



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

A comparison of the impact of exposure to fit ideal and non-fit ideal body shapes in fitspiration imagery on women

Citation for published version:

Barnes, K, Newman, E & Keenan, G 2023, 'A comparison of the impact of exposure to fit ideal and non-fit ideal body shapes in fitspiration imagery on women', *Computers in Human Behavior*, vol. 144, 107728. <https://doi.org/10.1016/j.chb.2023.107728>

Digital Object Identifier (DOI):

[10.1016/j.chb.2023.107728](https://doi.org/10.1016/j.chb.2023.107728)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Publisher's PDF, also known as Version of record

Published In:

Computers in Human Behavior

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.





A comparison of the impact of exposure to fit ideal and non-fit ideal body shapes in fitspiration imagery on women

Kate Barnes, Emily Newman^{*}, Grace Keenan

School of Health in Social Science, University of Edinburgh, Old Medical School, Elsie Inglis Quadrangle, Teviot Place, Edinburgh, EH8 9AG, United Kingdom

ARTICLE INFO

Handling Editor: Catalina L Toma

Keywords:

Fitspiration
Appearance comparison
Body image
Social media
Instagram

ABSTRACT

Previous research indicates a negative impact of exposure to fitspiration on women's mood, self-esteem, and body satisfaction. Fitspiration typically features thin and toned bodies, but there is some variation in the body types shown, which may influence its effects on viewers. Participants (N = 605 women) were randomly allocated to view fit ideal, non-fit ideal, or neutral control images from Instagram, and completed state measures of appearance self-esteem, self-objectification, body satisfaction, and negative mood before and after image exposure. Women in the fitspiration conditions also reported level of state appearance comparison with women depicted and how inspired they were to do more exercise. Fit ideal and non-fit ideal images had a negative effect on body satisfaction. However, participants in the non-fit ideal condition showed an increase in state self-esteem and a decrease in state negative mood following image exposure, in contrast to the fit ideal condition. Condition did not have an impact on state self-objectification and there was no difference between fitspiration conditions in how inspired participants felt to do more exercise. State appearance comparison was correlated with change in self-esteem, negative mood, body satisfaction scores and with how inspired individuals felt to exercise. Small effect sizes and limitations indicate that replication of findings is required. However, the effects of viewing fitspiration imagery may depend on thinness and muscle tone of models shown, and level of comparison with people portrayed.

1. Introduction

Media content presents a thin ideal body type to women and girls and promotes the message that thinness signifies success and health (Grabe et al., 2008; Hesse-Biber et al., 2006). For most women, this thin ideal does not match with their own body and is not easily achieved. Consequently, media consumption is associated with an internalisation of a thin ideal and a negative body image (Grabe et al., 2008; Levine & Murnen, 2009). Negative body image, such as dissatisfaction with the appearance of one's body, is associated with higher levels of disordered eating, drug use, self-harm, life satisfaction, and depression (Bornioli et al., 2019, 2021; Davis et al., 2020; Stice & Shaw, 2002), and therefore represents a public health concern. While research has tended to focus on the negative outcomes associated with body dissatisfaction, benefits of positive body image, including body appreciation and acceptance, have also been reported. These benefits include less alcohol and cigarette use, higher self-esteem, and optimism (Andrew et al., 2016; Avalos et al., 2005).

The rise of social media over the last fifteen years has presented new opportunities and challenges for women's body image. The continual addition of new content, and the accessibility of social media through mobile phone apps, means that women are exposed to media messages more than ever before. This has led to concerns about its negative impact on body image. On the other hand, the ability for members of the public to upload content means that a more diverse range of bodies is shown than in traditional media forms, including those which do not conform to a thin ideal (Slater et al., 2017). Messages of body acceptance, body appreciation, and body positivity have also emerged as popular social media trends (Cohen et al., 2019). Furthermore, being able to comment on others' media posts means that there is scope for the public to express their views about content, and directly challenge or endorse the thin ideal presented.

One global social media movement being scrutinised for its impact on body image is 'fitspiration' (an amalgamation of 'fitness' and 'inspiration'). Fitspiration content typically consists of images, videos, and advertisements, ostensibly intended to motivate its viewers to

Abbreviations: VAS, visual analogue scale; SSES, state self-esteem scale.

^{*} Corresponding author.

E-mail address: emily.newman@ed.ac.uk (E. Newman).

<https://doi.org/10.1016/j.chb.2023.107728>

Received 5 April 2022; Received in revised form 20 January 2023; Accepted 28 February 2023

Available online 1 March 2023

0747-5632/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

exercise and pursue a healthier lifestyle. Fitspiration content is pervasive on social media, demonstrating its popularity. For example, a search by the current authors found that Instagram contained 492 million #fitness posts and 19.5 million #fitspiration posts (April 2022). Despite fitspiration's purported benevolent intentions, analyses indicate that content frequently emphasises weight loss, promotes the importance of appearance rather than physical fitness or health, and often presents individuals in an objectified way (Boepple et al., 2016; Deighton-Smith & Bell, 2018; Santarossa et al., 2019; Tiggemann et al., 2018). Fitspiration does not predominantly present the thin body ideal, but instead a 'fit ideal', characterised by a thin, yet toned and muscular, physique. A content analysis of fitspiration on Instagram revealed that images promote a body shape that is thin and muscular, where 56.2% of the women shown had visible muscularity and 75.2% were thin (Tiggemann & Zaccardo, 2018). Similarly, a content analysis of fitspiration on Pinterest indicated that images typically featured thin and muscular women (Simpson & Mazzeo, 2017). While the fit ideal potentially signals healthy behaviours in terms of diet and physical activity, it still perpetuates the message that appearance is important, rather than the physical or mental health benefits of exercise. Furthermore, a body that is both thin and muscular is arguably even harder for women to achieve. This may lead to greater perceived discrepancy between the ideal body and one's own body and therefore greater body dissatisfaction (Tiggemann & Zaccardo, 2018). Findings from a recent study indicated that internalisation of both a fit and a thin ideal was associated with lower body satisfaction (Donovan et al., 2020). Furthermore, experimental research found that women exposed to fit ideal imagery had higher body dissatisfaction than women exposed to thin-ideal imagery (Robinson et al., 2017). Therefore, viewing a fit ideal may be just as harmful, if not more so, for body image than the thin ideal.

Experimental evidence has demonstrated that exposure to fitspiration imagery from social media has a negative short-term impact on women's body image, mood, and appearance self-esteem. In the first study to explore this effect, Tiggemann and Zaccardo (2015) compared the effects of viewing fitspiration and travel (control) imagery in women. The authors reported significantly lower body satisfaction and appearance-related self-esteem, and greater negative mood, in the fitspiration group. Subsequent studies have also reported a negative effect of fitspiration imagery on body satisfaction (Dignard & Jarry, 2021; Griffiths & Stefanovski, 2019; Prichard et al., 2020; Rounds & Stutts, 2021), though not universally. One study reported a negative impact on self-compassion, but not body satisfaction or mood, when comparing exposure to either fitspiration or neutral imagery (Slater et al., 2017). A recent study using an ecological momentary assessment design showed no effects of viewing fitspiration on negative mood or several aspects of state body satisfaction (Krug et al., 2020). Therefore, there are some inconsistencies in reported findings, which may in part relate to differences within the type of content tagged as fitspiration.

Research has started to explore whether the type of fitspiration content that women are exposed to influences the observed effects. In one study, the effects of viewing functional (where an individual is depicted performing exercise) or non-functional (where the individual is posed but not performing exercise) fitspiration images were compared (Prichard et al., 2018). The results showed that both conditions were associated with a negative change in mood and body satisfaction, but no difference between conditions was reported. Mulgrew and Tiggemann (2018) also explored the effect of viewing functional and non-functional images in women. This study did not look specifically at fitspiration imagery, but images selected for the functional condition showed women in sportswear engaging in exercise and therefore are consistent with elements of fitspiration imagery. Participants exposed to functional images (models depicted in sportswear and emphasising body functionality through physical movement), or who were prompted to focus on body function, had worse body satisfaction than participants shown posed images of models in swimwear, or prompted to focus on the model's appearance. Tasks requiring participants to reflect on

functionality of the body have been associated with positive body image outcomes, and are theorised to protect against some negative effects of viewing idealised images of women (Alleva et al., 2015, 2016). However, reflecting on one's own functionality is different from viewing images of another's performance in fitspiration images, which could lead to unfavourable comparisons and trigger feelings of inadequacy. Furthermore, in Prichard and colleagues, and Mulgrew and Tiggemann's studies, the women depicted were attractive and thin; therefore, it may be difficult for participants to avoid comparing their physical appearance with these ideals.

For this reason, Prichard et al. (2018) suggest that future research compares functional and posed images while also manipulating the body size of models to which participants are exposed. Williamson and Karaszia (2018) explored the effect of viewing posed versus functional images of models who either conformed to the thin ideal or not on female participants' body appreciation (acceptance and respect for the body and its capabilities). They reported an effect of model body size, where participants showed higher body appreciation after exposure to models who did not conform to the thin ideal. However, there was no interaction effect between body size, pose and time, indicating that this positive effect of viewing models who did not fit with the thin ideal was not contingent on the pose. Mulgrew et al. (2020) similarly tested the effect of viewing active or posed images of thin versus average sized female models on appearance and functionality body satisfaction. Exposure to thin models led to lower appearance satisfaction than exposure to average sized models, supporting the detrimental effects of viewing the thin ideal. Whether the model was posed or active had no effect for the thin model conditions; however, when the model was average sized, appearance satisfaction was lower in the active condition, compared with the posed condition. The results also suggest that thinness is important when viewing model images and additionally that pose is not negligible. This study did not specifically look at fitspiration imagery, but 'active' models were depicted in sportswear performing exercise and therefore represent a similar type of stimulus. However, the authors did not report the statistical difference in appearance satisfaction following exposure to average sized or thin models in these active conditions only, as an indication of the effect of body size when viewing fitspiration-type imagery.

The effect of body type of women depicted within fitspiration imagery has been looked at by Robinson et al. (2017), who compared the effect of viewing two types of fitspiration imagery (athletic ideal and muscular ideal) with the traditional thin ideal. In this study, a distinction was made between athletic and muscular ideals: the former showed individuals who were medium to high in thinness, with little body fat and some visible muscle tone, while the latter showed women who were medium in thinness, but rated high in visible muscularity (e.g., legs, arms, and abdomen). The results indicated that exposure to either the thin ideal or athletic ideal was associated with lower body satisfaction in women, but this effect was not evident for muscular ideal images. This outcome supports the idea that there are differential effects of fitspiration according to the type of body shown, and that thinness may be an important dimension to consider in predicting a negative impact of fitspiration content.

Interestingly, experimental findings have suggested that women feel inspired to improve their fitness after viewing fitspiration, which may contribute to its popularity and represent a potential positive outcome (Prichard et al., 2020; Tiggemann & Zaccardo, 2015). Nevertheless, there is little evidence that this reported inspirational effect translates into actual exercise behaviour. In the study by Robinson et al. (2017), women in the athletic ideal fitspiration condition reported the greatest inspiration to improve fitness and be active. However, there was no difference in exercise behaviour between either of the two fitspiration image conditions and the thin ideal condition, in terms of the distance walked on a treadmill. This study did not include a neutral control group with whom to compare exercise level; however, a later study did compare distance travelled on treadmill between women shown either

fitspiration or travel images. In this case, the researchers also found no difference in distance travelled between the two image groups, though interestingly, those in the fitspiration group reported greater exertion than participants in the other condition (Prichard et al., 2020).

The negative effects of media images on body image have been attributed to the process of social comparisons. Social Comparison Theory (Festinger, 1954) proposes that individuals compare themselves with others, to ascertain their own social standing and success. In the context of media images, women may compare and evaluate their appearance, including their bodies, against those of women in idealised images (Want, 2009). According to the theory, upward comparisons, where the individual views herself unfavourably with others, may lead to lowered self-esteem or body satisfaction. In contrast, a lateral or downward comparison, where the woman evaluates herself as equal to or favourably with the target image, would have a positive outcome for body image and self-esteem. Fitspiration images show women with bodies that are difficult to obtain, and which require a particular diet and exercise regime, so are likely to result in upward comparisons for most women. Furthermore, photographs posted on social media can be edited and manipulated, which means that women are comparing themselves unfavourably with images that are not just idealised, but also unrealistic. The role of social comparisons in the relationship between fitspiration exposure and outcomes is supported by experimental research. Findings have shown that exposure to fitspiration imagery results in higher levels of appearance comparison than does control imagery, and that appearance comparison mediates the effect of the image condition on study outcomes, including body (dis)satisfaction, appearance-related self-esteem, and mood (Dignard & Jarry, 2021; Tiggemann & Zaccardo, 2015). This suggests that the effect of fitspiration on social comparison is a plausible mechanism for its negative impact.

Content analyses have revealed that fitspiration images often show women in an objectified or sexualised manner (e.g., Boepple et al., 2016; Deighton-Smith & Bell, 2018; Murashka et al., 2021). According to Objectification Theory (Fredrickson & Roberts, 1997), objectified or sexually objectified portrayal of women's bodies in visual media leads women to view and evaluate themselves from an outsider's perspective, i.e., self-objectify. Previous experimental research has reported that exposure to images representing the thin ideal is associated with self-objectification, relative to neutral images (Cohen et al., 2019). However, Prichard et al. (2018) did not find an effect of fitspiration image exposure on state self-objectification. These authors suggested that the lack of effect was due to the focus on fitness, even in posed images, which may not trigger self-objectification in the same way as images of the thin ideal. As self-objectification has rarely been explored as an outcome in fitspiration research, it was included in the present study.

The research so far therefore points towards a deleterious effect of viewing fitspiration content on women's body image, mood, and appearance-related self-esteem, though there is scarce evidence for its effect on self-objectification. Despite these negative effects, fitspiration imagery does appear to be inspirational. Findings also suggest that thinness of models might be a critical component of the negative effect of fitspiration (Robinson et al., 2017). Therefore, the current study aimed to test whether it is possible to harness the positive effects of fitspiration while reducing negative effects, through manipulation of body type shown. Social media sites contain a vast array of user-generated content, and individuals shown within images tagged as fitspiration have a range of body types, meaning it is possible to experimentally manipulate the body type depicted. As the fit ideal has been identified as the prevalent body type in fitspiration content (e.g., Simpson & Mazzeo, 2017), the current study explored the effect of viewing either fit ideal or non-fit ideal body types from content tagged as fitspiration. Fit ideal was characterised by images of women with a low percentage of body fat and high visible muscularity, as guided by previous findings on the fit ideal body type, typical of fitspiration content

(Boepple, 2016; Tiggemann & Zaccardo, 2018). The non-fit ideal was represented by bodies with more visible body fat and low visible muscle tone. In both fitspiration conditions, posed images were used. These conditions were compared with a control condition, viewing interior design imagery. The differential impacts of image condition were established by the comparison of pre- and post-exposure measures of appearance self-esteem, state self-objectification, body satisfaction, and mood. The effect of both types of fitspiration imagery on self-reported inspiration to exercise was also explored, to test whether this possible positive outcome of viewing fitspiration was equivalent between fit ideal and non-fit ideal conditions. Additionally, based on Social Comparison Theory, the study tested the role of social comparisons in this process, by exploring whether the level of appearance comparison was correlated with change in outcome measures, for those women in the fitspiration conditions.

Specific hypotheses tested were.

1. Exposure to fit ideal imagery will result in a greater adverse effect on body image, mood and appearance self-esteem when compared to exposure to non-fit ideal imagery
2. Change in state body satisfaction, mood, and appearance self-esteem scores will correlate with level of state appearance comparison

2. Methods

2.1. Design

This study employed a between-subjects, experimental design with image type (fit ideal, non-fit ideal, or a control imagery category) as the independent variable. The dependent variables were state self-objectification, appearance self-esteem, negative mood, and body satisfaction.

2.2. Participants

Participants were recruited via social media platforms. Initially 1454 women entered the study; however, 454 did not reach the end of the study, and a further 166 did not complete at least 80% of each measure and so were removed from analysis. Two participants reported their age as under 18, and so were also removed from the dataset. Previous fitspiration research has typically involved samples aged between 17 and 30 years (cf. Prichard et al., 2018; Tiggemann & Zaccardo, 2015), therefore of the 832 remaining participants we selected those aged between 18 and 30, giving us a final sample size of 605. Age was available for all participants and 587 provided weight and height data. From these data, participants had a mean age of 23.51 years ($SD = 3.13$, range = 18 to 30) and a mean body mass index (BMI; kg/m^2) of 24.05 ($SD = 4.34$, range = 15.62 to 45.62). Participants were randomly allocated by the online survey software to one of the three conditions, which led to 195 participants in the fit ideal, 221 in the non-fit ideal, and 189 in the control condition.

To test whether participants with particular baseline or demographic characteristics were more likely to withdraw from the study, we compared those included in the analysis ($n = 605$) with those who withdrew during or after image exposure ($n = 150$). Independent t -tests and chi square tests revealed no differences between groups in age, BMI, social media usage, exercise frequency, or baseline measures of state self-objectification and body satisfaction (all $ps > .05$). Those who did not withdraw during/after image exposure had lower baseline state negative mood, $t(263.01) = 3.28$, $p < .001$, $d = 0.31$, and higher baseline appearance self-esteem, $t(753) = 2.09$, $p = .037$, $d = 0.20$. We then tested whether there were any differences in demographics and baseline state measures by withdrawal status (withdrew during/after image exposure versus completed the study) and image condition. Chi square tests and two-way ANOVA indicated no significant interactions (all $ps > .05$). This suggested that there were no differences in

withdrawal between conditions according to individuals' baseline characteristics.

2.3. Image selection

Image selection involved a two-step process. First, a pool of 36 images per category were sourced from public Instagram accounts. Images for the fitspiration conditions were identified by searching the most popular images marked as #fitspiration and #fitspo. The image set captured a racially diverse set of women. Each image showed the individual's full body, with a clearly visible face, wearing leggings and a sleeveless top. When selecting images, researchers were informed by existing content analyses when determining, and thus categorising models into fit ideal or non-fit ideal groups (Talbot et al., 2017; Tigge-mann & Zaccardo, 2018). The women pictured in the fit ideal condition had visible muscle tone (e.g., defined abdominal muscles), and were slim in build, with low visible body fat. Non-fit ideal images showed women with higher levels of body fat, and low visible muscularity (e.g., non-visible abdominal muscles), to provide a contrast to the fit-ideal condition. In both fitspiration conditions, posed images were selected. In line with past research (Slater et al., 2017) images labelled as interior design were used as the control condition, by searching the most popular images tagged as #interiordesign.

Second, eleven adult women with a mean age of 25.09 years ($SD = 9.08$), were asked to independently rate the attractiveness of the people shown in the fitspiration images ("how attractive is the individual in the following image?") and the aesthetic appeal of the interior design images ("how aesthetically pleasing do you find the following image?"), using a 10-point scale (1 = *not at all*, 10 = *very*). Images selected for the study were taken from the interquartile range of perceived attractiveness/aesthetic appeal scores of each group to increase their representability of the category, resulting in 17 images for each condition (fit ideal fitspiration $M = 7.42$, $SD = 0.21$; non-fit ideal fitspiration $M = 6.80$, $SD = 0.29$; interior design $M = 6.68$, $SD = 0.24$). A paired samples *t*-test was used to explore whether there was difference in ratings of attractiveness between the two fitspiration conditions from the pilot study. While there was not a statistically significant difference within this small sample, the moderate effect size indicated that models were not ideally matched on attractiveness, $t(10) = 1.84$, $p = .096$, $d = 0.55$, where fit ideal models had a higher mean attractiveness score ($M = 7.42$, $SD = 0.84$) than non-fit ideal models ($M = 6.80$, $SD = 0.93$). Participants in the current study who were allocated to one of the fitspiration conditions were also asked to rate the attractiveness of each model shown, as part of the procedure (see Section 2.5). Analysis indicated that attractiveness ratings given for women depicted in the fit ideal condition, $M = 4.02$ ($SD = 0.61$) were significantly higher than attractiveness ratings for the models shown in the non-fit ideal condition, $M = 3.60$ ($SD = 0.56$), with a moderate sized effect, $t(414) = 7.32$, $p < .001$, $d = 0.72$.

2.4. Measures

2.4.1. Participant characteristics

Participants were asked to self-report their age, height, and weight. Participants also indicated their typical daily amount of time on social media, using response options: *Never use social media*, *1–5 min*, *5–15 min*, *15 min to an hour*, *1–3 h*, *over 3 h*, and frequency of exercise, using response options: *Less than once a month*, *1–2 times a month*, *once a week*, *twice a week*, *3+ times a week*.

2.4.2. State appearance self-esteem

State appearance self-esteem was measured using the State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991). This is a 20-item scale where participants indicate how true each statement is of them "right now" on a 5-point Likert scale (1 = *not at all*, 5 = *extremely*). The scale measures three self-esteem factors: performance, social, and

appearance. Ratings for the six appearance subscale items were summed to provide a total appearance self-esteem score. The appearance subscale had excellent internal reliability in the current sample, pre ($\alpha = 0.85$), and post image exposure ($\alpha = 0.87$).

2.4.3. State self-objectification

State self-objectification was measured using Noll and Fredrickson's (1998) Self-Objectification Questionnaire. This measure requires participants to rank the importance of ten appearance (objectified) and competency (non-objectified) items. The total self-objectification score is obtained by subtracting the sum of the competency-based item ranks from the sum of the appearance-based item ranks. Scores range from -25 to $+25$, with a higher, positive score indicating a dominant emphasis on appearance, or greater levels of self-objectification. The tool is the most widely used measure of self-objectification with good face validity (Wollast et al., 2021), construct validity (Noll, 1996) and reliability (Calogero & Jost, 2011). In the current study, participants were prompted to rank the importance of the items 'right now' to adapt the scale into a state measure.

2.4.4. State body satisfaction and mood

State body satisfaction and mood were measured using visual analogue scales (VAS), based on those used by Tiggemann and Zaccardo (2015) and originally devised by Heinberg and Thompson (1995). To measure state body satisfaction, participants were asked how satisfied they were with their own weight and appearance right now, on a scale of 0 = *not at all*, to 100 = *very satisfied*. An overall score for state body satisfaction was determined by taking the mean of the two weight and appearance scores. State body satisfaction demonstrated good internal consistency (pre-exposure $\alpha = .79$, post exposure $\alpha = .83$). For state mood, participants were requested to indicate how they were feeling "right now" along five mood dimensions ("anxiety", "depression", "happiness", "anger", and "confidence"), from 0 = *not at all* to 100 = *very much*. An overall score was calculated by reversing the scores for confidence and happiness and then calculating the mean score, so that higher scores represented a more negative mood. Internal reliability for mood was acceptable to good (pre-exposure $\alpha = .78$, post exposure $\alpha = .80$).

2.4.5. State appearance comparison

Tiggemann and McGill's (2004) State Appearance Comparison Scale (SACS) was used to assess participants' level of appearance comparison when viewing the fitspiration images. Participants rated the degree to which they considered their appearance, and compared their overall body image and specific body parts when viewing these images using three Likert scales (1 = *no thought*, 7 = *a lot of thought*). An overall score was derived from the mean of the three item scores, where a higher represented a higher level of appearance comparison frequency, but did not indicate the direction (upwards or downwards) of comparison. The SACS was only completed by participants in the two fitspiration conditions, because the questions were not applicable to the control condition. In the current sample, the scale showed very good internal reliability for both fit ideal ($\alpha = 0.93$) and non-fit ideal ($\alpha = 0.89$) conditions.

2.4.6. Inspiration to exercise

To compare the effectiveness of fit ideal and non-fit ideal in fulfilling their intended purpose in inspiring participants to exercise, participants in both of the fitspiration image conditions were asked a single question devised by the researchers, "Having viewed the images, how inspired do you feel right now to do more exercise?", on a five-point scale, where 1 = *not at all* and 5 = *very inspired*.

2.5. Procedure

This study was approved by [authors institution]. Participants were recruited through the social media platforms Facebook and Instagram,

for a study on, ‘the impact of social media trends on women’ and were directed to an online experiment hosted on the survey platform Qualtrics (Qualtrics, Provo, UT). Prior to starting the study, all participants were provided information about the study and the nature of the tasks but were not told that the study was about the effects of viewing fitspiration images. The participants were instead informed that the study aimed to investigate the impact of social media trends on female viewers and that they must be female and aged over 18 years to take part. Participants provided consent electronically. On starting the study, participants provided information about age, height, weight, and social media usage, then completed time one (pre-exposure) measures of state self-esteem, body satisfaction, negative mood, and self-objectification. Participants were randomly allocated to one of the three conditions by the survey software. In all conditions, participants were shown 17 images one by one. The image order was not randomised. Participants were not timed on how long they spent observing each image; however, to ensure participants attended to each image, they were asked two questions per image. In the fitspiration image conditions, they were asked, ‘how attractive do you think the person in this photo is?’ (1 = *extremely unattractive*, 5 = *extremely attractive*) and ‘how healthy do you think the person in this photo is?’ (1 = *extremely unhealthy*, 5 = *extremely healthy*). In the interior design image condition, they rated the statements, ‘The image inspires you to alter the interior of your home’ (1 = *strongly disagree*, 5 = *strongly agree*), and ‘you are inspired to buy the products in the image for your home’ (1 = *strongly disagree*, 5 = *strongly agree*). Post exposure to fitspiration images, participants were asked to complete measures of inspiration to exercise and appearance comparison. Participants in all conditions then completed the four state measures for a second time. At the end of the study, participants were presented with a written debrief on the aims of the study, and signposted sources of support in case of concerns about body image or eating behaviour. The procedure took approximately 20 min for each participant.

2.6. Analysis

Quantitative analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 25 (IBM Corp. Raggatt et al., 2018) using a significance level of 0.05. Data were screened for missing data and univariate outliers on the outcome variables using boxplots and for multivariate outliers using Mahalanobis distance scores and Cook’s *D* values. No outliers were identified. Normality and homogeneity of variance assumptions were met. Descriptive statistics were calculated for participant characteristics, and a series of mixed ANOVAs assessed the effects of time and image condition on dependent variables. Simple effects analysis was used to interpret significant interaction effects. Independent *t*-tests assessed whether there were significant differences in appearance comparison and inspiration to exercise more between the two fitspiration conditions. To determine if state appearance comparison was related to change in outcomes and inspiration levels in the fitspiration conditions, change scores were calculated for state self-objectification, state appearance self-esteem, state body satisfaction and state negative mood and Pearson’s correlations were conducted.

3. Results

3.1. Exercise levels and social media use

Descriptive data showed that 52% of participants exercised 3+ times weekly, with 84% exercising at least once weekly. Two participants did not use social media, however, all except four participants used social media for at least 15 min per day, with 58% using social media for 1–3 h, and 32% using social media for over 3 h daily.

3.2. Baseline differences between conditions

One way ANOVA and chi square tests indicated that there were no significant differences between participants across the three conditions in age, ($F(2, 602) = 0.68, p = .507, \eta^2 = 0.002$), BMI, ($F(2, 584) = 1.27, p = .283, \eta^2 = 0.004$), or exercise level, ($\chi^2(8) = 10.71, p = .219, V = 0.094$). Excluding the four individuals who indicated that they did not use social media for at least 15 min per day, a chi square test indicated no difference in social media usage between the three conditions ($\chi^2(4) = 1.50, p = .826, V = 0.035$).

One way ANOVA also indicated that there were no significant differences between groups in baseline scores for appearance self-esteem ($F(2, 602) = 0.05, p = .951, \eta^2 < 0.001$), self-objectification ($F(2, 602) = 0.27, p = .761, \eta^2 = 0.001$), body satisfaction ($F(2, 602) = 0.40, p = .673, \eta^2 = 0.001$), and negative mood ($F(2, 602) = 0.17, p = .840, \eta^2 = 0.001$). Descriptive data for outcome measures pre and post image exposure are shown in Table 1.

3.3. Effect of image condition on state appearance self-esteem

Mixed design ANOVA revealed that there was no significant main effect of condition on self-esteem, $F(2, 602) = 0.40, p = .668, \eta^2 = 0.001$, nor time, $F(1, 602) = 0.09, p = .765, \eta^2 < 0.001$. There was a significant interaction between time and condition with a small effect size, $F(2, 602) = 9.11, p < .001, \eta^2 = 0.029$. Simple effects analysis demonstrated that there was a significant increase in appearance self-esteem between pre and post scores in the non-fit ideal condition, $F(1, 602) = 12.53, p < .001, \eta^2 = 0.020$, and a significant decrease in the fit ideal condition, $F(1, 602) = 5.83, p = .016, \eta^2 = 0.010$. There was no significant change in scores within the interior design condition, $F(1, 602) = 0.15, p = .695, \eta^2 < 0.001$.

3.4. Effect of image condition on state self-objectification

Mixed design ANOVA established there was no significant main effect of condition, $F(2, 602) = 0.25, p = .782, \eta^2 = 0.001$, or time, $F(1, 602) = 2.26, p = .133, \eta^2 = 0.004$, for self-objectification. Additionally, there was not a significant interaction between condition and time, $F(2, 602) = 0.88, p = .416, \eta^2 = 0.003$.

3.5. Effect of image condition on state body satisfaction

Mixed design ANOVA established there was no significant main effect of condition for body satisfaction $F(2, 602) = 0.19, p = .830, \eta^2 = 0.001$. There was a significant main effect of time for body satisfaction

Table 1
Descriptive statistics for state measures of appearance self-esteem, self-objectification, body satisfaction, and negative mood.

	Pre-Exposure <i>M (SD)</i>	Post-Exposure <i>M (SD)</i>
Appearance Self-Esteem		
Fit Ideal	17.07 (5.10)	16.69 (5.57)
Non-Fit Ideal	17.05 (4.80)	17.57 (5.04)
Interior Design	17.19 (4.71)	17.13 (4.99)
Self-Objectification		
Fit Ideal	1.18 (12.94)	0.21 (14.07)
Non-Fit Ideal	0.29 (14.23)	-0.01 (14.21)
Interior Design	1.06 (13.39)	1.02 (13.90)
Body Satisfaction		
Fit Ideal	54.33 (23.85)	50.20 (25.85)
Non-Fit Ideal	54.42 (22.83)	52.51 (23.39)
Interior Design	52.54 (23.93)	51.97 (23.59)
Negative Mood		
Fit Ideal	39.71 (18.28)	40.92 (20.07)
Non-Fit Ideal	39.93 (19.19)	38.90 (19.96)
Interior Design	38.87 (18.85)	38.76 (19.45)

with a small effect size, $F(1, 602) = 37.29, p < .001, \eta^2 = 0.058$, indicating that body satisfaction scores were significantly lower across the sample post image exposure. There was also a small, significant interaction between condition and time, $F(2, 602) = 7.96, p < .001, \eta^2 = 0.026$. Simple effects analysis showed that there was a significant decrease in pre to post image-exposure scores in the fit ideal, $F(1, 602) = 42.43, p < .001, \eta^2 = 0.066$, and non-fit ideal conditions, $F(1, 602) = 0.29, p = .001, \eta^2 = 0.017$. However, there was not a significant change in scores within the interior design condition $F(1, 602) = 0.78, p = .377, \eta^2 = 0.001$.

3.6. Effect of image condition on state negative mood

Mixed design ANOVA revealed no main effect of condition, $F(2, 602) = 0.30, p = .739, \eta^2 < 0.001$, or time, $F(1, 602) = 0.01, p = .936, \eta^2 < 0.001$, on negative mood. There was, however, a small, significant interaction between condition and time on negative mood, $F(2, 602) = 5.73, p = .003, \eta^2 = 0.019$. Subsequent simple effects analysis revealed that there was a significant increase from pre and post exposure scores in the fit ideal group, $F(1, 602) = 6.25, p = .013, \eta^2 = 0.010$. There was a significant decrease in negative mood within the non-fit ideal condition, $F(1, 602) = 5.16, p = .023, \eta^2 = 0.008$. There was no significant change within the interior design condition, $F(1, 602) = 0.05, p = .821, \eta^2 < 0.001$.

3.7. State appearance comparison and inspiration to exercise

There was no significant difference in level of appearance comparison reported by participants assigned to the fit ideal condition ($M = 4.65, SD = 1.96$), and those in the non-fit ideal condition, ($M = 4.31, SD = 1.82$), $t(414) = 1.87, p = .062, d = 0.18$. There was no significant difference in reported level of inspiration to exercise between participants in the fit ideal condition ($M = 2.93, SD = 1.16$) and those in the non-fit ideal condition ($M = 2.72, SD = 1.18$), $t(414) = 1.82, p = .069, d = 0.1820$.

3.8. Relationship between outcomes and state appearance comparison

Change in appearance self-esteem, self-objectification, negative mood, and body satisfaction were calculated by subtracting pre-exposure scores from post image exposure scores. The association between these change scores and level of appearance comparison was tested through Pearson's correlation coefficients, for individuals in the two fitspiration conditions only. Across both groups, level of state appearance comparison was not significantly correlated with change in self-objectification, $r = .00, p = .996$. There were small correlations between state appearance comparison and change in appearance self-esteem, $r = -0.19, p < .001$, change in body satisfaction, $r = -0.15, p = .002$, and change in negative mood, $r = 0.30, p < .001$. The coefficients indicated that a higher level of comparison was associated with a decrease in appearance self-esteem and body satisfaction, and an increase in negative mood. Inspiration to exercise was also moderately positively correlated with the level of appearance comparison, $r = 0.35, p < .001$. Within the fit ideal condition, there were medium-sized correlations between state appearance comparison and change in negative mood, ($r = 0.41, p < .001$), and how inspired participants felt to do more exercise ($r = 0.36, p < .001$). There were small sized correlations with change in appearance self-esteem ($r = -0.27, p < .001$), and body satisfaction ($r = -0.21, p = .004$) but no relationship with change in self-objectification ($r = -0.06, p = .441$). Therefore, in the fit ideal condition, the correlations mirrored those found across the full sample.

In the non-fit ideal condition, appearance comparison was not significantly associated with change in appearance self-esteem ($r = -0.09, p = .169$), body satisfaction ($r = -0.06, p = .341$), or self-objectification ($r = 0.07, p = .289$), but had a small significant relationship with change in negative mood ($r = 0.16, p = .018$) and a

medium sized correlation with inspiration to increase exercise ($r = 0.33, p < .001$).

4. Discussion

4.1. Effects of viewing fitspiration

The present study aimed to determine whether the effect of exposure to fitspiration on women's state mood, body satisfaction, appearance self-esteem, self-objectification, and inspiration to exercise differed according to the body type of the individuals depicted (fit ideal compared with non-fit ideal). Additionally, we explored whether the amount of state comparison with the women depicted correlated with inspiration to exercise and change in outcome scores. Both fit ideal and non-fit ideal fitspiration imagery had a negative effect on viewers' state body satisfaction, whereas there was no significant change over time for those in the neutral control condition. In contrast, the two fitspiration conditions appeared to diverge in their effects on state appearance self-esteem and state negative mood. Those in the non-fit ideal condition reported an increase in appearance self-esteem and a decrease in negative mood, and those in the fit ideal group showed a decrease in appearance self-esteem and increase in negative mood. The findings for the fit ideal group are consistent with previous experimental research showing that fitspiration exposure has a negative effect on body satisfaction and mood (e.g., Prichard et al., 2020; Rounds & Stutts, 2021; Tiggemann & Zaccardo, 2015). Although the effect size was larger for the fit ideal image condition, the negative impact on state body satisfaction for both types of fitspiration is concerning; for example, feeling dissatisfied with one's appearance is related to disordered eating (e.g., Bornioli et al., 2019). Findings for the non-fit ideal image exposure are novel in fitspiration research, and suggest some potential benefits of viewing this type of fitspiration imagery. Caution should be applied to these findings though because effect sizes for interactions were small.

The current study did not find an impact of viewing either type of fitspiration on state self-objectification. Exposure to thin ideal content from Instagram has been associated with an increase in state self-objectification (e.g., Cohen et al., 2019), while previous experimental research testing the impact of viewing fitspiration did not find an effect (Prichard et al., 2018). Objectification Theory (Fredrickson & Roberts, 1997) suggests that a focus on bodily capabilities and functionality might lead to lower levels of self-objectification. As previously argued (Prichard et al., 2018), the implication of fitness and exercise in fitspiration imagery, even when models are thin and posed, may be sufficient to mitigate against self-objectification processes. In another study, exposure to images promoting either the fit or thin ideal was associated with greater levels of state self-objectification, compared with exposure to body acceptance stimuli (Betz & Ramsey, 2017). However, the authors only found an effect for one self-objectification measure (a modified version of the Body Surveillance subscale of the Objectified Body Consciousness Scale; McKinley & Hyde, 1996), and not for a state version of the Noll and Fredrickson (1998) Self-Objectification Questionnaire. As both Prichard and colleagues and the current authors employed a state-adapted version of the latter scale, an alternative explanation for the lack of effect is that this measure is not sensitive enough to detect a short-term change in self-objectification. Furthermore, in our adaptation, participants were required to rank attributes rather than rate individual items (cf. Prichard et al., 2018), and participants may find this scale format overly complicated. Therefore, fitspiration researchers should consider alternatives for assessing state self-objectification. A recent review provides a critical overview of the ways in which the construct has been measured in experimental research (Kahalon et al., 2018).

We did not find a significant difference in the level of inspiration to exercise more between fitspiration conditions, though mean scores suggested that participants in both groups were inspired. Encouraging viewers to engage in exercise is generally considered a positive effect,

inciting engagement with healthy lifestyle choices, with the exception of compulsive exercise behaviours and eating disorders (Griffiths et al., 2018). If fitspiration content that does not promote a fit ideal is still inspiring in this respect, then this is a positive finding. However, it is important to consider why people feel inspired to exercise. Previous research has suggested that viewing fitspiration content may be indirectly associated with appearance related motivations for exercise in men (Fatt et al., 2019). Similarly, exposure to typical fitspiration image bodies (labelled 'fit normative'; Wood & Pila, 2022) was associated with appearance motivations for exercise in young women. Exercising for appearance, over health, has been shown to be associated with eating problems and poorer body image (Gonçalves & Gomes, 2012; Panão & Carraça, 2020). Furthermore, evidence does not point towards an effect of fitspiration on actual exercise behaviour (e.g., Robinson et al., 2017), though exercise activity needs to be tested outside a laboratory setting. For example, Arigo et al. (2021) measured number of visits to on-campus fitness centres in response to different fitspiration messaging in college students. In the current study, the inspiration to exercise measure was not completed by participants in the control condition, and only measured after, not before, image exposure in the fitspiration conditions. Thus, we cannot be certain whether participants experienced a change in level of inspiration. Future research should address this limitation to demonstrate more conclusively whether model body type influences level of inspiration, while considering exercise motivations, and how this translates into behaviour.

4.2. State appearance comparison

The level of state appearance comparison did not significantly differ between the two fitspiration image conditions, and mean values were around the midpoint of the Likert scale, indicating a moderate level of comparison. A greater level of state appearance comparison was associated with an increase in negative mood, decreases in body satisfaction and appearance self-esteem, and inspiration to exercise more. This finding is supportive of Social Comparison Theory and broadly consistent with previous research showing that level of state appearance comparison mediates the relationship between fitspiration exposure and negative outcomes (Dignard & Jarry, 2021; Griffiths et al., 2018; Prichard et al., 2018; Tiggemann & Zaccardo, 2015). When groups were analysed separately, these correlations remained significant within the fit ideal condition. In the non-fit ideal condition, appearance comparison was only correlated with change in mood, and inspiration to exercise more. It is therefore tentatively suggested that when viewing fitspiration, appearance comparison with a fit ideal body type is more predictive of a negative change in outcomes. However, the state appearance comparison measure only indicated how much the participant compared herself with the model, rather than whether the comparison was favourable or unfavourable. Investigating whether participants compared themselves with the models in an upwards or downwards direction (e.g., Mulgrew et al., 2017) would have allowed a more nuanced understanding of how appearance comparisons related to outcomes in each of the fitspiration conditions.

4.3. Strengths and limitations

Limitations relating to the measurement of self-objectification, inspiration to exercise and appearance comparison have already been discussed. Additionally, the study was conducted in the United Kingdom, during the lockdown phase of a national response to the coronavirus pandemic. During this time, social media usage dramatically increased (Cellini et al., 2020), and results may not reflect the typical impact of media exposure. Information regarding the participants' nationality and ethnicity was not obtained. Future research could explore whether these factors influence outcomes, based on previously identified differences in appearance satisfaction and drive for thinness between women of different ethnic groups (e.g., Sabik et al., 2010).

Attention should also be given to the ecological validity of the study. Participants were presented with real images sourced from Instagram which they viewed on their own devices. However, the images were not presented on an Instagram platform and there were no 'like', 'comment', or 'save' buttons. Instead, participants were asked questions about each image, which may have meant their interaction with images was different from usual. Furthermore, these questions asked participants to rate the attractiveness and health of the women shown which may have inadvertently led participants to focus on these characteristics more, stimulated appearance comparisons, and possibly triggered participants' weight biases or experiences of weight stigma. Participants were also prompted to complete the measures of exercise inspiration and state appearance comparison before post-exposure measures of the main outcome variables, which would usually be taken immediately afterwards.. These potential priming effects mean that the findings should be interpreted with caution. Relatedly, these four items were not completed by those in the control condition, so there may have been a slightly longer period between viewing images and completing outcome measures for the fitspiration conditions compared with the control (estimated at a minute or less). The same or filler questions could have been added to the control condition to address this discrepancy. A greater number of items were used to measure mood than body satisfaction, and a specific item on satisfaction with body shape or muscularity would have been useful, based on the emphasis that fitspiration imagery places on tone and composition, as well as thinness.

The researchers aimed for images to be matched between the fitspiration conditions (e.g., clothing, model pose), but ratings from the pilot and main study indicated that conditions were not equal in terms of model attractiveness. Images were not deliberately matched for level of sexualisation, but sexualisation in social media content is linked with body image (e.g., Guizzo et al., 2021). Clothing, pose, facial expression, and emphasising body parts may indicate sexualisation in online fitness content (Ahrens et al., 2022; Boepple et al., 2016; Deighton-Smith & Bell, 2018; Murashka et al., 2021). Sexualisation was not apparent through clothing, or slogans linking fitness with sexiness or sex, and conditions were reasonably matched: one image from each condition showed sexualisation through facial expression, two from each strongly emphasised the gluteal muscles through pose, and one in the fit-ideal condition emphasised the crotch through the camera angle. Attractiveness and sexualisation should ideally be matched in future research.. Second, the non-fit ideal images showed women with higher levels of fat and lower muscle tone than women in the other fitspiration condition, but they did not appear to be of overweight or obese BMI. This may have led to an upwards social comparison for some participants, and it would be useful for future research to explore the effects of viewing fitspiration images of women with larger bodies and more visible body fat. As the control condition did not include images of women, we did not collect ratings of appearance comparison within this condition. Future research could include images of other women in a neutral setting to allow for a direct comparison of scores, and test whether social comparison mediates effects of viewing both these types of fitspiration.

4.4. Implications and future research

The current findings suggest the effects of fitspiration imagery vary according to body type depicted. The negative effect of viewing the non-fit ideal on body satisfaction should not be ignored, though this effect size was smaller than for fit ideal images. However, mood and appearance satisfaction outcomes indicate that there may be some advantages to increasing the diversity of body shapes and sizes depicted in fitspiration content. Physical activity in young people is low (Poobalan et al., 2012), and social media may be an effective way to promote health behaviours to a young adult audience, if it can be done so without causing harm to body image. Such action may require buy-in from fitness clothing brands, gyms, and fitness influencers, who should be mindful of the effect that advertising and other social media content has

on their followers.

Aside from those already mentioned, there are several avenues for future research leading from this study. Participants were acutely exposed to only 17 images, a level of exposure similar to other experimental studies in the field. Other researchers have looked at exposure to fitspiration in everyday life over a period of a week using an experience sampling methodology (e.g., Griffiths & Stefanovski, 2019), but have pointed out that small effects of fitspiration might accumulate over time. Thus, there is a need for further research to determine the long-term impact of exposure to fitspiration.

Future research should continue to explore the effects of different aspects of fitspiration content in combination, including the model's body type, functional versus posed images, and image captions. To do this, research could utilise eye-tracking technology to examine how women attend to specific components of fitspiration imagery and how this relates to outcomes. Current research is mostly limited to static media content, however, the availability and popularity of Instagram 'reels', video platform TikTok, and YouTube (Ratwatte & Mattacola, 2021) highlights the importance of also studying the impact of viewing video-based content.

4.5. Conclusion

This study extends current knowledge by experimentally comparing the effects of viewing fit and non-fit ideal bodies in fitspiration content. Results suggest that acute exposure to non-fit ideal fitspiration imagery has a positive impact on state negative mood and appearance self-esteem, whereas fit ideal imagery has a negative effect on these outcomes. Exposure to either may have a detrimental impact on women's state body satisfaction. No effects were found for self-objectification. Level of state appearance comparison was associated with change in appearance self-esteem, body satisfaction, negative mood, and inspiration to exercise more. These correlations remained significant for the fit ideal condition. Effect sizes were small and therefore findings should be considered with caution; however, they suggest that the body type shown in fitspiration images may have differential effects on outcomes, and not all content should be viewed equally. Further research should examine the effects of viewing a wider range of body types and consider the direction of state appearance comparison.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Credit author statement

Kate Barnes: conceptualisation, methodology, formal analysis, resources, data curation, writing – original draft, writing -review and editing, visualisation. Emily Newman: supervision, conceptualisation, validation, formal analysis, writing – review and editing, visualisation. Grace Keenan: conceptualisation, methodology, formal analysis, data curation, project administration.

Data availability

The data that has been used is confidential.

References

Ahrens, J., Brennan, F., Eaglesham, S., Buelo, A., Laird, Y., Manner, J., Newman, E., & Sharpe, H. (2022). A longitudinal and comparative content analysis of Instagram fitness posts. *International Journal of Environmental Research and Public Health*, 19, 6845. <https://doi.org/10.3390/ijerph19116845>

Alleva, J. M., Martijn, C., Van Breukelen, G. J., Jansen, A., & Karos, K. (2015). ExpandHorizon, your horizon: A programme that improves body image and reduces

self-objectification by training women to focus on body functionality. *Body Image*, 15, 81–89. <https://doi.org/10.1016/j.bodyim.2015.07.001>

Alleva, J. M., Veldhuis, J., & Martijn, C. (2016). A pilot study investigating whether focusing on body functionality can protect women from the potential negative effects of viewing thin-ideal media images. *Body Image*, 17, 10–13. <https://doi.org/10.1016/j.bodyim.2016.01.007>

Andrew, R., Tiggemann, M., & Clark, L. (2016). Predictors and health-related outcomes of positive body image in adolescent girls: A prospective study. *Developmental Psychology*, 52, 463–474. <https://doi.org/10.1037/dev0000095>

Arigo, D., Brown, M. M., & DiBisceglie, S. (2021). Experimental effects of fitspiration messaging on body satisfaction, exercise motivation, and exercise behavior among college women and men. *Translational Behavioral Medicine*, 11, 1441–1450. <https://doi.org/10.1093/tbm/ibab016>

Avalos, L., Tylka, T. L., & Wood-Barcalow, N. (2005). The body appreciation scale: Development and psychometric evaluation. *Body Image*, 2, 285–297. <https://doi.org/10.1016/j.bodyim.2005.06.002>

Betz, D. E., & Ramsey, L. R. (2017). Should women be “All about that Bass?”: Diverse body-ideal messages and women's body image. *Body Image*, 22, 18–31. <https://doi.org/10.1016/j.bodyim.2017.04.004>

Boepple, L., Ata, R. N., Rum, R., & Thompson, J. K. (2016). Strong is the new skinny: A content analysis of fitspiration websites. *Body Image*, 17, 132–135. <https://doi.org/10.1016/j.bodyim.2016.03.001>

Bornioli, A., Lewis-Smith, H., Slater, A., & Bray, I. (2021). Body dissatisfaction predicts the onset of depression among adolescent females and males: A prospective study. *Journal of Epidemiology & Community Health*, 75, 343–348. <https://doi.org/10.1136/jech-2019-213033>

Bornioli, A., Lewis-Smith, H., Smith, A., Slater, A., & Bray, I. (2019). Adolescent body dissatisfaction and disordered eating: Predictors of later risky health behaviours. *Social Science & Medicine*, 238, Article 112458. <https://doi.org/10.1016/j.socscimed.2019.112458>

Calogero, R. M., & Jost, J. T. (2011). Self-subjugation among women: Exposure to sexist ideology, self-objectification, and the protective function of the need to avoid closure. *Journal of Personality and Social Psychology*, 100, 211–228. <https://doi.org/10.1037/a0021864>

Cellini, N., Canale, N., Mioni, G., & Costa, S. (2020). Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy. *Journal of Sleep Research*, 29, Article e13074. <https://doi.org/10.1111/jsr.13074>

Cohen, R., Fardouly, J., Newton-John, T., & Slater, A. (2019). #BoPo on Instagram: An experimental investigation of the effects of viewing body positive content on young women's mood and body image (Vol. 21, pp. 1546–1564). New Media and Society. <https://doi.org/10.1177/1461444819826530>

Davis, L. L., Fowler, S. A., Best, L. A., & Both, L. E. (2020). The role of body image in the prediction of life satisfaction and flourishing in men and women. *Journal of Happiness Studies*, 21, 505–524. <https://doi.org/10.1007/s10902-019-00093-y>

Deighton-Smith, N., & Bell, B. T. (2018). Objectifying fitness: A content and thematic analysis of #fitspiration images on social media. *Psychology of Popular Media Culture*, 7, 467–483. <https://doi.org/10.1037/ppm0000143>

Dignard, N. A., & Jarry, J. L. (2021). The “Little Red Riding Hood effect”: Fitspiration is just as bad as thinspiration for women's body satisfaction. *Body Image*, 36, 201–213. <https://doi.org/10.1016/j.bodyim.2020.11.012>

Donovan, C. L., Uhlmann, L. R., & Loxton, N. J. (2020). Strong is the new skinny, but is it ideal?: A test of the tripartite influence model using a new measure of fit-ideal internalisation. *Body Image*, 35, 171–180. <https://doi.org/10.1016/j.bodyim.2020.09.002>

Fatt, S. J., Fardouly, J., & Rapee, R. M. (2019). #malefitspo: Links between viewing fitspiration posts, muscular-ideal internalisation, appearance comparisons, body satisfaction, and exercise motivation in men (Vol. 21, pp. 1311–1325). New Media & Society. <https://doi.org/10.1177/1461444818821064>

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140. <https://doi.org/10.1177/001872675400700202>

Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21, 173–206. <https://doi.org/10.1111/j.1471-6402.1997.tb00108.x>

Gonçalves, S. F., & Gomes, A. R. (2012). Exercising for weight and shape reasons vs. health control reasons: The impact on eating disturbance and psychological functioning. *Eating Behaviors*, 13, 127–130. <https://doi.org/10.1016/j.eatbeh.2011.11.011>

Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134, 460–476. <https://doi.org/10.1037/0033-2909.134.3.460>

Griffiths, S., Castle, D., Cunningham, M., Murray, S. B., Bastian, B., & Barlow, F. K. (2018). How does exposure to thinspiration and fitspiration relate to symptom severity among individuals with eating disorders? Evaluation of a proposed model. *Body Image*, 27, 187–195. <https://doi.org/10.1016/j.bodyim.2018.10.002>

Griffiths, S., & Stefanovski, A. (2019). Thinspiration and fitspiration in everyday life: An experience sampling study. *Body Image*, 30, 135–144. <https://doi.org/10.1016/j.bodyim.2019.07.002>

Guizzo, F., Canale, N., & Fasoli, F. (2021). Instagram Sexualization: When posts make you feel dissatisfied and wanting to change your body. *Body Image*, 39, 62–67. <https://doi.org/10.1016/j.bodyim.2021.06.005>

Heatherington, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60, 895–910. <https://doi.org/10.1037/0022-3514.60.6.895>

Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of thinness and attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology*, 14, 325–338. <https://doi.org/10.1521/jscp.1995.14.4.325>

- Hesse-Biber, S., Leavy, P., Quinn, C. E., & Zoino, J. (2006). The mass marketing of disordered eating and eating disorders: The social psychology of women, thinness and culture. *Women's Studies International Forum*, 29(2), 208–224. <https://doi.org/10.1016/j.wsif.2006.03.007>
- Kahalon, R., Shnabel, N., & Becker, J. C. (2018). Experimental studies on state self-objectification: A review and an integrative process model. *Frontiers in Psychology*, 9, 1268. <https://doi.org/10.3389/fpsyg.2018.01>
- Krug, I., Selvaraja, P., Fuller-Tyszkiewicz, M., Hughes, E. K., Slater, A., Griffiths, S., Yee, Z. W., Richardson, B., & Blake, K. (2020). The effects of fitspiration images on body attributes, mood and eating behaviors: An experimental Ecological Momentary Assessment study in females. *Body Image*, 35, 279–287. <https://doi.org/10.1016/j.bodyim.2020.09.011>
- Levine, M. P., & Murnen, S. K. (2009). Everybody knows that mass media are/are not [pick one] a cause of eating disorders": A critical review of evidence for a causal link between media, negative body image, and disordered eating in females. *Journal of Social and Clinical Psychology*, 28, 9–42. <https://doi.org/10.1521/jscp.2009.28.1.9>
- McKinley, N. M., & Hyde, J. S. (1996). The objectified body consciousness scale: Development and validation. *Psychology of Women Quarterly*, 20, 181–215. <https://doi.org/10.1111/j.1471-6402.1996.tb00467.x>
- Mulgrew, K. E., Schulz, K., Norton, O., & Tiggemann, M. (2020). The effect of thin and average-sized models on women's appearance and functionality satisfaction: Does pose matter? *Body Image*, 32, 128–135. <https://doi.org/10.1016/j.bodyim.2019.12.004>
- Mulgrew, K. E., Stalley, N. L., & Tiggemann, M. (2017). Positive appearance and functionality reflections can improve body satisfaction but do not protect against idealised media exposure. *Body Image*, 23, 126–134. <https://doi.org/10.1016/j.bodyim.2017.09.002>
- Mulgrew, K. E., & Tiggemann, M. (2018). Form or function: Does focusing on body functionality protect women from body dissatisfaction when viewing media images? *Journal of Health Psychology*, 23, 84–94. [10.1177%2F1359105316655471](https://doi.org/10.1177%2F1359105316655471)
- Murashka, V., Liu, J., & Peng, Y. (2021). Fitspiration on Instagram: Identifying topic clusters in user comments to posts with objectification features. *Health Communication*, 36, 1537–1548. <https://doi.org/10.1080/10410236.2020.1773702>
- Noll, S. M. (1996). *The relationship between sexual objectification and disordered eating: Correlational and experimental tests of body shame as a mediator*. Unpublished doctoral dissertation. Duke University.
- Noll, S. M., & Fredrickson, B. L. (1998). A mediational model linking self-objectification, body shame, and disordered eating. *Psychology of Women Quarterly*, 22, 623–636. [10.1111%2Fj.1471-6402.1998.tb00181.x](https://doi.org/10.1111%2Fj.1471-6402.1998.tb00181.x)
- Panão, I., & Carraça, E. V. (2020). Effects of exercise motivations on body image and eating habits/behaviours: A systematic review. *Nutrition and Dietetics*, 77, 41–59. <https://doi.org/10.1111/1747-0080.12575>
- Poobalan, A. S., Aucott, L. S., Clarke, A., & Smith, W. C. S. (2012). Physical activity attitudes, intentions and behaviour among 18–25-year olds: A mixed method study. *BMC Public Health*, 12, 1–10. <https://doi.org/10.1186/1471-2458-12-640>
- Prichard, I., Kavanagh, E., Mulgrew, K. E., Lim, M. S., & Tiggemann, M. (2020). The effect of Instagram #fitspiration images on young women's mood, body image, and exercise behaviour. *Body Image*, 33, 1–6. <https://doi.org/10.1016/j.bodyim.2020.02.002>
- Prichard, I., McLachlan, A. C., Lavis, T., & Tiggemann, M. (2018). The impact of different forms of #fitspiration imagery on body image, mood, and self-objectification among young women. *Sex Roles*, 78, 789–798. <https://doi.org/10.1007/s11199-017-0830-3>
- Raggatt, M., Wright, C. J. C., Carrotte, E., Jenkinson, R., Mulgrew, K., Prichard, I., & Lim, M. S. C. (2018). I aspire to look and feel healthy like the posts convey": Engagement with fitness inspiration on social media and perceptions of its influence on health and wellbeing. *BMC Public Health*, 18, 1002. <https://doi.org/10.1186/s12889-018-5930-7>
- Ratwatte, P., & Mattacola, E. (2021). An exploration of 'fitspiration' content on YouTube and its impacts on consumers. *Journal of Health Psychology*, 26, 935–946. <https://doi.org/10.1177/1359105319854168>
- Robinson, L., Prichard, I., Nikolaidis, A., Drummond, C., Drummond, M., & Tiggemann, M. (2017). Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image*, 22, 65–71. <https://doi.org/10.1016/j.bodyim.2017.06.001>
- Rounds, E. G., & Stutts, L. A. (2021). The impact of fitspiration content on body satisfaction and negative mood: An experimental study. *Psychology of Popular Media*, 10, 267. <https://psycnet.apa.org/doi/10.1037/ppm0000288>
- Sabik, N. J., Cole, E. R., & Ward, L. M. (2010). Are all minority women equally buffered from negative body image? Intra-Ethnic moderators of the buffering hypothesis. *Psychology of Women Quarterly*, 34, 139–151. <https://doi.org/10.1111/j.1471-6402.2010.01557.x>
- Santarossa, S., Coyne, P., Lisinski, C., & Woodruff, S. J. (2019). #fitspo on Instagram: A mixed-methods approach using netlytic and photo analysis, uncovering the online discussion and author/image characteristics. *Journal of Health Psychology*, 24, 376–385. [10.1177%2F1359105316676334](https://doi.org/10.1177%2F1359105316676334)
- Simpson, C. C., & Mazzeo, S. E. (2017). Skinny is not enough: A content analysis of fitspiration on pinterest. *Health Communication*, 32, 560–567. <https://doi.org/10.1080/10410236.2016.1140273>
- Slater, A., Varsani, N., & Diedrichs, P. C. (2017). #fitspo or #loveyourself? The impact of fitspiration and self-compassion Instagram images on women's body image, self-compassion, and mood. *Body Image*, 22, 87–96. <https://doi.org/10.1016/j.bodyim.2017.06.004>
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, 53, 985–993. [https://doi.org/10.1016/S0022-3999\(02\)00488-9](https://doi.org/10.1016/S0022-3999(02)00488-9)
- Talbot, C. V., Gavin, J., van Steen, T., & Morey, Y. (2017). A content analysis of thinspiration, fitspiration, and bonespiration imagery on social media. *Journal of Eating Disorders*, 5, 40. <https://doi.org/10.1186/s40337-017-0170-2>
- Tiggemann, M., Churches, O., Mitchell, L., & Brown, Z. (2018). Tweeting weight loss: A comparison of #thinspiration and #fitspiration communities on twitter. *Body Image*, 25, 133–138. <https://doi.org/10.1016/j.bodyim.2018.03.002>
- Tiggemann, M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology*, 23, 23–44. <https://doi.org/10.1521/jscp.23.1.23.26991>
- Tiggemann, M., & Zaccardo, M. (2015). Exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body Image*, 15, 61–67. <https://doi.org/10.1016/j.bodyim.2015.06.003>
- Tiggemann, M., & Zaccardo, M. (2018). 'Strong is the new skinny': A content analysis of #fitspiration images on Instagram. *Journal of Health Psychology*, 23, 1003–1011. <https://doi.org/10.1177/1359105316639436>
- Want, S. C. (2009). Meta-analytic moderators of experimental exposure to media portrayals of women on female appearance satisfaction: Social comparisons as automatic processes. *Body Image*, 6, 257–269. <https://doi.org/10.1016/j.bodyim.2009.07.008>
- Williamson, G., & Karazsia, B. T. (2018). The effect of functionality-focused and appearance-focused images of models of mixed body sizes on women's state-oriented body appreciation. *Body Image*, 24, 95–101. <https://doi.org/10.1016/j.bodyim.2017.12.008>
- Wollast, R., Klein, O., VanLeeuwen, D. M., Gervais, S. J., & Bernard, P. (2021). Does self-objectification entail an opposition between appearance and competence? The Likert version of the self-objectification questionnaire (LSOQ). *Psychologica Belgica*, 61, 33. <https://doi.org/10.5334/pb.481>
- Wood, M., & Pila, E. (2022). Investigating the effects of fit-normative and weight-inclusive Instagram images on women's exercise motivations. *Body Image*, 41, 460–471. <https://doi.org/10.1016/j.bodyim.2022.04.003>