Article

new media & society
2023, Vol. 25(12) 3266–3288

DOI: 10.1177/14614448211038904
journals.sagepub.com/home/nms
SAGE

Examining the impact of daily exposure to body-positive and fitspiration Instagram content on young women's mood and body image: An intensive longitudinal study

Giulia Fioravanti, Andrea Svicher, Giulia Ceragioli, Viola Bruni and Silvia Casale
University of Florence, Italy

Abstract
The aim of the present study is to investigate the effect of daily exposure to body-positive and fitspiration Instagram posts on young women's mood, body satisfaction, and appearance comparison tendency. One hundred and twenty-two young Italian women (M_{age} = 22.29 ± 2.26 years) were randomly assigned to three different conditions of daily exposure on Instagram (i.e., body-positive, fitspiration and neutral content) and followed with an experience sampling method over a period of 28 consecutive days. Comparisons between groups were performed via multilevel regression modelled as a linear growth model. Results showed that daily exposure to body-positive images was associated with the highest rates of growth of positive mood and body satisfaction. Daily exposure to fitspiration images was associated with the highest rates of growth of negative mood and appearance comparison. In conclusion, the body-positive movement may be considered in interventions aimed at improving young women's body image. Fitspiration content on Instagram should be deemed inappropriate.

Keywords
Appearance comparison, experience sampling method, Instagram, mood, positive body image

Corresponding author:
Andrea Svicher, Department of Health Sciences, University of Florence, via di San Salvi, 12, 50135 Florence, Italy.
Email: andrea.svicher@unifi.it

Introduction

Instagram is a photosharing social network created in 2010 (Instagram, 2020). It has approximately 500 million daily active users, many of whom are young adult women (Instagram, 2020). Instagram allows users to follow a large variety of photo trends labelled with a hashtag (#) (Instagram, 2020). In this context, following appearance-focussed beauty trends (such as 'health and fitness' or 'celebrities') lead young women to be exposed to a broad range of ideal body images that have a detrimental effect on body image satisfaction and mood (Brown and Tiggemann, 2016; Casale et al., 2019; Sherlock and Wagstaff, 2019; Slater et al., 2017; Tiggemann and Barbato, 2018; Tiggemann and Zaccardo, 2015; Tiggemann et al., 2018). Recent research has focussed on the psychological effects of exposure to a specific appearance-focussed beauty trend: 'fitspiration' (e.g. Holland and Tiggemann, 2017; Tiggemann and Zaccardo, 2015; Uhlmann et al., 2018). The fitspiration trend (a combination of the words 'fitness' and 'inspiration') arose as a healthy solution to the 'thinspiration' trend (i.e. images planned to motivate weight loss, glamorizing thinness and promoting unhealthy eating habits) (Slater et al., 2017) that was considered inappropriate (Instagram help, 2020). Fitspiration trends mainly depict women, usually exercising, or dressed in exercise outfits, occasionally accompanied by inspirational quotes that motivate health and fitness (Boepple and Thompson, 2016). It was created to encourage women to practise physical activity and obtain a muscular, toned body (Boepple and Thompson, 2016). Extensive research suggests that the 'fitspiration' movement communicates messages that are potentially harmful to young women's well-being (e.g. Griffiths and Stefanovski, 2019; Tiggemann and Zaccardo, 2015, 2018), albeit some evidence shows the opposite effect, in that positive benefits associated with fitspiration, such as increasing motivation to be physically active and to eat healthily, were reported (e.g. Raggatt et al., 2018; Tiggemann and Zaccardo, 2015). Content analyses showed that fitspiration images, although focussed on fitness, foster weight loss and place particular value on physical appearance, depicting only thin and toned models (Carrotte et al., 2017; Tiggemann and Zaccardo, 2018). Fitspiration models were less thin and more muscular than models portrayed in fashion magazines, unattainable for most women (Tiggemann and Zaccardo, 2018). Specifically, fitspiration models represent mainly everyday women rather than fashion models, leading viewers to engage in greater levels of social comparison with them (Boepple et al., 2016). Social comparison theory (Festinger, 1954) argues that women evaluate their appearance by comparing themselves with the cultural ideals of beauty and thinness presented in the media. Perceiving the appearance of these models as unattainable could lead women to feel dissatisfied with their image and body. Social comparison based on appearance has been found to be responsible for the detrimental effects of viewing idealized images (including fitspiration images) on women's body image outcomes (Sherlock and Wagstaff, 2019; Tiggemann and McGill, 2004; Tiggemann and Zaccardo, 2015; Yee et al., 2020). Moreover, inspirational quotes motivate viewers to appearance-related benefits rather than health or enjoyment benefits. Exercising for reasons of appearance has been associated with negative body image (Prichard and Tiggemann, 2008; Strelan et al., 2003). Moreover, fitspiration images frequently display objectifying features (i.e. focus on particular poses or body parts) that were associated with self-objectification, body

dissatisfaction, depressed mood, disordered eating and sexual dysfunction (Tiggemann, 2011). Experimental studies confirm these results, showing that exposure to fitspiration pictures was associated with the development of body image dissatisfaction, unhealthy eating behaviours, lower appearance-related self-esteem, lower self-rated attractiveness and negative affective states (Griffiths and Stefanovski, 2019; Prichard et al., 2018; Sherlock and Wagstaff, 2019; Tiggemann and Zaccardo, 2015; Uhlmann et al., 2018; Yee et al., 2020).

In response to fitspiration and other appearance-focussed beauty trends, the 'body-positive' movement has rapidly grown in recent years (Tylka and Wood-Barcalow, 2015). Body-positive trends aim to face thin ideals and to disseminate body appreciation and acceptance among women (Cwynar-Horta, 2016). This trend comprises posts of images of women (e.g. selfies, posed or unposed photos) showing their larger bodies with pride or their 'real' bodies without filters or digital alterations (Sastre, 2014). Such posts attempt to enhance the normalization and diffusion of the otherwise unrepresented body in old media (Saguy and Ward, 2011).

Body-positive images are expected to improve acceptance of real bodies, reduce upward comparisons and decrease women's concerns with their appearance (Sastre, 2014). Hashtag #bodypositive on Instagram was used for over 13,900,000 posts, and #bodypositivity and #BoPo reached 5,67,836 and 1,192,639 posts, respectively (Instagram, 2020). A recent content analysis (Cohen et al., 2019b) found that, in most cases, Instagram body-positive profiles depicted a wide variety of larger body types and included messages in line with Tylka and Wood-Barcalow's (2015) definition of positive body image – a multifaceted construct including body appreciation, body acceptance and love, adaptive appearance investment, broadly conceptualized beauty, inner positivity that radiates outward and manifests as adaptive behaviour and filtering information in a body-protective manner. In young women, positive body appreciation was found to be associated with greater emotional, psychological and social well-being (Andrew et al., 2016; Tylka, 2018), healthier eating patterns (Andrew et al., 2014) and increased exercise frequency (Homan and Tylka, 2014). To our knowledge, only two experimental studies (Cohen et al., 2019a; Serlin, 2020) have examined the effect of viewing Instagram's body-positive images on young women, showing that positive mood and body satisfaction improved among participants who were briefly exposed to body-positive images compared with those exposed to thin-ideal and appearance-neutral images (Cohen et al., 2019a) as well as compared with those exposed to fitspiration and appearance-neutral images (Serlin, 2020). However, two other recent experimental studies (Brown and Tiggemann, 2020; Tiggemann et al., 2020) found no positive effect of body-positive captions attached to Instagram images (of both unknown peers and celebrities) on either body dissatisfaction or body appreciation, nor on social comparison, concluding that the addition of body-positive captions by attractive celebrities or peers does not serve to improve women's body image.

All previous studies that experimentally investigated the effects of body-positive images and captions were conducted in a laboratory setting, and the impact of viewing body-positive images was assessed after a few minutes of exposure. Intensive longitudinal assessment methods (e.g. experience sampling method [ESM], ecological

momentary assessment, daily diary study) have had increasing application in the field of body image studies (e.g. Fuller-Tyszkiewicz, 2019; Griffiths and Stefanovski, 2019; Heron and Smyth, 2013; Krug et al., 2020; Stefano et al., 2016; Stevens and Griffiths, 2020; Yee et al., 2020). In particular, Griffiths and Stefanovski (2019) investigated the effects of thinspiration and fitspiration exposure in everyday life on body satisfaction and affective functioning by an ESM. They found that exposure to thinspiration and fitspiration was uniquely and interactively associated with lower body satisfaction, higher negative affect and lower positive affect. Recently, Stevens and Griffiths (2020) have examined the influence of body-positive exposure on body satisfaction and affective functioning using a naturalistic study design. Applying an ecological momentary assessment protocol, they found that individuals who reported a unique exposure to body-positive subsequently reported greater state body satisfaction and positive affect, while also reporting lower state negative affect, relative to those occasions when they were not uniquely exposed to body-positive (i.e. unique exposure to thinspiration, unique exposure to fitspiration, dual exposure to body-positive and thinspiration, dual exposure to body-positive and fitspiration, dual exposure to thinspiration and fitspiration and triple exposure to body-positive, thinspiration and fitspiration). However, as the authors stated, a limitation of the above-mentioned study is that researchers did not know what participants were seeing when they reported viewing (or not viewing) body-positive. Indeed, they did not experimentally manipulate the types of images which participants were exposed to. Krug et al. (2020) and Yee et al. (2020) conducted two experimental ecological momentary assessment studies to assess the impact of fitspiration images (during a 7-day period) on body image concerns among women and men, respectively. Among men, viewing fitspiration images led to poorer body image, and this effect was stronger for men with high levels of trait muscularity dissatisfaction and appearance comparison (Yee et al., 2020). Among women, exposure to fitspiration content increased the perceived pressure to obtain an idealized body and decreased the perceived success of attempting to do so and the satisfaction with one's current fitness, whereas it did not affect other aspects of satisfaction with one's body attributes (e.g. weight, health, muscle tone), mood or the frequency of appearance comparisons (Krug et al., 2020).

To date no study has utilized intensive longitudinal assessment methods with an experimental design embedded within, to investigate the effect of the daily exposure to body-positive images on Instagram. Intensive longitudinal assessment methods allow participants to respond to questions in their natural setting and to schedule affective and behavioural dynamics in everyday life (Bolger and Laurenceau, 2013). Moreover, they provide the opportunity to track mood and body satisfaction in the environment where the data are collected and to overcome the limitation of a retroactive self-report assessment (Bolger and Laurenceau, 2013). Adopting an intensive longitudinal assessment method within an experimental design permits to maximize the ecological validity of the results without reducing internal validity.

The present study aimed to experimentally investigate the effect of daily exposure to three Instagram trends (i.e. body-positive, fitspiration, and neutral content) on four psychological variables (i.e. positive mood, body satisfaction, negative mood, and appearance comparison) engendered by a 1-month exposure to pictures using an ESM technique.

Specifically, participants will be randomly assigned to a condition of daily exposure (e.g. follow body-positive, fitspiration, or neutral-content Instagram trends) and fill out a short daily diary (Larson and Csikszentmihalyi, 2014). ESM relies on electronic devices (e.g. smartphones, tablets, laptops) that emit a stimulus signal (e.g. e-mail or social media message) according to a random schedule each day over several days (Larson and Csikszentmihalyi, 2014). At the signal, participants write down information about their daily exposure and psychological variables (Larson and Csikszentmihalyi, 2014). The results are analysed via a linear growth model (LGM) to evaluate whether the changes over time in psychological variables are due to assignment to different conditions or individual differences (Bolger and Laurenceau, 2013).

Specifically, the following hypotheses were tested:

H1. Participants exposed to body-positive content show greater growth in positive mood than participants exposed to neutral or fitspiration content.

H2. Participants exposed to fitspiration content show greater growth in negative mood than participants exposed to neutral or body-positive content.

H3. Participants exposed to body-positive content show greater growth in body satisfaction than participants exposed to neutral or fitspiration content.

H4. Participants exposed to fitspiration content show greater growth in appearance comparison engendered by exposure to pictures than participants exposed to neutral content.

Methods

Study design

The study design was a quasi-experimental intensive longitudinal study (Bolger and Laurenceau, 2013) in which a sample of women was randomly assigned to three different conditions of daily exposure on Instagram (i.e. body-positive, fitspiration, and neutral content) and followed with an ESM over a period of 28 consecutive days. A power analysis was conducted using G*Power. Assuming a medium-sized effect (partial $\eta^2 = 0.06$) and an alpha level of .05, the results indicated that 66 participants (22 per group) would be necessary to achieve a power of 0.95 (Cohen, 1992).

Participants

Participants were 122 Italian Instagram users. They were young women with a mean age of 22.29 ($SD = 2.26$) years. The majority (68.0%) of the participants had at least a high school education and were full-time students (89.3%) or employed (8.2%). The mean self-reported body mass index (BMI) was 21.25 ($SD = 2.77$).

Participants were recruited through announcements on Instagram advertising a study on ‘Instagram, body image and well-being’. To be eligible to participate, participants

were required to identify as females aged between 18 and 30 years (Cohen et al., 2019a), have a smartphone with access to the Internet (e.g. Bennett et al., 2020; Stefano et al., 2016), have an Instagram profile, be active users of Instagram defined as usage of at least 1 hour per day (Varkaris and Neuhofer, 2017), and following fewer than 1000 Instagram accounts. Participation was voluntary, and respondents gave informed digital consent and a privacy protection disclaimer according to Italian and European laws in the field of research activities. Approval to run the research was obtained by the University of Florence Review Board.

Procedure

Before starting the ESM procedure, a pilot test was run on a sample of 15 young women. They first received a tutorial fully explaining fitspiration (Tiggemann and Zaccardo, 2015) and body-positive definitions (Tylka and Wood-Barcalow, 2015) and then evaluated two sets of pictures on a 5-point Likert-type scale (1 = not at all; 5 = very much): 240 selected via hashtag #bodypositive and 240 selected via hashtag #fitspiration. For each set, the 112 pictures with the highest scores were assigned to two Instagram profiles created by researchers. The first profile included body-positive pictures (@bodypositive.unifi); the second profile encompassed fitspiration pictures (@fitspiration.unifi). A third Instagram profile related to neutral content (i.e. @study.unifi) was created with 112 images selected from the following hashtags: #animals; #plants, #landscape, #travel, #city, #marinelife and #nature. The structure of the present ESM protocol was modelled in line with previous effective intensive longitudinal studies investigating body image or mood (e.g. Bennett et al., 2020; Griffiths and Stefanovski, 2019; Stefano et al., 2016).

Respondents who agreed to take part in the study and who met the inclusion criteria were enrolled. Participants were assessed at baseline and daily for 28 days. At baseline, they were asked to give digital informed consent and to complete a self-report questionnaire collecting demographic information (i.e. age, level of education, occupational status, BMI) and frequency of Instagram use. Subsequently, participants were randomly assigned to one of the Instagram profiles created by researchers. Forty-one participants were randomly assigned to body-positive, 41 to fitspiration and 40 to neutral profiles. All participants were asked to follow the assigned profile for 28 days. Moreover, for all 28 days, participants assigned to body-positive and fitspiration content were asked to follow the most popular body-positive (i.e. #BodyPositive, #BoPo, #ShowUs #normalizeNormalBodies, #BodyPositivity, #celluLIT, #loveyourbody) and fitspiration (i.e. #fitspiration, #fitmodel, #fitmotivation, #bodytransformation, #fitspogirl) hashtags, and participants assigned to neutral content were asked to follow #animals, #nature, #travel and #landscape hashtags. Therefore, all participants received a second tutorial explaining the ESM procedures. During the ESM, participants received a new post each day published at 10:00 a.m. and three Instagram stories published at 9:00 a.m., 1:00 p.m. and 5:00 p.m., respectively. During the 28 days, participants received one message per day between the hours of 6:00 p.m. and 7:00 p.m. The text messages contained a control question about the details of the post or stories and a hyperlink to the ESM measures hosted through Google Forms. The ESM measures are described below.

Measures

The computer-based visual analogue scale (C-VAS) (Cohen et al., 2019a; Reich et al., 2003) was used to measure state mood and body satisfaction. Participants were asked to rate how they felt 'right now' by moving a vertical marker to the appropriate point on each horizontal line with endpoints labelled 'not at all' (1) and 'very much' (10). Participants were asked to rate a series of mood dimensions that encompassed 'depressed', 'anxious', 'anger', 'confident' and 'happy'. Following Cohen et al. (2019a) and Reich et al. (2003), ratings of 'happy' and 'confident' were combined to form a measure of state positive mood, and 'depressed', 'anxious' and 'anger' were combined to form a measure of state negative mood. The body satisfaction dimensions included 'satisfied with my weight', 'satisfied with my overall appearance', 'appreciation towards one's body' and 'satisfied with my body shape', which were combined to form a measure of state body satisfaction (Cohen et al., 2019a; Reich et al., 2003). Previous research has shown the VAS to be a reliable and sensitive measure of changes in mood and body satisfaction among young women (Cohen et al., 2019a). In the current study, the positive mood scale showed acceptable internal consistency ($\alpha = .72$), the negative mood scale showed good internal consistency ($\alpha = .81$) and body satisfaction demonstrated excellent internal consistency ($\alpha = .97$).

The State Appearance Comparison Scale (SACS) (Tiggemann and McGill, 2004) was used to measure appearance comparison engendered by exposure to the presented pictures. This scale consists of three items that have demonstrated good internal consistency (Tiggemann and McGill, 2004). In the present study, the SACS demonstrated excellent internal consistency ($\alpha = .95$).

The 5-item Physical Appearance Comparison Scale (PACS; Thompson et al., 1991) was used to measure trait tendency to engage in social comparison based on appearance. Thompson et al. (1991) report an adequate internal consistency coefficient and test–retest reliability. In the present study, the PACS showed acceptable internal consistency ($\alpha = .73$).

The Multidimensional Body-Self Relations Questionnaire Appearance Scales (MBSRQ-AS; Cash, 2000) was used to measure trait body image. It is a 34-item measure that consists of five subscales, namely, Appearance Evaluation, Appearance Orientation, Overweight Preoccupation, Self-Classified Weight and the Body Areas Satisfaction Scale. In the present study, all the scales showed acceptable internal consistency ($\alpha = .91$ for Appearance Evaluation; $\alpha = .80$ for Appearance Orientation; $\alpha = .71$ for Overweight Preoccupation; $\alpha = .76$ for Self-Classified Weight and $\alpha = .73$ for Body Areas Satisfaction Scale).

Statistical analysis

In accordance with Bolger and Laurenceau (2013), each total score measure was recorded on a 0–10 scale. Three subsamples were created to run multilevel regression analyses modelled as a linear growth function (Bolger and Laurenceau, 2013). They were created to compare the different conditions of exposure on Instagram (41 participants exposed to

body-positive content; 41 participants exposed to fitspiration content; 40 participants exposed to neutral content; total $n = 122$) and selected as *follows*:

1. *Subsample a* for the comparison of participants exposed to Instagram body-positive content (#BoPo; $n = 41$) and participants exposed to neutral content (neutral; $n = 40$) (total; $n = 82$).;
2. *Subsample b* for the comparison of participants exposed to Instagram body-positive content (#BoPo; $n = 41$) and participants exposed to fitspiration content (#fitspo; $n = 41$) (total; $n = 82$);
3. *Subsample c* for the comparison of participants exposed to Instagram fitspiration content (#fitspo; $n = 41$) and participants exposed to neutral content (neutral; $n = 40$) (total; $n = 81$).

No significant differences, $F_{(2, 119)} = 0.39$; $p = .67$, were found between the three groups on trait physical appearance comparison as assessed through the PACS (Thompson, Heinberg, & Tantleff, 1991) ($M \pm SD = 10.02 \pm 3.99$; 10.05 ± 3.74; and 9.40 ± 3.31 for #BoPo, #fitspo and neutral condition, respectively). No significant differences were found between the three groups on trait body satisfaction as assessed through the Appearance Evaluation, $F_{(2, 119)} = 0.48$; $p = .62$, and the Body Areas Satisfaction Scales, $F_{(2, 119)} = 0.01$; $p = .98$, of the MBSRQ-AS (Cash, 2000) (Appearance Evaluation: $M \pm SD = 3.43 \pm 0.90$; 3.37 ± 0.76 and 3.23 ± 1.03; Body Areas Satisfaction: $M \pm SD = 3.29 \pm 0.62$; 3.31 ± 0.55 and 3.31 ± 0.67 for #BoPo, #fitspo and neutral condition, respectively).

Before running multilevel regression analyses, each psychological variable (i.e. positive mood, body satisfaction, negative mood and SACS scores) was tested in terms of fit to the LGM internal consistency and the absence of a mean difference between groups at day 1 (Grimm et al., 2017). The fit to the LGM was calculated using the standardized root mean square error of approximation (SRMSEA), comparative fit index (CFI) and Tucker–Lewis index (TLI) (Hu and Bentler, 1998, 1999). SRMSEA values up to 0.08 were judged as having an acceptable fit (Hu and Bentler, 1999). The values close to 0.90 at CFI and TLI indicated an adequate fit; and those close to 0.95 indicated a good fit (Hu and Bentler, 1998). The statistical software Mplus 7 was used. The absence of a mean difference between groups at day 1 was calculated via the *t*-test for independent samples. A result that was not statistically significant showed no differences. The statistical software SPSS 22 was used. Thereafter, comparisons between groups were conducted via a series of eight multilevel linear regression analyses (i.e. two-level random), modelled as a LGM following the analytic strategies for intensive longitudinal data proposed by Bolger and Laurenceau (2013). The Maximum Likelihood estimator was applied. The statistical software Mplus 7 was used. A p value $\leqslant .05$ was considered statistically significant.

Time. For each regression, time was set as continuously ranging from 0 to 1, and the 28 days of the ESM were scaled such that 0 = day 1 and 1 = day 28, with the remaining 26 days spaced equally across the 0–1 interval (Bolger and Laurenceau, 2013).

Grouping variable. The grouping variable was the condition assigned by researchers. Zero was assigned to the group in which lower growth was expected (i.e. group 0). One was assigned to the group in which higher growth was expected (i.e. group 1) (Bolger and Laurenceau, 2013).

Multilevel regression analyses. Eight multilevel linear regression analyses were run to test the study hypotheses. At the lower level, positive mood (regressions 1 and 2), negative mood (regressions 3 and 4), body satisfaction (regressions 5 and 6) and SACS score (regressions 7 and 8) were the dependent variables, and time was the independent variable. At the upper level, positive mood (regressions 1 and 2), negative mood (regressions 3 and 4), body satisfaction (regressions 5 and 6) and SACS score (regressions 7 and 8) were the dependent variables, and the grouping variable was the independent variable. For each multilevel linear regression analysis, daily Instagram use was set as an adjustment variable (i.e. minutes spent on Instagram per day). The grouping variables were set as follows:

1. *Subsample a* (regressions 1 and 5), comparison between participants exposed to body-positive content and participants exposed to neutral content: #BoPo = group 1; neutral = group 0;
2. *Subsample b* (regressions 2 and 6), comparison between participants exposed to body-positive content and participants exposed to fitspiration content #BoPo = group 1; #fitspo = group 0;
3. *Subsample c* (regressions 3 and 7), comparison between participants exposed to fitspiration content and participants exposed to neutral content: #fitspo = group 1; neutral = group 0;
4. *Subsample b* (regressions 4 and 8), comparison between participants exposed to fitspiration content and participants exposed to body-positive content: #fitspo = group 1; #BoPo = group 0.

Multilevel regression analysis provided two sets of parameters (i.e. standardized beta coefficients ranging from 0 to 10) (Bolger and Laurenceau, 2013). The first set was fixed effects, and the second set was random effects (Bolger and Laurenceau, 2013). Fixed effects were intercept (i.e. the average score of group 0 at day 1), time (i.e. growth of group 0 over the 28 days), group (difference at day 1 in terms of group 1 minus group 0) and group × time (growth over the 28 days in terms of group 1 minus group 0) (Bolger and Laurenceau, 2013). The random effects were variance of intercept (i.e. variance of participants' scores above or below their population average scores), variance of time (i.e. variance of participants' growth above or below their population growth), covariance of intercept and time (i.e. linear relationship between population score and growth) and variance of residuals (i.e. average variability of population on the individual-specific fitted growth lines) (Bolger and Laurenceau, 2013).

True differences, percentages of between-group overlap, percentages of between-group separation and variance of residuals were examined to investigate whether group 1 had higher growth than group 0. The true difference was calculated via the group × time parameter. A group × time parameter with a statistically significant value > 1 indicated a

true difference; a no statistically significant parameter indicated no difference (Bolger and Laurenceau, 2013). The percentages of between-group overlap and between-group separation were determined from three values: the growth of group 0 (i.e. the time parameter); the growth of group 1 (i.e. the sum of the time plus the group × time parameters) and the standard deviation (*SD*) of population growth (i.e. the square root of the random variance of time parameter) (Bolger and Laurenceau, 2013; Cohen, 1988: p. 28). Percentages less than 50% were judged low; percentages greater than 50% were judged high (Cohen, 1988). Last, a value less than 1 of the variance of the residual parameter was considered low. Thus, a true difference, low between-group overlap, high between-group separation and low residuals provided evidence that group 1 has higher growth than group 0 (Bolger and Laurenceau, 2013). Moreover, a not statistically significant group parameter confirmed a successful random assignment (i.e. there were no group differences at day 1) (Bolger and Laurenceau, 2013).

Results

Results on positive mood

Subsample a (i.e. comparison between #BoPo and neutral) consisted of 81 young women followed during 28 days for a total of 2268 observations. Missing observations were 3.2% ($n=72$). Positive mood showed a moderate fit to the LGM (SRMR = 0.074; CFI = 0.862; TLI = 0.870) and there was no mean (± *SD*) difference between groups at day 1 (#BoPo = 5.19 ± 1.61; neutral = 5.04 ± 1.61; $p=.665$). Table 1 shows the results of multilevel regression for LGM of positive mood as a function of exposure groups adjusted for daily Instagram use. The upper part of the table shows comparisons between #BoPo and neutral. The group parameter was not statistically significant, confirming a successful random assignment (Table 1). The time parameter was statistically significant, showing a growth of 1.21 for neutral; the group × time parameter was statistically significant, showing no true difference (Table 1). This corresponded to 1.86 growth in positive mood for #BoPo. The random variance of time was statistically significant and corresponded to an *SD* of 1.05. The random variance of the residuals was low and statistically significant (Table 1). With these values, there was a high overlap (62.2%) and a high separation (77.4%). Overall, the absence of true differences and high overlap suggested similar rates of growth; small residuals and high separation suggested that #BoPo had greater growth. Thus, with respect to positive mood, #BoPo had higher growth than neutral with moderate evidence.

Subsample b (i.e. comparison between #BoPo and #fitspo) consisted of 82 young women followed for 28 days for a total of 2296 observations. In subsample b, positive mood showed a moderate fit to the LGM (SRMR = 0.086; TLI = 0.888; CFI = 0.894) and there was no mean (± *SD*) difference at day 1 (#BoPo = 5.19 ± 1.61; #fitspo = 5.15 ± 1.67; $p=.907$). Missing observations were 3.7% ($n=84$). The lower part of Table 1 shows comparisons between #BoPo and #fitspo. In accordance with successful random assignment, the group parameter was not statistically significant (Table 1). The time parameter showed a statistically significant growth of 1.06 for #fitspo (Table 1). The group × time parameter was statistically significant and very close to a true difference (Table 1). This

Table 1. Result of linear growth models of positive mood as a function of exposure groups adjusted for daily Instagram use.

Sub-sample	Effect	Parameter	β (SE)	*p*	95% CI	
					Lower	Upper
a (#BoPo vs neutral)	Fixed	Intercept	4.86 (0.23)	.000	4.39	5.32
		Time	1.21 (0.17)	.000	0.83	1.60
		Group	0.03 (0.32)	.951	−0.63	0.68
		Group × Time	0.65 (0.27)	.029	0.12	1.18
	Random ([co-] variances)	Intercept	2.05 (0.33)	.000	1.35	2.74
		Time	1.11 (0.22)	.000	0.66	1.57
		Intercept and Time	0.21 (0.20)	.204	−0.19	0.61
		Residual	0.97 (0.03)	.000	0.91	1.03
b (#BoPo vs #fitspo)	Fixed	Intercept	4.89 (0.21)	.000	4.44	5.35
		Time	1.06 (0.18)	.000	0.70	1.42
		Group	−0.02 (0.31)	.793	−0.61	0.66
		Group × Time	0.98 (0.25)	.000	0.47	1.48
	Random ([co-] variances)	Intercept	2.00 (0.34)	.000	1.33	2.67
		Time	1.01 (0.20)	.000	0.60	1.43
		Intercept and Time	−0.01 (0.19)	.917	−0.38	0.36
		Residual	0.93 (0.03)	.000	0.88	0.99

CI: confidence interval; SE: standard error.
a (#BoPo vs neutral): sub-sample a for the comparison of participants exposed to body-positive Instagram content (#BoPo) and participants exposed to neutral content (neutral) ($n = 81$); b #BoPo vs #fitspo): subsample b for the comparison of participants exposed to body-positive Instagram content (#BoPo) and participants exposed to fitspiration content (#fitspo) ($n = 82$).

corresponded to 2.04 growth in positive mood for #BoPo. The random variance of time was statistically significant (Table 1), which corresponded to an *SD* of 1.05. The random variance of the residuals was low and statistically significant (Table 1). With these values, there was a quite high overlap (55.4%) and a high separation (79.4%). Generally, the quite high overlap suggested similar rates of growth, whereas true difference (very close), small residuals, and high separation indicated that #BoPo had greater growth. Thus, concerning positive mood, #BoPo had higher growth than #fitspo with strong evidence. In summary, H1 was supported (i.e. #BoPo showed higher growth than neutral and #fitspo).

Results on negative mood

Subsample c (i.e. comparison between #fitspo and neutral) consisted of 81 young women followed during 28 days for a total of 2268 observations. In subsample c, negative mood

Table 2. Result of linear growth models of negative mood as a function of exposure groups adjusted for daily Instagram use.

Subsample	Effect	Parameter	β (SE)	*p*	95% CI	
					Lower	Upper
c (#fitspo vs neutral)	Fixed	Intercept	2.29 (0.18)	.000	1.96	2.74
		Time	1.40 (0.20)	.031	0.98	1.81
		Group	−0.02 (0.27)	.699	−0.55	0.51
		Group × Time	0.83 (0.29)	.073	−0.09	1.41
	Random ([co-] variances)	Intercept	1.24 (0.25)	.000	0.78	1.71
		Time	1.23 (0.28)	.000	0.67	1.79
		Intercept and Time	−0.48 (0.21)	.021	−0.87	−0.08
		Residual	1.52 (0.05)	.000	1.43	1.61
b (#fitspo vs #BoPo)	Fixed	Intercept	2.35 (0.20)	.000	1.96	2.74
		Time	1.24 (0.18)	.000	0.85	1.63
		Group	−0.09 (0.26)	.611	−0.65	0.46
		Group × Time	0.99 (0.04)	.000	0.44	1.55
	Random ([co-] variances)	Intercept	1.38 (0.25)	.000	0.88	1.88
		Time	1.09 (0.25)	.000	0.59	1.59
		Intercept and Time	−0.46 (0.20)	.035	−0.10	−0.07
		Residual	1.45 (0.04)	.000	1.36	1.53

CI: confidence interval; SE: standard error.
c (#fitspo vs neutral): subsample c for the comparison of participants exposed to fitspiration Instagram content (#fitspo) and participants exposed to neutral content (neutral) ($n = 81$); b (#fitspo vs #BoPo): subsample d for the comparison of participants exposed to fitspiration Instagram content (#fitspo) and participants exposed to body-positive content (#BoPo) ($n = 82$).

showed a poor fit to the LGM (SRMR = 0.090; CFI = 0.780; TLI = 0.767) and there was no mean (± *SD*) difference at day 1 (#fitspo = 2.55 ± 1.89; neutral = 2.91 ± 1.92; $p = .413$). Missing observations were 4.0% ($n = 90$). Table 2 shows the results of multilevel regression for LGM of negative mood as a function of exposure groups adjusted for daily Instagram use. The upper part of the table shows the comparison between #fitspo and neutral. The group parameter was not statistically significant, highlighting a successful random assignment (Table 2). However, the group × time parameter was not statistically significant (Table 2), indicating that there was no growth difference between #fitspo and neutral. Thus, regarding negative mood, there was no evidence that #fitspo had higher growth than neutral.

In subsample b (i.e. comparison between #BoPo and #fitspo), a negative mood showed a moderate fit to the LGM (SRMR = 0.076; CFI = 0.838; TLI = 0.828), there was no mean (± *SD*) difference at day 1 (#fitspo = 2.55 ± 1.89; #BoPo = 2.59 ± 1.49; $p = .906$), and 3.4% ($n = 84$) of missing observations. The lower part of Table 2 shows

the comparison between #fitspo and #BoPo. The group parameter was not statistically significant, indicating a successful random assignment (Table 2). The time parameter showed a statistically significant growth value of 1.24 for #BoPo, and the group × time parameter was very close to the true difference, indicating a 2.23 growth in negative mood for #fitspo (Table 2). The random variance of time showed a statistically significant value that corresponded to an *SD* of 1.04. The random variance of the residuals showed a high statistically significant value (Table 2). With these values, there was a quite high overlap (55.4%) and a high separation (84.1%). In general, the quite high overlap and the high residuals suggested similar growth; true difference (very close) and high separation suggested that #fitspo had higher growth. Thus, concerning negative mood, #fitspo had higher growth than #BoPo with moderate evidence. In summary, H2 was partially supported (i.e. #fitspo and neutral had no growth difference; #fitspo showed higher growth than #BoPo).

Results on body satisfaction

In subsample a (i.e. comparison between #BoPo and neutral), body satisfaction showed a good fit to the LGM (SRMR = 0.028; CFI = 0.917; TLI = 0.912), with 3.2% ($n = 72$) of observations missing, and no mean ($\pm SD$) difference between groups at day 1 (#BoPo = 5.73 ± 1.72; neutral = 5.29 ± 1.79; $p = .270$). Table 3 shows the results of multilevel regression for LGM of body satisfaction as a function of exposure groups adjusted for daily Instagram use. The upper part of the table shows comparisons between #BoPo and neutral groups. The group parameter was not statistically significant, showing a successful random assignment (Table 3). The time parameter showed a statistically significant growth of 1.72 for the neutral group. The group × time parameter was statistically significant, showing no true difference (Table 3). This corresponded to a 2.26 increase in body satisfaction for the #BoPo group. The random variance of time was not statistically significant (Table 3), which corresponded to an *SD* of 0.39. The random variance of the residuals was high and statistically significant (Table 3). With these values, there was a high overlap (72.6%) and a high separation (81.6%). In general, the absence of true difference, high overlap and high residuals suggested similar rates of growth, whereas high separation showed that #BoPo had higher growth. Thus, there was no evidence that #BoPo had higher growth in terms of body satisfaction than neutral.

In subsample b (i.e. comparison between #BoPo and #fitspo), body satisfaction showed a good fit to the LGM (SRMR = 0.051; CFI = 0.904; TLI = 0.898), 3.7% ($n = 84$) of observations were missing, and there was no mean ($\pm SD$) difference between groups at day 1 (#BoPo = 5.73 ± 1.72; #fitspo = 5.83 ± 1.71; $p = .780$). The lower part of Table 3 shows the comparison between #BoPo and #fitspo. The group parameter was not statistically significant, reflecting a successful random assignment (Table 3). The time parameter showed a statistically significant growth of 1.41 for #fitspo (Table 3). The group × time parameter showed a true difference corresponding to 2.44 of growth for #BoPo. The random variance of time was not statistically significant, corresponding to an *SD* of 0.43. The random variance of residuals was high and statistically significant (Table 3). With these values, there was a high overlap (65.3%) and a high separation (74.2%). Overall, the high overlap and large residuals suggested similar rates of growth,

Table 3. Result of linear growth models of body satisfaction as a function of exposure groups adjusted for daily Instagram use.

Subsample	Effect	Parameter	β (SE)	*p*	95% CI	
					Lower	Upper
a (#BoPo vs neutral)	Fixed	Intercept	5.36 (0.22)	.000	4.93	5.73
		Time	1.72 (0.14)	.000	1.46	1.97
		Group	0.24 (0.31)	.526	−0.37	0.86
		Group × Time	0.54 (0.17)	.011	0.18	0.90
	Random ([co-] variances)	Intercept	1.72 (0.31)	.000	1.11	2.33
		Time	0.15 (0.12)	.233	−0.06	0.36
		Intercept and Time	0.18 (0.30)	.491	−0.08	0.43
		Residual	1.35 (0.04)	.000	1.27	1.44
b (#BoPo vs #fitspo)	Fixed	Intercept	5.54 (0.20)	.000	5.15	5.93
		Time	1.41 (0.13)	.000	1.18	1.65
		Group	0.13 (0.27)	.877	−0.42	0.68
		Group × Time	1.03 (0.17)	.000	0.70	1.36
	Random ([co-] variances)	Intercept	1.38 (0.25)	.000	0.87	1.89
		Time	0.08 (0.12)	.626	−0.15	0.32
		Intercept and Time	0.19 (0.13)	.081	−0.05	0.44
		Residual	1.32 (0.05)	.000	1.24	1.40

CI: confidence interval; SE: standard error.
a (#BoPo vs neutral): subsample a for the comparison of participants exposed to body-positive Instagram content (#BoPo) and participants exposed to neutral content (neutral) ($n = 81$); b (#fitspo vs #BoPo): subsample b for the comparison of participants exposed to body-positive Instagram content (#BoPo) and participants exposed to fitspiration content (#fitspo) ($n = 82$).

whereas true difference and high separation suggested that #BoPo had higher growth. Thus, concerning body satisfaction, #BoPo had higher growth than #fitspo with moderate/strong evidence. H3 was partially supported (i.e. #BoPo and neutral showed no growth difference; #BoPo showed higher growth than #fitspo).

Results on appearance comparison

In subsample c (i.e. comparison between #fitspo and neutral), appearance comparison showed moderate fit to the LGM (SRMR = 0.059; CFI = 0.813; TLI = 0.801), there was no mean (± *SD*) difference at day 1 (#fitspo = 2.53 ± 1.16; neutral = 2.29 ± 1.05; $p = .334$), and 4% ($n = 90$) of observations were missing. Table 4 shows the results of multilevel regression for LGM appearance comparison as a function of exposure groups adjusted for daily Instagram use. The upper part of the table shows comparisons between #fitspo and neutral. The group parameter was not statistically significant, showing a successful

Table 4. Result of linear growth models of appearance comparison as a function of exposure groups adjusted for daily Instagram use.

Subsample	Effect	Parameter	β (SE)	*p*	95% CI	
					Lower	Upper
c (#fitspo vs neutral)	Fixed	Intercept	2.08 (0.15)	.000	1.76	2.41
		Time	1.48 (0.12)	.000	1.25	1.71
		Group	0.30 (0.22)	.248	−0.15	0.75
		Group × Time	0.57 (0.17)	.011	0.23	0.89
	Random ([co-] variances)	Intercept	0.98 (0.18)	.000	0.66	1.31
		Time	0.53 (0.09)	.000	0.35	0.70
		Intercept and Time	−0.03 (0.10)	.911	−0.20	0.14
		Residual	0.23 (0.16)	.000	0.21	0.24
b (#fitspo vs #BoPo)	Fixed	Intercept	2.54 (0.20)	.000	2.16	2.92
		Time	0.63 (0.14)	.000	0.33	0.93
		Group	0.19 (0.26)	.596	−0.34	0.72
		Group × Time	1.42 (0.22)	.000	1.00	1.85
	Random ([co-] variances)	Intercept	1.41 (0.23)	.000	0.96	1.89
		Time	0.90 (0.16)	.000	0.60	1.19
		Intercept and Time	−0.06 (0.12)	.711	−0.33	0.20
		Residual	0.30 (0.01)	.000	0.28	0.31

CI: confidence interval; SE: standard error.
c (#fitspo vs neutral): subsample c for the comparison of participants exposed to fitspiration Instagram content (#fitspo) and participants exposed to neutral content (neutral) ($n = 81$); b (#fitspo vs #BoPo): subsample d for the comparison of participants exposed to fitspiration Instagram content (#fitspo) and participants exposed to body-positive content (#BoPo) ($n = 82$).

random assignment (Table 4). The time parameter showed a statistically significant growth of 1.48 for neutral (Table 4). The group × time parameter was statistically significant, indicating no true difference corresponding to 2.05 growth for #fitspo. The random variance of time showed a statistically significant value with an *SD* of 0.73. The random variance of residuals showed a statistically significant low value (Table 4). With these values, there was a high overlap (68.1%) and a high separation (77.4%). Altogether, the high overlap and the absence of a true difference suggested similar rates of growth; the small residuals and the high separation suggested that #fitspo had higher growth. Thus, regarding appearance comparison, #fitspo had higher growth than neutral with moderate evidence.

In subsample b (i.e. comparison between #BoPo and #fitspo), appearance comparison showed a moderate fit to the LGM (SRMR = 0.057; CFI = 0.825; TLI = 0.814), there was no mean (± *SD*) difference at day 1 (#fitspo = 2.53 ± 1.16; #BoPo = 2.71 ± 1.51; $p = .543$), and 3.7% ($n = 84$) of the observations were missing. The lower part of Table 4 shows the comparison between #BoPo and #fitspo. The group parameter was not statistically significant, consistent with a successful random assignment (Table 4). The time parameter

showed a statistically significant growth of 0.63 for #BoPo (Table 4). The group × time parameter showed a true difference that corresponded to 2.05 growth in appearance comparison for #fitspo. The random variance of time was found to be statistically significant, corresponding to an *SD* of 0.95. The random variance of the residuals showed a low statistically significant value (Table 4). With these values, there was a low overlap (38.2%) and a high separation (61.8%). Overall, the low overlap, high separation, true difference, and small residuals suggested that #fitspo had higher growth. Briefly, concerning appearance comparison, H4 was supported (i.e. #fitspo showed higher growth than neutral). Moreover, #fitspo had higher growth than #BoPo in terms of appearance comparison, showing strong evidence.

Discussion

The present study aimed to investigate the effect of daily viewing of body-positive and fitspiration Instagram images on mood, body satisfaction and appearance comparison engendered by exposure to pictures among young women. Young women exposed to body-positive images showed a higher growth of positive mood than those exposed to fitspiration and neutral pictures (H1 was supported). These findings are in line with Cohen et al. (2019a) and Serlin (2020). These findings are also consistent with those reported by the naturalistic study of Stevens and Griffiths (2020) which showed that exposure to body-positive was associated with increased levels of positive affect. Participants exposed to neutral and fitspiration contents showed a significant growth in positive mood also, although lower than in the group exposed to body-positive images. Growth in exposure to neutral content is consistent with Cohen et al. (2019a) and Velarde et al. (2007), whereas growth in exposure to fitspiration content is in contrast with the findings in the literature (Griffiths and Stefanovski, 2019). Given that participants did not just follow the assigned profile but were also asked to follow the most popular fitspiration hashtags, they may have been exposed to a whole range of other content based on those hashtags (e.g. those images accompanied by positive inspirational quotations) that enhanced positive mood. Indeed, content analyses of the fitspiration hashtags (e.g. Tiggemann and Zaccardo, 2018) have shown that a sizable number of images were overlaid with quotations that were largely positive, encouraging and sometimes considered wise.

Young women exposed daily to fitspiration content showed greater growth of negative mood than those exposed to body-positive content. Conversely, there was no difference in the growth of negative mood between participants exposed daily to fitspiration and neutral content (H2 was partially supported), which is consistent with previous literature (Krug et al., 2020; Sherlock and Wagstaff, 2019). Participants exposed to both neutral and fitspiration contents showed lower but statistically significant growth in negative mood, which is in contrast to Serlin (2020), who found no differences in post-test negative mood across conditions (i.e. fitspiration, body-positive or appearance-neutral Instagram images). Since it is the first time that prolonged exposure to body-positive, fitspiration and neutral contents was run on the Instagram platform, we can suppose that participants in the appearance-neutral condition, during their daily Instagram use, may also have followed other content (i.e. hashtags, posts or stories) that boosted negative moods.

Participants exposed daily to body-positive content showed higher growth of body satisfaction than those exposed to fitspiration content, whereas no growth differences were observed when they were compared with those exposed to neutral content (H3 was partially supported). This is consistent with previous experimental results reported in the literature (Cohen et al., 2019a; Serlin, 2020) and with the ecological momentary assessment study conducted by Stevens and Griffiths (2020), which found a positive effect of body-positive exposure on body satisfaction. Conversely, the low but statistically significant growth observed in participants exposed to neutral and fitspiration images is in contrast with the literature (Cohen et al., 2019a; Griffiths and Stefanovski, 2019; Krug et al., 2020; Serlin, 2020). The self-improvement motive for social comparison (see Helgeson and Mickelson, 1995) might explain the growth in body satisfaction among those exposed to fitspiration images. Building from social comparison theory, scholars affirmed that the extent and direction of the influence of media models on body perception vary depending on the motive for comparing oneself with models in the media (Halliwell and Dittmar, 2005; Knobloch-Westerwick and Romero, 2011; Levine and Murnen, 2009; Martin and Gentry, 1997). In particular, when engaging in upwards comparison (i.e. the type of comparison most elicited by ideal body media exposure), two types of motives occur: (1) self-evaluation, the motivation highlighted by Festinger (1954) in his original theory, involves simply judging whether one's own body resembles that in the idealized image and (2) self-improvement, which is the motivation and inspiration to improve oneself (Lockwood and Kunda, 1997). On one hand, self-evaluation comparison motivation is more likely to be responsible for the negative effect of idealized pictures on body image through experiencing self-ideal discrepancies and potential feelings of personal failure in achieving the beauty ideal. On the other hand, self-improvement comparison motivation could explain the positive effects of exposure to body ideals on body satisfaction (e.g. Halliwell and Dittmar, 2005; Holmstrom, 2004). It is possible that the increase in body satisfaction among the fitspiration group depends on the occurrence of self-improvement comparison motivation that counteracts the effect of the exposure to idealized images on body satisfaction, in accordance with previous studies (e.g. Knobloch-Westerwick, 2015; Rousseau and Eggermont, 2018; Veldhuis et al., 2017). Evaluating the different motives for comparison with models' ideal bodies could help clarify the positive effects of fitspiration pictures on both body image and positive mood.

Last, young women exposed to fitspiration images showed greater growth of appearance comparison engendered by exposure to pictures than those exposed to neutral and body-positive pictures (H4 was supported). These findings are consistent with Tiggemann and Anderberg (2020) and Politte-Corn and Fardouly (2020), which affirmed that exposure to idealized images leads to greater comparison and appearance dissatisfaction. The low but statistically significant growth observed in exposure to a body-positive picture is in line with the findings of Cohen et al. (2019a). The body-positive movement has been recently criticized for two main reasons: (1) a large amount of body-positive content actually depicts conventionally attractive and thin women (Cwynar-Horta, 2016) and (2) the focus is kept on appearance, since many of the body-positive images represent larger women in non-active and sometimes sensual poses and in revealing clothing, as well as with captions that make explicit references to aspects of appearance, such as 'cellulite', 'belly rolls', 'curvy' and 'fat' (Cohen et al., 2019b). Any focus on one's appearance,

whether positive or negative, could lead individuals to make appearance-related comparisons. In support of this hypothesis, Tiggemann et al. (2020) found that viewing captions that encourage body acceptance, celebration and appreciation did not reduce social comparison. Moreover, Cohen et al. (2019a) found that although exposure to body-positive posts led to decreased body dissatisfaction and increased body appreciation, it also resulted in increased state self-objectification.

The present findings built upon previous research showing that following daily body-positive Instagram content has positive effects on young women's mood and body image also within a larger timeframe of exposure (every day for a 1-month period). This is important to ascertain how long lasting the effects of images are on individual's body image in a more naturalistic and ecologically valid setting. In contrast, following daily fitspiration Instagram content has negative effects on young women's mood and engages viewers in higher levels of appearance comparison. Moreover, regarding the effect of body-positive exposure, the present study extended the ecological validity of previous experimental results (Cohen et al., 2019a; Serlin, 2020) by utilizing an ESM methodology via the Instagram platform, and expanded the internal validity of previous associational longitudinal results (Stevens and Griffiths, 2020).

The present study features several limitations. First, the sample was restricted to Italian young women. Although the sample size is quite large, the overall results may not be generalizable to different countries and cultures. Future research should investigate the effects on young women who frequently use social networking sites and are greatly influenced by prevailing beauty ideals (e.g. Salomon and Brown, 2019). Second, collected data showed missing values in statistical analyses. However, multilevel regression analysis allows accurate parameter estimation within the presence of missing data (Muthén and Muthén, 2012). Third, mood and body satisfaction were evaluated via a C-VAS and not via self-report clinical instruments. However, it is the first experimental longitudinal study on Instagram providing evidence of the psychological effects of daily exposure to both body-positive and fitspiration posts. Future research should attempt to measure mood and body satisfaction via such clinical self-report measures. Fourth, participants were required to attend to the images differently from the way they would interact with images in their daily lives. Exposing participants to view fitspiration/body-positive images when they did not normally consume this type of content in their everyday lives could be quite artificial and might diminish the ecological validity of the current study results. Relatedly, we controlled for time spent on Instagram, but we did not control for the type of Instagram use or, more broadly, social media use. This is an important shortcoming, as some individuals might be exposed, for example, to fitspiration content while in the body-positive condition. However, a habituation effect might occur among those who frequently use Instagram, potentially undermining the impact of daily exposure to body-positive and fitspiration posts. In addition, those who frequently use Instagram might be exposed to higher doses of fitspiration or body-positive content. Therefore, one possibility for future studies could be to take under control the habitual frequency of fitspiration and body-positive content use.

The present study provides the first evidence of positive effects of daily exposure to body-positive content on Instagram using an experimental design, supporting the body-positive movement's intention to challenge unrealistic beauty ideals in favour of greater

body acceptance and appreciation (Tylka and Wood-Barcalow, 2015). Moreover, the present study provides the first results of daily negative effects on young women's mood and appearance comparison of exposure to fitspiration content on Instagram. This result supported the growing body of literature on the detrimental effects of exposure to fitspiration images (e.g. Griffiths and Stefanovski, 2019; Tiggemann and Zaccardo, 2015, 2018). This finding is also understandable given that body-ideal, body-positive and neutral posts always exist in the daily use of Instagram. They may have a constant effect during everyday social media use. In this context, young women may experience their psychological well-being as a balance between negative effects related to exposure to body-ideal content and positive effects related to exposure to body-positive content (Garamoni et al., 1991). In this vein, it could be methodologically useful to differentiate between unique body-positive exposure and exposure to both body-positive and beauty ideals posts (i.e. attractive, fitspiration and thinspiration) to best capture the influence of body-positive content on mood and body image.

The current findings have some important practical implications. In clinical practice, the prescription of daily exposure to body-positive pictures via social media could become an additional exercise in the framework of interventions aimed at enhancing body acceptance and body appreciation (e.g. Tylka, 2018). However, since body-positive images often contain objectifying elements, they can elicit appearance-related comparison and body objectification. As suggested by some scholars (e.g. Tiggemann et al., 2020), it might be that body-positive posts that call attention to the appreciation of the functionality of one's body over its appearance would be more effective, in accordance with growing evidence that focussing on the functional aspects of one's body promotes a positive body image (e.g. Alleva et al., 2015, 2018).

In terms of prevention, Instagram should consider inappropriate fitspiration trends that drive self-evaluation comparison motivation (i.e. fitspiration images that did not directly provide information on how to reach the goal of a fit body). Indeed, the significant growth in body satisfaction and positive mood found among participants exposed to fitspiration content in the current study implies that exposure to fitspiration can also have a positive impact on Instagram users. Self-improvement messages accompanying fitspiration images could be helpful to promote body satisfaction.

Authors' note

All the authors approved the final version of the manuscript that it has not been previously published or currently being considered for publication by any other print or electronic journal.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

ORCID iDs

Giulia Fioravanti https://orcid.org/0000-0003-4871-2755
Andrea Svicher https://orcid.org/0000-0001-5183-6113
Silvia Casale https://orcid.org/0000-0003-3823-9773

References

Alleva JM, Diedrichs PC, Halliwell E, et al. (2018) A randomised-controlled trial investigating potential underlying mechanisms of a functionality-based approach to improving women's body image. *Body Image* 25: 85–96.

Alleva JM, Martijn C, Van Breukelen GJP, et al. (2015) Expand 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.

Andrew R, Tiggemann M and Clark L (2014) An extension of the acceptance model of intuitive eating in adolescent girls: a role for social comparison? *Journal of Eating Disorders* 2: O40.

Andrew R, Tiggemann M and Clark L (2016) Predictors and health-related outcomes of positive body image in adolescent girls: a prospective study. *Developmental Psychology* 52: 463–474.

Bennett BL, Whisenhunt BL, Hudson DL, et al. (2020) Examining the impact of social media on mood and body dissatisfaction using ecological momentary assessment. *Journal of American College Health* 68: 502–508.

Boepple L and Thompson JK (2016) A content analytic comparison of fitspiration and thinspiration websites. *International Journal of Eating Disorders* 49: 98–101.

Boepple L, Ata RN, Rum R, et al. (2016) Strong is the new skinny: a content analysis of fitspiration websites. *Body Image* 17: 132–135.

Bolger N and Laurenceau JP (2013) *Intensive Longitudinal Methods: An Introduction to Diary and Experience Sampling Research*. New York: Guilford Press.

Brown Z and Tiggemann M (2016) Attractive celebrity and peer images on Instagram: effect on women's mood and body image. *Body Image* 19: 37–43.

Brown Z and Tiggemann M (2020) A picture is worth a thousand words: the effect of viewing celebrity Instagram images with disclaimer and body positive captions on women's body image. *Body Image* 33: 190–198.

Carrotte ER, Prichard I and Lim MSC (2017) 'Fitspiration' on social media: a content analysis of gendered images. *Journal of Medical Internet Research* 19: e95.

Casale S, Gemelli G, Calosi C, et al. (2019) Multiple exposure to appearance-focused real accounts on Instagram: effects on body image among both genders. *Current Psychology*. Epub ahead of print 14 March. DOI: 10.1007/s12144-019-00229-6.

Cash TF (2000) *MBSRQ Users' Manual*. 3rd ed. Norfolk, VA: Old Dominion University Press.

Cohen J (1988) *Statistical Power Analysis for the Behavioral Sciences*. Mahwah, NJ: Lawrence Erlbaum.

Cohen J (1992) A power primer. *Psychological Bulletin* 112: 155–159.

Cohen R, Fardouly J, Newton-John T, et al. (2019a) #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.

Cohen R, Irwin L, Newton-John T, et al. (2019b) #bodypositivity: a content analysis of body positive accounts on Instagram. *Body Image* 29: 47–57.

Cwynar-Horta J (2016) The commodification of the body positive movement on Instagram. *Stream: Interdisciplinary Journal of Communication* 8: 36–56.

Festinger L (1954) A theory of social comparison processes. *Human Relations* 7: 117–140.

Fuller-Tyszkiewicz M (2019) Body image states in everyday life: evidence from ecological momentary assessment methodology. *Body Image* 31: 245–272.

Garamoni GL, Reynolds CF, Thase ME, et al. (1991) The balance of positive and negative affects in major depression: a further test of the states of mind model. *Psychiatry Research* 39: 99–108.

Griffiths S and Stefanovski A (2019) Thinspiration and fitspiration in everyday life: an experience sampling study. *Body Image* 30: 135–144.

Grimm KJ, Ram N and Estabrook R (2017) *Growth Modeling Structural Equation and Multilevel Modeling Approaches*. New York: Guilford Press.

Halliwell E and Dittmar H (2005) The role of self-improvement and self-evaluation motives in social comparisons with idealised female bodies in the media. *Body Image* 2: 249–261.

Helgeson VS and Mickelson KD (1995) Motives for social comparison. *Personality & Social Psychology Bulletin* 21: 1200–1209.

Heron KE and Smyth JM (2013) Is intensive measurement of body image reactive? A two-study evaluation using Ecological Momentary Assessment suggests not. *Body Image* 10: 35–44.

Holland G and Tiggemann M (2017) 'Strong beats skinny every time': disordered eating and compulsive exercise in women who post fitspiration on Instagram. *International Journal of Eating Disorders* 50: 76–79.

Holmstrom AJ (2004) The effect of the media on body image: a meta-analysis. *Journal of Broadcasting & Electronic Media* 48: 196–217.

Homan KJ and Tylka TL (2014) Appearance-based exercise motivation moderates the relationship between exercise frequency and positive body image. *Body Image* 11: 101–108.

Hu LT and Bentler PM (1998) Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. *Psychological Methods* 3: 424–453.

Hu LT and Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling* 6: 1–55.

Instagram (2020) Instagram. Available at: https://www.instagram.com (accessed 10 September 2020).

Instagram help (2020) Instagram community guidelines. Available at: https://help.instagram.com (accessed 10 September 2020).

Knobloch-Westerwick S (2015) Thinspiration: self-improvement versus self-evaluation social comparisons with thin-ideal media portrayals. *Health Communication* 30: 1089–1101.

Knobloch-Westerwick S and Romero JP (2011) Body ideals in the media: perceived attainability and social comparison choices. *Media Psychology* 14: 27–48.

Krug I, Selvaraja P, Fuller-Tyszkiewicz M, et al. (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.

Larson R and Csikszentmihalyi M (2014) The experience sampling method. In: Csikszentmihalyi M (ed.) *Flow and the Foundations of Positive Psychology*. Dordrecht: Springer Netherlands, pp. 21–34.

Levine MP and Murnen SK (2009) Media, negative body image and disordered eating '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 & Clinical Psychology* 28: 9–42.

Lockwood P and Kunda Z (1997) Superstars and me: predicting the impact of role models on the self. *Journal of Personality & Social Psychology* 73: 91–103.

Martin MC and Gentry JW (1997) Stuck in the model trap: the effects of beautiful models in ads on female pre-adolescents and adolescents. *Journal of Advertising* 26: 19–33.

Muthén LK and Muthén BO (2012) Mplus user's guide, 7th ed. Available at: https://www.statmodel.com/download/usersguide/Mplus%20user%20guide%20Ver_7_r3_web.pdf (accessed 21 September 2018).

Politte-Corn M and Fardouly J (2020) #nomakeupselfie: the impact of natural no-makeup images and positive appearance comments on young women's body image. *Body Image* 34: 233–241.

Prichard I and 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.

Prichard I, Mclachlan A, Lavis T, et al. (2018) The impact of different forms of #fitspiration imagery on body image, mood, and self-objectification among young women. *Sex Roles* 78: 789–798.

Raggatt M, Wright CJC, Carrotte E, et al. (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.

Reich JW, Zautra AJ and Davis M (2003) Dimensions of affect relationships: models and their integrative implications. *Review of General Psychology* 7: 66–83.

Rousseau A and Eggermont S (2018) Media ideals and early adolescents' body image: selective avoidance or selective exposure? *Body Image* 26: 50–59.

Saguy AC and Ward A (2011) Coming out as fat: rethinking stigma. *Social Psychology Quarterly* 74: 53–75.

Salomon I and Brown CS (2019) The selfie generation: examining the relationship between social media use and early adolescent body image. *The Journal of Early Adolescence* 39: 539–560.

Sastre A (2014) Towards a radical body positive. *Feminist Media Studies* 14: 929–943.

Serlin D (2020) *The effects of exposure to body positive and fitspiration Instagram content on undergraduate women's state body satisfaction, state body appreciation, and mood*. MSc Thesis, Arizona State University, Tempe, AZ.

Sherlock M and Wagstaff DL (2019) Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture* 8: 482–490.

Slater A, Varsani N and Diedrichs PC (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.

Stefano EC, Hudson DL, Whisenhunt BL, et al. (2016) Examination of body checking, body image dissatisfaction, and negative affect using Ecological momentary assessment. *Eating Behaviors* 22: 51–54.

Stevens A and Griffiths S (2020) Body Positivity (#BoPo) in everyday life: an ecological momentary assessment study showing potential benefits to individuals' body image and emotional wellbeing. *Body Image* 35: 181–191.

Strelan P, Mehaffey SJ and Tiggemann M (2003) Self-objectification and esteem in young women: the mediating role of reasons for exercise. *Sex Roles: A Journal of Research* 48: 89–95.

Thompson JK, Heinberg LJ and Tantleff-Dunn S (1991) The physical appearance comparison scale. *The Behavior Therapist* 14: 174.

Tiggemann M (2011) Mental health risks of self-objectification: a review of the empirical evidence for disordered eating, depressed mood, and sexual dysfunction. In: Tantleff-Dunn S and Kevin Thompson J (eds) *Self-Objectification in Women: Causes, Consequences, and Counteractions*. Washington, DC: American Psychological Association, pp. 139–159.

Tiggemann M and 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 and Society* 22: 2183–2199.

Tiggemann M and Barbato I (2018) 'You look great!': the effect of viewing appearance-related Instagram comments on women's body image. *Body Image* 27: 61–66.

Tiggemann M and 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.

Tiggemann M and Zaccardo M (2015) 'Exercise to be fit, not skinny': the effect of fitspiration imagery on women's body image. *Body Image* 15: 61–67.

Tiggemann M and Zaccardo M (2018) 'Strong is the new skinny': a content analysis of #fitspiration images on Instagram. *Journal of Health Psychology* 23: 1003–1011.
Tiggemann M, Anderberg I and Brown Z (2020) #Loveyourbody: the effect of body positive Instagram captions on women's body image. *Body Image* 33: 129–136.
Tiggemann M, Hayden S, Brown Z, et al. (2018) The effect of Instagram 'likes' on women's social comparison and body dissatisfaction. *Body Image* 26: 90–97.
Tylka TL (2018) Overview of the field of positive body image. In: Markey CH, Daniels EA and Gillen MM (eds) *Body Positive: Understanding and Improving Body Image in Science and Practice*. Cambridge: Cambridge University Press, pp. 6–33.
Tylka TL and Wood-Barcalow NL (2015) What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image* 14: 118–129.
Uhlmann LR, Donovan CL, Zimmer-Gembeck MJ, et al. (2018) The fit beauty ideal: a healthy alternative to thinness or a wolf in sheep's clothing? *Body Image* 25: 23–30.
Varkaris E and Neuhofer B (2017) The influence of social media on the consumers' hotel decision journey. *Journal of Hospitality and Tourism Technology* 8: 101–118.
Velarde MD, Fry G and Tveit M (2007) Health effects of viewing landscapes – landscape types in environmental psychology. *Urban Forestry & Urban Greening* 6: 199–212.
Veldhuis J, Konijn EA and Knobloch-Westerwick S (2017) Boost your body: self-improvement magazine messages increase body satisfaction in young adults. *Health Communication* 32: 200–210.
Yee ZW, Griffiths S, Fuller-Tyszkiewicz M, et al. (2020) The differential impact of viewing fitspiration and thinspiration images on men's body image concerns: an experimental ecological momentary assessment study. *Body Image* 35: 96–107.

Author biographies

Giulia Fioravanti, PhD, is Assistant Professor of Clinical Psychology at the University of Florence. Her research interests include problematic Internet use and the influence of social media use on psychological well-being and sexuality.

Andrea Svicher, PhD, is Postdoctoral Research Fellow at the University of Florence. He is conducting research under the supervision of Professor Silvia Casale.

Giulia Ceragioli, PsyD, is doing her internship in Psychology at the Department of Health Sciences, University of Florence.

Viola Bruni, PsyD, is doing her internship in Psychology at the Department of Health Sciences, University of Florence.

Silvia Casale, PhD, is Associate Professor of Clinical Psychology at the University of Florence. Her research interests include problematic Internet use, Internet addiction and the influence of social media and new technologies on psychological well-being. She is Associate Editor of Addictive Behaviors.