Can Following Body Positive or Appearance Neutral Facebook Pages Improve Young Women's Body Image and Mood? Testing Novel Social Media Micro-Interventions

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Abstract

Small changes to social media use could have a large impact across the population. The present study tested novel social media micro-interventions (i.e., brief content delivered in everyday life) in which young women ($N = 159$) were instructed to either (1) follow a body positive Facebook group, (2) follow an appearance neutral Facebook group, or (3) use Facebook as usual. Relevant content was posted to the Facebook groups three times per day for two weeks. Primary outcomes were trait body image (body dissatisfaction and appreciation) and mood, and secondary outcomes were trait self-objectification, appearance comparison tendency, and body activism. Outcomes were assessed across three timepoints: pre-test (T1), post-test (T2) after the 14-day intervention period, and follow-up (T3) 4-weeks after T2. Participants in both the body positive and appearance neutral conditions reported decreased body dissatisfaction from T1 to T2 (small-medium effects) and participants in the body positive condition reported decreased appearance comparisons from T1 to T2 (medium effect). There were no changes for those variables from T2 to T3. No other significant differences were found. Viewing a small number of body positive or appearance neutral posts on social media may be an effective inexpensive micro-intervention for improving young women's body image.

1. Introduction

Body dissatisfaction is prevalent among young women globally (Swami et al., 2010) and is associated with a host of negative outcomes, such as poor academic performance (Florin et al., 2011), poor quality of life (Nayir et al., 2016), depressed mood (Paxton et al., 2006), and eating disorders (Stice & Van Ryzin, 2018). Thus, it is important that we identify ways to improve body image among this demographic. Social media is used by most young women around the world (GlobalWebIndex, 2020) and is often argued in the media to be partly responsible for the high rates of body dissatisfaction among young people (Milmo & Skopeliti, 2021; Perrigo, 2021). There are ways in which social media use may harm users' body image. For example, viewing edited and/or enhanced images of young women who match narrow societal beauty ideals on social media can increase body dissatisfaction and negative mood among young women (de Valle et al., 2021), partly because users compare their own appearance to the women in those images and judge themselves to be less attractive (i.e., make upward appearance comparisons; Fardouly et al., 2017). Further, there is a small relationship between spending more time on social media and lower body satisfaction cross-sectionally (Saiphoo & Vahedi, 2019) and longitudinally (de Valle et al., 2021). Researchers have recently turned their attention to how we can make social media a less harmful environment for body image and to see if certain social media content can actually improve body image (Rodgers et al., 2021). In the present study, we tested the efficacy of body positive or appearance neutral social media micro-interventions to improve body image and mood in young women's everyday lives.

1.1. Body Positivity on Social Media

With roots in the fat acceptance movement from the late 1960s, the body positive movement (also known as body positivity) aims to challenge narrow and unattainable societal beauty ideals, promote acceptance and love for all bodies, and encourage a focus on the

function and health rather than the appearance of the body (Cwynar-Horta, 2016; Sastre, 2014). The body positive movement emerged on social media platforms in the early 2010s, and was originally focused on people with marginalised and larger bodies (Cwynar-Horta, 2016). However, the body positive movement has been criticised in recent years for being commoditised by corporations, focusing on the often unseen physical 'flaws' (e.g., cellulite) of White women with thin bodies, and being sexualised and objectifying (Cohen et al., 2020; Cwynar-Horta, 2016; Sastre, 2014).

Two content analyses have been published on body positive posts taken from Instagram. One study examined posts from popular body positive Instagram accounts (Cohen, Irwin, et al., 2019) and the other examined the top posts under #bodypositivity on Instagram (Lazuka et al., 2020). Content posted on popular body positive Instagram accounts is controlled by those specific account holders whereas content found under the hashtag can be posted by any Instagram user wanting to link an individual post to body positivity. Both studies found that around 95% of body positive Instagram posts contained images or videos (5% only contained text). Some criticisms of the body positive movement on social media were supported by the content analyses. For example, most posts contained women who were young and White, especially under the hashtag (67% White people under the hashtag compared to 51% on popular accounts). Further, around a third of body positive content in both studies was judged to be objectifying (Cohen, Irwin, et al., 2019; Lazuka et al., 2020). The content found on popular body positive accounts appeared to be more closely aligned with the original aims of the body positive movement than those found under the body positivity hashtag. For example, posts on popular body positive accounts primarily contained people with large bodies (68%), compared to less than half of posts found under the hashtag (43%). Both studies found that around 40% of posts contained aspects of people's appearance that did not match societal beauty ideals (e.g., cellulite, stomach rolls, stretch marks) but

posts under the hashtag (79%) were much more likely to contain aspects of people's appearance that did match the ideals (e.g., clear skin, shiny hair, small waist) than those on popular accounts (43%). Given that most posts in both studies were not judged to be objectifying and most contained diverse bodies, there is some potential for body positive content to improve body image.

1.2. The Impact of Body Positive Content on Body Image

Researchers have recently begun to investigate the potential impact of viewing body positive social media content on young women's body image and mood. One study by Stevens and Griffiths (2020) using ecological momentary assessments (EMA) found that young women reported more state body satisfaction and better mood when they reported viewing body positive social media content than when they did not view that content. The type of body positive content viewed by participants in that study and the direction of the relationships is unknown. Participants in the Stevens and Griffiths (2020) study also reported viewing body positive content most frequently on Instagram followed by Facebook.

Another study by Cohen, Fardouly, et al. (2019) used an experimental design to examine the immediate impact of viewing body positive content taken from popular Instagram accounts on young women's body image and mood compared to thin ideal content and appearance neutral content. Brief one-time exposure to the body positive content improved women's state body satisfaction and mood and led to more state body appreciation than exposure to thin ideal or appearance neutral content. However, young women who viewed the body positive content or the thin ideal content reported more self-objectification (i.e., focused more on the appearance of their body than other aspects of themselves) than those who viewed the appearance neutral content, providing some support for previous concerns about potential negative impacts of body positive content (Cwynar-Horta, 2016; Sastre, 2014). Participants in the Cohen, Fardouly, et al. (2019) study reported favourable

attitudes towards body positive accounts and most were willing to follow body positive accounts in the future.

A third study by Fioravanti et al. (2021) combined both EMA and experimental methods to examine the immediate impact of viewing body positive content found under the body positive hashtag on Instagram in young women's everyday lives. Participants were randomly assigned to one of three conditions in which they were asked to follow an Instagram profile created for the study that posted either body positive content, fitspiration content (i.e., content that promotes a thin and toned body), or appearance neutral content several times each day. They were asked to follow their assigned Instagram page for 28 days and were also encouraged to follow the most popular hashtags consistent with their assigned condition (e.g., #bodypositive, #bopo, or #fitspiration, #fitspo). During the 28 days, participants were sent one text message each day containing a link to a brief survey asking them to recall the details of the posts from that day, in addition to completing state measures of body satisfaction, mood, and appearance comparisons. Participants in the body positive condition reported increases in state body satisfaction and mood, but also increases in appearance comparisons over the 28-day period. The rate of growth was higher among the body positive condition compared to the other two conditions for positive mood and was higher among the body positive condition than the fitspiration condition but not the appearance neutral condition for body satisfaction. The rate of growth for appearance comparisons was slower in the body positive condition than the fitspiration condition. Because participants were encouraged to view other content under their assigned hashtag during the study, the quantity and content of posts viewed in each condition is unknown. The authors argued that increases in appearance comparisons may be due to thin ideal and sexualised content potentially being viewed under the body positive hashtag on Instagram. This study provides initial support for the use of body positive social media content to

improve body image and mood among young women in everyday life. However, little attempt was made to disguise the purpose of the study and thus some results may be driven by demand characteristics, especially given that participants were asked to recall the content of posts prior to each state outcome measure in the daily survey. Further research is needed to test the effectiveness of body positive posts in a more controlled manner and on social media platforms other than Instagram (e.g., Facebook).

Social media provides a powerful tool to promote social movements by amplifying the communication of key messages, connecting like-minded people, and mobilising activists and resources (Mundt et al., 2018). Indeed, 23% of US adult social media users reported changing their views on a social or political issue based on the content they viewed on social media (Perrin, 2020). Scholars have highlighted the potential to harness social media to promote social activism regarding body image and weight stigma (Puhl, 2022; Zavattaro, 2021). Body activism could involve talking to friends and colleagues, signing petitions, and/or attending protests or workshops to improve body image on a broader scale (Calogero, 2013). A central theme of many body positive posts is to challenge societal beauty ideals and the importance placed on physical appearance (Cohen, Irwin, et al., 2019). Thus, body positive content may be considered body activism and viewing body positive posts may inspire women to engage in activism themselves to improve body image on a broader scale. However, research is yet to examine the impact of viewing body positive social media content on women's motivation to engage in body activism.

1.3. Appearance Neutral Social Media Content and Body Image

Another approach that has been proposed to improve the social media environment for body image is for users to follow accounts that are unrelated to appearance (e.g., travel, nature, or science pages; Cohen, Slater, et al., 2019; de Valle et al., 2021). Appearance neutral content is often used in the control conditions of experimental studies examining the

impact of idealised social media images on women's body image (de Valle et al., 2021). That research finds that viewing appearance neutral posts that do not contain people is better for women's body image, mood, and self-objectification than viewing posts containing idealised bodies (de Valle et al., 2021; Rodgers et al., 2021). Further, some research finds that viewing posts featuring nature landscapes, travel, or animals can improve women's mood (Cohen, Fardouly, et al., 2019; Livingston et al., 2020). However, research looking at change over time finds that viewing appearance neutral posts alone has no impact on women's body satisfaction scores (e.g., Cohen, Fardouly, et al., 2019; Fardouly & Rapee, 2019; Livingston et al., 2020).

While viewing appearance neutral posts alone may not improve body image, following such accounts on social media may reduce the frequency with which one views idealised bodies on those platforms, which may lead to improvements in women's body image because they have fewer opportunities to make upward appearance comparisons to others and to internalise unattainable beauty ideals. Indeed Fioravanti et al. (2021), found that participants who viewed appearance neutral social media content over the 28-day period reported increases in body satisfaction and mood. Thus, there is preliminary evidence to suggest that viewing appearance neutral content may be an effective way to improve body image on social media, but further research is needed to determine the robustness of those effects and to examine the effect of those posts on other constructs related to body image, such as body appreciation, self-objectification, and body activism.

1.4. Micro-Interventions

Following social media pages or accounts that post body positive or appearance neutral content could be considered a digital body image micro-intervention. Micro-interventions deliver easily consumed content in the context of a person's everyday life that should have an immediate positive influence on targeted outcomes and symptoms with little

burden on the individual (Baumel et al., 2020; Fuller-Tyszkiewicz et al., 2019). These interventions can be offered on a single occasion or repeatedly over a specific time period and could be used as a first step or in conjunction with other more detailed intervention programs to improve body image and mental health (Baumel et al., 2020; Fuller-Tyszkiewicz et al., 2019). Recent research has found some positive effects of micro-interventions for improving state or trait body image and related outcomes, including those focused on mindfulness (Atkinson & Diedrichs, 2021; Fraser et al., 2022; Fuller-Tyszkiewicz et al., 2019), self-compassion (Gobin et al., 2022), and psychoeducation (Matheson et al., 2020; Matheson et al., 2021). Given their potential low cost, low burden, and wide-scale reach, further research is needed to investigate the efficacy of body image micro-interventions, including those focused on potentially positive social media content.

1.5. The Present Study

Facebook is the most popular social media platform used globally (Statistica, 2021b), and 18- to 24-year-olds comprise the second largest cohort of active Facebook users (Statistica, 2021a). Facebook is often argued to be a less image-based platform than Instagram, and time spent on Facebook has been found to be less harmful for women's body image and mood than time spent on Instagram (Engeln et al., 2020). Thus, Facebook may be an effective environment to promote body positivity. Research is yet to examine body positive content posted on Facebook and to test the effectiveness of viewing body positive or appearance neutral Facebook content for improving women's body image and mood. Thus, the aim of the present study was to test whether a two-week body positive micro-intervention on Facebook can improve young women's body dissatisfaction, body appreciation, and mood compared to an appearance neutral micro-intervention on Facebook or using Facebook as usual (i.e., assessment-only condition). Further, we tested whether any effects of these micro-interventions lasted four weeks later. Following previous research (Cohen, Fardouly, et al.,

2019; Fioravanti et al., 2021), we also examined the impact of the micro-intervention on women's appearance comparison tendency and self-objectification and on women's intention to engage in body activism given that body positive posts often challenge societal beauty ideals (Cohen, Irwin, et al., 2019).

Based on existing research on Instagram (Cohen, Fardouly, et al., 2019; Fioravanti et al., 2021; Stevens & Griffiths, 2020), we hypothesised that participants in the body positive condition would report decreased body dissatisfaction, increased body appreciation, improved mood, and more self-objectification after the two-week intervention period. Based on previous research (Cohen, Fardouly, et al., 2019; Fioravanti et al., 2021), we also predicted decreases in women's body dissatisfaction and increases in their mood following exposure to appearance neutral content. No changes were expected for the assessment only condition. No predictions were made at follow-up given that this is the first study to examine the longer-term impact of a body positive or appearance neutral social media micro-intervention. Appearance comparison tendency was examined in an exploratory manner due to the varied content and body sizes presented in body positive posts. Body activism was also examined in an exploratory manner.

2. Method

2.1. Design

A three-armed (body positive Facebook group, appearance neutral Facebook group, assessment-only control) parallel-randomised controlled trial was conducted online (see Figure 1). Primary outcomes were trait body image (body dissatisfaction and appreciation) and mood, and secondary outcomes were self-objectification, appearance comparison tendency, and body activism. Outcomes were assessed across three timepoints: pre-test (T1), post-test (T2) after a 14-day intervention period, and follow-up (T3) 4-weeks after T2.

2.2. Participants

Participants were 159 young adult women aged 18 to 25 years old ($M = 20.92$, $SD =$ 2.21) living in Australia. A total of 49 participants were assigned to the body positive Facebook group condition (66.2% of the original 74 assigned to this condition), 48 participants assigned to the appearance neutral Facebook group condition (68.6% of the original 70 assigned to this condition), and 62 participants assigned to the assessment-only control condition (80.5% of the original 77 assigned to this condition) completed the post-test measures and complied with study instructions (see Figure 1). Participants were recruited via targeted Facebook advertisements and were paid up to $15 AUD for their time ($10 after completing the post-test [T2] survey and an additional $5 after completing the follow-up [T3] survey). The mean body mass index (BMI; kg/m^2) of participants was 23.59 ($SD = 6.45$). The majority of participants identified as White ($n = 93$, 58.5%), 45 as Asian (28.3%), 8 as Mixed (5.0%), and 13 as 'other' (8.2%). Most participants indicated their primary employment status as a student ($n = 101$, 63.5%), 29 were employed part-time (18.2%), 23 were employed full-time (14.5%), and 6 were unemployed (3.7%). All participants had a Facebook account, which they reported checking several times a day ($n = 149$, 93.7%) or once a day ($n = 10$, 6.3%). Participants reported spending an average of 2.18 ($SD = 1.62$) hours on Facebook on a regular day. None of the participants followed any of the most popular body positive accounts on Facebook (i.e., *Any-Body, Beauty Redefined, The Body Is Not an Apology, Operation Beautiful, I AM THAT GIRL*) and were therefore unlikely to view body positive information on Facebook prior to their involvement in this study.

2.3. Micro-Intervention Groups

Private Facebook groups were created for this study for both the body positive and appearance neutral conditions to allow us to post relevant content to participants via Facebook. We chose to create Facebook groups rather than Facebook pages for this study to ensure that only our participants had access to the study posts and to allow us to remove

participants from that group after the intervention period. We posted content relevant to each condition (see post information below) three times per day for 14 consecutive days (42 posts in total). We chose to post three times per day to give participants several opportunities to view the content without overwhelming their newsfeeds. Posts were scheduled for 7am, 12pm, and 6pm (i.e., first thing in the morning, around lunchtime, after work/study) each day because those times were found to be popular for Australian social media use in a report by Yellow (2018). The posts appeared on participants' Facebook timeline amongst the posts from other accounts/people that participants already followed on Facebook. Participants would also receive notifications on Facebook each time we posted new content, if they enabled that function in their settings as instructed.

      2.3.1. Body positive Facebook posts. To maintain ecological validity, body positive posts used in the present study were taken directly from popular public body positive Facebook pages with the permission of the owners of those pages. In order to select the posts for this study we first conducted a content analysis of seven of the most popular (minimum 5,000 total likes and page follows) public body positive Facebook pages (*Any-Body, My Body Gallery, Beauty Redefined, I AM THAT GIRL, Operation Beautiful, The Body Is Not an Apology, Body Positive Australia*) in January 2017, collating detailed information regarding the content, date, and time of posts, as well as the number of likes, shares, and comments those posts received. Data were collected daily over a two-week period.

      Of the pages selected, the media used in their posts (e.g., image, text and/or video) was systematically coded to give an overview of the type of content posted on these Facebook pages. As seen in Table 1, a large majority of the posts surveyed included a text description, some linked to an external source (e.g., an article, Instagram account), had an image attached (not including an image related to an article link or video), and a small proportion included a video. As seen in Table 1, the body positive posts selected for use in

the current study closely matched those media types. The Facebook posts were also categorised into various body image concepts and topics (*body diversity, body acceptance and kindness, body attentiveness/functionality, body activism, anti-diet/anti body change and weight loss, consideration/reflections on social/cultural influences on body image, weight stigma and discrimination*). The 42 body positive posts used in the present study were carefully selected to represent these categories equally, in order to target various aspects of body image. All authors agreed on the posts selected and which category each post represented. Of the 27 posts that contained human figures, 13 contained women with larger bodies, eight contained women showing aspects of their bodies unrelated to weight that did not match beauty ideals (e.g., scars, body hair, dark skin colour) of which five contained women with little clothing (e.g., lingerie or bikini), three contained women who matched aspects of the thin ideal but with accompanying messages promoting body positivity (i.e., body acceptance, body activism), and three contained average sized women who were fully clothed.

    2.3.2 Appearance neutral Facebook posts. Posts in the appearance neutral condition were taken from public Facebook pages related to science and culture (*BBC Culture, National Geographic, BuzzFeed, ScienceDump, Amazing Places*). All pages selected met the same popularity criteria as the body positive pages, with pages requiring over 5,000 minimum total likes and page follows. All posts underwent a review process and required agreement on suitability from all authors. The posts included in the appearance neutral condition focused on interesting scientific facts/findings, artistic and craft content, or travel/cultural information. Posts were unrelated to physical appearance, body image, or food and contained minimal imagery of people to remove possible confounds. Of the nine posts that contained people, eight contained clothed men of varying ages and body sizes, and three videos contained fully clothed women of different ages and body sizes who were only on the

screen for a few seconds. The people were not the focus of the posts and none of the people were sexually objectified or closely matched societal beauty ideals. Posts focusing on specific times of the year (e.g., Christmas) or potentially emotive topics (e.g., tragedy, cute puppies) were not included to reduce confounds on participants' mood and to make the study suitable at all times of the year. The amount of text included on posts was matched to the body positive condition (see Table 1). However, other media formats varied in order to reflect the typical media displayed on these types of Facebook pages.

2.4. Measures

     2.4.1. Body dissatisfaction. The Body Dissatisfaction subscale from the Eating Disorder Inventory (EDI: Garner et al., 1983) was used to measure participants' level of concern with their body weight and shape. Participants indicated the extent to which nine statement (e.g., "I think my thighs are too large") described them on a 6-point Likert scale (0 = *never*, 5 = *always*). Responses were summed after reverse scoring relevant items. The EDI has shown good psychometric properties among samples of young women (Garner et al., 1983). In the current sample, internal consistency for the Body Dissatisfaction subscale was excellent in all three surveys (pre α = .90; post α = .91; follow-up α = .93).

     2.4.2. Body appreciation. The Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015) was used to measure positive body image. Participants indicted the extent to which 10 statements (e.g., "I respect my body") described them on a 5-point Likert scale (1 = *never*, 5 = *always*). Responses to all statements were averaged, with higher scores indicating more body appreciation. The BAS-2 has been validated in samples of young women (Tylka & Wood-Barcalow, 2015) and was found to have good psychometric properties. In the current sample, internal reliability for the BAS-2 was excellent in all three surveys (pre α = .94; post α = .95; follow-up α = .95).

2.4.3. Mood. The Positive and Negative Affect Scale-Short Form (PANAS-SF; Watson et al., 1988) was used to measure mood. Participants were presented with a list of five positive affect items ("alert", "inspired", "determined", "attentive", "active") and five negative affect items ("upset", "hostile", "ashamed", "nervous", "afraid") and were asked to indicate how much they felt that way over the past two weeks on a 5-point Likert scale (1 = *not at all*, 5 = *a lot*). Items were summed separately for the positive mood and negative mood subscales. The PANAS-SF has been validated among samples containing young women (Watson et al., 1988). Internal consistency in the current sample was adequate in all three surveys for the positive mood subscale (pre α = .71; post α = .79; follow-up α = .81) and negative mood scale (pre α = .80; post α = .82; follow-up α = .82).

2.4.4. Self-objectification. The Self-Objectification Beliefs and Behaviors Scale (SOBBS; Lindner & Tantleff-Dunn, 2017) was used to measure self-objectification. The SOBBS contains two subscales: one measuring the internalisation of an observer's perspective of the body (Internalisation subscale) and the other measuring the extent to which the body is treated as being capable of representing the self (Representing Self subscale). Participants indicated their level of agreement with seven items related to internalisation (e.g., "I try to imagine what my body looks like to others") and seven items related to representing the self (e.g., "My physical appearance is more important than my personality") on a 5-point Likert Scale (1 = *strongly disagree*, 5 = *strongly agree*). Responses were averaged for each subscale. The SOBBS has shown good psychometric properties among samples of young women (Lindner & Tantleff-Dunn, 2017). Internal reliability for the current sample was good in all three surveys for the Internalisation subscale (pre α = .86; post α = .90; follow-up α = .89) and the Representing Self subscale (pre α = .87; post α = .91; follow-up α = .92).

2.4.5. Appearance comparison tendency. The Physical Appearance Comparison Scale (PACS; Thompson et al., 1991) was used to measure participants' tendency to compare their appearance to others. Participants indicated the extent to which five statements (e.g., "In social situations, I sometimes compare my figure to the figures of other people") described them on a 5-point Likert scale (1 = *never*, 5 = *always*). Responses were averaged after reverse coding the relevant item. The PACS is widely used among samples of young women and has shown good psychometric properties in previous research (Thompson et al., 1991). In the current sample, internal reliability for the total PACS was inadequate for all three surveys (pre α = .66; post α = .66; follow-up α = .68). Removing the reverse coded item (i.e., "Comparing your "looks" to the "looks" of others is a bad way to determine if you are attractive or unattractive") only slightly improved the internal reliability of the PACS in all three surveys (pre α = .71; post α = .75; follow-up α = .72) and the pattern of study results did not change when using a combined measure with or without this item. Thus, we retained all five of the original scale items for the combined PACS scores in the current study.

2.4.6. Intent to engage in body activism. We used a modified version of the social activism measure from Study 2 in the Calogero (2013) paper to measure participants' intentions to engage in activism regarding positive body image. Participants rated four items assessing their intentions to engage in different types of body activism over the next six months (e.g., "Discuss issues or share content related to improving body image with friends or colleagues") on a 5-point Likert scale (1 = *not at all*, 5 = *very much*). Responses were averaged to form a total body activism score. Internal reliability of the body activism measure in the current sample was adequate in all three surveys (pre α = .87; post α = .78; follow-up α = .83).

2.4.7. Manipulation checks. We included manipulation checks at the end of the post-test (T2) survey to assess the amount and content of posts that participants in the body

positive and appearance neutral Facebook group conditions recalled viewing over the 14-day intervention period. Participants were first asked to select the instructions they were given in the first survey: either to use Facebook as usual, or to join a Facebook group. Participants who indicated that they joined a Facebook group were then asked to describe the content posted on that group page in an open-ended response and were asked to indicate roughly how many posts they saw from that group over the past two weeks. All three surveys (pre, post, follow-up) also contained attention check items (e.g., "Please select 'never' for this item") to assess whether participants were attending to the study questions.

2.5. Procedure

The first author's University ethics committee approved this study. Paid advertisements were posted on Facebook, targeted only towards those who identify as women, aged 18-25 years old, and living in Australia on their Facebook profile. Interested participants clicked on a link that took them to an online survey containing the study information, a consent form, and screening questions. The study was described to participants as an examination of how well people recall the content they view on Facebook and the impact of Facebook use on personal factors. As seen in Figure 1, participants were only eligible for the study if they indicated that they identified as women and were aged 18-25 years old, living in Australia, with a Facebook account that they checked at least once per day, and if they indicated that they did not follow any of the most popular body positive Facebook accounts (hidden amongst the names of other accounts unrelated to appearance).

Eligible participants were sent the pre-test (T1) survey via email, which they had seven days to complete. The pre-test survey contained trait measures of body dissatisfaction, body appreciation, mood, self-objectification, appearance comparison tendency, intention to engage in body activism, and demographic questions (ethnicity, employment status, height, weight). The survey also contained filler measures (e.g., life satisfaction, personality,

intention to engage in gender activism, and influence of social media on memory, sleep, work, and attention) to blind participants to the purpose of the study. On completion of the pre-test survey, participants were randomly assigned to one of the three study conditions (body positive Facebook group, appearance neutral Facebook group, assessment-only control) via a secure survey platform (i.e., Qualtrics). If participants were allocated to the assessment-only condition, they were asked to continue to use Facebook as usual. If participants were allocated to the body positive or appearance neutral micro-intervention conditions, they were provided with a link to a Facebook group and instructed to request to join that group via their personal Facebook account. Participants who did not immediately join their condition's respective group were sent a reminder email prior to the posting period. Participants were dropped from the study if they did not join the group prior to the first day of posts (see Figure 1). Once participants had joined their relevant private Facebook group, they were asked to check their settings to ensure that they would receive a notification on Facebook each time we posted content to that group. They were also instructed to take time to look at each post as it appeared on their Facebook timeline.

Facebook posts were scheduled to start one week after the pre-test survey was sent to participants. On completion of the 14-day intervention period, participants were removed from the Facebook groups so that they could no longer view the Facebook posts. Then, all participants (including those in the assessment-only control condition) were emailed the post-test (T2) survey. The post-test survey contained the same trait measures as the pre-test (T1) survey and also included manipulation check questions. Participants were instructed to complete the post-test survey within a two-day period so that we could collect their responses close to their exposure to the Facebook posts. However, if the survey was not completed within two days, they were given an extra five-day extension, which meant that all participants completed the survey within seven days post cessation of posting.

Participants were sent the follow-up (T3) survey four weeks after being sent the post-test (T2) survey. The follow-up survey was only sent to participants who had completed the post-test survey (see Figure 1). The follow-up survey contained the same trait measures as the pre-test and post-test surveys. Consistent with the procedure for the post-test survey, participants were instructed to complete the follow-up survey within a two-day period but were given a five-day extension if it was not completed within the original timeframe. All participants were debriefed on completion of the study and provided with referral information to mental health providers.

2.6. Data Analyses

Responses to the manipulation and attention checks were examined and participants were excluded if they did not pay attention to the study instructions or if they did not view any of the Facebook posts in their relevant condition. Preliminary analyses were then conducted to examine missing data and to test assumptions of normality. Mixed factorial analyses of variance (ANOVAs) were conducted to examine any condition (body positive Facebook group, appearance neutral Facebook group, assessment-only control) by time interactions separately for each of the outcome variables from (1) pre- to post-test, and (2) post-test to follow-up. Thus, two mixed factorial ANOVAs were conducted for each outcome variable. Those analyses allowed us to examine whether the micro-interventions changed participants' scores on the outcome variables over the intervention period (i.e., pre-test to post-test) and whether any changes were maintained over time (i.e., post-test to follow-up). Post-hoc simple effects analyses were conducted for any significant condition by time interactions. Effect sizes were estimated using partial eta squared (η_p^2), with scores of 0.01 indicating a small effect, 0.06 indicating a medium effect, and 0.14 indicating a large effect (Richardson, 2011).

3. Results

3.1. Manipulation Checks

One participant in the assessment-only control condition had incorrectly answered attention check questions in both the post-test and follow-up surveys and was thus removed from all further analyses. To ensure that participants had been exposed to their relevant Facebook content, we removed any participants in the body positive and appearance neutral Facebook group conditions who reported seeing no posts over the 14-day intervention period (10 in body positive condition, 11 in appearance neutral condition). Those participants also did not recall the content of the posts in the open-ended question. We also removed participants from the body positive condition (5 participants) and appearance neutral condition (3 participants) who did not recall any content of the posts in the open-ended response (e.g., said they can't remember any posts). All of those participants reported seeing less than five posts over the 14-day period. All the remaining participants in the body positive and appearance neutral conditions correctly reported the general content posted on their respective Facebook group and reported seeing more than three posts over the 14-day posting period. Six participants in the assessment-only control condition were also removed because they reported being asked to follow a Facebook account and reported seeing posts from that group over the past 14 days, suggesting that they were not paying attention to the study instructions and/or were not answering the questions honestly. Thus, 36 participants in total were excluded from the study, resulting in a final sample of 159 participants (49 in body positive condition, 48 in appearance neutral condition, 62 in assessment-only control condition).

We conducted a sensitivity analysis to see if the study results differed when including all participants irrespective of whether they saw any study images (i.e., intent-to-treat analysis) and those who attended to the study images and were included in the final sample

(i.e., per protocol analysis). There was no significant time by condition interactions for any of the study variables (ps >.10) when including all participants who completed the post-test measures irrespective of viewing the study images. Thus, the results reported below are specific to those who attended to at least some of the posts in their assigned condition (i.e., per-protocol analyses). There were no significant differences between those who were retained and those who were excluded at the post-test survey on any of the demographic variables (i.e., age, BMI, time spent on Facebook, ethnicity, employment status; all $ps > .07$), or any pre-test measures (i.e., body satisfaction, body appreciation, mood, self-objectification, comparison tendency, body activism; all $ps > .25$).

In the final sample, participants in the body positive Facebook group condition reported viewing an average of 16.46 posts ($SD = 11.89$; 39.19%), and participants in the appearance neutral Facebook group condition reported seeing an average of 12.70 posts ($SD = 8.42$; 30.24%), over the 14-day intervention period. There was no significant difference in the number of posts seen between the body positive and appearance neutral conditions, $t(82) = -1.68$, $p = .10$. There was also no significant difference ($ps > .06$) between participants in each of the study conditions on demographic variables or any pre-test measures (i.e., body satisfaction, body appreciation, mood, self-objectification, comparison tendency, body activism).

3.2. Preliminary Analyses

There was less than 3.77% missing data for any of the variables of interest in the pre- and post-test surveys. Of those in the final sample who attempted the pre- and post-test surveys ($n = 159$), 39 did not attempt the follow-up survey (see Figure 1). Thus, there was between 25.2% and 26.4% missing data for the variables of interest in the follow-up survey. A Little's MCAR test showed that the data in this study were missing completely at random, $\chi^2(300) = 247.83$, $p = .99$. Missing data were handled with pairwise deletion. Most of the

study variables were not normally distributed (Shapiro–Wilk $p < .05$), except all three measures of body dissatisfaction, post and follow-up positive mood, follow-up negative mood, and post and follow-up body appreciation. Mixed factorial ANOVAs were conducted because they are considered robust to non-normal data (Blanca et al., 2017). Power analysis conducted with the software GPower (Erdfelder et al., 1996) indicated that the study had more than 80% power to detect relatively small effects at post-test (Cohen's $f > .013$) and follow-up (Cohen's $f > .015$). Means and standard deviation scores for participants in each condition on each of the outcome measures at each survey are reported in Table 2.

3.3. Main Analyses

3.3.1. Body dissatisfaction. There was a significant condition by time interaction for body dissatisfaction from pre-test to post-test, $F(2, 154) = 3.56$, $p = .03$, $\eta_p^2 = .04$. Post hoc simple effects analyses revealed that participants' body dissatisfaction decreased in the body positive Facebook group condition, $F(1, 154) = 8.78$, $p = .004$, $\eta_p^2 = 0.05$, and the appearance neutral Facebook group condition, $F(1, 154) = 4.03$, $p = .047$, $\eta_p^2 = 0.03$, but there was no change in body dissatisfaction scores for participants in the assessment-only control condition, $F(1, 154) = 0.23$, $p = .63$, $\eta_p^2 = 0.002$. Further, although the rate of decrease appears to be greater in the body positive condition than the appearance neutral condition, there was no significant difference between the two slopes $t(91) = 0.66$, $p = .51$. There was no significant condition by time interaction for body dissatisfaction from post-test to follow-up, $F(2, 115) = 0.17$, $p = .84$, $\eta_p^2 = .003$, suggesting that reductions in body dissatisfaction remained over time for the intervention groups.

3.3.2. Body appreciation. There was no significant condition by time interactions for body appreciation from pre- to post-test $F(2, 151) = 0.33$, $p = .72$, $\eta_p^2 = .004$, or from post-test to follow-up, $F(2, 114) = 0.51$, $p = .60$, $\eta_p^2 = .01$.

3.3.3. Mood. There was no significant condition by time interactions for positive mood from pre- to post-test, $F(2, 155) = 0.56$, $p = .57$, $\eta_p^2 = .01$, or from post-test to follow-up, $F(2, 114) = 0.92$, $p = .40$, $\eta_p^2 = .02$. Similarly, no significant condition by time interactions were found for negative mood from pre- to post-test, $F(2, 155) = 0.12$, $p = .89$, $\eta_p^2 = .002$, or post-test to follow-up, $F(2, 114) = 2.07$, $p = .13$, $\eta_p^2 = .04$.

3.3.4. Self-objectification. There was no significant condition by time interactions for the internalisation subscale of the SOBBS from pre- to post-test, $F(2, 150) = 0.73$, $p = .48$, $\eta_p^2 = .01$, or post-test to follow-up, $F(2, 114) = 1.50$, $p = .23$, $\eta_p^2 = .03$. Similarly, no significant condition by time interactions were found for the representing self subscale of the SOBBS from pre- to post-test, $F(2, 150) = 0.36$, $p = .70$, $\eta_p^2 = .01$, or post-test to follow-up, $F(2, 114) = 0.45$, $p = .64$, $\eta_p^2 = .01$.

3.3.5. Appearance comparison tendency. There was a significant condition by time interaction for appearance comparison tendency from pre-test to post-test, $F(2, 153) = 5.43$, $p = .01$, $\eta_p^2 = .07$. Post hoc simple effects analyses revealed that participants' appearance comparison tendency decreased in the body positive Facebook group condition, $F(1, 153) = 8.81$, $p = .003$, $\eta_p^2 = 0.05$, but there was no change in appearance comparison scores in the appearance neutral Facebook group condition, $F(1, 153) = 0.38$, $p = .54$, $\eta_p^2 = 0.002$, or assessment-only control condition, $F(1, 153) = 2.58$, $p = .11$, $\eta_p^2 = 0.02$. There was no significant condition by time interaction for appearance comparison tendency from post-test to follow-up, $F(2, 115) = 0.56$, $p = .57$, $\eta_p^2 = .01$, suggesting that reductions in appearance comparison tendency remained over time for the body positive Facebook group condition.

3.3.6. Intent to engage in body activism. There was no significant condition by time interaction for body activism from pre- to post-test $F(2, 152) = 2.09$, $p = .13$, $\eta_p^2 = .03$. There was a significant time by condition interaction from post-test to follow-up, $F(2, 116) = 4.47$,

$p = .01$, $\eta_p^2 = .07$. Post hoc simple effects analyses suggested that there was an increase in intentions to engage in body activism from post-test to follow-up for those in the appearance neutral Facebook group condition, $F(1, 116) = 10.37$, $p = .002$, $\eta_p^2 = 0.08$, but no change in body activism scores for those in the body positive Facebook group condition, $F(1, 116) = 0.07$, $p = .80$, $\eta_p^2 = 0.001$, or assessment-only control condition, $F(1, 116) = 0.54$, $p = .46$, $\eta_p^2 = 0.01$.

4. Discussion

The present study examined the impact of brief Facebook body positive and appearance neutral micro-interventions on young women's body image, mood, self-objectification, appearance comparison tendency, and intention to engage in body activism. Viewing only a small number of body positive posts taken from popular Facebook accounts over a 14-day period decreased women's body dissatisfaction (medium effect) and appearance comparison tendency (medium effect), and those measures (i.e., body dissatisfaction, appearance comparison) did not significantly change from immediately following the intervention to four weeks post-intervention. Viewing a small number of appearance neutral posts on Facebook also decreased women's body dissatisfaction at post-test (small to medium effect), and body dissatisfaction did not significantly change from immediately following the intervention to four weeks post-intervention. No changes were found for the assessment-only condition and there were no significant effects of conditions on women's mood, body appreciation, self-objectification, or body activism. These findings provide promising results for the potential of both body positive and appearance neutral Facebook posts for improving some aspects of body image in women's everyday lives.

It should be noted that positive effects of the micro-interventions found in the present study were only relevant to those who attended to the study posts and not all those who were assigned to each study condition. It is perhaps not surprising that participants needed to

attend to the information in the posts to experience any beneficial outcomes for body image. Participants in the present study were asked to turn on the notification settings for their assigned Facebook page so that they would be signalled when new content was posted. We were unable to determine whether participants complied with those instructions. However, it is possible that the positive results found in the present study may not be present if women follow pages without receiving notifications when new content is posted. Around 10% of participants in each condition did not comply with the study instructions and did not attend to their assigned posts. Thus, some drop out may be expected when using body positive or appearance neutral micro-interventions in practice. However, dropout rates for the micro-interventions used in the present study were less than those found in more intensive micro-interventions (36%; Fuller-Tyszkiewicz et al., 2019) and other online interventions for body image and eating disorders (~25%; Linardon et al., 2020).

4.1. Reducing Body Dissatisfaction

The findings of the present study were consistent with previous research (Cohen, Fardouly, et al., 2019; Fioravanti et al., 2021; Stevens & Griffiths, 2020), providing further evidence to suggest that viewing body positive content on both Facebook and Instagram can reduce young women's body dissatisfaction. Participants in the present study were presented with only three body positive Facebook posts per day, and on average they reported viewing only one post per day amongst the other content they regularly viewed on Facebook. Participants in the present study were excluded if they followed any of the most popular body positive Facebook accounts, to reduce the likelihood that participants in any condition would view other body positive content on Facebook during the intervention period. Thus, our findings suggest that viewing only a small number of body positive posts in a brief micro-intervention on Facebook may be enough to improve women's body image in everyday life. Similar to the findings of Fioravanti et al. (2021), participants in the appearance neutral

condition also reported less body dissatisfaction over the intervention period. Although the effects of the body positive condition appeared larger than those of the appearance neutral condition, there was no significant difference between the conditions in the size of effects for body dissatisfaction from pre- to post-intervention. Thus, viewing both body positive and appearance neutral content on social media appears to be beneficial for body image. These effects were maintained four weeks after the intervention period, suggesting that the micro-interventions may have lasting positive effects on body image. Caution should be taken when interpreting the effects at follow-up because dropout rates reduced the power to detect changes from post-intervention (T2) to follow-up (T3), although there was still more than 80% power to detect small to moderate effects (Cohen's $f > .015$) between those intervals.

Further research is needed to determine why viewing body positive or appearance neutral posts on social media may improve women's body image. Viewing body positive content may reduce the extent to which women internalised narrow societal beauty ideals leading to improvements in their body image over time. Further, viewing appearance neutral content may encourage women to focus on things they enjoy outside of their appearance, such as travel or art, which may reduce the extent to which they invest in their appearance. However, it is also possible that viewing any content on social media that does not contain idealised bodies will lead to improvements in body image over time because it may dilute the salience of other idealised content and provide women with fewer opportunities to make negative appearance comparisons with others. The mechanisms responsible for the positive impact of body positive or appearance neutral content on body image require further investigation. Changes in exposure to idealised content during the intervention period could be tested as a potential mechanism in future research.

4.2. Reduced Appearance Comparisons in the Body Positive Condition

In the present study, participants in the body positive condition reported reductions in their trait appearance comparison tendency after the intervention period. Appearance comparisons are argued to be an important mechanism responsible for any negative impact of social media on body image (Fardouly & Vartanian, 2016; Rodgers et al., 2020). The body positive posts used in the present study encouraged women to challenge narrow societal beauty ideals, promoted body diversity, and encouraged body acceptance and activism. These messages may have led to reductions in appearance comparisons because women may have reduced the extent to which they internalised narrow societal appearance ideals in line with the messages being promoted in body positive posts. Sociocultural models of body image propose that both internalisation of appearance ideals and appearance comparisons are responsible for the negative impact of ideal media imagery on body image (Rodgers et al., 2020; Thompson et al., 1999). Thus, future research should examine the impact of body positive posts on internalisation of ideals and appearance comparison tendency to determine the relevance and temporal order of these factors in the context body positivity on social media. The results of the present study suggest that future research should examine the impact of a body positive micro-intervention over longer periods of time because positive effects on appearance comparisons may induce stronger effects on body image over time.

Results of the present study were in contrast to those of Fioravanti et al. (2021), in which body positive Instagram posts *increased* women's state appearance comparisons over the intervention period. Contrasting results may be due to participants in the Fioravanti et al. (2021) study viewing Instagram posts that may contain more visual content containing people and thus may provide more opportunities to make appearance comparisons. Further because participants in that study were instructed to follow popular body positive hashtags during the intervention period, they may have viewed more images containing aspects of people's

appearance that match societal ideals (Lazuka et al., 2020) than those in the present study who viewed images taken from popular Facebook accounts, which may have triggered more appearance comparisons. Further research is needed to investigate the impact of viewing Instagram and Facebook content with and without people who match societal beauty ideals on women's tendency to make appearance comparisons and on the direction of those comparisons.

4.3. Null Results

Similar to the findings of other body image micro-interventions (Fuller-Tyszkiewicz et al., 2019), the effects found for body dissatisfaction in the present study did not extend to other primary or secondary outcome measures. In contrast to the findings of Cohen, Fardouly, et al. (2019), viewing body positive content in the present study had no impact on women's self-objectification. These differences in findings may be due to the type of body positive content posted by popular accounts on Facebook as compared to Instagram. Facebook has been argued to be a less visual platform than Instagram (Vandenbosch et al., 2022). A content analysis of posts from popular Facebook accounts in the present study found that only 47% of posts contained images or videos, compared to 95% of posts in the content analysis of posts from body positive Instagram accounts by Cohen, Irwin, et al. (2019). Thus, participants in the present study may have been exposed to less visual content and thus potentially fewer sexualised images of other women than participants in the study by Cohen, Fardouly, et al. (2019), resulting in less self-objectification. However, further research is needed to determine whether body positive posts on Facebook are less visual, sexualised, and objectifying than body positive posts on Instagram. Differences in findings may also be due to the different measures of self-objectification used, which may be capturing different aspects of self-objectification at state versus trait levels. Further research is needed to examine the immediate and long-term impact of viewing body positive social media content from

different platforms on young women's self-objectification. However, in contrasts to criticisms of body positivity (Cwynar-Horta, 2016; Sastre, 2014), the present study suggests that body positive Facebook posts may not impact self-objectification.

In contrast to our predictions and the findings of previous research (Cohen, Fardouly, et al., 2019; Fioravanti et al., 2021; Stevens & Griffiths, 2020), there was no impact of viewing body positive or appearance neutral content on women's mood. Unlike previous research which used state measures of mood, in the present study we asked participants to report on how they felt over the previous two weeks. Mood is transient in nature and our lack of significant results may be due to fluctuations in mood over the intervention period. Thus, mood may be more relevant to examine when considering the immediate impact of body positive social media content rather than the effects of an intervention over time. Depressive symptoms may be more relevant to examine in the context of the short- or long-term effects of body positive interventions. However, further research is needed to determine the cumulative effect of body positive and appearance neutral content on women's mood and depressive symptoms over different time intervals.

The body positive micro-intervention had no impact on women's intention to engage in body activism. Participants in all the study conditions reported low levels of intention to engage in body activism at each assessment. Beauty ideals (Swami et al., 2010) and weight stigma (Prunty et al., 2020) are pervasive, and participants may not have felt comfortable speaking out about these issues. Longer and more intense body image interventions may be needed to motivate young women to engage in body activism (Stice et al., 2021). Surprisingly participants in the appearance neutral condition reported increases in intention to engage in body activism from post-intervention to follow-up assessments, despite no change in body activism across the actual intervention period. It is possible that the appearance neutral content may have inspired young women to pursue interests outside of their

appearance (e.g., art, travel) which may have increased their intention to engage in body activism over longer periods of time. However, these effects will need to be replicated before any conclusions can be drawn.

4.4. Limitations and Future Directions

The study had several limitations that should be noted. First, we are unable to objectively determine whether participants viewed each post and if they clicked on and read the articles linked to certain posts. Facebook originally allowed users to see who had viewed each post, but that function was removed by the platform. Future research could examine users' level of engagement with body positive posts to determine whether it impacts their body image. Relatedly, we chose to focus on passive consumption of the social media posts rather than encourage participants to actively engage with those posts via likes, shares, or comments. Future research could examine whether the findings change if participants passively view the content or actively engage with the content on social media. Second, we only examined the impact of the micro-interventions over a two-week period. People who follow popular body positive accounts or pages on social media are likely to view that content for more than two weeks and viewing that content may have a cumulative effect over time. Future research should examine the impact of body positive and appearance neutral micro-interventions over longer periods of time with differing amounts of content presented to participants. Third, we used trait measures of body image and related outcomes to examine the potential cumulative effect of the micro-interventions over time. However, micro-interventions are also proposed to have an immediate impact on participants (Baumel et al., 2020; Fuller-Tyszkiewicz et al., 2019). Thus, future research could include both state and trait measures of body image outcomes to examine both the immediate and potential cumulative impact of micro-interventions using ecological momentary assessment and traditional longitudinal methods. Fourth, we used diverse posts taken from popular body

positive Facebook accounts to investigate the potential impact of following those accounts on women's body image. We do not know what aspects of the posts may be driving any effects in the present study. Researchers are beginning to investigate different aspects of body positive posts (Rodgers et al., 2021) with a focus on visual content taken from Instagram. Viewing images of people with diverse body sizes or seeing real verse ideal images of women's bodies has been found to be most beneficial in current research (Rodgers et al., 2021). Viewing body positive messages without people visible in the content may also be beneficial. However, further research is needed to examine specific aspects of image and text content that may be driving any positive effects of body positivity on social media.

Fifth, except for appearance comparison tendency, we did not measure mechanisms that may be responsible for any positive effects of body positive or appearance neutral social media content on women's body image. Further, we did not measure appearance comparisons on social media specifically and instead examined comparisons to others more generally across different mediums. Future research could examine the impact of body positive or appearance neutral micro-interventions on women's social media appearance comparisons, internalisation of beauty ideals, or on broadening their conceptualisation of beauty to investigate if those constructs are relevant mechanisms responsible for any positive effects of the micro-intervention on body image. Sixth, we did not ask participants their opinion on the content posted on their assigned condition. It would be interesting to examine whether participants had positive opinions of body positive content and whether they would be willing to follow similar accounts in the future. Related to this point, we did not measure the perceived valence (i.e., positive, neutral, negative) of posts in either of the micro-intervention conditions. Future research could examine the perceived valence of body positive and appearance neutral posts and test if the perceived valence of posts influences the impact of those posts on women's body image. Finally, the present study focused on primarily White

women and further research is needed to determine whether the findings generalise other genders and cultural groups.

4.5. Conclusions

Results of the present study suggest that viewing only a small number of body positive posts on social media over a two-week period can reduce women's body dissatisfaction and appearance comparison tendency. Viewing appearance neutral posts also reduced women's body dissatisfaction during this period. The almost universal reach and daily influence of social media mean that even relatively small changes to usage can have a large impact across the population. Thus, viewing a small number of body positive or appearance neutral posts on social media may be an effective, inexpensive micro-intervention for improving body image among young women. Although these interventions provide exciting potential, careful consideration of the type of body positive content being viewed is needed before they are used in practice. Future research should continue to explore different types of body positive content on social media to ensure that it has a positive impact on women's body image.

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