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Self-Comparison With Influencers but Not General Instagram Use Moderate Upward and Downward Social Comparisons to #Fitspiration and #BodyPositive Images

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Abstract

Using an image-reactivity task, this study examined whether changes in body image (BI) dissatisfaction were more closely associated with specific social media interactions than with overall time spent online. A sample of 327 college women (ages 18–36; M = 20.82, SD = 2.98) viewed images of fit, thin, and plus-size female body types (the independent variable), as well as control and distractor food images, on Instagram using their smartphones. Image presentations were randomized and counterbalanced across participants. After viewing each image type, participants reported their desire to eat (distractor items), emotional reactions (valence and arousal checks), and self-perceived control and BI satisfaction (the dependent variables). Following the task, participants completed a survey about their overall Instagram use and their tendency to engage in social comparisons with Instagram influencers. Results showed that viewing images of fit and thin women reduced participants' sense of control and BI satisfaction compared to control images. In contrast, viewing plus-size images increased both control and satisfaction, with these effects being stronger among participants who frequently compared themselves to Instagram influencers. However, overall Instagram activity did not correlate with or influence these effects. These findings emphasize the significant role of influencer culture and suggest that promoting diverse body types on social media could improve women's self-worth.

Keywords: upward and downward social comparison; Instagram; influencers; body satisfaction; body positive; Fitspiration

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Introduction

Since the 1950s, mainstream Western media has promoted an ideal female body that, over time, became increasingly thinner (Bonafini & Pozzilli, 2011). The ideal of female beauty in the first two decades of the 2000s also included a toned and fit appearance, a.k.a. an *ultra-fit* body image (BI; e.g., Homan et al., 2012). This shift toward favoring angular figures was first noted in the 1980s (Silverstein et al., 1986). It was described as an emerging preference for bodies showing a well-defined musculature, predominantly throughout the trunk, upper arms, and legs (Lenart et al., 1995). When women internalize idiosyncratic, unrealistic ideals of female beauty, they are likely to become dissatisfied with their body appearance and increase their risk for poor mental health

(Moreno-Domínguez et al., 2019). For instance, as with the exaggerated thin ideal, exposure to the ultra-fit ideal has been linked to BI dissatisfaction and disordered eating (e.g., Wasilenko et al., 2007), particularly when rather slender models fashion the portrayal of the fit ideal (Homan et al., 2012). The internalization of sociocultural ideals of physical appearance and their negative impact on self-perceived BI are easily accommodated by social comparison theory (Festinger, 1954). Building on the role of unrealistic beauty ideals and their internalization, it is essential to consider the psychological mechanisms underlying BI satisfaction, particularly through the lens of social comparison theory.

Impact of Social Comparison

Social comparison theory posits that individuals compare themselves to others about specific dimensions or attributes to evaluate their self-worth (Festinger, 1954). Social comparisons with peers or *role models* who are deemed superior in the endeavored dimension are "upward social comparisons" (USCs; Festinger, 1954). When the superiority of the comparison target is perceived as unattainable, USCs can highlight one's perceived shortcomings, leading to feelings of inadequacy, negative emotions such as shame, and even depressive states (Major et al., 1991; Taylor & Lobel, 1989; Wheeler & Miyake, 1992). However, USCs can also foster positive emotions through upward assimilative comparisons. For example, they may inspire feelings of optimism and motivation by broadening an individual's outlook and enhancing expectations for personal growth (e.g., Berger, 1977; Meichenbaum, 1971). According to Major et al. (1991) and Smith (2000), the emotional impact of USCs—whether negative or positive—is largely influenced by perceived control, with lower control associated with negative outcomes and higher control fostering positive experiences.

Unlike USCs, downward social comparisons (DSCs) involve comparing oneself to "inferior" peers, often boosting self-regard by fostering a sense of superiority (Suls & Wills, 1991). DSCs can also elicit both positive and negative emotions depending on the outcomes for the self (Smith, 2000). For example, recognizing one's superiority in a downward contrastive comparison may evoke pride, while a downward assimilative comparison, where the other person suggests a potential negative outcome, can trigger fear or worry. In such cases, the prospect of a similar outcome for oneself shapes thoughts and generates negative emotions (Smith, 2000). Perceived control over the discrepancy in DSCs is a key predictor of emotions: a high sense of control relates to positive emotions, as superiority feels more secure (Major et al., 1991).

While social comparisons often involve personal characteristics such as abilities, affect, and performance satisfaction, physical appearance comparisons specifically focus on physical traits and therefore have the potential to significantly impact BI satisfaction (Schaefer & Thompson, 2014). Theoretically, women may experience declines in BI satisfaction when comparing themselves to women with "idealized" bodies (e.g., fit or thin), but they may feel greater BI satisfaction when the comparison targets depict "non-idealized" bodies (e.g., plus-size models; Moreno-Domínguez et al., 2019). Consequently, research on USCs and DSCs in the context of physical appearance often examines how exposure to idealized and non-idealized female images produces decreases and increases in BI satisfaction, respectively (e.g., Moreno-Domínguez et al., 2019).

However, it is important to note that findings on the effects of USC and DSC manipulations on BI satisfaction—whether decreases or increases—have been inconsistently replicated. For example, Moreno-Domínguez et al. (2019) discussed how methodological variations might account for both the successes and failures in replicating USC effects. Additionally, several literature reviews have raised concerns about these inconsistencies and the sheer volume of studies in this field (Ferguson, 2013; Holmstrom, 2004; Want, 2014).

Congruent with social comparison theory, Dohnt and Tiggemann (2006) found that girls who watched television programs that emphasized physical appearance and attractiveness were more likely to subsequently report BI concerns. Similarly, Myers and Crowther (2009) reported that the likelihood of engaging in USCs correlated with BI concerns. USC and DSC effects have been most recently investigated and replicated within the Body Positivity (BoPo) movement and its promotion in online social media (Hendrickse et al., 2021). BoPo encourages the acceptance and positive portrayal of diverse body shapes and sizes, focuses on the functionality and health of the body, and rejects appearance-based idealizations of BI (Lazuka et al., 2020). While social comparison theory provides a framework for understanding BI satisfaction, the advent of social media platforms like Instagram has amplified opportunities for appearance-based comparisons, especially through the influence of digital content creators.

Instagram: Influencers and Body Image

In a review, Holland and Tiggemann (2016) concluded that while the frequency of use and time spent on social media correlated with BI dissatisfaction, specific browsing behaviors (e.g., posting photos) were more informative about the relationship between social network involvement and levels of BI satisfaction. Instagram encourages users to engage in appearance-oriented activities that overprize physical attractiveness portrayed by slender and fit ideals (Ringrose, 2011). Instagram stands out as advantageously equipped to post, view, and share photos, and Instagram hosts an overrepresentation of profiles that selectively exhibit idealized body shapes and sizes through manipulated and edited pictures (Fardouly & Vartanian, 2016; Hund, 2017). Instagram is among the top worldwide social network platforms, with 2.0 billion monthly active users (Walsh, 2024a). Notably, Instagram is uniquely popular among younger age users; it is estimated that up to 67% of adolescents and young adults use Instagram nearly daily (Walsh, 2024a).

Instagram's success is largely due to the huge following engendered by its *influencers* (Walsh, 2024a, 2024b) or users who hold the top followed social network profiles (Statista, 2023). Researchers have noted that influencers continuously post personal content and images highlighting their luxurious lives (Abidin, 2016) and idealized slender and fit bodies (Hund, 2017). In 2021, the top three female Instagram influencers with over 370 billion followers were Ariana Grande, Kylie Jenner, and Selena Gomez (Walsh, 2024b); all three likely epitomize the modern fit and thin ideal of female beauty.

The profound influence of Instagram influencers on users can be effectively explained using the *hyperpersonal* model of computer-mediated communication (Walther & Whitty, 2021). This model suggests that online environments, particularly those focused on image and text curation like Instagram, enable individuals to carefully construct their self-presentations by highlighting idealized attributes while concealing imperfections. Influencers, in particular, capitalize on these affordances by meticulously curating, editing, and showcasing highly polished images that align with societal ideals of beauty, fitness, and lifestyle, further amplifying their appeal and impact (Walther & Whitty, 2021). In the context of computer-mediated communication, influencers act as "senders" and Instagram users as "receivers," who process these carefully curated messages in ways that contribute to the construction of an idealized image of influencers. Receivers often exaggerate their perceptions of senders in such environments, viewing them as highly relatable and trustworthy due to perceived homophily (Metzger et al., 2010). Influencers, in particular, leverage this dynamic by appearing relatable (Martensen et al., 2018) and genuine (Audrezet et al., 2020), qualities that enhance their "self-relevance" and increase their likelihood of being seen as "inspirational" models.

The hyperpersonal model further explains that, in the absence of face-to-face interactions, receivers tend to "fill in the gaps" with idealized assumptions, thereby amplifying the appeal and influence of these digital personalities. Consequently, influencers provide their followers with abundant opportunities for USC (Tosun et al., 2020). Consistent with findings that USCs with unattainable role models or "superstars" can be "threatening and deflating" (Lockwood & Kunda, 1997), exposure to Instagram influencers is frequently linked to BI dissatisfaction and negative affect (e.g., Brown & Tiggemann, 2016; Fardouly et al., 2017; Ho et al., 2016).

Using a correlational design and a sample of teenage girls, Ho et al. (2016) reported significant, substantive correlations between the likelihood of social network appearance comparisons to peers and celebrities and BI dissatisfaction. Similarly, Fardouly et al. (2017) found that Instagram use was correlated with self-objectification and that this association was mediated by the tendency to self-compare with the appearance of celebrities. In addition, the frequency of viewing Instagram fitspiration images correlated with self-reported BI concerns, a relationship mediated by appearance-based comparisons with fitspiration images (Fardouly et al., 2017). Pedalino and Camerini (2022) reported that although Instagram use was cross-sectionally correlated with lower levels of BI satisfaction, this relationship was fully mediated by self-reported tendencies to engage in social comparisons with influencers but not with close or distant peers. Moreover, commenting on others' looks and posting content was not associated with BI dissatisfaction. That is, correlational studies suggest that the relationship between Instagram activity and BI dissatisfaction is a function of the extent to which individuals engage in USCs, particularly when the USC targets are influencers. The pervasive role of Instagram influencers highlights the importance of examining how direct exposure to curated media content impacts BI, which is further explored through experimental manipulations of image exposure.

Image Exposure Manipulations and Appearance-Based Upward Social Comparisons

Tiggemann and Zaccardo (2015) found that exposure to *fitspiration* images, or images that supposedly inspire healthy habits and fitness achievement, increased BI dissatisfaction relative to neutral images. This research has been extended to show that USC effects can be mediated and moderated by individual characteristics and behaviors. Brown and Tiggemann (2016) found that exposure to images of Instagram celebrities and exposure to attractive peers increased BI dissatisfaction. The exposure effect in both studies was mediated by the degree to which participants self-reported comparing themselves to the images they viewed. Brown and Tiggemann (2016) also found that self-reported "worship" of celebrities potentiated the negative effects of watching celebrity images. In turn, McComb and Mills (2022) found that self-reported appearance perfectionism potentiated image exposure effects. Given the insights from prior experimental studies on media exposure, the current investigation aims to address key gaps by focusing on the moderating roles of social network activity and influencer-driven social comparisons.

The Current Study: Aims and Predictions

We note above that correlational research suggests that more than overall social network activity, specific social network behaviors predict BI dissatisfaction (e.g., Pedalino & Camerini, 2022; Stein et al., 2021). We have also noted that through image exposure manipulations, USC effects appear to be mediated by the tendency to engage in appearance-based comparisons with images of thin, fit, attractive, and moderated by participants propensity to "worship" celebrity women (Brown & Tiggemann, 2016) and self-reported appearance-based perfectionism (McComb & Mills, 2022). However, no experimental study has tested the potential moderating effects of overall social network activity (e.g., time connected, frequency of daily use, posting frequency, following others, etc.) on image-exposure USC or DSC effects. In addition, no experimental study has tested either the moderating role of appearance-based comparisons with celebrities or influencers on image-exposure DSC effects.

The present study aimed to investigate how social network activity and appearance-based comparisons with influencers moderate the effects of media exposure on BI satisfaction in women. Using a passive image-viewing task, we examined changes in BI and dominance following exposure to different image types, including fit, thin, and plus-size female bodies, as well as control and distractor images. This research seeks to address gaps in the literature by exploring the unique roles of influencer-driven comparisons and overall Instagram activity in shaping emotional and perceptual reactions to media content. Our focus on women is based on the historical emphasis of prior literature on female populations. Given the extensive body of work on women, our study aims to clarify a question that has been primarily investigated in female samples.

Two female body types (thin and fit) represented the opportunity to engage in USCs, and one (plus size) in DSCs. Following imagery exposure, participants self-reported their overall Instagram activities tendencies to follow and engage in live-style USC with the influencers they followed. To test these objectives, we propose the following hypotheses, grounded in prior research and the theoretical framework outlined above.

Hypotheses

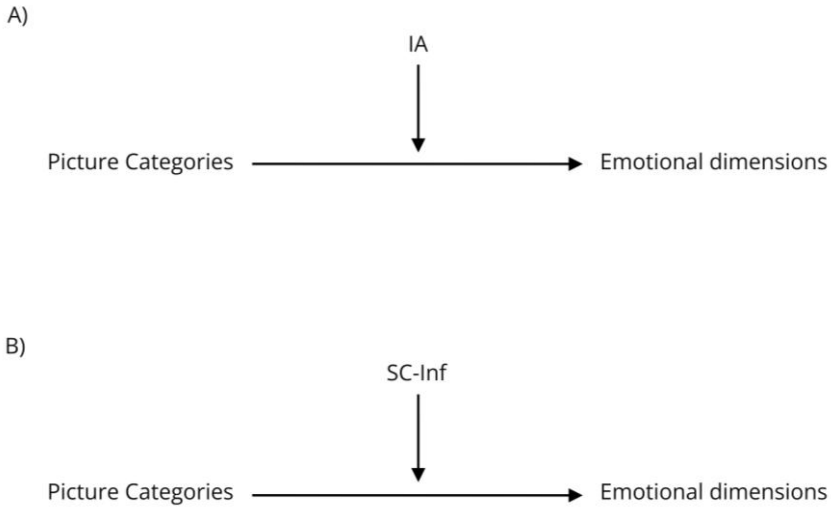
H1: Relative to neutral images, exposure to images of fit and thin women would lower BI satisfaction and dominance (feeling "controlled by" vs "being in control of"). That is, we predicted a USC effect for BI satisfaction and Dominance.

H2: Relative to neutral images, exposure to plus-size images would increase BI satisfaction and dominance (i.e., we predicted a DSC effect for BI satisfaction and dominance).

H3: Overall Instagram activity would not influence with USC and DSC effects on BI satisfaction and dominance.

H4: The tendency to engage in USCs with Instagram influencers (USC-Inf) would potentiate USC and DSC effects on BI satisfaction and dominance.

Figure 1. *Conditional Models Testing of Image Type Exposure on Body Image Satisfaction and Dominance With Instagram Activity (IA) and Social Comparisons With Influencers (SC-Inf) as Moderators.*



Methods

Participants

A convenience sample of 353 Spanish college women were recruited via in-class announcements calling for undergraduate, female volunteers (at least 18 years old) with an active Instagram account willing to participate in a study about individual perceptions of food and female photographs. BI concerns and the effects of media and social comparisons are notably pronounced among younger populations, especially adolescents and young adults. Research indicates that adolescents are especially vulnerable to developing BI issues due to social media exposure. Additionally, studies have found that reducing social media use can significantly improve BI in teens and young adults. Therefore, focusing on this age group aligns with existing literature and enhances the relevance of our findings (e.g., Thai et al., 2024).

Participants were offered partial credit toward one of their psychology course requirements. Interested participants signed up for "Google Meet" group sessions by accessing an Instagram account created to administer the research manipulation. Participants who self-reported a current or past eating disorder (n = 17) or left unanswered large portions of the study (n = 9) were excluded from the analyses. The final sample size (N = 327) exceeds minimum power requirements. An a priori power analysis conducted using G*Power 3.1 (Faul et al., 2007) indicated that a repeated measures ANOVA with a single three-level factor, assuming a small effect size (f = .15), α = .01, and power (1-β) = .80, required a minimum of 106 participants to detect significant differences. The participants were assessed between February and March 2021.

The ages of the final sample ranged between 18 to 36 (M = 20.82, SD = 2.98). The average self-reported BMI (kg/m^2) was M = 22.59 (SD = 4.06). The distribution of the sample across BMI weight categories was underweight (BMI < 18.5) = 29, healthy weight (BMI = 18.5–24.9) = 228, Overweight (BMI = 25.0–29.9) = 53, and obese (BMI > 29.9) = 17.

This study was conducted at the University of Jaén with the approval and oversight of its Institutional Review Board. The study complies with *Section 8: Research and Publication* of *the Ethical Principles of Psychologists and Code of Conduct* published by the *American Psychological Association* (American Psychological Association, 2016).

Measures

Exposure Reactivity Measures

State Body Satisfaction and Desire to Eat. Following exposure to different sets of image categories, we assessed participants' present level of body-satisfaction reactivity using a one-item, Likert-type scale from *completely dissatisfied* (1) to *completely satisfied* (10). One-item scales are frequently used in cue-reactivity and BI research

(e.g., Tiggemann et al., 2020). This item followed a *filler* question that assessed current *eating desire* and was scored from *none* (1) to *very high* (10). Filler questions help mask the experimenters' hypotheses and are recommended to protect against experimental demand characteristics (particularly when the experimental manipulation involves within-subject designs, see De Quidt et al., 2019).

Self-Assessment Manikin (SAM; Bradley & Lang, 1994). The SAM has been widely used to assess reactivity to various types of emotion-laden content, including images of female models (e.g., Wilson et al., 2023). The SAM is a pictorial rating scale with nine levels of intensity (from 1 to 9), represented by five human-like drawings and the four spaces that separate them. Bradley and Lang (1994) varied specific features of the drawings to represent distinct appetitive (approach) and defensive (avoidance) motivational states. Valence indicates whether a stimulus elicits an approach (appetitive) response (is perceived as appetizing, desirable, attractive) or a withdrawal (defensive) response (is perceived as dangerous, noxious, undesirable, disgusting). Arousal level is simply an index of the level of activation required to cope with what the stimulus represents. In general, emotionally neutral stimuli are less activating than appetitive and defensive stimuli. Feeling dominant vs feeling dominated indexes the degree of power or sense of control a person has over a particular situation or challenge. Dominance is a variable often measured in studies that assess emotional reactivity to a wide range of emotionally laden stimuli (e.g., Cepeda-Benito & Tiffany, 1996; Muñoz et al., 2010; Rodríguez et al., 2005), and has also been used to assess reactivity to female images in BI research (e.g., Moreno-Dominguez et al., 2019; Ortega-Roldán et al., 2014). In the present study, valence was anchored from *very unpleasant* (1) to *very pleasant* (9). Arousal or activation was anchored from *completely relaxed* (1) to *completely activated* (9). Dominance was anchored from *completely dominated* (1) to *completely dominant* (9).

The analyses of valence and activation served as manipulation checks by confirming the manipulation replicated previously reported robust effects. We predicted that participants would rate images of women, regardless of body type category, as more pleasant and arousing than images of neutral objects (e.g., pictures of people are consistently rated as more pleasant and activated than pictures of inanimate objects; Colden et al., 2008). We also anticipated that photographs of fit and thin women would be rated as more pleasant and activating than photographs of plus-size women (e.g., Támez, 2008).

Post-Exposure Measures

Instagram Activity (IA). We searched for but did not find any multiple-item validated self-reported measure of overall Instagram activity. Previous researchers have described one to several *home-made* items to assess Instagram use or activity (e.g., Pedalino & Camerini, 2022; Stein et al., 2021; Tiggemann et al., 2020). We combined the items used in these previous studies to create a 5-item instrument to measure overall self-reported Instagram activity. For three items, participants were asked to report information readily available in their Instagram profiles: how many minutes per day they had averaged on Instagram, how many profiles they followed, and how many people followed them. They were also asked to report how many posts they posted per week and the estimated frequency with which they checked their Instagram account.

Raw item scores were converted to *z*-scores and summed to obtain a total Instagram activity score. Although the measure has only five items, the internal consistency of the scores was unambiguously acceptable ($\alpha = .76$; Gliem & Gliem, 2003). Moreover, given that all corrected inter-item correlations were > .30 and all item-total correlations were > .50, there is also evidence that the five items are indicators of a single construct (Hajjar, 2018). The largest average inter-item corrected correlation ($r = .60$) belonged to the item measuring average daily minutes spent on Instagram, which supports the construct validity of the measure. Although this is the first time the five items were combined within the same measure, we emphasize the individual items had already been used as single-item instruments in published research and that three of the five items report objective rather than subjective activity.

The Physical Appearance Comparison Scale-Revised (PACS-R; Schaefer & Thompson, 2014). The PACS-R is an 11-item measure used to assess a person's tendency to engage in appearance-based comparisons with others (sample items: *When I meet a new person (same sex), I compare my body size to his/her body size*; *When I'm out in public, I compare my body fat to the body fat of others*). Items are scored on a 5-point Likert-type scale that ranges from 0 (*never*) to 4 (*always*). PACS-R scores have been shown to correlate with body dissatisfaction, weight concern, and dietary restraint, all evidence of convergent validity (Schaefer & Thompson, 2014). We used the Spanish PACS-R scale, which also showed sound psychometric properties (Alcaraz-Ibáñez et al., 2020). The internal consistency of the scores in the present sample was very high ($\alpha = .96$).

Social Comparison with Influencers (SC-Inf). As with IA, we were not able to locate any validated, multiple-item measures that assessed the tendency to use influencers as role models or self-comparison references. Thus, as other investigators have done with one-item measures (e.g., Pedalino & Camerini, 2022, we developed a 3-item instrument to assess the participants' tendency to engage in social comparisons with Instagram influencers (SC-Inf). Using a 0 to 4, Likert-type scale, the items inquired about 1) the frequency with which they compared themselves to the influencers they followed (from *never* to *always*), 2) whether they wished their lives were like the lives of the influencers they followed (from *totally disagree* to *totally agree*), and 3) whether they "could not stop themselves" from comparing themselves to the influencers they followed (from *totally disagree* to *totally agree*). The internal consistency for 3-item measure scores was unambiguously good (α = .76; Gliem & Gliem, 2003). Moreover, given that all corrected inter-item correlations were > .30 and all item-total correlations were > .50. This provides evidence that the three items are indicators of a single construct (Hajjar, 2018). Although the USC-Inf did not ask specifically about appearance-based comparisons, but rather comparisons in a broad sense, USC-Inf and PACS-R scores were strongly correlated (*r* = .57), which provides unambiguous evidence of convergent validity for the USC-Inf.

Materials

Stimuli

Participants were exposed to two different sets or categories of food pictures, one set of neutral pictures, and three different categories of female pictures (15 pictures/set). Food pictures functioned as "*masking*" stimuli meant to obscure experimental demand characteristics (see De Quidt et al., 2019). The two food categories included ultra-processed foods (ice cream, cakes, and fast-food meals) and a mix of unprocessed and processed foods (fresh fruits and home-cooked meals). The food pictures were found on Instagram under the #*fastfood* and the *#realfood* hashtags. The control images were pictures of objects obtained from the *neutral* category of the International Affective Pictures System (IAPS, Lang & Bradley, 2007). The three experimental image categories corresponded to pictures of young women classified as *fit*, *thin*, and *plus-size*. Fit pictures were found on Instagram under the *#fitinspiration* hashtag. Thin and Plus-size pictures were found on Instagram under the *#bodypositive* hashtag.

To select the experimental images we followed procedures and criteria as described in previous research (e.g., Blechert et al., 2010). Briefly, we collected large pools of images (about 45 to 53 per category) that were then reduced to a small set of 15 pictures per experimental category. To select the larger pool of images, researchers were asked to search for images under the pre-specified hashtags, the images were then combined, and duplicates were removed. Under the *#fitinspiration* hashtag, researchers were instructed to select images that best represented thin and toned bodies by models that seemed to express a confident, positive attitude or outlook (see also Carrotte et al., 2017). The final set of 15 fit images was selected by the female study's coauthors via a process of independent selection and consensus agreement. Under the *#bodypositive* hashtag, researchers were asked to select a large sample of images representative of a full range of diverse body types and sizes by models that seemed to express a confident, positive attitude or outlook (see also Cohen et al., 2019). Undergraduate women (*n* = 35) classified 53 images into two categories, not overweight and overweight. The students also rated the extent to which the women in the pictures were representative of the "ideal female body" from *far away* (1) to *close* (9). We selected the 15 pictures with the farthest from (*M* = 3.67, *SD* = 0.69) and closest to (*M* = 7.45, *SD* = 1.18) ratings. All images with the farthest and closest rating respectively belonged to the overweight (plus-size) and not-overweight (thin) previous classification.

To present the images, we created an Instagram profile that featured 6 *story highlights,* each with a set of 15 randomly ordered pictures representing each of the six image categories (2 food, 1 neutral, and 3 female). We also created one "practice" story highlight with 6 pictures, one per image category. Each story highlights automatically presented each of the images for 6 seconds, with a seventh image instructing participants to complete the exposure reactivity measures using a Google Forms survey (see *Procedures* below). The images were presented without accompanying text or hashtags to avoid introducing extraneous information. Hashtags such as #bodypositive, #loveyourbody, #acceptyourbody, or #bodydiversity could potentially prompt opinion-based comparisons, which might elicit upward social comparisons (USCs) regardless of the body type depicted (Park & Baek, 2018).

Procedures

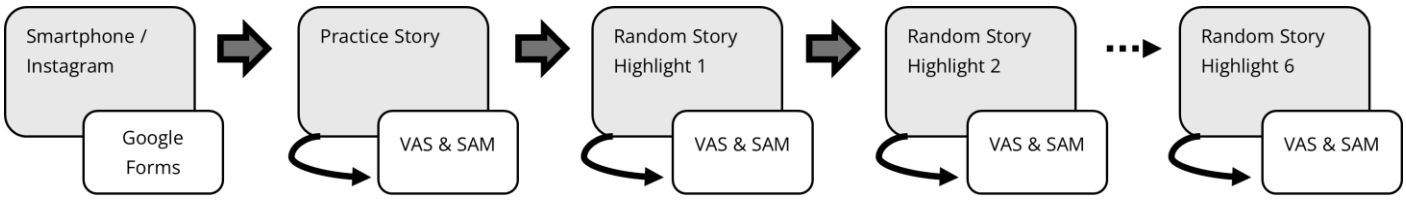
Pre-Exposure Phase

Participants joined group experimental sessions via Google Meet. A researcher greeted them and reminded them of the need to complete the study in a quiet place free of distractions, to not multitask while completing the experiment, and to remain connected to the Google Meet conference with their cameras turned on until told their participation had concluded. The researcher provided a link with access to the informed consent form and asked participants to read the form and sign it electronically. Participants who consented to participate received a second link to a Google Forms questionnaire containing a brief demographics questionnaire and all the measures they would be asked to complete during the imagery-exposure and post-exposure phases of the study.

Imagery Exposure and Post-Exposure Phases

Figure 2 illustrates the imagery exposure phase. After answering the demographic questions participants used their smartphones to connect to the study's Instagram profile. Participants followed a Google Meet presentation that familiarized them with the Instagram profile and instructed them on how to complete the SAM measures. They were then directed to click and watch the practice story highlights and then return to the Google Forms survey to complete the sequence of five, cue-reactivity items (body satisfaction, desire to eat, SAM valence, SAM activation, and SAM dominance). The imagery-exposure phase consisted in completing six cycles identical to the practice trial except that during each exposure set participants viewed 15 instead of 6 images, and all 15 images belonged to the same image category. Participants were asked to click and watch the story highlights in the order presented on Instagram. There were six-story orders randomly presented and counterbalanced across Google Meet sessions, with no story-highlights category appearing in the same placement order across the six orders.

Figure 2. *Imagery Exposure Phase.*



Note. VAS, Visual analogue scale; SAM, Self-Assessment Manikin.

Following the imagery exposure phase, participants were directed to complete the post-imagery exposure measures, which were also presented randomly and in counterbalanced order across sessions. Participants then returned to the Google Meet session, where they were debriefed, asked to not discuss the nature of the study or the experimental procedures with other students, and thanked for their participation.

Statistical Analyses

All analyses were conducted using R (version 4.0.5) with the *lme4*, *lmerTest*, *boot*, *haven*, *emmeans*, and *MuMIn* packages. Statistical significance was set at $p <. 05$. For the mixed-effects models, we used the restricted maximum likelihood (REML) method to estimate fixed effects and applied the Kenward-Roger approximation to determine degrees of freedom for hypothesis testing, ensuring accurate *p*-values for fixed effects.

We developed eight versions of the same model (one for each of the four outcome variables and one for each of the two covariates). Each model included a random intercept for participants to account for individual variability. The models examined the influence of Image Type (Thin, Fit, Plus Size) on outcome variables (Valence, Arousal, BI Satisfaction, and Dominance) while separately accounting for two covariates: IA and SC-Inf. Image reactivity (the outcome variable) was indexed as difference scores, calculated by subtracting the neutral image score from each Image Type score. The Thin category served as the reference group, such that the intercept represented the average difference score for Thin (relative to neutral). Coefficients for Fit and Plus Size represented their difference relative to the Thin difference score. Covariates were standardized to facilitate the interpretation of interaction effects.

To ensure robustness, we performed bootstrapping with 1,000 iterations, generating non-parametric 95% confidence intervals for key parameter estimates. Bootstrapped intervals were computed for the intercept, main effects of Image Type, covariates, and interaction terms. Parameters whose confidence intervals did not include zero were deemed statistically significant. To control for Type I errors due to multiple comparisons, we used the *emmeans* package with Bonferroni adjustments for pairwise comparisons of estimated marginal means (EMMs). Although all predictions were formulated a priori, Bonferroni adjustments were applied as a conservative measure. Neither bootstrapping nor Bonferroni adjustments altered the findings.

Finally, Cohen's *d* was calculated as an effect size measure for Fit and Plus Size comparisons with Thin images. These additional analyses enhance the interpretability and robustness of the reported effects.

Results

Tables 1 (Valence and Arousal) and 2 (BI Satisfaction and Dominance) summarize the statistical findings. Figures 3-6 depict the mean difference scores (body type minus neutral) for Valence (Figure 3), Arousal (Figure 4), BI Satisfaction (Figure 5), and Dominance (Figure 6), with error bars representing 95% confidence intervals (CIs) around the means. Figures 7-10 display the individual covariate effects of SC-Inf on neutral-difference scores for Fit, Thin, and Plus-Size images across Valence (Figure 7), Arousal (Figure 8), BI Satisfaction (Figure 9), and Dominance (Figure 10) ratings.

Manipulation Checks

To assess whether the manipulation effectively replicated previously reported effects, we predicted that participants would rate images of women as more pleasant and arousing compared to neutral objects (Colden et al., 2008). Additionally, we hypothesized that participants would find Thin and Fit images more pleasant and arousing than Plus Size images (Támez, 2008). No specific hypotheses were formulated regarding the potential relationship between the covariates and Valence or Arousal.

Valence

For the model with IA as a covariate, the intercept was significant, $b = 1.45$, $t(681.13) = 12.82$, $p < .001$, indicating that Valence scores for Thin images were significantly above the neutral level. The effect of Fit images compared to Thin images was not statistically significant, $b = 0.19$, $t(650) = 1.64$, $p = .102$, $d = 0.32$, 95% CI [−0.03,0.42], suggesting insufficient evidence for differences in Valence ratings between Thin and Fit image types. In contrast, Plus Size images showed a significant decrease in Valence ratings compared to Thin images, $b = −0.49$, $t(650) = −4.21$, $p < .001$, $d = 0.45$, 95% CI [−0.76,−0.22], indicating a moderate effect size (see Table 1, Figure 3).

The standardized effect of the covariate, IA, was not significant, $b = −0.05$, $SE = 0.11$, $t(681.13) = −0.46$, $p = .646$, indicating that variations in IA did not meaningfully influence Valence ratings. Interaction effects between IA and image type were also not significant for Fit or Plus Size images (both *p*s >.598). The model with SC-Inf as a covariate produced a similar pattern of results as the IA model (see Table 1, Figure 7).

Arousal

For the model with IA as a covariate, the intercept was significant, $b = 2.45$, $t(543.89) = 19.86$, $p < .001$, indicating a higher baseline Arousal for Thin images. Both Fit and Plus Size images had significantly lower Arousal ratings compared to Thin images; Fit: $b = −0.71$, $t(650) = −6.67$, $p < .001$, $d = 1.06$; Plus Size: $b = −1.45$, $t(650) = −13.61$, $p < .001$, $d = 0.52$; see Table 1 and Figure 4.

The effect of IA was statistically significant and negative, $b = −0.26$, $SE = 0.12$, $t(543.89) = −2.10$, $p = .037$, indicating a slight reduction in Arousal ratings with higher IA. However, interactions between IA and image type were not significant (both $p > .173$). The Arousal model with SC-Inf as a covariate showed a similar pattern (see Table 1), with one notable exception: the effect of SC-Inf was significant and positive, $b = 0.32$, $SE = 0.12$, $t(543.89) = 2.60$, $p = .0096$, indicating a positive association between SC-Inf and Arousal ratings. Interaction effects between SC-Inf and image type were not significant (both $p > .184$; see Figure 8).

Experimental Effects

Body Image Satisfaction

The linear mixed model revealed a significant intercept, $b = -0.85$, $t(769.67) = -11.96$, $p < .001$, indicating that, on average, participants' BI Satisfaction scores for the Thin image type were below the reference level. The comparison between Thin and Fit images was not statistically significant, $b = 0.08$, $t(650) = 1.03$, $p = .303$, $d = 0.08$, suggesting no meaningful difference in BI Satisfaction between these two image types. However, the Plus Size image type was significantly associated with higher BI Satisfaction than Thin, $b = 1.48$, $t(650) = 18.51$, $p < .001$, $d = 1.45$; see Table 2 and Figure 5.

The IA covariate did not significantly influence BI Satisfaction, $b = -0.10$, $t(769.67) = -1.38$, $p = .168$, suggesting its lack of meaningful impact on participants' ratings. Similarly, the interactions between IA and image types (Fit and Plus Size) were not significant ($p = .735$ for Fit; $p = .127$ for Plus Size), indicating that the relationship between IA and BI Satisfaction was consistent across image types. When SC-Inf was included as a covariate, the Image Type effects remained unchanged. However, SC-Inf significantly and negatively influenced BI Satisfaction, $b = -0.34$, $t(769.67) = -4.76$, $p < .001$, demonstrating that a higher tendency to compare oneself with influencers was associated with lower BI Satisfaction ratings (see Table 2 and Figure 9).

Table 1. *Valence and Arousal Results for Mixed Effects Models With Instagram Activity (IA) and Social Comparisons With Influencers (SC-Inf) as the Covariate.*

Outcome	Fixed Effect	*b*	*t*	*df*	*p*	Cohen's *d*	95% CI
Valence	Intercept (Thin)	1.45	12.82		< .001	-	[1.27, 1.62]
	Fit vs Thin	0.19	1.64		.102	0.32	[−0.03, 0.42]
	Plus Size vs Thin	−0.49	−4.21		< .001	0.45	[−0.76, −0.22]
	IA	−0.05	−0.46		.646	-	[−0.23, 0.42]
	Fit x IA	−0.06	−0.53		.598	-	[−0.23, 0.12]
	Plus Size x IA	0.06	0.50		.620	-	[−0.23, 0.35]
Valence	Intercept (Thin)	1.45	12.81		< .001	-	[1.27, 1.61]
	Fit vs Thin	0.19	1.64		.102	0.32	[−0.03, 0.42]
	Plus Size vs Thin	−0.49	−4.20		< .001	0.45	[−0.76, −0.22]
	SC-Inf	−0.01	−0.13		.899	-	[−0.20, 0.18]
	Fit X SC-Inf	−0.04	−0.36		.720	-	[−0.23, 0.19]
	Plus Size x SC-Inf	−0.07	−0.58		.563	-	[−0.36, 0.21]
Arousal	Intercept (Thin)	2.45	19.86		< .001	-	[2.28, 2.62]
	Fit vs Thin	−0.71	−6.67		< .001	1.06	[−0.94, −0.48]
	Plus Size vs Thin	−1.45	−13.61		< .001	0.52	[−1.69, −1.20]
	IA	−0.26	−2.10		.0366	-	[−0.43, −0.08]
	Fit X IA	0.04	0.36		.722	-	[−0.19, 0.25]
	Plus Size X IA	0.15	1.37		.173	-	[−0.23, 0.34]
Arousal	Intercept (Thin)	2.45	19.86		< .001	-	[2.28, 2.63]
	Fit vs Thin	−0.71	−6.67		< .001	1.06	[−0.94, −0.48]
	Plus Size vs Thin	−1.45	−13.61		< .001	0.52	[−1.69, −1.20]
	SC-Inf	0.32	2.60		.0096	-	[0.15, 0.49]
	Fit X SC-Inf	0.03	0.25		.806	-	[−0.22, 0.26]
	Plus Size x SC-Inf	−0.14	0.12	−1.33	.184	-	[−0.38, 0.12]

Dominance

For the Dominance outcome, the mixed-effects model revealed a significant intercept, $b = -0.94$, $t(619.50) = -8.46$, $p < .001$, indicating that participants' Dominance ratings for Thin images were, on average, below baseline. The Fit image type did not significantly differ from Thin, $b = 0.02$, $t(650) = 0.17$, $p = .865$, $d = -0.02$. In contrast, the Plus Size image type was significantly associated with higher Dominance compared to Thin, $b = 1.32$, $t(650) = 12.39$, $p < .001$, $d = 0.96$; see Table 2 and Figure 6.

The IA covariate did not significantly influence Dominance ratings, $b = 0.14$, $t(619.50) = 1.20$, $p = .231$, and interactions between IA and image types were also non-significant ($p = .255$ for Fit; $p = .958$ for Plus Size), suggesting that the relationship between IA and Dominance was consistent across image types. When SC-Inf was included as a covariate, the pattern of Image Type effects remained unchanged. However, SC-Inf significantly predicted Dominance, $b = -0.60$, $t(619.50) = -5.44$, $p < .001$, with higher tendencies to compare oneself with influencers being associated with lower Dominance ratings. The interaction between SC-Inf and Fit images was not significant, $b = -0.03$, $t(650) = -0.24$, $p = .813$, while the interaction with Plus Size images was significant, $b = 0.40$, $t(650) = 3.73$, $p < .001$. Notably, this positive interaction term was smaller in magnitude than the absolute value of the negative main effect, indicating that SC-Inf had a relatively weaker negative impact on Plus Size images compared to Thin images (see Table 2 and Figure 10).

Table 2. *Body Image Satisfaction (BI-Sati) and Dominance Results for Mixed Effects Models With Instagram Activity (IA) and Social Comparisons With Influencers (SC-Inf) as the Covariate.*

Outcome	Fixed Effect	*b*	*t*	*df*	*p*	Cohen's *d*	95% CI
BI-Satis	Intercept (Thin)	−0.85	−11.96		< .001	-	[−0.97, −0.74]
	Fit vs Thin	0.08	1.03		.303	−0.08	[−0.08, 0.25]
	Plus Size vs Thin	1.48	18.51		< .001	1.45	[1.32, 1.66]
	IA	−0.10	−1.38		.168	-	[−0.44, 0.03]
	Fit x IA	0.03	0.34		.735	-	[−0.22, 0.18]
	Plus Size x IA	0.13	1.53		.127	-	[−0.14, 0.32]
BI-Satis	Intercept (Thin)	−0.85	−11.96		< .001	-	[−0.97, −0.74]
	Fit vs Thin	0.08	1.03		.303	−0.08	[−0.08, 0.25]
	Plus Size vs Thin	1.48	18.51		< .001	1.45	[1.32, 1.66]
	SC-Inf	−0.34	−4.76		< .001	-	[−0.44, −0.22]
	Fit X SC-Inf	0.04	0.46		.648	-	[−0.13, 0.25]
	Plus Size x SC-Inf	0.60	7.54		< .001	-	[0.43, 0.79]
Dominance	Intercept (Thin)	−0.94	−8.46		< .001	-	[−1.11, −0.76]
	Fit vs Thin	0.02	0.17		.865	−0.02	[−0.21, 0.25]
	Plus Size vs Thin	1.32	12.39		< .001	0.96	[1.08, 1.57]
	IA	0.14	1.20		.231	-	[−0.21, 0.43]
	Fit X IA	0.12	1.14		.255	-	[−0.18, 0.41]
	Plus Size X IA	0.01	0.05		.958	-	[−0.33, 0.37]
Dominance	Intercept (Thin)	−0.94	−8.46		< .001	-	[−1.11, −0.76]
	Fit vs Thin	0.02	0.17		.865	−0.02	[−0.21, 0.25]
	Plus Size vs Thin	1.32	12.39		< .001	0.96	[1.08, 1.57]
	SC-Inf	−0.60	−5.44		< .001	-	[−0.76, −0.44]
	Fit X SC-Inf	−0.03	−0.24		.813	-	[−0.25, 0.29]
	Plus Size x SC-Inf	0.40	3.73	−1.33	< .001	-	[0.16, 0.62]

Visual Representation of the Findings

Figures 3 and 4 illustrate the difference scores (body type minus neutral) for Valence (Figure 3) and Arousal (Figure 4). Participants consistently rated images from all body-type categories as more pleasant than neutral images. Additionally, Fit and Thin body images were rated as significantly more pleasant than Plus-Size body images (Figure 3). For Arousal, Figure 4 shows that all female body images were significantly more activating than neutral images,

as indicated by positive, mean difference scores with 95% CIs that did not include zero. Fit images elicited the highest activation, followed by Thin images, with Plus-Size images producing the lowest activation. All these difference scores were significantly different from each other as none of their 95% CIs overlapped each other.

Figure 3. *Neutral-Difference Scores for Image Valence (Pleasantness) Ratings*.

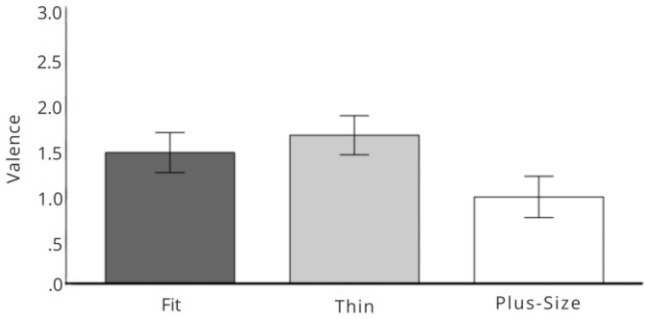


Figure 4. *Neutral-Difference Scores for Image Arousal Reactivity.*

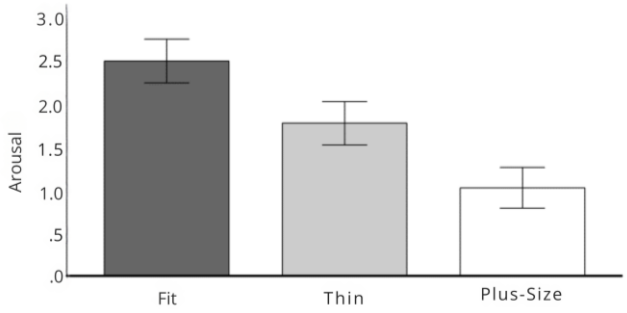


Figure 5. *Neutral-Difference Scores for Body Image Satisfaction.*

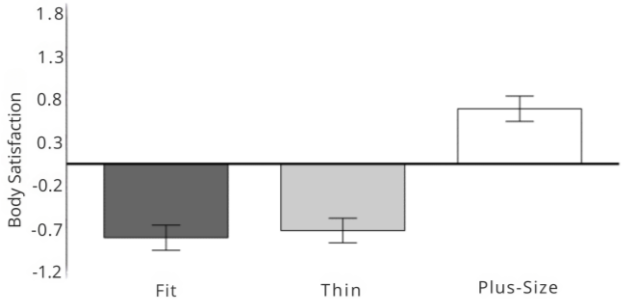
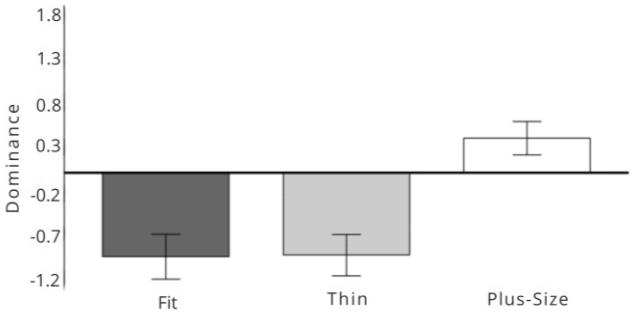


Figure 6. *Neutral-Difference Scores for Dominance (Feeling in Control).*



Figures 5-6 depict BI satisfaction reactivity (Figure 5) and dominance reactivity (Figure 6) relative to neutral images. In both figures, none of the 95% CIs for the difference scores crossed zero (horizontal axis), indicating statistically significant deviations from neutral reactivity across all levels of the within-subject factor for both BI Satisfaction and Dominance. Specifically, difference scores were negative for Fit and Thin images but positive for Plus-Size images. This indicates that while Fit and Thin images decreased BI Satisfaction and Dominance (USC effects), Plus-Size images increased BI Satisfaction and Dominance (DSC effects).

Figure 7. *Individual Covariate Parameters (SC-Inf) Predicting Difference Scores for Fit, Thin, and Plus Size Images for Valence and Plus Size Images for Valence.*

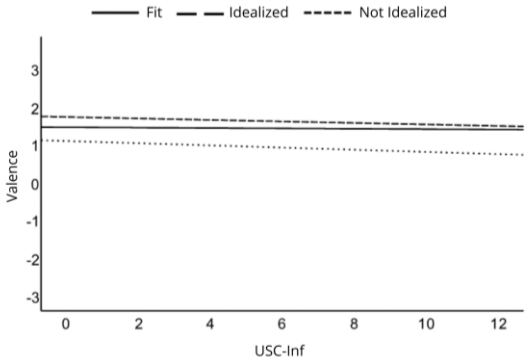


Figure 8. *Individual Covariate Parameters (SC-Inf) Predicting Difference Scores for Fit, Thin, and Plus Size Images for Arousal.*

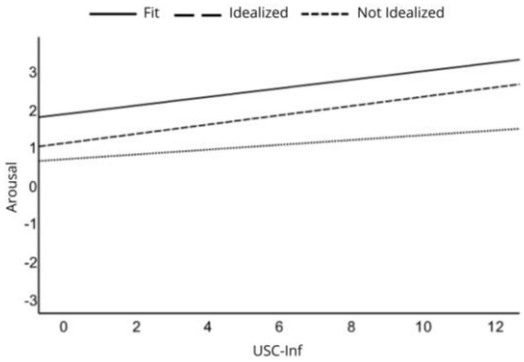


Figure 9. *Individual Covariate Parameters (SC-Inf) Predicting Difference Scores for Fit, Thin, and Plus Size Images for Body Satisfaction.*

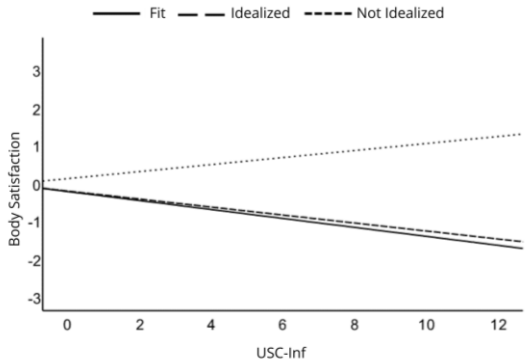


Figure 10. *Individual Covariate Parameters (SC-Inf) Predicting Difference Scores for Fit, Thin, and Plus Size Images for Dominance.*

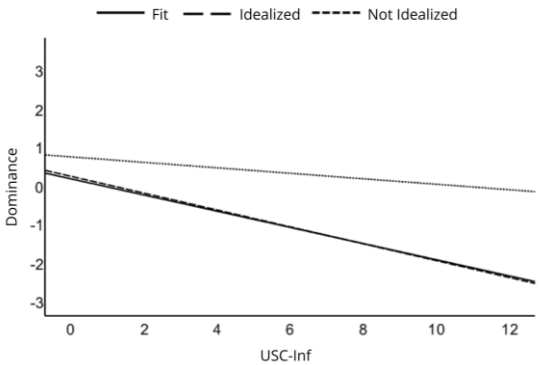


Figure 7 illustrates three nearly horizontal lines for USC-Inf scores plotted against the pleasant difference ratings, indicating no significant covariate effect or interaction between the covariate and the within-factor levels. Regarding activation, Figure 8 depicts three parallel and ascending lines, showing that the covariate was positively and significantly associated with neutral-difference scores across all three body-type conditions in a similar manner.

Figures 9 and 10 reveal comparable but not identical associations between the SC-Inf covariate and reactivity difference scores for the three body-type images. For body satisfaction (Figure 9), the slope for Plus-Size images is positive, while the slopes for Fit and Thin images are negative and nearly identical, highlighting a reversal in the relationship between the covariate and BI Satisfaction scores for Plus-Size images. Figure 10 depicts a negative relationship between the SC-Inf covariate and dominance scores; however, the negative slope is less steep for Plus-Size images compared to Thin and Fit images.

Consistency of Reported Results and Identification of Potential Biases

We conducted a Test of Insufficient Variance (TIVA) to examine the consistency of reported results and identify potential biases. The TIVA is designed to detect whether the observed variance in test statistics (e.g., *t*-values) is unexpectedly small, which could indicate selective reporting, *p*-hacking, or other biases. Specifically, we applied the TIVA to the *t*-statistics corresponding to eight predicted rejections of the null hypothesis (H1: USC-effect or Thin intercept for BI Satisfaction and Dominance (2); H2: DSC-effect or Plus-Size vs Thin for BI Satisfaction and Dominance (2); H4: SC-Inf covariate and SC-Inf x Image interaction for BI Satisfaction and Dominance (4).

To perform the test, we used the *p*-checker app (see http://shinyapps.org/apps/p-checker/). The results of the TIVA, $\chi^2(7) = 103.094$, $p = 1$, var = 14.73, confirmed the absence of insufficient variance, indicating no evidence of bias in the reported results. This finding validates that the entered test statistics and corresponding *p*-values are consistent with expectations under unbiased conditions and align with the hypothesized direction of effects.

Discussion

Grounded in social comparison theory (Festinger, 1954), social psychology research demonstrates that upward social comparisons (USCs) with superior others often result in negative emotions when the outcomes are unfavorable for the self, while downward social comparisons (DSCs) with inferior others typically evoke positive emotions when the outcomes are favorable (Buunk & Ybema, 2003; Gibbons & Buunk, 1999; Park & Baek, 2018; Smith, 2000; Wood et al., 1994). In the BI field, previous studies have demonstrated that the effects of USCs are shaped by engagement in appearance-based comparisons, particularly with images of thin, fit, attractive, and celebrity women (Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). Image-based social networking sites, such as Instagram, may further amplify body-related USCs and DSCs by continuously exposing users to curated information about others' bodies (Appel et al., 2016; Feinstein et al., 2013). Correlational research has indicated that specific online social-network behaviors, rather than overall usage, are more strongly associated with low BI satisfaction (e.g., Pedalino & Camerini, 2022). The present study is the first to experimentally investigate the moderating roles of overall social network activity versus specific network behaviors on both USC and DSC effects. Specifically, we examined whether overall Instagram activity and the tendency to compare oneself to Instagram influencers covary with and interact with reactivity to images of fit, thin, and plus-size models.

Our findings revealed that overall Instagram activity—measured by frequency of use, average minutes per day, number of weekly posts, number of followers, and number of profiles followed—neither covaried with nor moderated USC or DSC effects. In contrast, the tendency to engage in self-comparisons with Instagram influencers, characterized by frequency, intensity, and automaticity of comparisons, significantly covaried with and moderated USC and DSC effects. Thus, this study provides the first experimental evidence to rule out a moderating role of overall Instagram activity on BI-related USC and DSC effects, while highlighting the pivotal role of specific behaviors, particularly self-comparison with influencers, in shaping these effects.

In our study, exposure to images of women with fit and thin body types provided participants with opportunities for appearance-based USCs. Congruent with social comparison theory, we found that, compared to neutral responses, exposure to images depicting idealized standards of beauty led to decreased BI satisfaction and reduced feelings of dominance or control (e.g., Moreno-Domínguez et al., 2019). These findings align with previous research, which suggests that USCs highlighting one's deviation from socially idealized body types can elicit

negative emotional responses, such as feelings of shame or depression—emotions typically associated with upward contrastive comparisons.

USCs can also elicit positive emotional responses (upward assimilative emotions) when the social comparison yields desirable outcomes for the self. This type of USC has been explored in prior research by exposing participants to images containing socially desirable opinions—presented through inspirational hashtags and text embedded in the images—which evoke emotions such as inspiration, optimism, and admiration (Ozimek et al., 2023). In the same study, upward contrastive emotions were induced by triggering ability-based comparisons using images depicting ability-related activities (e.g., playing guitar or basketball) accompanied by hashtags emphasizing the activity (e.g., "Successful volleyball game! [Erfolgreiches Volleyballspiel!]").

In our study, images were presented without captions or hashtags to ensure the focus remained on the effects of viewing women with different body types (fit, thin, or plus-size). Notably, fit models were more frequently depicted engaging in physical activities compared to thin and plus-size models. This distinction suggests that emotional reactions to fit images may have been influenced not only by appearance-based comparisons but also by ability-based comparisons, perhaps to a greater extent than for thin and plus-size images. Future research on body image could further explore how body-related images provoke ability-based social comparisons and their emotional impacts.

In contrast to fit and thin body types, exposure to female images with lower idealized-body ratings led to improvements in both BI satisfaction and the feeling of being in control (e.g., Moreno-Domínguez et al., 2019; Mulgrew et al., 2020). These findings align with the effects of DSCs (downward contrastive comparisons), which yield desirable outcomes for the self and evoke positive emotions such as pride (Major et al., 1991; Tesser, 1991).

While previous experimental studies have identified that individual traits, particularly the general tendency to engage in appearance-based comparisons, mediate USC effects (Brown & Tiggemann, 2016), our study is the first to demonstrate that the tendency to engage in USCs specifically with influencers covaries with and moderates both USC and DSC effects. Specifically, USC-Inf scores amplified declines in BI satisfaction and dominance in response to fit and thin body images and enhanced increases in BI satisfaction for plus-size body images. The USC-Inf potentiation of reactivity to fit and thin images aligns with prior findings on the role of appearance-based social comparisons (e.g., Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). However, while earlier studies have reported USC and DSC effects driven by exposure to idealized and BoPo images (e.g., Cohen et al., 2019), our findings uniquely reveal that USC-Inf scores also enhance DSC effects, marking a novel contribution to this research area.

This tendency to compare oneself with influencers may reflect a broader pattern of comparing with idealized individuals who possess socially idealized bodies. The hyperpersonal model (Walther & Whitty, 2021) provides a framework for understanding this phenomenon, suggesting that in the context of computer-mediated communication, recipients (Instagram users) process carefully curated photos and messages from senders (influencers) that construct an idealized image of the influencers. In the absence of contradictory information from face-to-face interactions, Instagram users tend to "fill in the gaps" with idealized assumptions, thereby intensifying the appeal and influence of these digital personalities.

Regarding BI satisfaction, USC-Inf scores amplified both USC and DSC effects. This finding aligns with previous research demonstrating that BI perfectionism intensifies declines in BI satisfaction following exposure to USC stimuli compared to control images (McComb & Mills, 2022). It also supports findings that reductions in BI satisfaction due to USC image exposure are moderated by baseline levels of BI concerns (Want, 2009). To our knowledge, no prior studies have investigated or demonstrated that tendencies toward USC moderate BI satisfaction effects in DSC contexts.

Regarding dominance, USC-Inf scores amplified USC effects but diminished DSC effects. Specifically, individuals with higher USC-Inf scores experienced greater reductions in dominance after exposure to fit and thin images, as well as smaller increases in dominance following exposure to plus-size images. This pattern suggests that individuals with strong tendencies toward USC, such as frequent comparisons with Instagram influencers, often place themselves in a vulnerable position, increasing the likelihood of disappointment and diminished self-esteem (Lockwood & Kunda, 1997). Furthermore, USC tendencies may operate in an automatic or compulsive manner (Want, 2009). Consequently, if individuals with high USC tendencies develop pessimistic expectations about social comparisons, they may approach such situations with a diminished sense of control or dominance, regardless of the context.

Our findings may suggest that for women who frequently engage in upward social comparisons, browsing certain types of body-focused content on Instagram may exacerbate existing body concerns. This effect is especially pronounced when users actively engage in USCs (see also, Brown & Tiggemann, 2016; Tiggemann & Zaccardo, 2015). A prevalent trend involves following influencers who consistently post images showcasing their idealized slender and fit bodies, creating abundant opportunities for USCs. To mitigate these effects, parents can play a critical role in guiding their children's interactions with social media. Providing parents with resources and tools to discuss BI and social comparisons with their children can serve as an effective prevention strategy to reduce the risk of potential negative BI impacts from social media. Additionally, given social media personalities have significant influence in shaping their followers' BI, collaborative efforts with influencers to promote self-acceptance and body positivity could play a pivotal role in preventing BI disturbances. We also speculate that Instagram BoPo content may significantly enhance women's BI satisfaction and feelings of dominance, potentially counteracting the often-cited association between widespread exposure to idealized BI imagery (Fardouly & Vartanian, 2016; Hund, 2017). Consequently, prevention and treatment initiatives aimed at improving women's mental health should prioritize educating the public about the risks of exclusively engaging with idealized BI content. Furthermore, increasing the prevalence and visibility of BoPo content on photo-based social networking platforms could serve as a protective strategy, mitigating the detrimental impact of idealized body imagery.

We believe that experimental artifacts or demand characteristics did not unduly influence our results. Regarding manipulation checks, the image arousal reactivity findings align with prior research showing that human images are more activating than images of neutral objects (e.g., Colden et al., 2008; Támez, 2008). Additionally, participants rated fit and thin images as more pleasant and arousing than plus-size images, consistent with previous studies that struggled to equate thin and plus-size image sets on pleasantness and attractiveness dimensions (Támez, 2008).

To minimize the potential for experimental demand characteristics, we implemented several measures in line with the recommendations of De Quidt et al. (2019). Participants were blinded to the study's purpose, being told that the research was about "individual perceptions of food and female photographs." The order of image presentations was randomized, with six counterbalanced image types (two food, one neutral, and three female body types). To further reduce hypothesis transparency, we included filler tasks and distracting items, while framing the tasks neutrally to avoid priming effects.

Although one might speculate that Hypotheses 1 and 2 (USC and DSC effects) could have been inferred by participants, we argue that Hypotheses 3 and 4 (moderation by Instagram engagement and USC-Influencer tendencies) were too complex to deduce. These hypotheses involved covariates measured only after the experimental stimuli were presented, and the null prediction for overall Instagram activity (Hypothesis 3) is not intuitively obvious. Additionally, the design's complexity makes it highly unlikely that participants could deliberately confirm hypotheses. For example, participants would have needed to track and compute their responses across five post-stimuli measures for six image types while avoiding ceiling and floor effects over multiple randomized trials to align their responses with the study's predictions.

Finally, while most BI reactivity studies employ between-subjects designs, within-subject designs are a well-established approach in cue-reactivity research (e.g., Cepeda-Benito & Tiffany, 1996; Rodríguez et al., 2005) and have also been utilized in BI reactivity studies (e.g., Ortega-Roldán et al., 2014; Moreno-Domínguez et al., 2019). Taken together, the randomization, blinding, and inclusion of distraction tasks ensured that demand characteristics did not substantively confound the results.

Limitations and Future Directions

The implications of the current findings should be interpreted in light of several limitations. First, the measurement of IA and USC-Inf posed a challenge. Due to the lack of validated questionnaires specifically designed to assess these variables, we developed our own scales, a practice that is common in the BI literature. Future research could prioritize the development of validated scales to provide reliable tools for measuring Instagram activity frequency. Nonetheless, our measures yielded favorable psychometric results, including good internal consistency and construct validity.

We have already noted the potential confound for the presence of ability-based comparisons triggered by the fit images. Future studies could integrate a second ability factor where the three image types are presented stationary vs in action.

Our sample was restricted to women, which, while a common practice in BI research, raises questions about the generalizability of the findings to men. Including male participants in future studies could address this limitation. Furthermore, expanding the age range to include adolescents and older social networking site users would help determine whether the current results extend to these populations.

Lastly, future research might benefit from incorporating psychophysiological measures alongside self-report tools to more comprehensively assess the effects of USCs and DSCs. Such approaches would enhance the robustness and depth of the findings by providing objective data on participants' reactions.

Conclusions

Our findings align with social comparison theory, demonstrating that exposure to images of women embodying idealized beauty standards decreased both BI satisfaction and feelings of dominance (USC effects), while exposure to images of less idealized (plus-size) body types increased BI satisfaction and dominance (DSC effects). Notably, our results showed no association between overall Instagram activity and USC or DSC effects. Instead, we found that young women with higher self-reported tendencies to compare themselves to Instagram influencers were more susceptible to USC-related decreases in BI satisfaction but also experienced greater DSC-related increases in BI satisfaction.

To the extent that exposure to idealized body images could contribute to poor body image (BI) in women, these findings suggest that increasing body diversity on Instagram and similar image-based social platforms could be one possible strategy to help mitigate the negative effects of exposure to idealized body imagery. By promoting a broader representation of body types, it may be possible to foster a more inclusive online environment that might support more positive body image outcomes.

Conflict of Interest

The authors have no conflicts of interest to declare.

Use of AI Services

The authors declare they have not used any AI services to generate or edit any part of the manuscript or data.

Authors' Contribution

María Moreno-Padilla: Conceptualization, Methodology, Software, Investigation, Resources, Writing—original draft, Writing—review & editing. **Rafael Delgado-Rodríguez**: Conceptualization, Methodology, Software, Investigation, Resources, Data curation, Formal analysis, Writing—original draft, Writing—review & editing. **Silvia Moreno-Domínguez**: Conceptualization, Methodology, Software, Investigation, Resources, Writing—original draft, Writing—review & editing. **Antonio Cepeda-Benito**: Conceptualization, Methodology, Software, Data curation, Formal analysis, Writing—original draft, Writing—review & editing.

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