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Viewing before and after weight loss transformation images online: The impact on young women's mood, body satisfaction, self-objectification, and the role of appearance comparison.

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Abstract

Previous research has uncovered paradoxical outcomes associated with viewing online fitspiration-related images, where viewing content can increase motivation and inspiration while negatively impacting body image. This study addressed a lacuna in the current literature by exploring the impact of viewing before and after weight loss "transformation" images. Female participants (N = 404) aged 18-30 were randomly allocated to three image conditions to examine changes in state body satisfaction, self-objectification, mood, and inspiration. Image conditions were: side-by-side before and after weight loss; before and after images presented individually in a random order; travel. Negative mood and state self-objectification significantly increased after exposure to before and after weight loss images, while state body satisfaction increased in the group that viewed the same images one at a time (without the weight loss subtext). Exposure to before and after images did not increase participants' inspiration to "improve fitness" or "eat healthily". State appearance comparison mediated the relationship between both experimental image conditions relative to the control group for self-objectification and negative mood. Findings suggest that transformation content does not inspire healthy lifestyle changes and that the inherent messaging has harmful short-term effects on women's mood and self-objectification.

Keywords: fitspiration, body image, weight loss, transformation, before and after, social media

An online search of "weight loss before and after" returns a wave of over 1,990,000,000 articles, many of which feature before and after weight loss image compilations (Google search conducted in October 2022). Typical before and after weight loss images consist of a side-by-side comparison of the "after" and the "before" body, signifying an inspiring or dramatic weight loss success story. As well as being prevalent online, researchers have identified that before and after transformation imagery is often found within the broader category of 'thinspiration' (Ghaznavi & Taylor, 2015; Ging & Garvey, 2018) and 'fitspiration' content on social media platforms, such as Instagram (Baker & Walsh, 2020; Sumter et al., 2018; Tiggemann & Zaccardo, 2018). Previous experimental research has indicated a negative impact of viewing fitspiration imagery on mood, appearance self-esteem, and body satisfaction (e.g., Dignard & Jarry, 2021; Tiggemann & Zaccardo, 2015). However, no published studies to date have investigated the impact of viewing before and after weight loss "transformation" images specifically. This study addresses this lacuna in the current research by exploring the impact of viewing before and after weight loss images (BAWLI) on young women's body image and mood.

Recent findings suggest that photo-based social media activities and images representing appearance ideals are particularly salient to body image concerns (de Valle et al., 2021; Holland & Tiggemann, 2016). Given its focus on posting and sharing images, mounting research suggests that Instagram use may be especially detrimental to women's appearance concerns (Fardouly & Vartanian, 2016; Holland & Tiggemann, 2016). With over 1.5 billion users, Instagram is the fourth most used mobile app globally – outranked only by Facebook, YouTube, and WhatsApp (Hootsuite, 2022). Those aged between 25 and 34 are the most represented age group for female platform users (Statista, 2022). In addition to posting and sharing images, Instagram enables

users to "hashtag" images with key identifying words to facilitate searching for themed content (e.g., #fitness, #weightloss).

The virtual fitness realm on Instagram provides some of the most popular content among users. As of July 2021, #fitness was the 20th most popular hashtag globally, returning 395.8 million posts (Hootsuite, 2023). Fitspiration (a portmanteau of the words fitness and inspiration) is a subsphere of Instagram fitness content featuring images and quotations that purport to promote a healthy lifestyle, characterised predominantly by exercise and healthy food choices (Tiggemann & Zaccardo, 2018). However, researchers have documented that many fitspiration-related images depict individuals in an objectified manner, feature and promote a homogenous body shape, and provide messaging that encourages exercise, dieting and restrictive eating (Boepple et al., 2016; Deighton-Smith & Bell, 2018; Santarossa et al., 2019). A growing body of research has reported adverse effects of viewing fitspiration on women's body (dis)satisfaction, mood, and appearance-related self-esteem (e.g., Dignard & Jarry, 2021; Pryde & Prichard, 2022; Tiggemann & Zaccardo, 2015), which may be accounted for by Social Comparison Theory (Festinger, 1954). The theory describes a process of comparing oneself favourably (downwards comparison) or unfavourably (upwards comparison) with a target to assess one's status. As models depicted typically conform to a fit ideal, characterised by a thin and toned body (e.g., Tiggemann & Zaccardo, 2018), viewers would be expected to make an upwards comparison and thus experience lower satisfaction with their own appearance. In support, some experimental evidence has indicated that the level to which participants compare their appearance with the individuals shown mediates the effects of fitspiration imagery on outcomes (Tiggemann & Zaccardo, 2015). Therefore, despite its claim to empower and inspire healthy lifestyle choices, research indicates that fitspiration may harm women's mood and self-image through comparison.

Sumter et al. (2018) identified BAWLI (before and after weight loss images) within one of four types of online fitspiration imagery, falling under a "weight loss messages" subcategory. As of October 2022, the following hashtags capture a high volume of BAWLI on Instagram: #bodytransformation, 9,221,952 posts; #weightlosstransformation, 13,772,883 posts; #beforeandafterweightloss, 1,346,074 posts. A survey of these images reveals photos predominantly of women, typically dressed in exercise gear, swimwear, or underwear, documenting their personal fitness/weight loss "journey". The line between fitness endorsement and weight loss promotion appears to be blurred in fitspiration content (Boepple et al., 2016). This conflation is encapsulated by BAWLI, as the smaller "after" body is presented as synonymous with improved fitness and health. A moral discourse is also evident in BAWLI. This is explored by Baker and Walsh (2020), who highlight that BAWLI on Instagram is a visual trope signifying status and self-improvement, and "aesthetic labour", where subjects are, "…visibly healthier, happier and more attractive as a result of their lifestyle change" (p.61).

BAWLI is anticipated to be particularly harmful to women's body image within the fitspiration genre, due to its messaging and the way the viewer is prompted to engage with the image. The juxtaposition of before and after bodies explicitly signals to viewers that the body is a project and to be fixed, with weight loss as the goal. Recent evidence has indicated that viewing weight loss content on social media is associated with poorer body image (specifically body appreciation; Sanzari et al., 2023). BAWLI is explicitly focused on the individual's (change in) appearance, and therefore represents a subset of fitspiration content that is likely to trigger appearance comparison within the viewer, particularly upwards comparison with the 'after' body ideal images. The viewer is invited to compare the change in body shape and size over time, which could trigger comparison processes between the viewer and target to a greater extent than

viewing images without the weight loss messaging. Furthermore, BAWLI might lead viewers to objectify themselves. Self Objectification Theory (Fredrickson & Roberts, 1997) proposes that continual exposure to objectified images of women teaches women to view their bodies from a third-person perspective and focus on their physical appearance. Specific situations that emphasise appearance can increase self-objectification at that moment. As fitspiration imagery typically associates appearance with fitness and shows women in an objectified way, it might be expected to trigger greater self-objectification in viewers. A previous study found no effect of viewing fitspiration imagery on women's state self-objectification (Prichard et al., 2018). However, no published experimental research has investigated the potential triggering of state self-objectification by BAWLI specifically, and Katebi (2022) highlighted that the emphasis on changes to the body and body parts within transformation imagery may encourage objectification of the target and self. Interestingly, young women reported that transformation imagery (within the wider fitspiration genre) is inspirational for exercise intentions, because it provides evidence for the effectiveness of exercise (Katebi, 2022).

The present study used an experimental design to investigate the effect of exposure to BAWLI on young women's body satisfaction, mood, self-objectification, and appearance comparison. Based on previous experimental work with Instagram images hashtagged as fitspiration (e.g., Tiggemann & Zaccardo, 2015) and the explicit emphasis on appearance in BAWLI, it was hypothesised that participants who were exposed to BAWLI would report a greater decrease in state body satisfaction, and a higher increase in negative state mood versus those who viewed either the same images removed from the before and after context or travel images. It also explored whether exposure to BAWLI would have a greater impact on state self-objectification and appearance comparison compared with the other conditions. Although

previous fitspiration research has not found an effect on self-objectification (Prichard et al., 2018), the focus on how the individual's body and body parts have changed in appearance may trigger self-objectification in the viewer (Katebi, 2022) and prompt higher levels of appearance comparison with the target. Given the purported inspirational effects of BAWLI, the study examined the effect of viewing BAWLI on inspiration to pursue health and fitness-related goals. Drawing on previous findings (Katebi, 2022; Prichard et al., 2020; Tiggemann & Zaccardo, 2015), it was predicted that participants who viewed BAWLI would be more inspired to eat healthily and improve their fitness than those in the other two image groups. Finally, based on previous fitspiration findings and the exposure of participants to appearance-focused images of women's bodies, it was predicted that state appearance comparison would mediate the relationship between image condition and any change in body satisfaction, mood, and self-objectification.

Method

Design

The study employed an experimental design with independent variables of time (two levels: pre-and post-image exposure) and image type (three levels: side by side before and after weight loss 'transformation'; before and after images viewed not side by side but individually in a random order; travel). Dependent variables were state measures of mood, body satisfaction, appearance comparison, self-objectification, how inspiring the images were, and how inspired participants were to improve fitness and eat healthily. The study was granted ethical approval by Clinical Psychology [authors' institution] and followed the British Psychological Society's Code

of Human Research Ethics (Oates et al., 2021).

Participants

English-speaking women aged 18 to 30 years were eligible to take part. An a priori sample size calculation using G*Power (Faul et al., 2007), indicated that a sample size of N = 246 was sufficient to detect small-sized effects (.10) with power of .80, and an alpha of .05, for an interaction effect using mixed ANOVA. A conservative effect size was estimated in the absence of previously published studies with BAWLI. Seven hundred and seven participants opened the online survey link; 86 participants did not consent to take part and a further 217 did not finish the study, leaving a total of 404 participants in the final sample (BAWLI, $n = 130$, before and after viewed separately, $n = 147$, and travel, $n = 127$).

Experimental Stimuli

All images were sourced from public Instagram profiles. For the BAWLI image condition, 32 images showing a side-by-side "transformation" were found using the hashtags, #weightlosstransformation, #beforeandafterweightloss and #beforeandafterweightlosstransformation. All these before and after images used showed women facing the camera in full profile and were selected by the research team to be diverse in terms of ethnicity and body shape and size. A pilot test was conducted with eight independent female raters from the target age group ($M = 26$ years) to rate images in terms of the likelihood of seeing them on Instagram (1 = *very unlikely*, 5 = *very likely*). The 16 images with the highest ratings were used in the study and included women of different ethnicities wearing workout clothes (10 images) or underwear/bikinis (six images). In all image pairs the after picture showed the same

person as thinner and/or with more visible muscle tone. The before pictures showed women with different body sizes and shapes who did not meet the thin or fit body ideal. While BAWLI imagery can also be present within thinspiration content, images were more consistent with fitspiration than thinspiration themes (e.g., none of the images depicted ultra-thin bodies or emphasised bones; Ghaznavi & Taylor, 2015). In 14 of the before pictures there was visible cellulite or fat on the person's body, such as on the abdomen (five images), hips and thighs (two images), or both (seven images).

For the second condition, the same images were cropped using the Photos program for Macbook to separate before and after images. The cropped images were presented individually in a randomised order. This meant that participants in this condition viewed the same individuals as in the first condition, but one at a time instead of side-by-side, therefore not indicative of a body transformation. The women's faces were blurred by researchers to preserve their anonymity and encourage participants to focus solely on their bodies, rather than facial features and expressions (for both these experimental conditions).

For the control group, travel images were sourced from the hashtags, #womenwhoexplore, #sheexplores and #sheisnotlost. Travel images were chosen because they are also a popular image genre on Instagram (Hootsuite, 2023) and have been employed as a control in similar studies (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). Images selected for this condition showed women from a distance, pictured in various landscapes, where the women themselves were not the focus of the image. These images were chosen to minimise participants' ability to evaluate the women's bodies, while still corroborating the study's advertised aim ("how women engage with images of bodies on social media"), and justifying the

completion of the appearance comparison measure. From an initial selection of 32 images, the 16 rated as most likely to be seen on Instagram in the pilot study were chosen for the final set.

Measures

Demographic Information and Social Media Usage

Participants were asked to provide their age, ethnicity, height, and weight. They were also asked to specify the social networking platforms on which they held accounts and indicate how much time they spent on social media per day (*no time*; *< 30 mins*; *30 mins to 1 hour*; *> 1 hour*; *> 2 hours*; *> 3 hours*).

Visual Analogue Scales (VAS)

This study utilised VAS for pre- and post-measures of state body satisfaction, negative mood, and level of inspiration to improve fitness, eat healthily and travel, and post-exposure measurement of state appearance comparison. VAS format has been shown to reduce recall bias in studies with brief manipulations with relatively rapid re-testing and be sensitive to subtle emotional state changes (Hargreaves & Tiggemann, 2003; Heinberg et al., 1995; Kazdin, 2021). All VAS items were presented on a horizontal line featured in the slider question format of the Qualtrics Research Suite, where participants could move the slider to their chosen point between 0 and 100.

State Negative Mood. State mood was measured before and after viewing the images, instructing participants to indicate how they felt "right now" in relation to five mood items

("anxiety", "depression", "happiness", "anger", and "confidence"), from *none* to *very much* (cf.,

Tiggemann & Zaccardo, 2015). Individual item scores were averaged (with the two positive

mood scales reversed) to create a negative mood score, with higher scores indicating a higher

negative mood. This measure has previously demonstrated excellent internal reliability (pretest,

$\alpha = .88$; posttest, $\alpha = .92$; Tiggemann et al., 2020). In the current study internal reliability was

acceptable (pretest, $\alpha = .74$; posttest, $\alpha = .78$; Nunnally, 1978).

State Body Satisfaction. Three VAS items instructing participants to indicate how they

felt "right now" in relation to state body satisfaction (satisfied with my overall appearance,

satisfied with my weight, and satisfied with my body shape) from *not at all* to *very much*, were

averaged to create a state body satisfaction score (based on Slater et al., 2017). Higher scores

indicated higher body satisfaction. This scale has previously demonstrated excellent internal

reliability, pre-exposure ($\alpha = .96$), and post-exposure ($\alpha = .98$) (Slater et al., 2017). In the current

study, internal reliability was good (pre-exposure, $\alpha = .88$; post-exposure, $\alpha = .93$).

Inspiration Rating. Following Tiggemann and Zaccardo (2015), VAS items were used

to assess how inspirational participants found the images ('How inspiring did you find the

images?'; measured only post-image exposure) and how inspired they were feeling in that

moment to improve fitness, eat healthily and go travelling (e.g., "please move the slider to show

how inspired you feel right now in this moment to go travelling"; measured pre- and post-image

exposure). All four items were rated from *not at all inspiring/inspired* to *very inspiring/inspired*.

These items also served as a manipulation check, as the before and after images should inspire

people to improve their fitness and eating, and those in the control condition should report

increased inspiration to travel.

State Appearance Comparison. After viewing the images, participants rated the extent to which they had engaged in appearance comparison, using three VAS items from the State Appearance Comparison Scale (Tiggemann & McGill, 2004). The items asked participants to rate how much they thought about their own appearance, and how much they compared their overall appearance and specific body parts, while viewing the images, from *no comparison* to *a lot of comparison*. Scores were averaged to generate a mean score. Tiggemann and McGill (2004) reported excellent internal reliability ($\alpha = .91$). Internal reliability in the present sample was similarly high ($\alpha = .95$).

State Self-Objectification

State self-objectification was measured before and after image exposure using an adaptation of the eight-item Body Surveillance subscale of the Objectified Body Consciousness Scale (McKinley & Hyde, 1996). This measure was designed to assess the extent to which participants monitor their external appearance, thinking about how their body looks rather than how it feels, and was converted into a state version by asking participants to respond to the statements "right now, in this moment". The state measure adaption has been used in previous studies (Breines et al., 2008). Example items included, "Right now, I am thinking about how I look", and "Right now, I am more concerned with what my body can do than how it looks" (reverse coded). Participants responded to items using a 7-point Likert scale ranging from strongly disagree to strongly agree. Item responses were summed to create a total score, with higher scores representing higher levels of state self-objectification. This scale has previously demonstrated

acceptable internal reliability (α = .74–.83; Tiggemann & Andrew, 2012). In the current study, internal reliability was acceptable (pretest, $α = .74$; posttest, $α = .77$).

Attention Checks

The presentation included attention check prompts after the 5th, 10th, and 15th images were displayed (on the 10th, 20th and 30th image for the participants who viewed a cropped "half" version of the original before and after image), e.g. "This is an attention check, please select "strongly agree". No participants failed these tests, and therefore none were excluded for not attending to stimuli.

Procedure

Participants were recruited online through advertisements on Instagram, Facebook, Twitter, LinkedIn, and Reddit. The study was advertised as exploring how women respond to images of women's bodies on social media. The specific focus on BAWLI was not shared with the participants until debriefing because this information may have biased responses. The advertisements directed participants via a link to an online study hosted on Qualtrics. After reading the study information and providing consent, participants were asked to provide demographic information and level of social media usage. Participants then completed the pre-exposure state measures of mood, body dissatisfaction, self-objectification and how inspired they were to improve fitness, eat healthily, and go travelling.

Next, the Qualtrics software randomly allocated participants to one of the three experimental image conditions, in which they viewed 16 Instagram images (32 for the participants in the group that viewed the before and after images individually). Before viewing

their respective image condition slide presentation, all participants were informed: "Now you will be viewing a three-minute slide presentation featuring women's before and after weight loss photos/photos of women's bodies/women's travel photos (dependent on condition) from Instagram. Please look at the images carefully as you will be asked to complete a few questionnaires about what you've seen and how it made you feel. Thank you." Each image was displayed for 12 seconds (six seconds for participants who viewed "half" of the original before and after image) before automatically moving to the next image. This exposure time was deemed sufficient to view the image but not so long that participants would become distracted or bored and lose focus. Similar timings have been used in other studies that aim to replicate the online image consumption experience (Cohen et al., 2019; Tiggemann & Anderberg, 2020; Tiggeman & Zaccardo, 2015).

Following the presentation, participants completed the post-exposure state measures of mood, body dissatisfaction, self-objectification, inspiration to improve fitness, eat healthily and go travelling. They also rated state appearance comparison and how inspiring the images were. On completion of all measures, participants entered the debriefing page where the true aim of the experiment was shared and explained.

Data Analysis

All analyses were conducted using IBM SPSS Statistics version 25 (IBM Corp., 2017). Differences between conditions in demographic characteristics and baseline measures of outcome variables were tested using one-way ANOVA and chi square tests. For the main analysis, a series of mixed ANOVAs were conducted with time and image condition as independent variables, and state measures of negative mood, body satisfaction, self-

objectification, inspiration to improve fitness and eat healthily as dependent variables. Significant interactions were interpreted using Bonferroni-corrected simple effects analysis to test how scores changed over time within conditions. Two one-way ANOVAs were performed to assess differences between image conditions in state appearance comparison and overall image inspiration rating. State appearance comparison was tested as a mediator of the relationship between image condition and change in state body satisfaction, negative mood and self-objectification using PROCESS model 4 (Hayes, 2018). The condition was entered as a multi-categorical predictor, and 95% confidence intervals were calculated using bootstrapping with 5000 samples. Indirect effects of each experimental group relative to the control group were calculated as an indication of mediation via state appearance comparison on change scores. An indirect effect was interpreted as significant where 95% confidence intervals did not contain zero.

Results

Characteristics of the Sample

Participant characteristics are shown in Table 1. Participants had a mean age of 25.79 years ($SD = 3.45$). Ten participants did not disclose their weight or height, and a further eleven participants had their height and weight information excluded from the data set due to unclear choice of measurement metrics. The remaining sample had a mean Body Mass Index (BMI: kg/m^2) of 24.93 ($SD = 5.61$). Most of the sample ($n = 324$; 80.2%) identified as white. Instagram was the most used social media platform amongst the sample, with 375 (92.8%) participants holding an account. Modal daily use of social media platforms was over 3 hours.

Table 1

Participant Characteristics

	BAWLI		Before and after viewed separately		Travel		Full sample	
	n	%	*n*	%	*n*	%	*n*	%
Ethnicity								
Aboriginal	1	.8	0	0	0	0	1	.2
Asian	9	6.9	16	10.9	10	7.9	35	8.7
African American / Black	2	1.5	0	0	3	2.4	5	1.2
Bi / Multiracial	6	4.6	6	4.1	1	.8	13	3.2
Hispanic / Latina	1	.8	3	2	2	1.6	6	1.5
Indigenous	2	1.5	1	.7	2	1.6	5	1.2
White / Caucasian	105	80.8	115	78.2	104	81.9	324	80.2
Other	4	3.1	5	3.4	5	3.9	14	3.5

Missing	0	0	0	0	0	0	1	.2

Social media accounts

Facebook	119	91.5	135	91.8	109	85.8	363	89.9
Instagram	121	93.1	135	91.8	109	93.7	375	92.8
LinkedIn	56	43.1	65	44.2	45	35.4	166	41.1
Snapchat	81	54	88	60	66	64	235	58.2
TikTok	27	44.6	30	42.2	32	37	167	41.3
Twitter	58	39.2	62	33.3	47	34.6	144	35.6
YouTube	78	60	100	68	70	55.1	248	61.4
Do not use any	1	.8	0	0	2	1.6	3	.7

Average daily time on social media

No time	2	1.5	0	0	3	2.4	5	1.2
Less than 30 minutes	1	.8	0	0	0	0	1	.2
30 minutes to one hour	11	8.5	23	15.6	16	12.6	50	12.4
Over an hour	44	33.8	29	19.7	26	20.5	99	24.5

Over two hours	27	20.8	42	28.6	45	35.4	114	28.2
Over three hours	45	34.6	53	36.1	37	29.1	135	33.4
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
BMI	24.28	4.80	25.47	5.71	24.95	6.21	24.93	5.61
Age (years)	25.67	3.60	26.01	3.38	25.67	3.38	25.79	3.45

Differences in Baseline Measures and Demographics between Conditions

A Pearson Chi-Square test showed that the three groups did not differ significantly by ethnicity, $X^2(4, N = 403) = 1.86$, $p = .762$, V = .048 (due to small cell counts, ethnicity was recoded as White, Asian, and Other). There was a difference between groups in daily social media usage after excluding participants with use below 30 minutes, $X^2(6, N = 398) = 15.71$, $p = .015$, V = .140, but this variable was unrelated to change in any outcome scores. One-way ANOVA showed that groups did not differ significantly by age, $F(2, 401) = .44$, $p = .646$, $\eta p^2 = .002$; or BMI, $F(2, 380) = 1.48$, $p = .229$, $\eta p^2 = .008$. There were no significant differences between conditions in baseline state measures of body satisfaction, $F(2, 401) = 1.73$, $p = .179$, $\eta p^2 = .009$, negative mood, $F(2, 401) = .09$, $p = .911$, $\eta p^2 < .001$, and self-objectification, $F(2, 401) = .73$, $p = .482$, $\eta p^2 = .004$. There were also no significant differences between conditions in baseline measures of inspiration to improve fitness, $F(2, 401) = .1.18$, $p = .308$, $\eta p^2 = .006$, eat healthily, $F(2, 401) = .37$, $p = .691$, $\eta p^2 = .002$, or go travelling, $F(2, 401) = 1.33$, $p = .265$, $\eta p^2 = .007$.

Effect of Image Condition on State Body Satisfaction

Means and standard deviations for outcome measures across all conditions are shown in Table 2. Mixed ANOVA revealed that there was no significant main effect of time, $F(1, 401) = 2.82$, $p = .094$, $\eta p^2 = .007$, or group, $F(2, 401) = .45$, $p = .640$, $\eta p^2 = .002$. There was a significant interaction effect for state body satisfaction, $F(2, 401) = 5.34$, $p = .005$, $\eta p^2 = .026$. Simple effects analysis indicated that there was a significant increase in pre to post-state body satisfaction scores within the non-side-by-side weight loss image condition, $F(1, 401) = 7.75$, $p = .006$, $\eta p^2 = .019$. There was no statistically significant difference in scores over time in the BAWLI condition, $F(1, 401) = 2.69$, $p = .102$, $\eta p^2 = .007$, or the travel condition, $F(1, 401) = 3.47$, $p = .063$, $\eta p^2 = .009$.

Table 2

Descriptive Statistics for Body Satisfaction, Negative Mood, Self-Objectification, Inspiration and Appearance Comparison

Outcome Variable	BAWLI		Before and after viewed Separately		Travel		Full sample	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pretest state body satisfaction	48.82	25.67	43.17	24.77	45.09	26.15	45.09	26.15
Posttest state body satisfaction	46.67	26.71	46.59	26.72	47.55	27.90	46.92	27.03
Pretest state negative mood	32.68	1.46	32.44	1.37	31.81	1.48	32.32	16.62

Posttest state negative mood	36.00	1.58	32.85	1.49	31.39	1.60	33.40	18.09
Pretest state self-objectification	3.84	1.10	3.98	1.15	4.00	1.15	3.94	1.13
Posttest state self-objectification	4.11	1.18	4.13	1.14	3.74	1.23	4.00	1.19
Pretest inspiration to improve fitness	55.61	26.19	59.86	27.07	55.56	27.52	57.14	26.94
Posttest inspiration to improve fitness	54.54	27.88	53.54	29.15	44.32	29.44	50.96	29.12
Pretest inspiration to eat healthily	58.08	26.19	59.86	27.07	55.56	27.52	57.14	26.94
Posttest inspiration to eat healthily	54.54	27.88	53.54	29.15	44.32	29.44	50.96	29.12
Pretest inspiration to travel	68.07	31.17	61.47	36.71	65.72	34.24	64.93	34.26
Posttest inspiration to travel	49.96	38.82	48.50	37.96	72.49	29.87	56.51	37.43
State appearance comparison (posttest)	56.36	31.42	62.79	31.14	20.45	23.97	47.41	34.47
Overall image inspiration rating	51.06	30.09	43.67	28.21	59.55	28.05	51.04	29.44

Effect of Image Condition on State Negative Mood

Mixed ANOVA showed that there was no significant main effect of group, $F(2, 401) =$ .90, $p = .409$, $\eta p^2 = .004$, but there was a significant main effect of time, $F(1, 401) = 4.56$, $p = .033$, $\eta p^2 = .011$, where negative mood increased overall across the sample over time (see Table 2). Moreover there was a significant interaction between image condition and time for state negative mood, $F(2, 401) = 4.71$, $p = .010$, $\eta p^2 = .023$. Simple effects analysis revealed that there

was a significant increase from pre to post image exposure in the BAWLI condition, $F(1, 401) = 13.40$, $p < .001$, $\eta p^2 = .032$, but no significant difference for the non-side-by-side image condition, $F(1, 401) = .23$, $p = .632$, $\eta p^2 = .001$, or the travel control group, $F(1, 401) = .22$, $p = .643$, $\eta p^2 = .001$.

Effect of Image Condition on State Self-Objectification

There were no significant main effects of time ($F(1, 401) = 1.49$, $p = .224$, $\eta p^2 = .004$), or group ($F(2, 401) = 1.01$, $p = .365$, $\eta p^2 = .005$) on state self-objectification. There was a significant interaction between time and image condition for state self-objectification $F(2, 401) = 13.45$, $p < .001$, $\eta p^2 = .063$. The simple effects analysis showed that there was a significant change in all three conditions, i.e., an increase in scores over time within the BAWLI condition, $F(1, 401) = 12.64$, $p < .001$, $\eta p^2 = .031$, and the before and after images separately condition, $F(1, 401) = 4.45$, $p = .036$, $\eta p^2 = .011$, and a significant decrease in the travel condition, $F(1, 401) = 11.69$, $p = .001$, $\eta p^2 = .028$.

Image Inspiration Ratings

One-way ANOVA with image condition as the independent variable and the VAS item, "How inspiring did you find the images?" as the dependent variable indicated a significant difference in ratings between conditions, $F(2, 401) = 10.38$, $p < .001$, $\eta p^2 = .049$. Means and Bonferroni-corrected post hoc pairwise comparisons indicated that travel images were rated the most inspirational, the BAWLI were rated the second most inspirational, and the before and after images viewed separately were rated the least inspirational (see Table 2). There was only a statistically significant difference between the travel images inspiration rating and the separate

before and after images ($p < .001$); the difference between the BAWLI and the separate before and after images condition was not significant ($p = .100$), nor between the BAWLI and the travel conditions ($p = .056$).

Effect of Image Condition on Inspiration to Improve Fitness and Eat Healthily

To test the hypothesis that viewing BAWLI images would increase inspiration to improve fitness and eat healthily more than the other conditions, two separate mixed ANOVAs were conducted for each outcome, with time and image condition as independent variables. For inspiration to improve fitness, there was no significant main effect of group, $F(2, 401) = 2.93$, $p = .055$, $\eta p^2 = .014$, but a main effect of time, $F(1, 401) = 18.36$, $p < .001$, $\eta p^2 = .044$, where scores were lower after viewing the images. There was also a significant interaction between time and group, $F(2, 401) = 3.94$, $p = .020$, $\eta p^2 = .019$. Simple effects analysis indicated that there was a significant decrease in scores over time in the travel, $F(1, 401) = 18.98$, $p < .001$, $\eta p^2 = .045$, and the non before and after conditions, $F(1, 401) = 6.96$, $p = .009$, $\eta p^2 = .017$, but no significant difference in the BAWLI condition, $F(1, 401) = .18$, $p = .675$, $\eta p^2 < .001$.

For inspiration to eat healthily, there was a significant main effect of time, $F(1, 401) = 25.78$, $p < .001$, $\eta p^2 = .060$ but not group, $F(2, 401) = 1.27$, $p = .282$, $\eta p^2 = .006$. Mean values indicated that inspiration to eat healthily decreased across the full sample. There was a significant interaction between image condition and time, $F(2, 378) = 4.86$, $p = .008$, $\eta p^2 = .024$. Simple effects analysis showed that there was a significant decrease over time within the travel condition, $F(1, 401) = 28.38$, $p < .001$, $\eta p^2 = .066$, and the non before and after condition, $F(1, 401) = 4.84$, $p = .028$, $\eta p^2 = .012$, but that there was no significant change in the BAWLI condition, $F(1, 401) = 1.44$, $p = .231$, $\eta p^2 = .004$.

Effect of Image Condition on State Appearance Comparison

One-way ANOVA revealed that state appearance was significantly different between groups, $F(2, 401) = 80.80$, $p < .001$, $\eta p^2 = .287$. Means and Bonferroni-corrected post hoc tests showed that state appearance comparison was lowest in the group that viewed the travel photos, and highest in the group that viewed the before and after images separately. There was a statistically significant difference in appearance comparison in the travel group and the group that viewed the BAWLI ($p < .001$) and the travel group and the group that viewed the before and after images separately ($p < .001$), but no significant difference between the BAWLI and the before and after images separately groups ($p = .203$).

State Appearance Comparison as a Mediator

To test whether state appearance comparison mediated the relationship between image condition and state measures of body satisfaction, negative mood, and self-objectification, change scores were calculated by subtracting pre-scores from post-scores for each outcome variable. Three separate models were run with each change score as the dependent variable, image condition as the independent variable and appearance comparison as the mediator. As the independent variable was multi-categorical, two direct and indirect effects were estimated for each experimental condition relative to the travel control imagery condition.

For state body satisfaction change, there was a marginal direct effect of image condition on change in body satisfaction for BAWLI versus travel ($b = -4.05$, $p = .052$, 95% CI [-8.13, 0.03]). The direct effect of non-side-by-side images versus control was not significant ($b = 1.61$, $p = .444$, 95% CI [-2.53, 5.75]). Relative indirect effects of condition via appearance were not

significant, as the confidence intervals both contained zero, b = -.65, 95% CI [-2.76, 1.64] for non-side by side transformation versus control, and b = -.55, 95% CI [-2.26, 1.40] for BAWLI versus control. Therefore, mediation via appearance comparison for change in body satisfaction was not established.

For negative mood, there was no direct effect of BAWLI versus control condition on change score (b = -.07, p = .958, 95% CI [-2.77, 2.63]), but there was a direct effect for the non-transformation condition versus control (b = -3.67, p = .009, 95% CI [-6.41, -0.93]). The indirect effects via state appearance comparison were both significant, b = 4.50, 95% CI [2.96, 6.20] for non-transformation images versus control, and b = 3.82, 95% CI [2.47, 5.34] for BAWLI versus control. In each case, the coefficient indicated that exposure to the experimental images was associated with an increased negative mood relative to the control images, via comparing oneself with the women depicted.

For the change in self-objectification, there was only a direct effect of BAWLI versus control, b = .25, p = .030, 95% CI [0.02, 0.04] and not for non-transformation images versus control, b = .08, p = .477, 95% CI [-0.15, 0.31]. However, both indirect effects through state appearance comparison were significant: b = .33, 95% CI [0.20, 0.47] for non-transformation images versus control, and b = .28, 95% CI [0.17, 0. 40] for BAWLI versus control. Coefficients indicated that exposure to each experimental type of image was associated with a greater increase in self-objectification relative to the control condition through more comparison with the women depicted.

Discussion

The aim of the present study was to investigate the effects of viewing before and after weight loss images (BAWLI), a popular Instagram fitspiration trend, on women's body satisfaction, mood, self-objectification, and inspiration to improve fitness and eat healthily. A strength of the study design was that differences in outcomes could be examined between participants viewing BAWLI and participants viewing the same images but removed from the context of a "before and after" body transformation message. As predicted, results showed that exposure to BAWLI significantly increased state negative mood and state self-objectification; however, there was no significant change for state body satisfaction. These findings align with previous experimental research on the negative effects of body-related social media imagery and fitspiration consumption on women's mood (e.g., Cha et al., 2022; Prichard et al., 2020; Tiggemann & Zaccardo, 2015). The lack of a significant effect on body satisfaction is consistent with some studies (Cha et al., 2022; Slater et al., 2017), but not others (e.g., Dignard & Jarry, 2021; Fardouly et al., 2018; Tiggemann & Zaccardo, 2015). This may signal that not all fitspiration content has the same effect on body satisfaction, and it is noted that BAWLI represents only a subset of the types of images appearing under the fitspiration hashtag.

Those participants exposed to the same images of women, but without the weight loss context, showed an increase in body satisfaction and self-objectification, but no significant change in mood. They also showed a higher level of state appearance comparison than those who viewed travel images, and at a similar level to those who viewed BAWLI. The improvement in body satisfaction within this group suggests that the weight loss message was not apparent to viewers and may have resulted from viewing a mixture of body shapes and sizes, including bodies that are thin and/or with more visible muscle tone/visible fat. This interpretation is supported by other research on the potentially positive implications of viewing images of diverse

bodies online (Cha et al., 2022; Nelson et al., 2022; Tiggemann et al., 2020). Despite this potential positive effect, it is noteworthy that both experimental groups showed an increase in state self-objectification after image exposure, and that there was no difference between these two conditions in terms of appearance comparison. A previous experimental study found that brief exposure to images of diverse body shapes and sizes (amongst other body-positive themed imagery) was associated with positive outcomes such as increased positive mood, body appreciation and body satisfaction. However, this was also accompanied by an increase in self-objectification comparable to that of participants who viewed thin-ideal content (Cohen et al., 2019). These results corroborate findings from this study which suggest that diverse body representation does not protect against or reduce the tendency to engage in appearance comparison and self-objectification. It is worth considering that participants in both experimental conditions viewed images of women in underwear as well as sportswear, and the women's faces had been blurred, which may have made triggered more objectification of the women depicted and the self.

Contrary to hypotheses, exposure to BAWLI did not increase inspiration to eat healthily or improve fitness, though these decreased in the control and non-transformation image conditions. Previous fitspiration research has indicated that participants find the content inspirational (e.g., Robinson et al., 2017; Tiggemann & Zaccardo, 2015) and therefore, this might represent a positive effect on health behaviours. However, while BAWLI is commonly tagged under fitspiration, we did not find evidence to support a short-term inspirational effect of weight loss transformation images for either healthy eating or fitness, and thus the harmful effects did not appear to be offset by these potential benefits.

Mediation models indicated indirect effects of each experimental condition relative to the control condition, via state appearance, for change in state negative mood and self-objectification, but not body satisfaction. A higher level of state appearance comparison was associated with increased negative mood and self-objectification in both cases. The current study was particularly concerned with the impact of viewing BAWLI content, and findings indicate that the negative effects of viewing these images are partly through a process of comparing oneself with the women depicted. Other research exploring the effects of fitspiration content has reported indirect effects via state comparison on body (dis)satisfaction and mood (e.g., Dignard & Jarry, 2021; Pryde & Prichard, 2022), so the current findings are partly consistent with previous literature but diverge for body satisfaction. The measure of state appearance comparison used here only indicates the amount of comparison that viewers engaged in rather than the direction (i.e., whether they viewed themselves favourably or unfavourably with the women shown), and therefore this effect needs to be interpreted with caution. As the 'after' component of the images depicted women who conform to a more ideal body in Western cultures, we would suggest that it is likely that higher comparison reflected engaging in upwards comparisons, but this should be tested using a more exact measure of the process.

In summary, both experimental conditions showed an increase in self-objectification, but the non-side by side group showed an increase in body satisfaction and no change in negative mood, whereas the BAWLI group showed no change in body satisfaction but an increase in negative mood. For the former group, there was a decrease in inspiration to improve fitness and eat healthily while the latter group showed no change. Taking these findings together, BAWLI appear to be more harmful to female viewers than seeing the same images without the transformation element. This study's findings add to growing evidence that despite surface

appearances of healthy lifestyle promotion, exposure to fitspiration-themed content such as BAWLI has adverse effects on viewers (Dignard & Jarry, 2021; Prichard et al., 2020; Rounds & Stutts, 2021). Content analyses have shown that fitspiration imagery typically centres on the appearance-related aspects of pursuing a healthier lifestyle through diet and exercise versus the holistic health and wellbeing benefits (Boepple & Thompson, 2016; Carrotte et al., 2017; Tiggemann & Zaccardo, 2018). Research into the implications of exercise motivation has demonstrated that exercise motivated by appearance-based factors rather than health or enjoyment is associated with negative body image (Prichard & Tiggemann, 2008; Strelan et al., 2003). BAWLI present a distinct example of promoting a homogenous body shape and is arguably one of the most cogent examples of how fitspiration focuses on aesthetics in a supposed fitness and health context. The juxtaposition of a bigger 'before' body and a smaller 'after' body presents the body as a project. The celebratory framing of the smaller body in the "after" upholds fatphobic discourses that conflate increased thinness and smaller bodies with increased fitness and health. The observed differences in effects for negative mood and body satisfaction in the groups which viewed the bodies in the context of before and after, versus those who viewed the same bodies without this framework, illuminate the impact of this positioning on women's body image. The changes in outcomes are especially noteworthy in light of the three-minute exposure time used in the experiment. As the modal social media use reported by the sample was more than three hours, it is likely that real-world social media use and potential exposure time and effects may be greater. The concerning impact of cumulative fitspiration exposure and its capacity to lower body satisfaction and poorer affective functioning has been spotlighted in other studies (Griffiths & Stefanovski, 2019).

The comparable outcomes in relation to state appearance comparison and significant effects on state self-objectification for both the BAWLI and the before and after images separately groups have interesting implications. A move towards more diverse body representation in media may have benefits for viewers' self-esteem and mood (Selensky & Carels, 2021), but our data indicate that exposure still induces state self-objectification. In this case, rather than working to ensure more women's bodies are viewed as valuable, it may be beneficial to focus on making sure all women are valued as more than bodies to view. Body neutrality describes content that aims to promote respect and acceptance of the body while taking a neutral stance on its appearance (Rodgers et al., 2022). In health and fitness promotion, this could involve focusing on body functionality (what the body can do), rather than its appearance. Nevertheless, experimental research has found that viewing fitspiration imagery demonstrating body functionality is not beneficial for women's body satisfaction or mood (Prichard et al., 2018). Focusing on physiological outcomes or mood benefits of exercise might be a less harmful alternative to emphasising appearance, if this can be portrayed compellingly through visual imagery. As discussed in the next section, the current study has limitations in terms of the ecological validity of stimuli and social media exposure that future research could address before further informing media literacy and social media usage interventions.

Limitations and Future Directions

As the present study represents the first attempt to investigate the impact of BAWLI on body image, it is appropriate to recognise limitations which future research could address. First, the sample consisted of young adult white women, most of whom reported using social media for at least two hours a day. Future research could investigate if the findings generalise to more

diverse populations in terms of gender identity, age, ethnicity and social media usage. A second limitation concerns ecological validity. While the experimental images used were sourced from Instagram, the blurring of faces in the images, necessary to conceal that they were before and after images in the second condition, deviates from typical BAWLI on the platform. Participants were also required to attend to the images in a way that they might not naturally do while using the platform. For example, image presentation was timed for all groups as a control measure, and there was no opportunity to actively engage with the images, i.e., to "like", share or comment on images. As noted previously, it is this interactivity that distinguishes social media platforms such as Instagram from traditional mass media (Perloff, 2014). Future research can increasingly integrate realistic Instagram features to mimic the authentic "scrolling" experience, as modelled in some pre-existing studies (Slater et al., 2017).

Similarly, to strengthen ecological validity, future research could examine the effect of BAWLI when presented with accompanying captions and hashtags, which were omitted from this study as a control measure. Other Instagram-based body image studies suggest that it is the visual image itself, rather than any accompanying text, which has the most salient effect on the viewer (Tiggemann & Barbato, 2018; Tiggemann et al., 2020). Nevertheless, the nature and effects of captioned BAWLI on body image could be explored through qualitative and experimental methods, in terms of whether messages about strength or body functionality are eclipsed by the body shape ideals promoted or fat-phobic discourses. Previous qualitative research on the impact of fitspiration has proved revealing in unpacking its complex nuances (Bell et al., 2021). Furthermore, future research could explore the impact of BAWLI on the individuals who create and share BAWLI of their bodies on platforms such as Instagram, to investigate the impact of "tracking progress" through this medium on body image.

The finding that the group that viewed images of bodies without the before and after framing also experienced a significant increase in state self-objectification merits further investigation. This result bolsters concerns flagged by other body image researchers that even when social media imagery features diverse bodies, it still inadvertently perpetuates a preoccupation with appearance and subsequent self-objectification (Cohen et al., 2019; Cohen et al., 2021). Considering the relationship between self-objectification and adverse health concerns such as eating disorder symptomatology, this link warrants further disentangling (Schaefer & Thompson, 2018).

Conclusion

The present study makes a novel contribution to research on body image and social media by focusing on the effects of exposure to BAWLI content from Instagram. Findings indicated that exposure to BAWLI increased state self-objectification and negative mood, and that these effects were mediated by appearance comparison, extending existing evidence that appearance-focused messaging can be harmful to body image and mental health (Rodgers et al., 2021). Furthermore, the content did not increase participants' inspiration to engage in healthy eating and fitness and therefore there was no evidence of these potential benefits. Young women may benefit from engaging with content that offers a more diverse representation of women's body shapes and sizes, but without weight loss or body transformation messaging, or that emphasises physical health and functionality, beyond the reductive terms of a "before and after" transformation.

References

Baker, S. A., & Walsh, M. J. (2020). You are what you Instagram: Clean eating and the symbolic

   representation of food. In *Digital Food Cultures* (pp. 53-67). Routledge.

   https://doi.org/10.4324/9780429402135

Bell, B. T., Deighton-Smith, N., & Hurst, M. (2021). 'When you think of exercising, you don't

   really want to think of puking, tears, and pain': Young adolescents' understanding of

   fitness and #fitspiration. *Journal of Health Psychology*, *26*, 1046–1060.

   https://doi.org/10.1177/1359105319869798

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

Boepple, L., & Thompson, J. K. (2016). A content analytic comparison of fitspiration and

   thinspiration websites. *International Journal of Eating Disorders*, *49*, 98-101.

   https://doi.org/10.1002/eat.22403

Breines, J. G., Crocker, J., & Garcia, J. A. (2008). Self-objectification and well-being in

   women's daily lives. *Personality and Social Psychology Bulletin*, *34*, 583–598.

   https://doi.org/10.1177/0146167207313727

Brown, Z., & Tiggemann, M. (2016). Attractive celebrity and peer images on Instagram: Effect

   on women's mood and body image. *Body Image*, *19*, 37-43.

   https://doi.org/10.1016/j.bodyim.2016.08.007

Carrotte, E. R., Prichard, I., & Lim, M. S. C. (2017). "Fitspiration" on social media: A content

   analysis of gendered images. *Journal of Medical Internet Research*, *19*, e6368.

   https://doi.org/10.2196/jmir.6368

Cha, H. S., Mayers, J. A., & Stutts, L. A. (2022). The impact of curvy fitspiration and fitspiration

    on body dissatisfaction, negative mood, and weight bias in women. *Stigma and Health*,

    7, 266-233. https://doi.org/10.1037/sah0000367

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. *New Media & Society*, *21*, 1546–1564.

    https://doi.org/10.1177/1461444819826530

Cohen, R., Newton-John, T., & Slater, A. (2021). The case for body positivity on social media:

    Perspectives on current advances and future directions. *Journal of health psychology*,

    26(13), 2365-2373. https://doi.org/10.1177/1359105320912450

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

de Valle, M. K., Gallego-García, M., Williamson, P., & Wade, T. D. (2021). Social media, body

    image, and the question of causation: Meta-analyses of experimental and longitudinal

    evidence. *Body Image*, *39*, 276-292. https://doi.org/10.1016/j.bodyim.2021.10.001

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

Fardouly, J., & Vartanian, L. R. (2016). Social media and body image concerns: Current research

    and future directions. *Current Opinion in Psychology*, *9*, 1-5.

    https://doi.org/10.1016/j.copsyc.2015.09.005

Fardouly, J., Willburger, B. K., & Vartanian, L. R. (2018). Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways. *New Media & Society*, *20*, 1380–1395. https://doi.org/10.1177/1461444817694499

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191. https://doi.org/10.3758/BF03193146

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

Ghaznavi, J., & Taylor, L. D. (2015). Bones, body parts, and sex appeal: An analysis of #thinspiration images on popular social media. *Body Image*, *14*, 54-61. https://doi.org/10.1016/j.bodyim.2015.03.006

Ging, D., & Garvey, S. (2018). 'Written in these scars are the stories I can't explain': a content analysis of pro-ana and thinspiration image sharing on Instagram. *New Media & Society*, *20*, 1181-1200. https://doi.org/10.1177/1461444816687288

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

Hargreaves, D., & Tiggemann, M. (2003). The effect of "thin ideal" television commercials on body dissatisfaction and schema activation during early adolescence. *Journal of Youth and Adolescence*, *32*, 367-373. https://doi.org/10.1023/A:1024974015581

Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach (2nd Edition)*. New York: Guilford publications.

Heinberg, L. J., Thompson, J. K., & Stormer, S. (1995). Development and validation of the sociocultural attitudes towards appearance questionnaire. *International Journal of Eating Disorders*, *17*, 81-89.https://doi.org/10.1002/1098-108X(199501)17:1<81::AID-EAT2260170111>3.0.CO;2-Y

Holland, G., & Tiggemann, M. (2016). A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image*, *17*, 100-110. https://doi.org/10.1016/j.bodyim.2016.02.008

Hootsuite, W. A. S. Y. (2022). https://blog.hootsuite.com/social-media-statistics-for-social-media-managers/#General_social_media_statistics

Hootsuite (2023). https://blog.hootsuite.com/instagram-hashtags/#Top_Instagram_hashtags

Katebi, V. M. (2022). *Understanding How Message Features of Fitspiration Posts Affect Body Image Perceptions and Exercise Intentions* (Doctoral dissertation, University of Georgia).

Kazdin, A. E. (2021). *Research Design in Clinical Psychology*. Cambridge University Press.

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

Nelson, S. L., Harriger, J. A., Miller-Perrin, C., & Rouse, S. V. (2022). The effects of body-positive Instagram posts on body image in adult women. *Body Image*, *42*, 338-346. https://doi.org/10.1016/j.bodyim.2022.07.013

Nunnally, J. C. (1978). An overview of psychological measurement. In Wolman, B.B. (Ed). *Clinical Diagnosis of Mental Disorders* (pp. 97-146). https://doi.org/10.1007/978-1-4684-2490-4_4

Oates, J., Carpenter, D., Fisher, M., Goodson, S., Hannah, B., Kwiatowski, R., Prutton, K., Reeves, D., & Wainwright, T. (2021). *BPS Code of Human Research Ethics*. British Psychological Society. https://cms.bps.org.uk/sites/default/files/2022-06/BPS%20Code%20of%20Human%20Research%20Ethics%20%281%29.pdf

Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, *71*, 363-377. https://doi.org/10.1007/s11199-014-0384-6

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.2017.06.001

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

Prichard, I., & Tiggemann, M. (2008). Relations among exercise type, self-objectification, and body image in the fitness centre environment: The role of reasons for exercise. *Psychology of Sport and Exercise*, *9*, 855-866. https://doi.org/10.1016/j.psychsport.2007.10.005

Pryde, S., & Prichard, I. (2022). TikTok on the clock but the #fitspo don't stop: The impact of TikTok fitspiration videos on women's body image concerns. *Body Image*, *43*, 244-252. https://doi.org/10.1016/j.bodyim.2022.09.004

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

Rodgers, R. F., Paxton, S. J., & Wertheim, E. H. (2021). #Take idealized bodies out of the
picture: A scoping review of social media content aiming to protect and promote
positive body image. *Body Image*, *38*, 10-36.
https://doi.org/10.1016/j.bodyim.2021.03.009

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://doi.org/10.1037/ppm0000288

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.
https://doi.org/10.1177/1359105316676334

Sanzari, C. M., Gorrell, S., Anderson, L. M., Reilly, E. E., Niemiec, M. A., Orloff, N. C. et al.
(2023). The impact of social media use on body image and disordered eating behaviors:
Content matters more than duration of exposure. *Eating Behaviors*, *49*, 101722.
https://doi.org/10.1016/j.eatbeh.2023.101722

Schaefer, L. M., & Thompson, J. K. (2018). Self-objectification and disordered eating: A meta-
analysis. *International Journal of Eating Disorders*, *51*, 483-502.
https://doi.org/10.1016/j.bodyim.2019.03.004

Selensky, J. C., & Carels, R. A. (2021). Weight stigma and media: An examination of the effect of advertising campaigns on weight bias, internalized weight bias, self-esteem, body image, and affect. *Body Image*, *36*, 95-106. https://doi.org/10.1016/j.bodyim.2020.10.008

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

Statista (2022). Distribution of Instagram Users Worldwide as of April 2022, by Age and Gender. Available at: https://www.statista.com/statistics/248769/age-distribution-of-worldwide-instagram-users/#:~:text=Instagram%3A%20distribution%20of%20global%20audiences%202022%2C%20by%20age,population%20worldwide%20is%20aged%2034%20years%20or%20younger

Strelan, P., Mehaffey, S. J., & Tiggemann, M. (2003). Brief report: Self-objectification and esteem in young women: The mediating role of reasons for exercise. *Sex Roles*, *48*, 89-95. https://doi.org/10.1023/A:1022300930307

Sumter, S. R., Cingel, D. P., & Antonis, D. (2018). "To be able to change, you have to take risks# fitspo": Exploring correlates of fitspirational social media use among young women. *Telematics and Informatics*, *35*, 1166-1175. https://doi.org/10.1016/j.tele.2018.01.013

Tiggemann, M., & Anderberg I. (2020). Social media is not real: The effect of 'Instagram vs reality' images on women's social comparison and body image. *New Media & Society*. 22, 2183-2199. doi:10.1177/1461444819888720

Tiggemann, M., Anderberg, I., & Brown, Z. (2020). #Loveyourbody: The effect of body positive Instagram captions on women's body image. *Body Image*, *33*, 129-136. https://doi.org/10.1016/j.bodyim.2020.02.015

Tiggemann, M., & Andrew, R. (2012). Clothes make a difference: The role of self-objectification. *Sex Roles*, *66*, 646-654. https://doi.org/10.1007/s11199-011-0085-3

Tiggemann, M., & Barbato, I. (2018). "You look great!": The effect of viewing appearance-related Instagram comments on women's body image. *Body Image*, *27*, 61-66. https://doi.org/10.1016/j.bodyim.2018.08.009

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