

The effects of athletic ideal versus diverse body ideal exercise videos on young women's
body image, mood, and exercise motivation.

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Statement of Originality

This report contains no material offered for the award of any other degree or diploma, or material previously published, except where due reference is made in the text.

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Abstract

Recently, a new 'athletic ideal', characterised by both thinness and visible muscle tone, has emerged as the modern appearance ideal for women to aspire to. Women who epitomise the athletic ideal online are often shown to be engaging in exercise. Promoting health and fitness demonstrates the potential for considerable positive influence, however recent experimental research has found women exposed to the athletic ideal are more frequently dissatisfied with their bodies. In an attempt to alleviate media-induced body dissatisfaction, there has been a shift towards exploring the potential for media imagery to transmit positive body image ideals. This shift has been reflected online with increased female body diversity content. The present study sought to experimentally investigate the impact of athletic ideal versus diverse body ideal fitness videos on young women's body image, mood, physical functionality satisfaction, and exercise intent, under the framework of Social Comparison Theory. Ninety-five female participants (aged 18-25 years) were randomly assigned to view either athletic ideal exercise videos, diverse body ideal exercise videos, or scenic travel (control) videos. The results were calculated using complete data from seventy two participants. Results showed that acute exposure to athletic ideal videos led to increased body dissatisfaction and less physical functionality satisfaction compared to exposure to diverse body ideal or control videos. Comparatively, viewing diverse body ideal videos led to a decrease in body dissatisfaction and greater exercise intentions. As this study is the first to provide empirical evidence of the effects of diverse body ideal fitness video clips, it illuminates a number of future research directions. These are discussed, along with the theoretical and practical implications of the study's findings.

Keywords: social media, athletic ideal, state body dissatisfaction, exercise

Introduction

Body image is defined as an individual's perception of their bodily appearance, as well as the thoughts and feelings that result from this perception (Cash, 2004; Tiggemann, 2004). The experience of negative body image — possessing dysfunctional perceptions of and/or attitudes towards the body — is particularly prevalent amongst young women in Western cultures. In 2018, almost half (41.5%) of young women in Australia aged 17-25 years reported body image as one of their greatest worries, compared with less than one-fifth (15.4%) of young Australian men (Carlisle et al., 2018). Given negative body image can have harmful implications for a woman's psychological and physical health, such as increased risk of low self-esteem, depression, and disordered eating (Groesz, Levine & Murnen, 2002), this concern is not inconsequential. The substantial number of young women indicating concern around body image has generally been attributed to sociocultural factors, with the mass media considered the most powerful and pervasive force (Levine & Murnen, 2009). In particular, idealised media images have been implicated as a significant source of influence as they are renowned for perpetuating and reinforcing an ideal of beauty that is unrealistic for the majority of women.

Traditional mass media images ubiquitously portray women as curvaceously slender, physically appealing and unrealistically thin, with thinness considered the most salient and pervasive feature (Tiggemann, 2011). The thin ideal image of a woman often portrayed in the media is typically 15% below the average weight of women (Hawkins, Richards, Granley, & Stein, 2004), demonstrating a clear disparity between the ideal and the 'average' female. However, the pervasiveness of thin ideal images supports the notion that the extremely thin look is both desirable and achievable, desensitising women from its generally unobtainable nature (Brownell, 1991). A large body of research has demonstrated that thin ideal mass media images strongly influence women's body image disturbance. For example, Groesz et

al.'s (2002) meta-analysis of 25 experimental studies found small yet relatively consistent and significant effect sizes between thin, idealised images and negative body image.

Similarly, Want (2009) analysed 47 experimental studies and found a small-to-moderate negative effect of experimental exposure to thin and attractive media images on women's appearance satisfaction. Consequently, Levine and Murnen (2009, p. 31) concluded in their comprehensive review that mass media thin-ideal imagery was a possible "causal risk factor" for women's negative body image.

In recent years, social media sites such as Facebook and Instagram have provided a new platform for the transmission of societal body ideals. Although the thin ideal is still prominent, a new 'athletic ideal', characterised by both thinness and visible toning, including a more muscular upper body, toned abdomen and firmer lower body, has emerged as the new beauty standard for women (Robinson et al., 2017; Rodgers et al., 2018). The emergence of the athletic ideal has, in part, been due to the proliferation of the social media movement known as 'fitspiration' (an amalgamation of the words 'fitness' and 'inspiration'), an online source which many women now use when seeking health-related information and inspiration related to diet and exercise (Jong & Drummond, 2016a; Vaterlaus, Patten, Roche, & Young, 2015). This is because fitspiration consists of mostly images and an increasing number of videos exemplifying positive health and fitness behaviour in order to inspire people to pursue and achieve a healthier lifestyle (Boepple, Ata, Rum, & Thompson, 2016). The emphasis is on increased exercise activity, positive eating behaviours and self-care as a way of achieving improved health and wellbeing, rather than thinness and weight loss. Thus, fitspiration has emerged as a healthy antidote to thin-ideal imagery (Webb, Thomas, Rogers, Clark, Hartsell, & Putz, 2018).

Fitspiration content is widely promulgated on a range of social networking sites, however Instagram has asserted itself as the de-facto channel for users to catalogue material

related to health and fitness. The site is a unique social media player purely dedicated to the posting and sharing of photos and videos, either with friends (on a private profile) or the wider public (on a public profile). The website allows users to “tag” their imagery with identifying words (hashtags), making it easier to search for themed content. To illustrate the ubiquity of the fitspiration trend on Instagram, a search (October, 2019) of the fitspiration hashtag returned close to 18.5 million images and videos. A perusal of the content indicates that photos and videos are mainly of women, who emulate an athletic body type, typically engaged in exercise or posing in active wear, or of healthy food. Some images are overlain with inspirational quotes, either general in nature (e.g. “We don’t grow when things are easy; we grow when we face challenges”) or fitness-related (e.g., “Exercise to be fit, not skinny” and “Strong is the new skinny”; Tiggemann & Zaccardo, 2015) intended to further inspire or motivate viewers. Overall, supporters of this movement emphasise that the general underlying philosophy of fitspiration is strength and empowerment over physical appearance. For example, one website explained that fitspiration is designed to inspire people to achieve an empowered body image through exercise and healthy eating (“What is fitspiration?” 2009). Hence, fitspiration has considerable potential to elicit positive physical and psychological wellbeing among viewers, however, research suggests this may not be the case.

Experimental research has shown that while exposure to fitspiration imagery does indeed increase viewers’ inspiration and motivation to improve their fitness and eat healthily, it also increases body dissatisfaction and negative mood (Tiggemann & Zaccardo, 2015; Robinson et al., 2017; Prichard et al., 2018). Several content analyses (Boepple et al., 2016; Simpson & Mazzeo, 2016; Carrotte, Prichard, & Lim, 2017; Tiggemann & Zaccardo, 2018) have identified components of this imagery which are likely to have damaging effects for female body image. For example, while fitspiration imagery may be viewed as healthier (due to its focus on promoting fitness) than thin ideal imagery, there remains a resounding focus

on the appearance of the body and physical activity is often presented as a means to an attractive body, rather than a fit and healthy one (Deighton-Smith, & Bell, 2018). This is problematic as appearance-orientated imagery communicates that physical attractiveness for women is paramount, and exercise motivated by appearance rather than for health or performance-related reasons has been associated with body image disturbance, disordered eating, and low self-esteem among women (Strelan, Mehaffey, & Tiggemann, 2003; Gonçalves & Gomes, 2012; Prichard & Tiggemann, 2008). Also, the repeated promulgation of a female subject with an ultra-fit and thin physique in fitspiration posts, with very little variation, excluding all other body types, implies that only thin and toned bodies are considered healthy and beautiful (Boepple et al., 2016; Simpson & Mazzeo, 2016; Tiggemann & Zaccardo, 2018). For the majority of women, attainment of such a thin and toned athletic ideal would require strict dieting practice as well as substantial and consistent weight training (Ramme, Donovan, & Bell, 2016), which may be unrealistic and unobtainable. Given these concerns, the effects of fitspiration imagery on female body image is likely to be similar to those produced by thin ideal media imagery.

To date, a small body of research has experimentally examined the impact of fitspiration imagery on female body image. Preliminary research by Tiggemann and Zaccardo (2015) found that while exposure to fitspiration images increased participants' inspiration to engage in healthy behaviours, it also resulted in greater body dissatisfaction, negative mood and reduced state appearance self-esteem, in comparison to viewing travel images.

Tiggemann and Zaccardo (2015) suggested that adding tone, strength or fitness to the prescription to be thin, may serve to provide women with additional ways to feel inadequate. Conversely, Slater et al. (2017) were unable to replicate these findings, and suggested further replication was necessary to fully elucidate the impact of exposure to this particular type of imagery. Concurrent research by Robinson et al. (2017) demonstrated that women exposed to

athletic ideal images reported greater body dissatisfaction than women who viewed traditional thin ideal images, suggesting that thin and fit images may be more damaging for women's body image. More recently, Prichard et al. (2018) found that irrespective of focus or presence of text, acute exposure to fitspiration decreased body satisfaction and increased negative mood in young women. Across these experimental studies, the overall consensus seems to be that even short-term exposure to fitspiration imagery can have deleterious effects on levels of body dissatisfaction and women should be advised to limit their exposure to them.

The negative impact of fitspiration imagery on female body image is usually attributed to the process of social comparison. Social Comparison Theory (Festinger, 1954) proposes that individuals have an innate tendency to self-evaluate and self-improve by comparing themselves with similar others on relevant dimensions, such as physical appearance. The aim of these comparisons is to maintain a stable and accurate self-view. Festinger (1954) postulated that people self-evaluate by making upward (comparing oneself to someone who is perceived as better off, or more physically attractive) or downward (comparing oneself to someone who is perceived as less physically attractive) comparisons, with upward comparisons having more negative effects on the individual than downward comparisons (Myers & Crowther, 2009).

Social comparisons on the dimension of physical appearance tend to be upward rather than downward (Wheeler & Miyake, 1992). This is particularly true of comparisons made through online media exposure as women comparing their appearance to a false, unattainable athletic ideal, digitally enhanced "to adhere to the mainstream aesthetics" (Manago, Ward, Lemm, Reed, & Seabrook, 2015, p. 10), will almost always find themselves lacking in some way. Because few women can meet the beauty standards created by this ideal, dissatisfaction with one's own body and appearance is a likely outcome of this comparison process (Engeln-

Maddox, 2005). This reasoning is supported by experimental evidence which has demonstrated that the observed negative effect of media exposure on body dissatisfaction is mediated by engaging in social comparison while viewing fitspiration images (Tiggemann & Zaccardo, 2015; Robinson et al., 2017; Griffiths et al., 2018).

Social comparison can be examined as a state variable, in response to specific situations (Tiggemann & McGill, 2004), or as a trait variable, in that there exists relatively stable individual differences in the general tendency to engage in social comparison (Tiggemann, Slater, Bury, Hawkins, & Firth, 2013). Trait social comparison has been found to moderate the impact of idealised media imagery on women's body image. In one experimental study, women with a greater tendency to compare themselves with media models experienced stronger negative effects of media images on body-focussed anxiety than those with lower social comparison tendencies (Dittmar & Howard, 2004). Trait social comparison has also been found to be a strong predictor of body dissatisfaction (Myers & Crowther, 2009).

There are a number of reasons why social comparison may be particularly pertinent to fitspiration imagery. First, according to Social Comparison Theory (Festinger, 1954), the drive for self-evaluation causes people to seek out comparisons with others who are similar rather than dissimilar to themselves. Thus, it has been suggested that peers provide more important appearance comparison targets than models or celebrities (Heinberg & Thompson, 1995). Therefore, the fact that the women featured in fitspiration posts are predominately peers (in the sense of being typical, 'everyday' women), rather than fashion models, is likely to lead viewers to engage in greater levels of social comparison with them (Tiggemann & Zaccardo, 2018; Heinberg & Thompson, 1995). Second, Instagram offers the selection of a number of possible filters to enhance the appearance of photos. Comparisons to online peers, who are strategically portraying themselves in a positive light, may leave women unable to

justify the shortfalls of their own appearance, increasing the likelihood that comparisons will be upward in nature. Third, young adult women are particularly vulnerable to the harmful effects of social comparison as fitspiration imagery typically contains women of a similar age and can be seen as pertinent targets for comparison (Mulgrew, Stalley, & Tiggemann, 2017). Thus, women should be warned against using the women portrayed in fitspiration imagery as aspirational targets for social comparison.

In an attempt to alleviate media-induced body dissatisfaction among women there has been a shift towards exploring positive body image, and the potential for media to transmit positive body image ideals. This shift has been reflected online with increased body diversity in media imagery. The intended purpose of body diversity is to increase the visibility and normalisation of otherwise underrepresented bodies in a “perfectly manicured” environment (Cohen et al., 2019, p. 53), with the aim of encouraging acceptance and appreciation of all bodies. The posts include a variety of images and videos of women proudly displaying their ‘real’ bodies of various sizes and appearances with captions like, “it’s possible to love your belly rolls, it’s possible to have a favourite spot of cellulite”, positive quotes like “you are more than a body, go show the world more”, and imagery focusing on body functionality (Cohen, Irwin, Newton-John, & Slater, 2019). Many of the women display attributes incongruent with societal beauty ideals, such as cellulite, stomach rolls, stretch marks and beauty blemishes. This is uncommon, as social media users typically portray the best version of themselves, carefully posing, selecting, and editing content before posting to hide or remove such societally deemed “flaws” (Cohen et al., 2019). The unique feature of user-generated content on social media sites such as Instagram allows for these marginalised body types to finally be seen and for young women to be exposed to them in a public forum. Accordingly, Instagram offers a global platform for everyday women to reframe the prevailing discourse on body image, beauty, and health in the media to be more inclusive and

affirmative (Cohen et al., 2019). Thus, showcasing a broad range of female bodies online has the potential for considerable positive influence and young women may usefully be encouraged to follow body diverse content online as a possible avenue to enhance body image.

Preliminary experimental research by Williamson and Karazsia (2018) found women's state body appreciation (a salient component of positive body image; Tylka & Wood-Barcalow, 2015a; Webb et al., 2015; Wood-Barcalow et al., 2010) significantly increased after viewing images of full-figured models that did not conform to the sociocultural thin ideal. Similarly, Cohen et al. (2019) randomly assigned 195 young women (18-30 years old) to view either body positive, thin ideal, or appearance neutral Instagram posts. The authors defined 'body positive' as rejecting unrealistic body ideals and encouraging women to accept and love their bodies at any shape and size. Results showed that brief exposure to body positive posts was associated with improvements in young women's positive mood, body satisfaction and body appreciation, relative to thin-ideal and appearance-neutral posts. Taken together, the limited findings to date suggest that non-idealised media imagery of average, everyday women can have a positive effect on women's body image and mood. It remains unknown if this is the case for fitspiration imagery.

Another effective method for promoting positive body image is to encourage women to focus on the function of their bodies instead of appearance (Alleva et al., 2015; Mulgrew & Tiggemann, 2018). Traditionally, women (and men) are socialised within Western cultures to view and appreciate the female body in terms of its aesthetic qualities (i.e., its form; Mulgrew & Tiggemann, 2018), however perceptions of the body are not restricted to the way the body looks; they may also extend to the way the body functions (Abbott & Barber, 2010). Body functionality encompasses everything the body is capable of doing and includes functions related to physical capacities such as strength and instrumentality (Alleva et al., 2015). A

functionality focus may help women to view their bodies in a more holistic manner (Alleva et al., 2015) with a focus on what the body can do rather than how it looks. This may allow women to incorporate their perceptions of physical competence or functionality when making evaluative judgements about their bodies (Abbott, 2012), placing less importance on physical appearance. A growing body of research (e.g., Abbott & Barber, 2010; Alleva et al., 2015; Gusella, Clark & van Roosmalen, 2004) has demonstrated that shifting young women's attention toward focusing on body functionality can improve body image and self-esteem.

The physical functionality of the body can be displayed through visual means, with video footage (i.e., presenting the body in active form) purported to be a better source of stimuli than still images (Mulgrew & Tiggemann, 2018). Recently, Mulgrew, McCulloch, Farren, Prichard, and Lim (2018) exposed women to two public health mass media campaigns, *This Girl Can* and *#jointhemovement*, which showcased women of all body shapes, sizes, and abilities exercising in a variety of contexts such as swimming, running, and dancing. Across two studies, 339 and 256 women viewed either the campaign or a control video. State physical functionality and appearance satisfaction as well as exercise intent were measured pre and post-exposure. The results of the study were promising, women were more satisfied with the appearance of their bodies and felt inspired to exercise after viewing the television campaigns. It seemed exposure to women of varied body shapes, sizes, and abilities appeared to allow viewers to reflect more positively upon their own appearance (Mulgrew et al., 2018). The authors suggested that by presenting non-idealised depictions of women exercising, wherein the physical capabilities of the body are shown, the level of harmful social comparison was disrupted, promoting a positive self-image. Collectively, these results demonstrate that exposure to counter stereotypical imagery and messages advocating body diversity and functionality likely have a positive effect on women's

wellbeing and health behaviour and are an important avenue for future research and health promotion.

The Present Study

This study extends the research on social media imagery by investigating the effect of fitness-related body diverse Instagram content on young women's mood, body image, physical functionality satisfaction, and exercise intent, in comparison to fitspiration Instagram content, within a social comparison framework. Though less common, a proportion of body diverse posts focus on exercise behaviour (Cohen et al., 2019). A search of the tags #bodypositivefitness and #fithasnosize returned 47,500 and 35,100 posts, respectively. Women with a range of body sizes, shapes, and abilities are shown engaging in exercise (e.g., push-ups, running, yoga) in still or active form. The notion of 'health and fitness at every size' may empower women to engage in health-promoting behaviours by breaking down weight stereotypes (Haskins, 2015). Although fitspiration images have been shown to increase exercise inspiration (Tiggemann & Zaccardo, 2015), they also promote negative body image in women due to the promulgation and emulation of an idealised athletic ideal. Therefore, it is important to determine whether fitness-related content depicting a diverse range of bodies may help promote engagement in positive health behaviours without harmful psychological outcomes.

The study will employ an experimental design examining the impact of two different types of exercise video clips (athletic ideal and diverse body ideal) in comparison to control videos of scenic travel images (as travel images are also a common form of content on social media and largely inspirational in nature). The potential mediating role of state appearance comparisons as well as the potential moderating role of trait social comparison will be considered.

On the basis of previous research, the following hypotheses are predicted:

1. (a) Exposure to athletic ideal exercise videos will result in greater body dissatisfaction and negative mood, than exposure to either diverse body ideal exercise videos or control videos.

(b) Exposure to both exercise video types (athletic ideal and diverse body ideal) will result in greater state physical functionality satisfaction, state appearance comparison and exercise intentions, than exposure to control videos. State appearance comparison will be greatest for the athletic ideal video condition.
2. The effect of video type on participants' negative mood and body dissatisfaction will be mediated by amount of state appearance comparison processing engaged in by participants.
3. The effect of video type on body dissatisfaction and mood will be moderated by trait appearance comparison such that the negative effects of idealised imagery will be greater for participants high in their tendency to engage in upward appearance comparisons compared with participants low in their tendency to engage in upward appearance comparisons.

Method

Participants

Participants were 95 females aged 18-25 years ($M = 22.56$, $SD = 2.92$) recruited from an Australian University and the general community. Mean Mass Body Index (BMI: kg/m^2) was 24.43 ($SD = 5.21$), which is within the "normal weight" range as defined by Garrow, Hesp, and Webster (1984). Of the total sample, the majority of participants identified as

Caucasian (82%) with the remaining participants identifying themselves as Asian (8%), Aboriginal/Torres Strait Islander (2%), or "other" (6%).

Design

The study employed a between-subjects experimental design with video type (athletic ideal, diverse bodies, travel) as the independent variable. The major dependent variables were state body dissatisfaction, negative mood, and physical functionality satisfaction (measured pre-and post-exposure), exercise intent, and state appearance comparison. The latter was tested as a mediating variable. Trait tendency for appearance comparison was also tested as a potential moderating variable.

Materials

Experimental manipulation: video type. Three sets of visual stimuli were utilised in the study (athletic ideal, diverse body ideal, scenic travel control). Total viewing time (6.5 minutes) was controlled for across conditions, however, each condition contained video clips of varying lengths, lasting from 10 to 60 seconds. Each video clip played in full before participants were given the option to move to the next video to ensure there was an equal amount of time spent viewing the video content across conditions. The athletic ideal condition contained 16 fitpiration videos of women with a toned and thin physique engaging in exercise, plus two travel-related videos (to make sense of subsequent travel-related questions). The diverse body ideal condition contained 13 videos, which showcased women of all body shapes, sizes and abilities exercising in a variety of contexts, plus two travel-related videos. The control (scenic travel) condition contained 19 videos of various travel destinations, and included natural landscapes, monuments, and buildings. Of these, 5 also contained people so that the subsequent questions relating to comparisons also made sense.

All video clips were sourced from public Instagram profiles. To identify and select videos, the keywords entered were 'fitspiration' for athletic ideal; 'diverse bodies' or 'body positive fitness' for diverse body ideal; and 'travel videos' for the control condition. The specific videos were selected from an initial pool of 30 fitspiration and 40 diverse body video clips to provide reasonable coverage of currently disseminated videos in the designated categories. A pilot study was conducted with 10 independent female raters from the target age group. Raters were provided with a description of 'body diverse' (*represents a diverse array of bodies of different shapes, sizes, and abilities challenging societal appearance ideals*) and 'fitspiration' (*represents the female form as a slender, thin physique with a more toned upper body, abdomen and lower body*), and were asked to rate the extent to which each video was representative of either category using a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely). Raters were also asked to give their perceptions of tone, athleticism, thinness, and attractiveness of the woman in each video, as well as overall visual quality and the extent to which physical ability was a major focus of the video using a 7-point Likert scale, ranging from 1 (not at all) to 7 (extremely/very much). The videos rated to be most representative of each condition were selected for the study. The final athletic ideal stimuli were rated medium-high on thinness ($M = 6.50, SD = .592$), tone ($M = 6.47, SD = .690$), and athleticism ($M = 6.31, SD = .778$). The final diverse bodies stimuli were rated low on thinness ($M = 3.17, SD = .963$). The videos comprising the final sets were matched for visual quality, attractiveness of the female subject, and physical ability. This procedure ensured that the two exercise video sets differed only in aspects which were central to the experimental manipulation. The final set of diverse body ideal video clips showcased women of all body shapes, sizes, and abilities exercising in a variety of contexts (e.g., lifting weights in the gym, performing yoga outdoors). Comparatively, the final set of athletic ideal video clips depicted

women, whose body epitomised the ultra-thin, ultra-toned body ideal, engaging in physical activity (e.g., push-ups, running etc.).

Measures

Social media use. To measure general social media usage, participants were asked to indicate which social networking sites they use and how much time they spend on these sites each day (in minutes). They were also asked to report how frequently they saw or posted fitness-related material on social media and whether they followed any fitness-related pages.

Regular physical activity levels. As an index of typical activity levels, all participants were asked to indicate their current exercise habits (frequency and duration of any physical activity/sport they engage in). Following Prichard and Tiggemann (2008), total amount of exercise per week was calculated by multiplying the frequency of each activity by its duration and then summing all activities.

State body dissatisfaction and negative mood. A series of computer-based visual analogue scales (VAS) were used to measure state body dissatisfaction and negative mood both before (pre) and immediately after (post) viewing the videos. Following previous research (Heinberg & Thompson, 1995; Prichard & Tiggemann, 2012; Tiggemann & Slater, 2004), the scales included four dimensions which represented state body dissatisfaction (*fat, physically attractive, satisfied with body size* and *satisfied with body shape*) and five different state mood dimensions (*anxiety, depression, happiness, anger* and *confidence*). At pre-and post-exposure, participants were asked to rate how they felt “right now” with regards to each of the dimensions by marking a vertical line along a horizontal line between the statements “not at all” to “very much”. Each dimension ranged from zero to 100 and scores were calculated to the nearest two decimal places. An overall score for negative mood was

determined by calculating the average of the five mood items, with the positive items (happiness and confidence) being reverse coded. This produced a scale ranging from zero (very positive mood) to 100 (very negative mood). Similarly, an overall score for body dissatisfaction was calculated by averaging the four body dissatisfaction dimensions, with the positive items (physically attractive, satisfied with body size and satisfied with body shape) being reverse coded, producing a scale ranging from zero (no body dissatisfaction) to 100 (extreme body dissatisfaction). VAS have been shown to be valid measures of mood and body dissatisfaction, significantly correlating with similar, yet more complex, measures of mood and body image disturbances (Heinberg & Thompson, 1995). The relatively infinite nature of this type of measurement also allows for sensitivity to small changes across time. The body dissatisfaction scale demonstrated good internal reliability at pre-exposure ($\alpha = .92$) and post-exposure ($\alpha = .93$). Likewise, the negative mood scale demonstrated acceptable internal reliability at pre-exposure ($\alpha = .69$) and post-exposure ($\alpha = .72$).

Physical functionality satisfaction. A series of computer-based visual analogue scales (VAS) were used to assess state changes in physical functionality satisfaction before and after viewing the videos. Participants were asked to rate how important four different attributes were to their physical self-concept “right now” by placing a vertical line at the appropriate position on a horizontal line between the statements “not at all” and “very much”. Consistent with previous research (Mulgrew & Tiggemann, 2018; Mulgrew et al., 2018), four items assessed physical functionality satisfaction: *body tone*, *body movement*, *physical strength*, *what the body can do*. Each attribute ranged from zero to 100, with higher scores indicating greater physical functionality satisfaction. The physical functionality satisfaction scale demonstrated acceptable internal consistency at pre-exposure ($\alpha = .85$) and post-exposure ($\alpha = .90$).

State social comparison. The State Appearance Comparison Scale (Tiggemann & McGill, 2004) was included to determine the amount of appearance comparison participants engaged in after viewing the videos. Using three 7-point Likert scales, participants rated the extent to which they thought about their appearance when viewing the videos (1 = no thought about appearance, 7 = a lot of thought about appearance), and the extent to which they compared their body/specific parts with those seen in the videos they viewed (1 = no comparison, 7 = a lot of comparison). State appearance comparison was calculated by averaging the three items, with higher scores indicating greater state appearance comparison. Previous research has shown that items on this scale are highly correlated ($r = .71$ to $.82$; Tiggemann & McGill, 2004). The current study had good internal reliability ($\alpha = .92$).

Trait appearance comparison. The tendency to make global social comparisons on the basis of appearance was measured by the upward subscale of the Upward and Downward Appearance Comparison Scale (UPACS/DACS; O'Brien et al., 2009). Participants indicated their level of agreement on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*) with 10 statements on comparisons to people who look better (upward comparison) than themselves, such as "when I see good-looking people I wonder how I compare to them". Mean scores were calculated with higher scores indicating a greater tendency to compare oneself with targets considered more physically attractive. The UPACS has good internal consistency ($\alpha = .93$) and construct validity among college women (O'Brien et al., 2009). Previous research has also found that the upward appearance comparison and downward appearance comparison subscales of the UPACS/DACS are strongly and positively correlated with each other and with measures of body image concerns among college women (O'Brien et al., 2009; Vartanian & Dey, 2013). The current study had good internal reliability for the UPACS ($\alpha = .91$).

Video inspiration. Following Tiggemann and Zaccardo (2015), three items were included to test the inspirational effects of the videos. Participants were asked to use 7-point Likert scales to rate how inspired they felt when viewing the videos (1 = not at all inspired, 7 = very inspired) to improve their fitness, to eat healthily, and to go travelling.

Demographic information. Participants were asked to indicate their age, ethnicity, weight and height. Self-report measures of current weight and height were used to calculate body mass index (BMI; kg/m²).

Procedure

Following ethics approval from the University of Southern Queensland's Research Ethics committee (project H19REA054), participants were recruited via fliers and social media pages advertising a study on 'social media imagery and fitness motivation'. Participants were informed that the study would involve answering a series of questions about their mood, physical self-concept and viewing some videos from social media. Upon entering the online study, participants first provided informed consent. They then completed measures of their social media use and regular physical activity levels followed by the baseline state measures of body dissatisfaction, mood, and physical functionality satisfaction. Participants were then randomly allocated, via the random allocation function in the Qualtrics survey software, to one of three exposure conditions (athletic ideal, diverse body ideal, or scenic travel videos). To ensure participants paid attention to each video, they were asked to rate each video segment on its visual quality, length, inspirational nature and the likelihood that they would like or share the video on social media. All participants then completed follow-up state measures of body dissatisfaction, mood, physical functionality satisfaction, state appearance comparison and inspiration as well as the trait measure of social comparison. Participant height and weight was reported at the end of the survey. Testing sessions lasted

approximately 30-40 minutes. As a token of appreciation for their involvement in the project, participants were given the opportunity to enter a prize pool to win one of three \$50 Visa Debit Gift Cards upon completion of the survey in full.

Results

Statistical Considerations

Analyses in this study used an alpha level of .05 as an indicator of significance. The effect size measure used was partial eta squared (η^2). Suggested benchmarks for partial eta squared are .01, .06, and .14, which represent a small, medium, or large effect, respectively (Cohen, 1988). Preliminary analyses were conducted to test for normality and the presence of outliers. All dependent outcome variables were found to be near normally distributed, with no outliers identified as being more than 1.5 box lengths from the lower or upper edges of the boxes.

Sample Characteristics

Participants had a mean age of 22.56 years ($SD = 2.92$) and a mean Body Mass Index (BMI) of 24.43 ($SD = 5.21$). Modal use of Instagram was 55 minutes per day and Facebook was 49 minutes per day. Over two-thirds of participants (70%) reported having seen material related to fitness on social media in the past week and 59% followed fitness-related pages on social media (e.g., Kayla Itsines, Ashy Bines). Of the total sample ($N=95$), only 72 participants provided complete data. The remaining participants had to have completed over 50% of the questionnaire to be included in the study. After running a power analysis, future research would aim to use a larger sample of 150-200 participants to more fully investigate the effects on young adult women (G*power 3.1.9.2. 2014).

A series of one-way analyses of variance (ANOVA) indicated that between the three conditions (athletic ideal, diverse body ideal, travel) there was no statistically significant difference at the $p < .05$ level on age, $F(2, 69) = 2.03, p = .139$; BMI, $F(2, 69) = .019, p = .981$; weekly media use, $F(2, 69) = 1.087, p = .343$; exercise weekly, $F(2, 59) = 1.323, p = .274$; current weight, $F(2, 69) = .085, p = .919$; baseline state negative mood, $F(2, 69) = .272, p = .763$; baseline state body dissatisfaction, $F(2, 69) = .016, p = .984$; baseline state physical functionality satisfaction, $F(2, 69) = 2.396, p = .099$; or trait appearance comparison, $F(2, 65) = 1.208, p = .305$ (see Table 1).

Table 1

Mean (SD) Scores for Age, BMI, Weekly Media Use, Weekly Exercise, Current Weight and Baseline Body Dissatisfaction, Baseline Negative Mood and Baseline Physical Functionality Satisfaction

	Video Type			
	Overall	Athletic-Ideal	Diverse Bodies	Control
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Age	22.82 (2.97)	22.04 (2.01)	23.67 (3.74)	22.62 (2.58)
BMI	24.44 (5.21)	24.27 (5.53)	24.53 (5.41)	24.51 (4.80)
Weekly Media Use (min)	183.26 (197.00)	189.04 (160.60)	143.70 (137.88)	227.52 (281.41)
Exercise Weekly (min)	276.92 (235.33)	314.17 (301.49)	306.25 (230.67)	207.00 (135.93)
Current Weight	68.53 (16.75)	67.64 (17.11)	68.41 (17.56)	69.71 (15.99)
Pre-Body Dissatisfaction	47.45 (27.06)	46.77 (26.24)	48.15 (27.90)	47.33 (28.19)

Pre-Negative Mood	32.25 (16.00)	30.29 (18.17)	33.48 (15.30)	32.90 (14.77)
Pre-Physical Functionality Satisfaction	50.08 (21.10)	55.77 (17.08)	43.44 (25.02)	52.11 (18.12)
Trait Social Comparison	3.18 (0.73)	3.37 (0.68)	3.11 (0.69)	3.05 (0.83)

N = 72

The Effect of Video Type on Body Dissatisfaction and Negative Mood

The mean scores and adjusted means (controlling for pre-exposure scores) for body dissatisfaction and negative mood for all three conditions before and after video exposure are presented in Table 2.

Table 2

Mean (SD) Scores for Body Dissatisfaction and Negative Mood by Video Type

	Pre-Exposure	Post-Exposure	Adjusted Post-Exposure
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SE)</i>
Body Dissatisfaction			
Athletic Ideal	46.77 (26.24)	53.48 (25.45)	54.14 (1.65)
Diverse Bodies	48.15 (27.90)	44.69 (28.72)	44.00 (1.56)
Control	47.33 (28.19)	47.85 (29.75)	47.97 (1.77)
Negative Mood			
Athletic Ideal	30.29 (18.17)	33.91 (21.13)	35.68 (1.99)
Diverse Bodies	33.48 (15.30)	34.14 (16.12)	33.02 (1.88)

Control	32.90 (14.77)	24.15 (14.58)	23.55 (2.13)
<i>N</i> = 72			

In order to test the effect of video condition on post-exposure body dissatisfaction and negative mood, two orthogonal planned contrasts via LMATRIX were employed in an analysis of covariance (ANCOVA). Pre-exposure body dissatisfaction and negative mood scores were entered as covariates in the relevant analyses, and adjusted means are presented in Table 2. For each outcome variable, specific planned comparisons tested the impact of exposure to the athletic ideal condition against the diverse body ideal condition (contrast: 1, -1, 0) and the athletic ideal condition against the control condition (contrast: 1, 0, -1), within a single analysis.

The overall ANCOVA for body dissatisfaction found a significant effect of video condition, $F(2, 68) = 10.04, p < .001, \text{partial } \eta^2 = .228$. More informatively, the first planned comparison was statistically significant, $F(1, 68) = 19.94, p < .001, \text{partial } \eta^2 = .227$, whereby women exposed to the athletic ideal video clips, in comparison to the diverse body ideal video clips, reported significantly greater body dissatisfaction. Likewise, the planned comparison which compared the athletic ideal videos against the control videos proved significant, $F(1, 68) = 6.52, p = .013, \text{partial } \eta^2 = .087$. These results demonstrate that participants who viewed the athletic ideal exercise videos experienced greater body dissatisfaction after exposure than those who viewed either the diverse body ideal exercise videos or control videos. Notably, supplementary analyses revealed there was a statistically significant reduction in body dissatisfaction from pre- to post-exposure for participants who viewed diverse body fitness imagery, $F(1, 69) = 4.99, p = .029, \text{partial } \eta^2 = .067$.

The overall ANCOVA for negative mood was significant, $F(2, 68) = 9.48, p < .001, \text{partial } \eta^2 = .218$. The first planned comparison which compared the athletic ideal exercise

videos against the diverse body ideal exercise videos however was not significant, $F(1, 68) = .944, p = .335, \text{partial } \eta^2 = .014$. Young females exposed to athletic ideal exercise videos reported no greater negative mood than young women exposed to the diverse body exercise videos. The planned comparison which compared the athletic ideal videos against the control videos was significant, $F(1, 68) = 17.32, p < .001, \text{partial } \eta^2 = .203$. Supplementary analyses showed that for those exposed to scenic travel clips, negative mood significantly improved from pre- to post-exposure, $F(1, 69) = 16.83, p < .001, \text{partial } \eta^2 = .196$.

Together, these results demonstrate partial support for hypothesis 1a, whereby participants who viewed the athletic ideal exercise videos presented with significantly increased feelings of dissatisfaction, but not increased negativity, than those who viewed either diverse body exercise videos or scenic travel videos.

Effect of Video Type on Physical Functionality Satisfaction, State Appearance Comparison and Inspiration

An ANCOVA with orthogonal planned contrasts via LMATRIX was conducted to compare state physical functionality satisfaction resulting from viewing both exercise video conditions (athletic ideal and diverse body ideal) versus the control condition (contrast: -1, -1, +2). Pre-exposure physical functionality satisfaction was controlled for as a covariate, and adjusted means are presented in Table 3. The overall ANCOVA for state physical functionality satisfaction was significant, $F(2, 68) = 5.93, p = .004, \text{partial } \eta^2 = .148$. The planned comparison which compared the exercise video conditions combined against the control condition was also statistically significant, $F(1, 68) = 3.99, p = .05, \text{partial } \eta^2 = .055$. The adjusted means in Table 3 show that participants who viewed the exercise video conditions had less physical functionality satisfaction after exposure than those who viewed scenic travel videos, demonstrating nil support for the first part of Hypothesis 1b.A

supplementary planned comparison between the two exercise conditions was also significant, $F(1, 68) = 8.04, p = .006$, partial $\eta^2 = .106$. Based on the pre- and adjusted post-exposure means in Table 3, it seems these findings are associated with a decline in physical functionality satisfaction after viewing the athletic ideal exercise videos and an increase in physical functionality satisfaction after viewing the diverse body ideal videos.

Table 3

Mean (SD) Scores for State Physical Functionality Satisfaction by Video Type

	Pre-Exposure	Post-Exposure	Adjusted Post-Exposure
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Physical Functionality Satisfaction			
Athletic Ideal	55.03 (16.75)	47.08 (20.07)	41.45 (2.08)
Diverse Bodies	43.48 (23.17)	43.12 (25.48)	49.69 (1.97)
Control	48.18 (20.77)	52.79 (22.00)	50.78 (2.19)

$N = 72$

The means and standard deviations for the experimental and control conditions on state appearance comparison after manipulation are shown in Table 4. A one-way ANOVA with planned contrasts was conducted to compare state appearance comparison resulting from viewing both exercise video conditions (athletic ideal and diverse body ideal) versus the control videos. The overall ANOVA was significant, $F(2, 69) = 28.59, p < .001$. Planned contrasts revealed that viewing the exercise video clips significantly increased state appearance comparisons compared to viewing scenic travel videos, $t(65.5) = -9.40, p <$

.001. However, there was no significant difference in state appearance comparison across the two exercise conditions, $t(49) = 1.94, p = .058$. As expected, participants in the athletic ideal and diverse body ideal video conditions engaged in more comparisons with their video set than participants in the control condition, however state appearance comparison was not statistically greater in the athletic ideal exercise video condition compared to the diverse body ideal exercise condition. These results demonstrate partial support for the predictions made regarding state appearance comparison in hypothesis 1b.

Fitness-related imagery is purported to have inspirational effects on intentions to improve one's health and fitness. Consequently, the relationship between video condition and three items related to improving one's fitness, eating healthily, and going travelling were assessed via a series of one-way ANOVA's with planned contrasts. Table 4 shows the means for the inspiration variables in response to the different video conditions (athletic ideal, diverse body ideal, control) after exposure. It was found that viewing exercise videos (athletic ideal and diverse body ideal) resulted in significantly greater inspiration to improve fitness, $t(69) = -3.11, p = .003$, and to eat healthily, $t(56.9) = -2.80, p = .007$, compared to viewing scenic travel (control) videos. On the other hand, viewing travel videos resulted in significantly greater inspiration to go travelling, $t(68.8) = 5.09, p < .001$, compared to viewing the exercise video conditions. These results demonstrate support for the predictions made regarding exercise intentions in hypothesis 1b.

Table 4

Mean (SD) Scores for State Appearance Comparison and Inspiration to Exercise, Eat Healthily and Travel by Video Type

Video Type

	Athletic-Ideal	Diverse Bodies	Control
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
State appearance comparison	4.85 (1.68)	3.88 (1.87)	1.37 (.918)
Inspiration influence to:			
Improve fitness	3.92 (1.82)	3.93 (1.90)	2.48 (1.60)
Eat healthily	3.50 (2.09)	3.19 (2.08)	2.19 (1.33)
Travel	4.08 (2.08)	4.15 (2.30)	6.00 (.949)

N=72

Mediation by State Appearance Comparison

The SPSS macro PROCESS (Hayes, 2012) was used to examine whether the effect of video condition on post-exposure body dissatisfaction and negative mood was mediated through state appearance comparison, as predicted in hypothesis 2. PROCESS focuses on the indirect effects of predictors on outcome variables through the mediator. Traditional methods of testing for mediation do not report the indirect effects, thus PROCESS is considered the more ideal method (Preacher & Hayes, 2004). Based on the recommendation of Shrout and Bolger (2002), bootstrapping, a nonparametric approach to hypothesis testing (Preacher & Hayes, 2004), was employed to test the significance of the indirect effect, given the relatively small sample size of the present study. Bootstrap methods are powerful tests of mediation because they do not impose the assumption of normality of the sampling distribution (Preacher & Hayes, 2008). Accelerated bootstrapping with 10,000 samples was used in the current analysis to produce a bias-corrected 95% confidence interval (CI) for the indirect effect, which is interpreted as significant when the CI does not contain zero. The unstandardised coefficients for the meditational models are shown in Tables 5 and 6.

Two separate PROCESS analyses were conducted to test hypothesis 2, which anticipated that the predicted effects of hypothesis 1a would be mediated by state appearance comparison. The three-level categorical independent variable (video condition) was dummy coded into two dichotomous variables: dummy variable 1 (1 if in the athletic ideal condition, 0 otherwise) and dummy variable 2 (1 if in the diverse body ideal condition, 0 otherwise). This coding scheme ensured the control condition acted as the reference condition in the interpretation of regression coefficients.

In the first analysis, dummy variable 1 (athletic ideal vs. control) was entered as the predictor variable and dummy variable 2 as a covariate, with state appearance comparison as the mediator and body dissatisfaction as the outcome variable. As shown in Figure 1, the direct effect demonstrates that after controlling for state appearance comparison, the relationship between dummy 1 and post-exposure body dissatisfaction was not significant ($\beta = 5.71, t = .173, p = .088$). Similarly, the indirect effect through state appearance comparison was also not significant ($\beta = .4638, CI = -3.806$ to 4.923). Thus, the result of the mediation analysis was not significant.

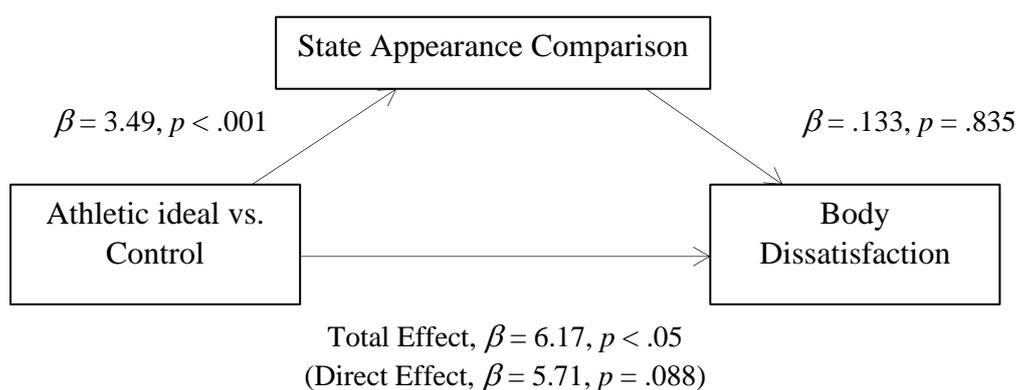


Figure 1. Mediation of the relationship between Video Type (Dummy 1) and Body Dissatisfaction by State Appearance Comparison

In the second analysis, dummy variable 2 (diverse body ideal vs. control) was entered as the predictor variable and dummy variable 1 as a covariate, with state appearance comparison as the mediator and body dissatisfaction as the outcome variable. As shown in Figure 2, the direct effect demonstrates that after controlling for state appearance comparison, the relationship between dummy 2 and post-exposure body dissatisfaction was not significant ($\beta = -4.29, t = -1.50, p = .137$). Similarly, the indirect effect through state appearance comparison was also not significant ($\beta = .3332, CI = -2.711$ to 3.774). Thus, the result of the mediation analysis was not significant.

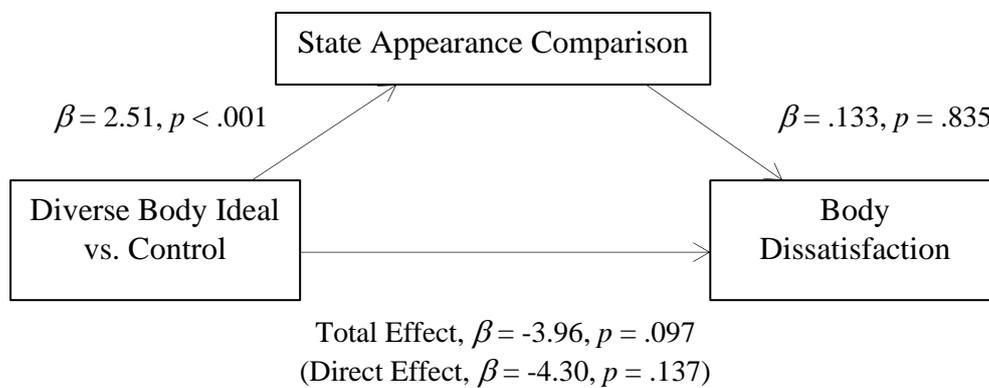


Figure 2. Mediation of the relationship between Video Type (Dummy 2) and Body Dissatisfaction by State Appearance Comparison

Table 5

Total and Direct Effects for State Appearance Comparison Regressed on Video Type and the Indirect Effects for State Appearance Comparison Mediating the Relationship between Video Type and Body Dissatisfaction

Analysis		Total Effects			Direct Effects			Indirect Effects		
		Coefficients	SE	t	Coefficients	SE	t	Coefficients	SE	95% CI
Outcome regressed on predictors	State Appearance Comparison regressed on Dummy 1	6.17*	2.42	2.55	5.71	3.30	1.73	.464	2.21	-3.81, 4.92
	State Appearance Comparison regressed on Dummy 2	-3.96	2.35	-1.68	-4.30	2.86	-1.50	.333	1.63	-2.71, 3.77

Note. Total effect = outcome regressed on predictor without controlling for mediator. Direct effect = outcome regressed on predictor after controlling for mediator. Indirect effect = difference in relationship between predictor and outcome before and after controlling for mediator. CI = confidence interval. SE = standard error.

* $p < .05$.

As with body dissatisfaction, PROCESS was used to test the mediating role of state appearance comparison on the relationship between video condition and negative mood. In the first analysis, dummy variable 1 (athletic ideal vs. control) was entered as the predictor variable and dummy variable 2 as a covariate, with state appearance comparison as the mediator and negative mood as the outcome variable. As shown in Figure 3, the direct effect demonstrates that after controlling for state appearance comparison the relationship between dummy 1 and post-exposure negative mood was significant ($\beta = 11.11, t = 2.82, p < .05$). However, the indirect effect through state appearance comparison was not significant ($\beta = 1.025, CI = -3.486$ to 6.502). Thus, the result of the mediation analysis was not significant.

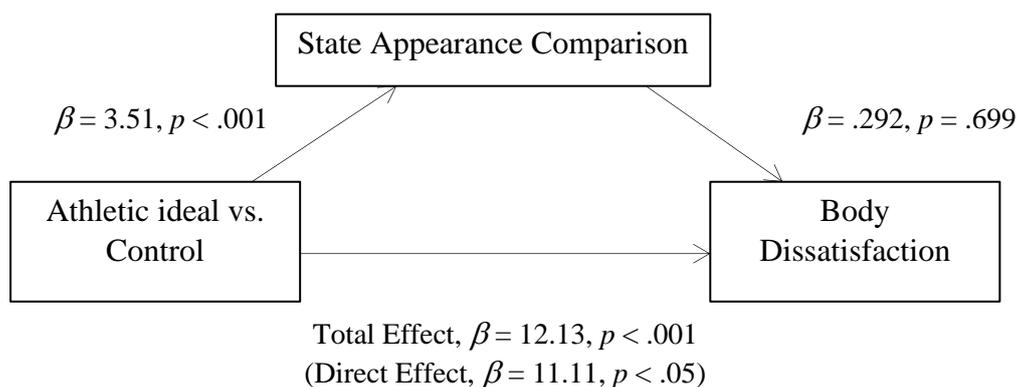


Figure 3. Mediation of the relationship between Video Type (Dummy 1) and Negative Mood by State Appearance Comparison

In the second analysis, dummy variable 2 (diverse body ideal vs. control) was entered as the predictor variable and dummy variable 1 as a covariate, with state appearance comparison as the mediator and negative mood as the outcome variable. As shown in Figure 4, the direct effect demonstrates that after controlling for state appearance comparison the relationship between dummy 2 and post-exposure negative mood was significant ($\beta = 8.74, t = 2.56, p < .05$). However, the indirect effect through state appearance comparison was not

significant ($\beta = .733$, CI = -2.523 to 4.646). Thus, the result of the mediation analysis was not significant.

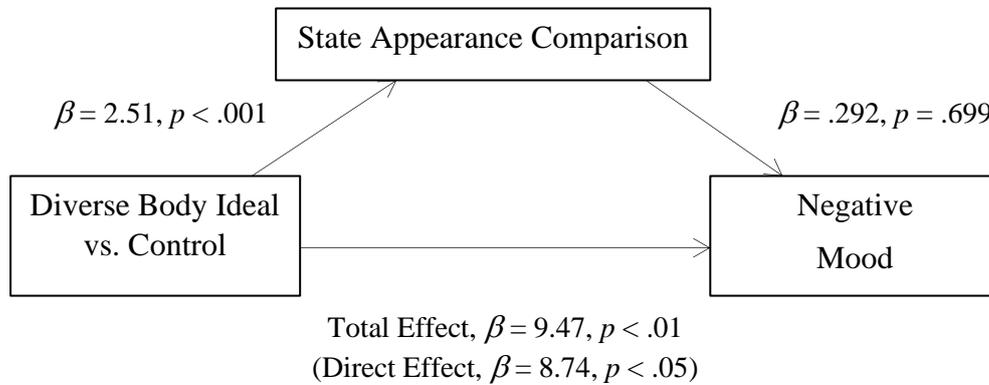


Figure 4. Mediation of the relationship between Video Type (Dummy 2) and Negative Mood by State Appearance Comparison

Together, the results of the mediation analyses indicated that state appearance comparison did not mediate the effect of video condition on body dissatisfaction and negative mood, providing no support for hypothesis 2.

Table 6

Total and Direct Effects for State Appearance Comparison Regressed on Video Type and the Indirect Effects for State Appearance Comparison Mediating the Relationship between Video Type and Negative Mood

Analysis		Total Effects			Direct Effects			Indirect Effects		
		Coefficients	SE	t	Coefficients	SE	t	Coefficients	SE	95% CI
Outcome regressed on predictors	State Appearance Comparison regressed on Dummy 1	12.13*	2.92	4.16	11.11*	3.94	2.82	1.02	2.53	-3.49, 6.50
	State Appearance Comparison regressed on Dummy 2	9.47*	2.83	3.34	8.74*	3.42	2.56	.733	1.82	-2.52, 4.65

Note. Total effect = outcome regressed on predictor without controlling for mediator. Direct effect = outcome regressed on predictor after controlling for mediator. Indirect effect = difference in relationship between predictor and outcome before and after controlling for mediator. CI = confidence interval. SE = standard error.

* $p < .05$.

Moderation by Trait Appearance Comparison

A series of hierarchical multiple regression analyses were carried out to test trait appearance comparison as a potential moderator of the effect of video condition on body dissatisfaction and negative mood, as predicted by hypothesis 3. First, as recommended by Aiken and West (1991), trait appearance comparison was centred by subtracting the sample mean from each score in order to reduce multicollinearity. Two product term variables were then derived by multiplying both dummy variables by centred trait appearance comparison scores. As seen in Table 7, pre-exposure scores for the dependent variables were entered in Step 1 of the analyses, and then the two dummy variables and centred trait appearance comparison in Step 2. The product terms were entered in Step 3. A significant interaction is established when the inclusion of the product term in the final step of the analysis explains significant additional variance in the dependent variable, beyond that provided by the individual variables (main effects). A summary of the analyses are shown in Table 7, with key findings highlighted here.

As can be seen in Table 7, the inclusion of the product term in the final step of the analysis predicting post-exposure body dissatisfaction did not explain significant, additional variance, $R^2_{change} = .005$, $F_{change}(2,61) = 2.02$, $p = .141$. Nor did it explain additional variance in post-exposure negative mood, $R^2_{change} = .019$, $F_{change}(2,61) = 2.23$, $p = .117$. Instead, pre-exposure measures explained almost all of the variance in post-exposure scores of body dissatisfaction, $R^2 = .885$, $F(1,66) = 516.37$, $p < .001$, and negative mood, $R^2 = .627$, $F(1,66) = 113.54$, $p < .001$. Therefore, trait appearance comparison did not moderate the relationship between image type and body dissatisfaction, or negative mood. Thus, hypothesis 3 was not supported.

Table 7

Hierarchical Regression Analyses of Video Condition and Trait Appearance Comparison as Predictors of Body Dissatisfaction and Negative Mood

<i>Dependent</i>						
<i>Variable</i>	<i>Step</i>	<i>Predictor</i>	<i>B</i>	<i>R²</i>	<i>ΔR²</i>	<i>ΔF</i>
Body Dissatisfaction	1.	Body Dissatisfaction (pre)	.952**	.885		516.37**
	2.	Dummy 1	5.82*	.913	.032	8.12**
		Dummy 2	-3.71			
		Trait Appearance Comparison (TAC)	-.995			
	3.	TAC x D1	6.60*	.916	.005	2.02
		TAC x D2	2.65			
Negative Mood	1.	Negative Mood (pre)	.898**	.627		113.54**
	2.	Dummy 1	12.81**	.705	.090	6.84**
		Dummy 2	9.03**			
		Trait Appearance Comparison (TAC)	-7.07**			
	3.	TAC x D1	6.66	.716	.019	2.23
		TAC x D2	7.00			

Note. B values are the unstandardised regression coefficients obtained in the final step of the regression analysis

* $p < .05$. ** $p < .01$.

Discussion

The present study sought to determine how exposure to diverse body ideal fitness imagery affected young women's state body dissatisfaction and negative mood relative to idealised fitness imagery ('fitspiration'), and to determine whether this imagery inspires positive health behaviour. Results revealed that, as predicted, participants exposed to idealised fitness videos emphasising an ultra-fit and thin physique demonstrated a greater increase in state body dissatisfaction than participants exposed to diverse body ideal fitness videos or control videos. Conversely, exposure to diverse body fitness content was associated with improvements in young women's body dissatisfaction. This finding builds on previous experimental research by Mulgrew et al. (2018) who found women were more satisfied with the appearance of their bodies after viewing two fitness-related mass media campaigns, which showcased diverse body-ideals. Results also showed, as predicted, participants exposed to athletic ideal videos demonstrated a greater increase in state negative mood than participants exposed to the control videos, but not more so than those who viewed diverse body ideal videos. That is, contrary to expectations, young women exposed to the athletic ideal condition reported no greater negative mood than young women exposed to the diverse bodies condition. However, exposure to control videos was associated with improvements in negative mood. Although not predicted, this finding was not surprising given that exposure to nature has been found to improve mood (Velarde et al., 2007).

Participants exposed to both sets of exercise videos (athletic ideal and diverse body ideal) also engaged in greater state appearance comparison than participants exposed to control videos, which aligns with previous experimental research on idealised media images (Tiggemann & Zaccardo, 2015; Robinson et al., 2017). However, in contrast to Tiggemann and Zaccardo (2015), state appearance comparison was not found to mediate the effect of video type on body dissatisfaction and negative mood, demonstrating nil support for the

mediation hypothesis. Similarly, in contrast to predictions, trait appearance comparison did not moderate the effect of video type on any of the outcome variables. Finally, both experimental conditions also saw an increase in exercise intentions after manipulation compared with the control condition. Overall, the findings of the present study increase concerns regarding the harmful psychological implications of exposure to idealised fitspiration imagery for young women. However, the results also demonstrate that exposure to counter stereotypical imagery and messages advocating body diversity and functionality have a positive effect on women's body image and intentions to exercise. These findings pose a number of theoretical and practical implications, as well as potential avenues for future research.

The first aim of the study was to determine the effects of the experimental manipulation on participants' mood and body image. As predicted, it was found that exposure to idealised fitness videos emphasising an ultra-fit and thin physique (athletic ideal) in a functional manner led to greater body dissatisfaction relative to exposure to diverse body ideal fitness videos and scenic travel videos. This finding is consistent with prior experimental research demonstrating the negative effects of viewing fitspiration images on women's body image (Tiggemann & Zaccardo, 2015; Robinson et al., 2017; Prichard et al., 2018). With the development of the social media fitspiration movement and the proliferation of 'fitspo' content online, this finding is particularly disturbing and insidious as fitspiration imagery conflates messages of 'health', 'wellbeing', 'inspiration' and 'positivity' with this thin and toned athletic ideal, which is generally very unrealistic and unachievable (Sabiston & Chandler, 2009). It is not surprising then that these videos led to young women feeling dissatisfied with their bodies, as this ideal is often portrayed as the 'perfect body', a body many women do not mirror and hence fall short of and feel inadequate to when comparing their appearance. Given that the present study was the first to consider the effect of athletic

ideal video clips on women's body image, the finding that idealised videos increased body dissatisfaction is a novel discovery. Future research could compare the impact of exposure to athletic ideal video clips relative to still images to determine the effect of different formats of fitspiration imagery on young women's mood and body image.

The present study also demonstrated novel and promising initial findings regarding the effect of viewing diverse body-ideal fitness content sourced from Instagram on women's body image. Specifically, the finding that exposure to diverse body ideal exercise videos improved young women's body dissatisfaction contributes to the emerging research into positive body image. The results suggest that by providing women with a broader conceptualisation of beauty offers a protective role against media-induced body dissatisfaction. These findings align with Cohen et al. (2019) who found that brief exposure to body positive Instagram posts was associated with improvements in young women's positive mood, body satisfaction and body appreciation, relative to thin-ideal and appearance-neutral posts. Future research could extend the current experimental findings to women's state-orientated body appreciation.

Results also showed, as predicted, that there was a statistically significant difference in negative mood post-exposure between participants who viewed the athletic ideal videos and participants exposed to the scenic travel (control) videos, whereby mean level of negative mood was higher in the fitness-idealised condition after manipulation than in the control condition. However, this effect was associated with improvements in negative mood after viewing scenic travel videos and was not attributed to a change in negative mood post-exposure to fitspiration videos. This outcome was surprising but aligned with the results of Slater et al. (2017) who found that exposure to fitspiration images did not result in significantly poorer negative mood compared to viewing neutral Instagram images. Based on

the adjusted means in Table 2, there was relatively no change in negative mood following exposure to diverse body ideal exercise videos. Perhaps, given that the exercise imagery in both experimental conditions contained themes encouraging women's pursuits of physical activities and behaviours such as being strong and sweaty whilst enjoying oneself contributed to these findings. Or they could be attributed to the videos showing and demonstrating how to engage in various exercise activities, which some women may not have attempted before, breaking down the complexity of physical activity. It is recommended that mood be included and considered more carefully in future studies of this kind to ascertain if these components explain the studies current findings related to negative mood.

In contrast to prediction, results revealed that there was a decline in physical functionality satisfaction after viewing the athletic ideal exercise videos. Although this finding was unexpected, one potential explanation is that idealised fitness functionality depictions retain a strong aesthetic focus. By doing so, women may not incorporate their perceptions of physical competence or functionality when making evaluative judgements about their bodies. Alternatively, Tiggemann and Zaccardo (2015) have speculated that adding tone, strength, or athleticism to the prescription to be thin may serve to provide women with additional ways in which to feel inadequate, resulting in less satisfaction with one's body function. We also suggest that there are other likely non-appearance components, such as perceived effort, achievability or will power that warrant further investigation as there were few external cues (e.g., sweating, being red faced) to suggest the image subjects found the exercises difficult. As such, the exercises may have been viewed as effortless, which is unrealistic for most women, causing women to feel inadequate leading to less satisfaction with how one's body functions. Comparatively, participants in the diverse body ideal condition demonstrated improvement in state physical functionality satisfaction from pre-to-

post exposure. It seems viewing depictions of everyday women exercising encouraged women to focus on their body functionality. This finding is a novel discovery.

In relation to the present study, it was proposed that the negative effects of viewing athletic ideal imagery is a result of social comparison processes. Social comparison is a mechanism through which idealised media images have commonly been found to impact upon body image (Dittmar & Howard, 2004; Tiggemann & McGill, 2004; Tiggemann & Polivy, 2010). The study also evaluated whether exposure to diverse body-ideal fitness imagery provoked social appearance comparison processes, and then determined the implications of these comparisons for women's body image and mood. As anticipated, participants in both exercise video conditions (athletic ideal and diverse body ideal) engaged in more comparisons with their video set than participants in the control condition, however state appearance comparison was not statistically greater in the athletic ideal condition compared to the diverse body ideal condition. Thus, hypothesis 1b was only partially supported. Contrary to predictions, participants' appearance comparisons following video exposure did not lead to increased body dissatisfaction or negative mood, therefore the mediation proposed in hypothesis 2 was not supported. This was surprising given past research has shown appearance comparison to mediate, or partially mediate, the relationship between viewing fitspiration images and negative body image (Tiggemann & Zaccardo, 2015; Robinson et al. 2017). It is possible these results were due to limited statistical power. It is also possible that other factors, such as objectification of women may play more of a role when the functionality of movement is also presented. Broadly defined, objectification is the treatment of the body as an object, focusing on how it looks rather than its functional capacity (Fredrickson & Roberts, 1997). Objectification is a prominent feature of fitspiration imagery, which spotlights bodies and body parts to direct the observers gaze toward the aesthetic qualities of the body (Carrotte et al., 2017). This was evident in the present study, whereby

the women in athletic ideal condition were repeatedly depicted in figure-hugging sportswear with a high degree of skin exposure, particularly visible abdominals. Whereas the women in the diverse body-ideal condition were portrayed in a less or non-objectified manner as they often wore less revealing active wear with minimal skin exposure. Objectification can lead some women to become preoccupied with their external appearance, habitually monitoring and observing the body's physical attributes, a process termed self-objectification (Fredrickson & Roberts, 1997). When engaged in this process, some women experience greater appearance anxiety, body dissatisfaction and greater symptoms of depression and disordered eating (Fredrickson & Roberts, 1997; Noll & Fredrickson, 1998; Moradi & Huang, 2008). Future studies of this kind may usefully consider the mediating role of self-objectification to determine if this process explains the negative effect of athletic ideal imagery on women's body image found in the present study.

The effect of video condition on participants' body image and mood was also expected to be moderated by trait appearance comparison. It was predicted that participants who exhibited a greater tendency to compare themselves and engage in upward social comparison would be more sensitive and susceptible to the effects of the videos. But contrary to predictions, trait appearance comparison was not found to moderate the relationship between exposure to the different videos and body dissatisfaction or negative mood. Thus, hypothesis 3 was not supported. This may be related to the measure used to determine trait appearance comparison as The Physical Appearance Comparison Scale (PACS) is a more commonly employed measure in the fitspiration literature. However, these findings are consistent with recent fitspiration literature (Tiggemann & Zaccardo, 2015; Robinson et al., 2017), which advocate that everyday state appearance comparisons play a more important role than trait appearance comparison. Notably, given the observed relationship between body dissatisfaction and athletic ideal exercise videos, these findings suggest that participants

were equally vulnerable to the negative effects of such exercise imagery regardless of individual differences in appearance comparison tendencies.

Fitness-related imagery is purported to have inspirational effects on intentions to improve one's health and fitness. Here, this was shown to be true. All three conditions led to increases in overall feelings of inspiration, indicating that the scenic travel videos provided an appropriate comparison condition. Specifically, women exposed to athletic ideal and diverse body ideal videos reported feeling more inspired to improve their fitness and to eat healthily, compared to women exposed to control videos. These findings are consistent with recent fitspiration literature (Tiggemann & Zaccardo, 2015; Robinson et al., 2017). However, an investigation into the inspirational effect of fitspiration imagery found it did not impact actual exercise engagement in women (Robinson et al., 2017). Although surprising, it can be argued that should women actually make changes to their exercise regimes and/or diet after viewing fitspiration imagery, these behaviours might, in fact, be dysfunctional, or at least be driven by dysfunctional motivations such as attempting to emulate the ideal bodies displayed in fitspiration imagery. Research has found exercising for appearance-related reasons rather than for health and wellbeing reasons has been linked to higher body dissatisfaction and disordered eating, and low self-esteem among women (Gonçalves & Gomes, 2012; Prichard & Tiggemann, 2008). Thus, it seems little value exists in fitspiration motivating viewers towards behaviours to improve their physical health if this is unachievable and the content is simultaneously detrimental to their emotional health and potentially detrimental to their physical health. Future research could usefully determine if the inspirational effect of diverse body ideal fitness imagery translates into any subsequent behavioural changes. It is anticipated that this imagery will promote actual exercise engagement in a positive manner. Body positive advocates have argued that increasing the visibility of a diverse range of body sizes may encourage women to partake in health-

promoting behaviours by fostering a sense of inclusivity and breaking down weight stereotypes and any perceived barriers to participation (Cohen et al., 2019). Moreover, the diverse range of body types featured in these clips means there is no ideal for women to subscribe or aspire to, so the overall focus of the clip is on what the body can do, rather than what it looks like. Finding an innovative approach to increasing young women's participation in physical activity is vital, given in Australia, there is a gender bias in sport, active recreation and physical activity participation rates with females participating less than their male counterparts (Reece et al., 2017). Hence, action is required to improve equity in participation.

The results of the current study have important theoretical and practical implications. They contribute to the growing body of literature on new media sources and body image. In particular, they demonstrate that fitness-idealised (athletic ideal) video clips, like fitness-idealised still images, whilst considered to be inspirational are associated with body image disturbance. Importantly, the experimental design of the study adds value to this finding by establishing causal direction. It appears the purported benefit of body functionality breaks down when women are exposed to imagery of women displaying the physical functionality of their bodies in an idealised manner. Future research could consider exploring self-objectification as the mechanism through which fitness-idealised videos leads to negative body image. At a practical level, these findings point to recommendations for women to limit their exposure to fitspiration imagery. However, given its general positive philosophy, it is not uncommon for women to use fitspiration media to inform themselves of what constitutes a "healthy lifestyle." This imagery is also seen as a positive alternative to other forms of media (e.g., thinspiration; Griffiths et al., 2018). Young women are aware that viewing and subscribing to thin ideal imagery can lead to numerous negative physical and psychological outcomes (e.g., anorexia, bulimia, and low self-esteem; Smolak & Levine, 2015) due to widespread media coverage of these potential effects and the collective banning of imagery

and text related to disordered eating on social media. Problematically, by subscribing to the fitspiration trend women are unknowingly exposing themselves to potential increases in negative body image. Thus, it is imperative that consistent with previous campaigns rendering thin ideal imagery as dangerous, all media outlets should aim to more efficiently educate women on the perils of fitspiration and the unobtainability of the athletic ideal and associations with negative body image. This could also be incorporated into media literacy programs to help young women become better informed and more responsible social media consumers and creators. It can be argued that those who have the skills to critically analyse media messages are less likely to be adversely affected by such messages and therefore potentially less susceptible to body dissatisfaction.

The present findings also inform clinical interventions for women struggling with body image concerns. Clinicians should consider and be mindful of client's engagement with fitspiration material, particularly as a health information source. Therapeutic interventions should focus on teaching young women what positive healthy living entails, challenging misconceptions (i.e., health and fitness is not synonymous with one body type) and promoting healthy practices with food and exercise. Positive eating and exercise has been found to have many psychosocial and behavioural protective factors, one being positive body image (Korn, Gonen, Shaked & Golan, 2013). Emphasis should also be on developing positive body esteem by emphasising that a healthy body can come in a variety of different shapes and sizes. Given the present findings, it seems providing women with broader conceptualisations of beauty and exposure to women of varied body shapes, sizes, and abilities allows viewers to reflect more positively upon their own appearance. Thus, diverse body ideal imagery might offer a practical and cost-effective way to reduce women's vulnerability to body dissatisfaction. Perhaps simply by encouraging women to follow more body diverse imagery online this may help to counterbalance the many idealised messages

typical of most women's social media feeds and provide a way to mitigate the negative impacts of exposure to such content (Fardouly & Vartanian, 2016; Tiggemann & Zaccardo, 2015). Modifying young women's interactions is possible given that unlike traditional media formats whereby users are passive consumers, social media allows users agency in terms of what they post or follow. Hence, this could be considered a 'light-touch,' cost-effective, and scalable intervention strategy (Slater et al., 2017). As with all experimental research, the results of the current study need to be interpreted within the context of a number of limitations. First, the sample was limited in size. Second, the sample recruited was quite an active one, averaging 5 hours of exercise each week. The recruitment material may have inadvertently attracted young women who regularly exercise and who are not representative of the general population. This limits the generalisability of the findings. The exercise imagery may have a very different effect on sedentary or less active individuals. Third, the expectation that women would respond better to the diverse body ideal videos, in comparison to the athletic ideal videos, was based on their focus on realistic depictions of active female bodies. However, the videos comprising the final sets were not matched for degree of skin exposure with the women in athletic ideal condition depicted with a higher degree of skin exposure than the women in the diverse body-ideal condition. As such, the greater presence of objectifying features in the athletic ideal condition may have contributed to the current findings. Lastly, although the online delivery method of the study was more indicative of how people access social media it does have potential problems with an inability to control for external variables such as distraction and influence of others. However, multiple strategies were employed to minimise these effects. For example, to ensure participants watched each video in full they were unable to move to the next video until the existing clip had played in full. Also, to ensure participants paid attention to each video, they were asked to rate each

video on its visual quality, length, inspirational nature and the likelihood that they would like or share the video on social media.

In conclusion, notwithstanding these limitations, the present study makes an important contribution to the growing body of literature focusing on the impact of exposure to new media and female body image. The results demonstrate that even short-term exposure to athletic ideal video clips can increase body image disturbances in young women. The findings build on previous research (Tiggemann & Zaccardo, 2015; Robinson et al., 2017; Benton & Karazsia, 2015; Homan et al., 2012) and establish empirical evidence for the previously unstudied trend of idealised videos. In practice, the findings of this study inform recommendations against exposure to fitspiration imagery, which may be usefully incorporated into negative body image interventions. Furthermore, the current study was the first to experimentally investigate how exposure to diverse body ideal fitness videos affected women's psychological wellbeing, and to determine whether these videos inspire exercise. The finding that exposure to counter stereotypical imagery advocating agency, body functionality and body positivity regardless of size had a more positive effect on women's body image, physical functionality satisfaction, and exercise intent is a novel and noteworthy discovery. Given the proliferation of social media content encouraging women to aspire to unrealistic and unobtainable body ideals, and the known negative outcomes of exposure to such content, the current study suggests women be encouraged to follow diverse body ideal content that offers alternative and empowering messages about the body in order to improve their negative body image. Future research should aim to replicate this study with a greater and more diverse sample, as well as examine exercise outcomes.

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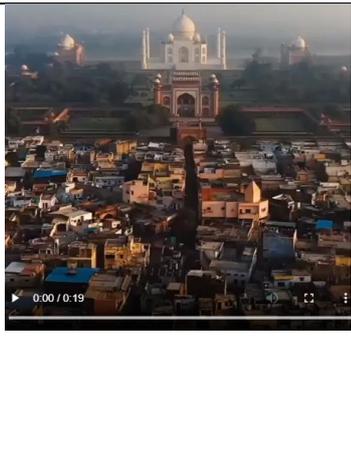
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Appendix A

Screenshot of Video Stimuli Examples

Athletic Ideal	Diverse Body Ideal	Scenic Travel
		
		

In the past week, how frequently have you **seen** material related to:

	Never	Rarely	Sometimes	Often	Always
Fitness	<input type="radio"/>				
Fashion	<input type="radio"/>				
Food	<input type="radio"/>				
Travel	<input type="radio"/>				

In the past week, how frequently have you **posted** material online related to:

	Never	Rarely	Sometimes	Often	Always
Fitness	<input type="radio"/>				
Fashion	<input type="radio"/>				
Food	<input type="radio"/>				
Travel	<input type="radio"/>				

Do you follow any fitness-related pages on social media?

Yes

No

Please indicate which page you see the most:

Physical Activity Levels

The following questions are concerned with your current physical activity.

Please fill in the survey questions if applicable. If you are unable to fill out all the questions below, as you only participate in one sport, leave the remaining questions blank and press next to proceed to the following question.

Please list a type of **physical activity/sport** that you currently participate in (if any).

How **long** do you spend doing this activity/ sport (on each occasion)? (please specify if in minutes or hours)

How **often** do you partake in this sport or activity (a week)?

Please list another type of **physical activity/sport** that you currently participate in (if applicable).

How **long** do you spend doing this activity/ sport (on each occasion)? (please specify if in minutes or hours)

How **often** do you partake in this sport or activity (a week)?

Are there any other types of sport or physical activity that you engage in currently (not mentioned above)?

Yes

No

State Mood and State Body Dissatisfaction VAS

Please indicate how you *feel* **right now** by placing a vertical line at the appropriate position on each horizontal line.

Anxious

Not at all | _____ | Very much

Depressed

Not at all | _____ | Very much

Happy

Not at all | _____ | Very much

Angry

Not at all | _____ | Very much

Confident

Not at all | _____ | Very much

Fat

Not at all | _____ | Very much

Physically attractive

Not at all Very much

Satisfied with your body size

Not at all Very much

Satisfied with your body shape

Not at all Very much

Physically fit

Not at all Very much

Physical Functionality Satisfaction VAS

Please indicate how **satisfied** you are with the following attributes of your physical self-concept **right now** by moving the vertical line to the appropriate position on each horizontal line.

Physical Strength

Not at all Very much

Body Tone

Not at all Very much

Body Movement

Not at all Very much

What the Body Can Do

Not at all Very much

State Social Comparison and Video Inspiration.

I'd like you to think back to how you felt when you saw the videos earlier. Please indicate your response to the following questions by circling the appropriate number on each scale.

1. How much did you think about your health and fitness when viewing the videos?

1 2 3 4 5 6 7

no thought
about health/fitness

a lot of
thought

2. How much did you think about travelling when viewing the videos?

1 2 3 4 5 6 7

no thought
about travel

a lot of
thought

3. How much did you think about your appearance when viewing the videos?

1 2 3 4 5 6 7

no thought
about appearance

a lot of
thought

4. How much did you compare your overall appearance with those of the people you saw in the videos?

1 2 3 4 5 6 7

no comparison

a lot of
comparison

5. How much did you compare your specific body parts with those of the people you saw in the videos?

1 2 3 4 5 6 7

no comparison

a lot of
comparison

6. How inspired did you feel to improve your fitness when viewing the videos?

1 2 3 4 5 6 7

not at all inspired

very inspired

7. How inspired did you feel to go travelling when viewing the videos?

1 2 3 4 5 6 7

not at all inspired

very inspired

8. How inspired did you feel to eat healthy when viewing the videos?

1 2 3 4 5 6 7

not at all inspired

very inspired

Upward and Downward Appearance Comparison Scales

For each of the statements below, please circle the appropriate response.

1. I compare myself to those who are better looking than me rather than those who are not.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

2. I tend to compare my own physical attractiveness to that of magazine/social media models.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

3. I find myself thinking about whether my own appearance compares well with models and movie stars.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

4. At the beach or athletic events (sports, gym, etc.) I wonder if my body is as attractive as the people I see there with very attractive bodies.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

5. I tend to compare myself to people I think look better than me.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

6. When I see a person with a great body, I tend to wonder how I 'match up' with them.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

7. When I see good-looking people I wonder how I compare to them.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

8. At parties or other social events, I compare my physical appearance to the physical appearance of the very attractive people.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

9. I find myself comparing my appearance with people who are better looking than me.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

10. I compare my body to people who have a better body than me.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

11. When I see a person who is physically unattractive I think about how my body compares with theirs.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

12. I tend to compare my body to those who have below average bodies.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

13. At the beach, gym, or sporting events I compare my body to those with less athletic bodies.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

14. I compare myself to people less good looking than me.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

15. I think about how attractive my body is compared to overweight people.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

16. At parties I often compare my looks to the looks of unattractive people.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

17. I often compare myself to those who are less physically attractive.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

18. I tend to compare my physical appearance with people whose bodies are not as physically appealing.

1	2	3	4	5
strongly disagree	disagree	neither agree nor disagree	agree	strongly disagree

Demographic Information

What is your current age? _____

Please indicate your ethnicity (please tick the most appropriate box):

- Aboriginal/Torres Strait Islander
- Caucasian (white)
- Asian
- African
- Other _____

Height: _____ cm

Weight: _____ kg

Word count: 12,643