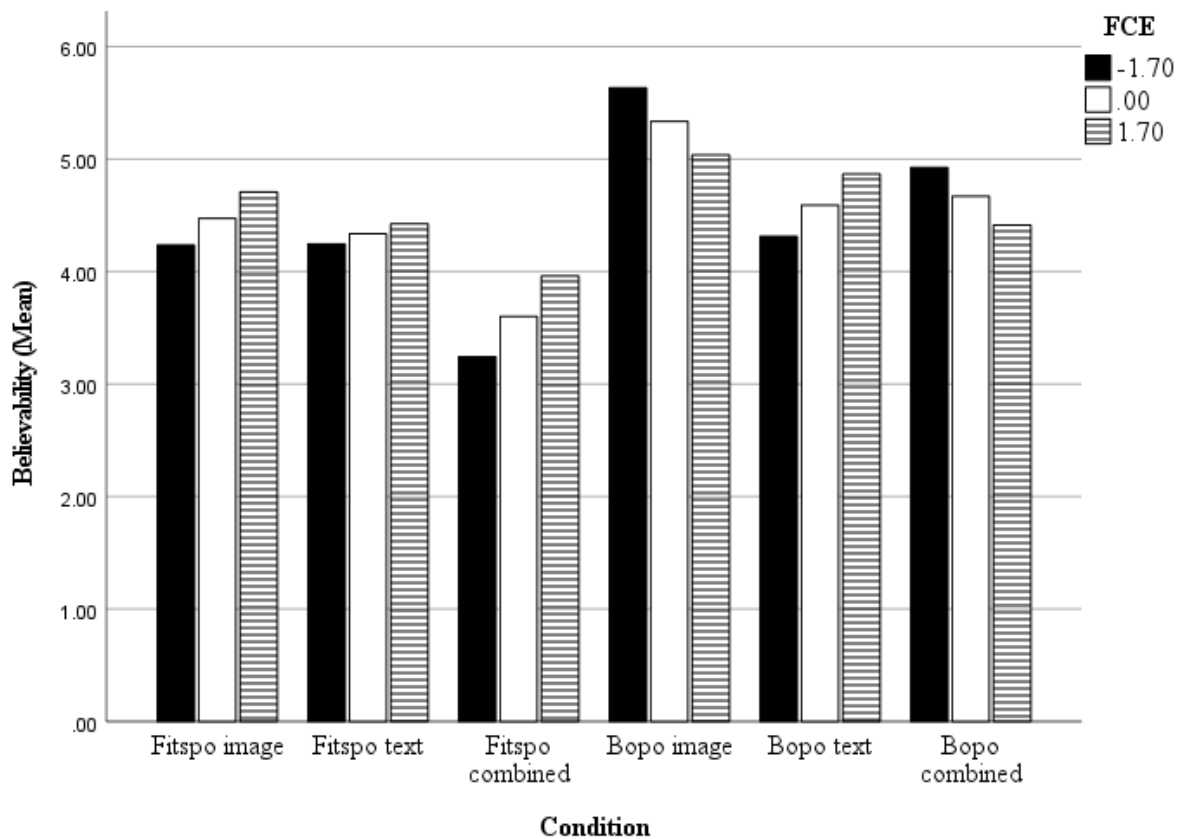
Outcome variables	Model summary	Significant predictors
Implicit body image	F (11, 448) = .53, $p = .89$ ; $R^2 = .01$	None
Explicit attitudes	F (11, 448) = 15.78, $p < .001$ ; $R^2 = .28$	Fitspiration combination, $\beta = -.75$ (SE = .16), $p < .001$ Bopo text, $\beta = .56$ (SE = .16), $p < .001$ Bopo combination, $\beta = .45$ (SE = .15), $p = .003$ FCE, $\beta = .17$ (SE = .06), $p = .004$ FCE x Fitspiration combination, $\beta = .26$ (SE = .09), $p = .005$ FCE x bopo images, $\beta = -.24$ (SE = .09), $p = .008$
Believability	F (11, 448) = 10.77, $p < .001$ ; $R^2 = .21$	Fitspiration combination, $\beta = -.87$ (SE = .19), $p < .001$ Bopo images, $\beta = .86$ (SE = .18), $p < .001$ FCE x bopo images, $\beta = -.31$ (SE = .11), $p = .004$ FCE x bopo combination, $\beta = -.29$ (SE = .11), $p = .007$
Intention	F (14, 445) = 3.62, $p < .001$ ; $R^2 = .10$	Implicit body image, $\beta = .51$ (SE = .23), $p = .03$ Explicit attitude, $\beta = .23$ (SE = .10), $p = .004$ FCE, $\beta = .40$ (SE = .12), $p = .001$

#### Significant indices of moderated mediation

Fitspiration combination condition: at low (effect =  $-.28$  [SE = .13], LLCI =  $-.56$ , ULCI =  $-.04$ ) and mean levels of FCE (effect =  $-.18$  [SE = .09], LLCI =  $-.38$ , ULCI =  $-.02$ ), attitude mediated intention

Bopo image condition: at low FCE (effect =  $.15$  [SE = .08], LLCI =  $.02$ , ULCI =  $.33$ ), attitude mediated intention

Note: lower level confidence interval = LLCI; upper level confidence interval = ULCI; FCE = fitspiration-related cognitive error



*Figure 3.* Differences in believability of the stimuli by condition at different levels of FCEs.  
Notes: FCE = fitspiration-related cognitive error.

Hypothesis 2d was partially supported. The overall model accounted for 10% of the variance in intention. Implicit body image, explicit attitudes, and believability were significantly related to intention. Higher scores on any of these constructs was related to greater intention to exercise. Several indexes of moderated mediation were significant, and the confidence intervals did not cross zero (see supplementary analysis file) indicating that FCEs moderated the indirect effects of some of the conditions on intention through explicit attitude. Specifically, in the fitspiration images with text condition, explicit attitude mediated intention at low and mean levels of FCEs. Participants with low or average FCEs, who reported disliking the stimuli more, had greater intention to exercise. Conversely, in the bopo images condition, attitude mediated intention for participants with the lowest FCEs; participants with the lowest FCEs who reported liking the bopo

images more, reported greater intention to exercise. None of the indexes of moderated mediation were significant for believability nor implicit body image.

## DISCUSSION

Fitspiration that features women typically shows thin and toned bodies and includes text that targets appearance as the desired outcome of exercise (Boepple et al., 2016; Rounds & Stutts, 2020). While there may be relatively transient enhancements to fitness motivation, fitspiration commonly stigmatizes larger bodies, promotes thinness, and may include messages that reinforce excessive exercise. By contrast, bopo, while also objectifying the body (Fredrickson & Roberts, 1997), shows more diverse, generally larger bodies, and tends to include text that promotes body acceptance and healthy approaches to exercise (Vandenbosch et al., 2022). However, it is not clear how images and text may differentially affect consumers of such media (Rodgers et al., 2022; Tiggemann et al., 2020). Therefore, the current research sought to examine the effects of fitspiration images, text, or images with text, compared to bopo images, text, or images with text on implicit body image, attitudes toward the media, believability of the media, and exercise intentions. The possible moderating effects of fitspiration-related cognitive errors (FCEs), where a person might magnify the impact of not giving full effort while exercising as often portrayed in fitspiration, were also examined.

A main finding, in partial support of the first hypothesis, was that the fitspiration images with text (i.e., images of thin women with text emphasizing hard exercise as the way to achieve such a body) were significantly more disliked and less believed compared to every other condition, including fitspiration images or text alone. This supports the broader social media research suggesting image-based social media may lead to greater dysfunctional body image perceptions compared to text-based ones (Vandenbosch et al., 2022). Images may be more likely to evoke stronger negative feelings than text (Karsay et al., 2021). FCEs further moderated this relationship; participants in the fitspiration images with text condition who had low or average amounts of FCEs reported lower explicit attitudes and believability of the stimuli. Contrary to the first hypothesis, there were no differences between conditions on implicit body image.

It was also hypothesized that participants who viewed the fitspiration images, text, or images with text, and made more FCEs would have lower implicit body image, explicit attitudes toward the media, and believability, which would be negatively related to intention. This hypothesis was not supported. Rather, the results of the moderated mediation analysis showed that although participants in the fitspiration images with text condition who had low or mean FCEs reported lower attitudes, they had higher exercise intention. In support of other cognitive errors literature (Blumenkrans & Locke, 2024; Locke et al., 2025), this finding may indicate that making fewer cognitive errors reflects a healthier perspective about exercise; that is, people who make fewer FCEs are less attracted to the extreme message conveyed and don't believe it but still intend to exercise. It may also be that individuals viewing these messages perceive themselves as too dissimilar to the images depicted and are less likely to make social comparisons, contributing to lowered believability of the fitspiration media. Conversely, participants who make more FCEs may find fitspiration motivational or aspirational but do so because of unhealthy ideas about exercise. For example, researchers examined the perceived influence of fitspiration on people who choose to engage with it and found that many use it for goal setting and endorsed the message that they could achieve their appearance goal through hard work and by not being lazy (Raggatt et al., 2018). But the participants also reported higher rates of psychological distress and disordered eating compared to population levels.

In contrast, participants in the current study who were in the bopo images condition (i.e., viewed pictures of women in larger bodies exercising) rated the stimuli as more believable compared to every other condition. Again, this may be due to social comparisons (Thompson et al., 1999), whereby the bodies depicted in bopo images were perceived as similar to participants, which may have contributed to increased believability of the images. However, it may be that bopo offers a different lens through which women may engage in self-objectification. Thus, contrary to the second hypothesis, there was no benefit of bopo images combined with text emphasizing self-care and exercise as a celebration of what a body is capable of. This aligns with previous research that showed that images were more influential than text on body dissatisfaction or body appreciation in general (Tiggemann et al., 2020). The current research also showed that participants

who made fewer FCEs reported higher attitudes toward the bopo images, bopo text, or bopo images with text compared to fitspiration stimuli, partially supporting hypothesis 1c. Rodgers and colleagues (Rodgers et al., 2022) argue that the text included in bopo media may still highlight tensions about one's body. In the current study, such tensions may have led to lower attitudes toward bopo stimuli that contained text compared to the bopo images alone. Further, it is possible that women viewing the bopo stimuli were engaging in self-comparison with the images regardless of the intended message, contributing to lowered bopo-related attitudes.

The results of the moderated mediation further showed higher intentions to exercise among participants who made fewer FCEs and who reported higher explicit attitudes toward the bopo images. Previous research has shown no effect of weight diverse compared to thin-ideal, or control videos on exercise intention (Stewart & Ogden, 2021), whereas others have shown that body positive images did increase intention to exercise, but so did fitspiration images (Wood & Pila, 2022). The results of the moderated mediation in the bopo images condition may indicate that making fewer FCEs reflects a healthier perspective about exercise. This supports Beck's (1976) cognitive errors model and past exercise-based research (e.g., Blumenkrans & Locke, 2024) implicating higher levels of cognitive errors as a factor that exacerbates maladaptive behaviors. However, a deeper investigation into the mechanisms that underpin FCEs is warranted.

It was also hypothesized that implicit body image, explicit attitudes, and believability would be positively related to exercise intentions. Again, this hypothesis was partially supported as it was found that across all conditions implicit body image and explicit attitudes toward the media were positively related to exercise intentions. As noted earlier, there were no differences in implicit body image between conditions, which indicates that in general, positive impulsive feelings about one's body may be related to the intention to exercise. It may be that both forms of exercise social media influence body objectification and comparison such that previous exposure to these media have already resulted in well-formed implicit body image that is less susceptible to change (Strack & Deutsch, 2004). Yet, implicit body image was not related to explicit attitudes nor believability. In other words, it could be that a one-time viewing of fitspo or bopo was insufficient for influencing a change in implicit body image, nor was it sufficient for

producing elaboration through reflective processes related to the stimuli (i.e., attitudes, believability). This supposition aligns with cognitive bias modification research which generally requires multiple exposures to produce even small changes in implicit biases (Jones & Sharpe, 2017). However, representations of one's body within the impulsive system can result in reflective propositions, which can include intending to do a behaviour (Strack & Deutsch, 2004). It may be then, that for women with positive implicit body image, upon reflective elaboration, they propositionally endorsed the intention to exercise as a means of maintaining already-held ideas about their bodies. Nonetheless, the stability of implicit body image in the face of polarizing exercise social media is unclear, and more research is needed to examine this phenomenon.

Social media trends, like fitspiration, perpetuate societal norms emphasizing women's appearance. Objectification theory argues that sexual objectification is comprised of the experience of being minimized into the physical body (Fredrickson & Roberts, 1997). The internalization of these norms leads to self-objectification. Social comparison theory posits that comparisons between the self and others is more likely in situations where the two are perceived as similar (Festinger, 1954). Women viewing these media may have been more likely to draw comparisons between their own bodies and the images depicted by the fitspiration and bopo images. Social comparisons which emphasize a fit body ideal dissimilar to their own, may exacerbate self-objectification among viewers. This study examined factors associated with believability of fitspiration and bopo, but the extent to which these factors cause or are caused by social media use is unclear. Future research could experimentally examine the extent to which FCEs and implicit processes underlie the process of self-objectification and the extent to which social media exposure exacerbates or mitigates these factors.

### **Implications**

There are several important implications of this research. First is the notion that the image portion of exercise-based social media may be the most evocative component of the media. This may suggest that image-based social media (e.g., Instagram) may evoke stronger negative self-beliefs compared to text-based ones (e.g., Facebook). It remains unknown and the role of future research to examine whether video-based media evokes even stronger negative self-beliefs compared to image or text. Second, findings from our

second purpose highlight the insight that a dual processing approach can bring understanding to fitspiration and bopo media. Given that associative and propositional beliefs do not always align, findings may suggest that associative processes may have a more direct link to physical activity intentions and are less likely to be impacted by a one-time exposure to social media than propositional beliefs, which may also be moderated by FCE level. Third and relatedly, those with high FCEs may be more susceptible to the potential negative appearance-related outcomes associated with social media exposure. Those susceptible to making cognitive errors may benefit from interventions to reframe the negative and biased thoughts associated with FCEs (e.g., Locke, McKay, & Jung, 2019). Applied to FCEs, reframing would help the individual learn to identify the exaggerated body-related ideals promoted in fitspiration or bopo, challenge the accuracy of these ideals, and then reframe their view to be more adaptive.

### **Limitations**

Several limitations of this research should be noted. The measure of implicit body image only had words as stimuli and not images. Because images may elicit stronger or different responses, it is possible that a similar measure using images (e.g., of a participant) could more effectively measure implicit body image. Another limitation is that the research was conducted over the internet and there was no control over where the research was conducted. The context in which participants did the study (e.g., noise) may have influenced the results. This also meant we could not employ eye-tracking technology as a manipulation check. An additional limitation was the study-created bopo media which were not pilot tested, whereas the fitspo media were used in previous research (Berry et al., 2023). The content of the media being tested consisted of images and text. Given the proliferation of video-based social media (e.g., Reels, TikTok) future research should seek to tease apart the audio/text from the video component of video-based fitspiration/bopo media. Finally, intention is not a perfect predictor of behaviour (Rhodes & Rebar, 2017) and similar research would benefit from including an objective measure of actual exercise behaviour after viewing fitspiration or bopo media.

### **Conclusion**

Social media designed to motivate physical activity may be interpreted and internalized differently when it focuses on achieving appearance ideals compared with

body positivity encouragement. This research sought to examine the independent effects of fitspiration and bopo images and text. Results differed by the focus of the message type. In the case of fitspiration, the images with text were the least well liked but making fewer FCEs may have mitigated the effects of the media. Interventions to reduce the negative impacts of fitspiration among women prone to making FCEs are needed. By contrast, the bopo images alone were the most positively received, thus supporting previous research indicating that the text included in bopo may still have negative effects. It may be that any exercise-related social media carries with it the potential to negatively affect women's perceptions of self and exercise.

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## Funding and Acknowledgements

This research was funded by the Social Sciences and Humanities Research Council of Canada.