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The impact of functionality-focused social media images on positive body image: an experimental study among young Chinese women

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Introduction: Social media use is often associated with negative impacts on women's body image and mental health, as idealized portrayals disseminated through digital platforms trigger upward comparisons, body dissatisfaction, and emotional distress. As an intervention strategy, functionality-focused imagery has been introduced; however, its effectiveness in reshaping body perceptions and supporting mental wellbeing remains contested, particularly within the Asian media context.

Methods: This study examined how functionality-focused visual content on social media influences body image and mental health (including body appreciation and functionality appreciation) among young Chinese women. A total of 420 female undergraduates aged 18 to 22 were exposed to five sets of images curated from Xiaohongshu: thin active, thin posed, full active, full posed, and scenery (control). ANCOVA was used to analyze the data.

Results: ANCOVA results revealed that exposure to full-figured model images significantly enhanced both body and functionality appreciation compared to thin-ideal images. Functionality-focused portrayals also buffered the negative effects of thin-ideal exposure.

Discussion: This effect may partly stem from the limited critical discourse surrounding the "muscle ideal" on Chinese social media platforms. These findings highlight the importance of promoting diverse and functionality-oriented body representations through social media channels to foster positive body image and support young women's mental health in digital environments.

KEYWORDS

social media, mental health, functionality-focused interventions, body appreciation, young women

1 Introduction

1.1 Social media and negative body image in China

The rise of social media has intensified body dissatisfaction among young women, primarily due to repeated exposure to idealized and digitally enhanced body images (Fioravanti et al., 2022; Jackson et al., 2020; Jarrar et al., 2022). These portrayals, shaped by societal beauty norms and reinforced through editing tools, promote rigid appearance standards that encourage upward social comparisons and the internalization of appearance-based values (Jarrar et al., 2022; Tiggemann and Velissaris, 2020; Wang et al., 2020). In China, platforms such as Xiaohongshu amplify these effects by prominently featuring content aligned with societal beauty ideals, including slenderness and fair skin

(Lang et al., 2023; Wang et al., 2020). The widespread use of AI filters and smartphone editing tools has further normalized image manipulation, making unattainable beauty standards increasingly pervasive (Hausken, 2024; Tiggemann, 2022).

The interactive nature of social media exacerbates body image concerns. On platforms like Xiaohongshu, users frequently discuss appearance-related anxieties, fostering emotional contagion and group polarization. This environment contributes to body dissatisfaction, restrictive eating behaviors, and elevated risks of eating disorders (Carter and Vartanian, 2022; Ibrahim et al., 2025). When young women fail to meet these unrealistic standards, they often experience frustration and shame (Liu et al., 2022). Collectively, constant exposure to idealized imagery, peer comparisons, and emotionally charged interactions significantly harm young women's body image and mental wellbeing.

Western research demonstrates that exposure to thin-ideal content on social media reduces self-esteem and increases body dissatisfaction and anxiety (Tylka et al., 2023). Similar trends are evident in China, where viral challenges like the "A4 Waist" and "BM Girls" promote extreme thinness, heightening body-related distress (Jackson et al., 2021). Chinese women report higher levels of appearance anxiety than men, a disparity driven by media glorification of thinness and patriarchal norms that equate female beauty with social capital (Wang et al., 2021). These pressures also foster self-objectification, further intensifying body image concerns (Budenz et al., 2022). Together, these findings underscore the growing prevalence of appearance-related anxiety among young Chinese women.

1.2 Functionality-focused interventions

In response to these pressures, the body positivity movement advocates for the acceptance of diverse body types. However, despite its intention to promote inclusivity, the movement has been criticized for still placing excessive focus on appearance (Legault and Sago, 2022; Pellizzer and Wade, 2023). For example, advocates of body neutrality argue that attention should shift from appearance to bodily function (Pellizzer and Wade, 2023). In line with this perspective, researchers and advocates have increasingly promoted functionality-focused interventions as a healthier and more holistic approach to fostering a positive body image (Alleva and Tylka, 2021). Unlike focusing solely on external appearance, this perspective encourages individuals to value their body's multifunctional capacities, including external physical activities (e.g., running and stretching), internal biological processes (e.g., digestion and recovery from illness), and embodied experiences (e.g., physical-mental wellbeing and social communication; Alleva and Tylka, 2021). In other words, body functionality goes beyond the simple idea of physical movement; it encompasses the entire physiological system of bodily operations.

This intervention was inspired by two theories. First, Franzoi (1995) proposed that the body can be viewed either as an object or a functional entity. In relation to this, Fredrickson and Roberts (1997) proposed objectification theory, which suggests that when women are frequently viewed as objects, they may self-objectify, and self-objectification is a major factor contributing to negative body image. Therefore, based on these two theories, reducing the objectified presentation of women and increasing the functional presentation may help alleviate self-objectification and, in turn, improve body image. As a result, functionality-focused interventions have emerged as a promising approach to addressing these concerns.

On this basis, various studies have indicated that more body functionality-focused interventions would arouse more positive body image (Brooks et al., 2023; Mulgrew and Courtney, 2022; Vandenbosch et al., 2022). This approach emphasizes what the body can do rather than how it looks, which helps individuals appreciate their bodies for their capabilities and strengths rather than their physical appearance (Alleva et al., 2016). For example, by focusing on the functionality of the body, individuals can develop greater appreciation for activities such as running, lifting, or even everyday movements, leading to an overall more positive and empowered view of their bodies. Moreover, images that depict physical activities can theoretically inspire individuals to engage in more exercise and adopt healthier eating habits (Jeronimo and Carraca, 2022). These images serve as visual reminders of the benefits of an active lifestyle and can motivate people to incorporate physical activities into their daily routines. The portrayal of functional activities can highlight the positive impact of exercise on overall wellbeing, encouraging viewers to prioritize their health and fitness. This motivational effect can contribute to better physical health and a more positive body image, as individuals begin to value their bodies for their abilities rather than solely for their appearance (Linardon et al., 2023). Therefore, functionality-focused interventions may buffer the negative impacts of appearance-based content on social media.

1.3 Past studies and research gaps

In recent years, interventions emphasizing functionality have gained popularity in body image therapy and awareness campaigns (Linardon et al., 2023). For example, interventions like journaling about the body's capabilities, yoga, and exposure to nature have proven effective in promoting positive body image (Alleva and Tylka, 2021). These interventions have yielded positive outcomes in reducing body anxiety and increasing body appreciation across diverse demographics. However, other forms of intervention, apart from these, have shown only small-to-moderate improvements in women's body image (Alleva and Tylka, 2021).

While functionality-focused content is often seen as a promising strategy to promote positive body image, studies reveal that many of the images shared on social media still depict thin-ideal models (Mulgrew and Courtney, 2022). One example is "fitspiration," which features muscular and toned women rather than those with extreme thinness, yet this still perpetuates body standards that can negatively impact women's body image (Dignard and Jarry, 2021). This narrow portrayal equates body

Abbreviations: ANCOVA, Analysis of Covariance; BMI, Body Mass Index; CV, Covariate; F, F-ratio; FA, Full-figured Active; FAS, Functionality Appreciation Scale; FP, Full-figured Posed; M, Mean; p, p-value; S, Scenery; SBAS-2, State Body Appreciation Scale-2; SD, Standard Deviation; SE, Standard Error; TA, Thin Active; TP, Thin Posed; η^2 , eta squared.

functionality with a specific appearance standard, reinforcing the thin ideal under the guise of fitness. However, the concept of body functionality should encompass diverse body types, including full-figured models, offering a more inclusive and potentially effective approach to functionality-based interventions (Alleva and Tylka, 2021).

Notably, previous studies have consistently shown that exposure to full-figured models can significantly enhance women's positive body image and attitudes (de Lenne et al., 2023; Furnham and Wallhead, 2025). Given this evidence, it is essential to include full-figured model conditions in the scope of functionality-focused research and interventions. Doing so allows for a broader understanding of how functionality-focused interventions on social media images may influence viewers' perceptions of their own bodies.

Relevant studies have further illustrated the complexity of functionality-focused imagery by employing similar experimental conditions involving both thin-ideal and full-figured models. Notably, two studies used such designs and reported consistent findings: in thin-ideal conditions, functionality-focused interventions did not lead to significant improvements in participants' body appreciation or functionality appreciation (Mulgrew et al., 2020; Williamson and Karazsia, 2018). However, a key distinction emerged in Mulgrew et al.'s (2020) study. Among participants who viewed average-sized models, those exposed to functionality-focused (i.e., active) poses reported lower body satisfaction and greater upward functionality-based comparisons compared to those who viewed posed-only models. This suggests that functionality-focused imagery, especially when it features individuals performing high-skill physical activities, may inadvertently trigger negative social comparisons. Viewers may feel inadequate when they perceive themselves as unable to replicate such advanced actions, thereby reducing the intended positive impact of the intervention.

In summary, the actual effects of functionality-focused imagery may vary significantly depending on model body types, poses, and display contexts. According to sociocultural theory, body image perceptions are shaped by cultural norms and values (Scott and Palincsar, 2013). This is exemplified in cultural narratives where fatness is constructed as desirable rather than deviant (Team, 2020). In the Chinese context, traditional aesthetics historically favored round faces and fuller figures (Jung, 2018), but contemporary beauty standards have shifted markedly toward thinness. Recent feminist discourses on Chinese social media increasingly emphasize fitness and body diversity (Lang et al., 2023), suggesting a potential transition from the thin-ideal to a fitness-oriented ideal. Supporting this shift, Lee (2024) found that Chinese women expressed strong admiration for "fitspiration" content (a portmanteau of "fit" and "inspiration") on domestic platforms, which is a stark contrast to Western critiques of such imagery. These culturally distinct responses may lead to divergent outcomes in functionality-focused social media interventions. Against this backdrop, exploring the effects of functionality-focused interventions becomes both timely and meaningful, especially in culturally specific contexts such as China, where empirical evidence remains scarce. However, systematic research in East Asian cultural settings remains limited. Therefore, empirical studies that adopt culturally sensitive and

body-diverse approaches are needed to explore the boundaries and mechanisms of functionality-based image interventions.

1.4 The present study

The present study aims to verify the extent to which functionality-focused interventions on social media can promote positive body image in the Chinese context. By including independent variables like images of thin models, full-figured models, models engaged in functional activities, and posed-only models, this study provides a comprehensive understanding of how model presentations influence young Chinese women's body image. The findings are expected to draw conclusions regarding whether functionality-focused interventions on social media can promote positive body image for young Chinese women.

Based on the past theories and studies, five hypotheses are proposed:

H1: Images of full-figured models lead to significantly higher body and functionality appreciation than thin-ideal model images.

H2: Among thin-ideal models, functionality-focused images do not significantly enhance body appreciation compared to posed images.

H3: Among thin-ideal models, functionality-focused images do not significantly enhance functionality appreciation compared to posed images.

H4: Among full-figured models, functionality-focused images significantly reduce body appreciation compared to posed images.

H5: Among full-figured models, functionality-focused images significantly reduce functionality appreciation compared to posed images.

2 Methods

2.1 Participants

The study employed a multistage recruitment process beginning with an initial pool of 680 female undergraduate students aged 18–22 years from a university in Jiangxi Province, China. Through institutional email invitations containing the study information sheet and survey link, with two follow-up reminders sent at 1-week intervals, we achieved a final sample of 420 participants (response rate: 61.8%). The Wenjuanxing online survey platform facilitated data collection, with its built-in response tracking system enabling real-time monitoring of recruitment progress. Participants were randomly selected from eligible candidates identified through university registration databases using an SPSS-generated random number sequence. Rigorous eligibility verification included: (1) demographic confirmation (age/gender/ethnicity through self-report), (2) attention check items embedded in the survey instrument. Twelve initially selected participants were excluded during screening due to eligibility mismatches, with replacement cases randomly drawn from the

remaining pool using identical procedures. The final sample ($N = 420$) demonstrated a mean age of 19.81 years ($SD = 1.34$) and mean BMI of 20.34 ($SD = 3.60$), with all participants confirming Asian Chinese ethnicity. The study utilized the Wenjuanxing online survey platform for data collection, with its automated tracking system monitoring timestamped responses, IP address verification, and completion rate thresholds throughout the recruitment period. No technical anomalies or protocol deviations were detected (system sensitivity: 100% for identifying incomplete submissions).

2.2 Materials

2.2.1 Imagery stimulus

The imagery stimuli utilized in this study were classified into five distinct categories: (a) images depicting thin-ideal models engaged in physical activities (TA); (b) images of thin-ideal models in static, posed positions (TP); (c) images featuring full-figured models participating in physical activities (FA); (d) images of full-figured models in static, posed positions (FP); and (e) a control group comprising nonhuman subjects, specifically scenic landscapes (S).

The selection of these five image categories was informed by prior research and theoretical considerations regarding the effects of body type and model pose on body image outcomes. First, the inclusion of thin-ideal (TA and TP) and full-figured (FA and FP) models enables a direct comparison of the impact of body size, which is a central variable in body image research. Thin-ideal imagery is frequently promoted in social media and has been widely associated with increased body dissatisfaction (Fioravanti et al., 2022), whereas exposure to full-figured models has been linked to enhanced body appreciation and reduced internalization of unrealistic beauty standards (de Lenne et al., 2023).

Second, differentiating between active (TA and FA) and posed (TP and FP) representations allow for an investigation into the role of functionality-focused vs. appearance-focused depictions. Functionality-focused images emphasize what the body can do rather than how it looks, aligning with the emerging body functionality framework, which has been shown to improve body image in some contexts (Vandenbosch et al., 2022). By contrasting active and posed conditions within both body size categories, this design permits an evaluation of whether functionality emphasis can buffer the harmful effects of thin-ideal imagery or enhance the benefits of diverse body representation.

Finally, the use of a neutral control condition (S), consisting of scenic landscape images without human figures, serves as a baseline to assess the specific effects of body-related visual stimuli. This ensures that any observed changes in body or functionality appreciation can be attributed to the image content rather than general exposure to visual stimuli.

Xiaohongshu is the leading appearance-based social media platforms in China, with young female users making up most of their audience (Lang et al., 2023). However, as one of China's most influential social media platforms, Xiaohongshu has drawn increasing public scrutiny for promoting unrealistic beauty ideals (Zhang et al., 2021). Three platform characteristics particularly contribute to this phenomenon. First, its user-generated content

ecosystem generates approximately three billion daily content exposures, with 70% originating from ordinary users (Zhang et al., 2021). Young female influencers dominate this space by consistently posting curated images featuring flawless skin, facial symmetry, and slender figures, which are typically enhanced through photo editing (Sun, 2023). Second, the platform's design actively promotes these idealized images. The tagging system and algorithm powered "Explore" page prioritize aesthetically "perfect" content (Qiu, 2023), while engagement metrics (likes, saves, comments) reinforce conformity through viral challenges like the "A4 waist challenge." Third, these mechanisms create a self-reinforcing cycle. As users consume polished representations of beauty, they engage in upward social comparisons, often resulting in body dissatisfaction (Zhang et al., 2021). The interplay between a largely female user demographic, algorithmic amplification, and standardized aesthetic narratives that promoting body dissatisfaction makes Xiaohongshu particularly suitable for studying social media's influence on body image in young Chinese women. Therefore, the images used in experiments were carefully chosen from Xiaohongshu. Further, to ensure accuracy, this study followed the guidelines of Farquhar and Wasyliw (2007) to classify "functional images" and "posed images," with functional images showing high activity levels and natural captures, such as models lifting or stretching, and posed images exhibiting low levels of activity and featuring models who are highly posed, often presented in a sexualized manner.

The images used in this study were carefully chosen from popular social media accounts with significant followings to reflect typical online content. To minimize the influence of facial recognition or gaze direction on participant responses, the faces of the models were obscured, following guidelines from Williamson and Karazsia (2018). Standardized attire was assigned to ensure consistency across the images: models in activity-based images wore form-fitting yoga outfits exposing their midsection, whereas those in posed images wore clothing that modestly revealed skin. The models were divided into two categories on the basis of body size. Thin-ideal models conform to prevailing beauty standards, such as having an "A4 waist" or "right angle shoulders," whereas full-figured models, with a BMI exceeding 25, are classified as overweight according to BMI criteria (Khanna et al., 2022).

2.2.2 State body appreciation

The Body Appreciation Scale-2 (BAS-2), developed by Tylka and Wood-Barcalow (2015), is a widely recognized tool for assessing positive body image, demonstrating strong construct validity across diverse populations (Swami et al., 2023). Its Chinese version has also been validated in studies conducted in Taiwan and mainland China (Ma et al., 2022; Swami et al., 2016). To measure momentary positive body image, Homan (2016) introduced the State Body Appreciation Scale-2 (SBAS-2), which retains the one-factor structure and internal consistency of the original BAS-2. The SBAS-2 is particularly suitable for evaluating immediate body appreciation responses to stimuli, making it ideal for this study.

The participants completed the SBAS-2 before and after exposure to visual stimuli, rating ten items that reflected their current feelings about their bodies (see Appendix A.1). The

responses were scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores indicating greater body appreciation. In this study, the SBAS-2 demonstrated excellent reliability, with a Cronbach's alpha of 0.925.

2.2.3 State functionality appreciation

The Functionality Appreciation Scale (FAS), originally developed by [Alleva et al. \(2017\)](#), evaluates an individual's appreciation for their body's functionality. Emphasizing body functionality is crucial for addressing negative body image and promoting positive body image, as it helps alleviate appearance-related concerns, reduces the risk of eating disorders, and enhances psychological wellbeing ([Alleva et al., 2017](#)). Research has shown that high levels of functional appreciation are associated with positive body image, which highlights the rationality of using the FAS to assess participants' body image variations in this study ([Engel et al., 2023](#)). Moreover, the Chinese adaptation of the FAS has demonstrated excellent reliability (Cronbach's alpha ranging from 0.91 to 0.97) and strong construct validity in prior studies conducted in China ([He et al., 2023](#)). Therefore, using this scale in the context of China is reliable.

For this study, seven items from the Functionality Appreciation Scale (C-FAS; [He et al., 2023](#)) were tailored to assess participants' immediate appreciation of functionality both before and after they viewed the stimuli. Like the SBAS-2 ([Homan, 2016](#)), these items incorporated temporal phrases such as "Right now" or "At this moment" to reflect momentary perceptions (see [Appendix A.2](#)). The participants provided their responses via a visual analog scale (VAS) ranging from 0 to 100, where higher scores indicated greater functionality appreciation. In this study, the scale demonstrated excellent reliability, with a Cronbach's alpha of 0.952.

2.2.4 Personal information

At the beginning of the questionnaire, the participants were asked to report their perceived sex and age to confirm their eligibility for the study. They also provided their height and weight, which were used to calculate body mass index (BMI) for analyzing intercorrelations.

2.2.5 Manipulation and attention check

To verify the effectiveness of the image manipulations, participants rated the perceived body size (thin vs. full-figured) and activity focus (posed vs. functionality-focused) of the models after image exposure. One-way ANOVAs confirmed that thin model images were perceived as significantly thinner than full-figured models ($p < 0.001$), and functionality-focused images were rated as significantly more active or movement-oriented than posed images ($p < 0.001$), indicating successful manipulation.

An attention check question was embedded midway through the post-exposure survey to ensure participant attentiveness (e.g., "Please select 'strongly agree' for this item"). Participants who failed this check or completed the survey in under 3 min were excluded from analysis. After these criteria were applied, a final sample of 420 valid responses was retained for statistical analysis.

2.3 Procedure

Before data collection, ethical approval was obtained from the Universiti Malaya Research Ethics Committee (UMREC). The participants were first invited to join a WeChat group, where the questionnaire link was distributed via the Wenjuanxing platform. Informed consent was obtained at the start of the survey, followed by a series of initial questions to confirm eligibility. Information such as perceived sex, age, weight, and height was collected, and body mass index (BMI) was calculated for further analysis. The survey automatically ended if "male" was selected in the gender field.

To measure baseline metrics, participants completed a preexposure assessment via Likert scales and a visual analog scale (VAS) to evaluate state body appreciation and state functionality appreciation. They were then randomly assigned to one of five image sets: (a) TA, (b) TP, (c) FA, (d) FP, or (e) S. Each set included seven images featuring Asian models, with participants viewing each image for 30 s before answering follow-up questions.

The study employed a between-subjects experimental design, a methodology commonly used in body image research to examine the effects of media exposure on psychological outcomes ([Mulgrew et al., 2020](#); [Williamson and Karazsia, 2018](#)). This design enabled the comparison of participants' responses to different types of image stimuli across distinct groups, thereby minimizing potential carryover effects that could arise in within-subjects designs. Upon completing the questionnaire, participants were shown a thank-you message, signaling the end of the experiment. The entire process, including informed consent, exposure to stimuli, and survey completion, lasted ~9 min.

2.4 Statistical methods

2.4.1 Data management

Data from participants who did not meet the demographic requirements (e.g., males, those older than 22 years; $n = 2$) and pass the attention check were removed. Additionally, responses that appeared carelessly or randomly completed, such as those completed in less than one-third of the median time or with identical answers across multiple questions, were excluded. This led to the exclusion of 28 out of 448 responses, resulting in a final sample of 420 valid responses. To verify whether the exclusion of these 28 participants introduced bias, we conducted an independent samples t-test and chi-square test comparing their age, BMI, pre and post BAS/FAS with those of the included sample. The results revealed no significant differences ($p > 0.10$), suggesting that excluded responses did not differ meaningfully from retained data. On the basis of [Cohen's \(2013\)](#) criteria, effect sizes measure the strength of relationships or differences between groups and are classified as small ($f^2 = 0.02$), medium ($f^2 = 0.15$), or large ($f^2 = 0.35$). In anticipation of a medium effect size due to the influence of social media images on young women's body image, we set the

TABLE 1 Intercorrelations between pre- and post-test state body and functionality appreciation, age, and BMI.

Variable	1	2	3	4	5
1. Age					
2. BMI	-0.10				
3. Pre body appreciation	0.06	-0.17			
4. Post body appreciation	0.04	-0.09	*0.86		
5. Pre functionality appreciation	0.11	-0.11	*0.63	*0.55	
6. Post functionality appreciation	0.08	-0.10	*0.62	*0.66	*0.91

BMI, body mass index; positive values indicate a positive correlation between two items, and negative values indicate a negative correlation between two items. A value of $|r| \geq 0.50$ indicates a high correlation between two items, significance levels are denoted by asterisks (*) for all inferential tests.

significance level (α) at 0.05 and the statistical power at 0.95. With five groups and two covariates, G*Power software indicated a minimum required sample size of 338 participants, which our final sample of 420 exceeded. Table 1 presents the intercorrelations between pre- and posttest scores for state body and functionality appreciation, appearance comparison, age, and BMI. Significant correlations were observed between the pretest and posttest scores, underscoring the need to account for covariate effects in the formal analysis.

2.4.2 Data analysis

IBM SPSS Statistics (Version 27.0) was used to analyze the experiment data. Participants' basic demographic characteristics (mean age and BMI) were analyzed using descriptive statistics in SPSS. ANCOVA was conducted for both the State Body Appreciation Scale-2 (SBAS-2) and Functionality Appreciation Scale (FAS), with the respective pretest scores (Pre-BAS and Pre-FAS) included as covariates to control baseline differences. Preliminary analyses revealed no significant linear associations between age/BMI and the post-test outcomes (both $|r| < 0.05$ for age and BMI), which did not meet the assumption test of ANCOVA, justifying their exclusion as covariates in the final model. To examine targeted hypotheses regarding group differences, custom contrasts were implemented using an L-matrix. The L-matrix (linear contrast matrix) allowed for the specification of contrast weights across the five experimental conditions—thin active (TA), thin posed (TP), full active (FA), full posed (FP), and control (S)—to test specific comparisons in alignment with the study's hypotheses.

The following contrasts were specified in the L-matrix: all model conditions (TA, TP, FA, FP) vs. control (S): contrast weights = [0.25, 0.25, 0.25, 0.25, -1]; Thin (TA, TP) vs. Full (FA, FP): contrast weights = [0.5, 0.5, -0.5, -0.5, 0]; Thin posed vs. thin active: contrast weights = [-1, 1, 0, 0, 0]; Full posed vs. full active: contrast weights = [0, 0, -1, 1, 0].

These contrasts were entered into the ANCOVA model to compute adjusted group means and evaluate the statistical significance of differences between targeted conditions. The results were reported using F statistics, p-values, degrees of freedom, and partial eta squared (η^2) to reflect effect sizes.

TABLE 2 Participant demographic and BMI information (N = 420).

Characteristic	Value
Ethnicity	100% Asian Chinese
Mean age (SD)	19.81 (1.34) years
Mean BMI (SD)	20.34 (3.60)
BMI category	n (% of total)
Underweight (BMI < 18.5)	95 (22.6%)
Normal weight (BMI 18.5–22.9)	235 (56.0%)
Overweight (BMI 23.0–24.9)	50 (11.9%)
Obese (BMI \geq 25.0)	40 (9.5%)

3 Results

3.1 Participants' basic demographic characteristics

Table 2 shows the description of participants' basic information. The final sample consisted of 420 Asian Chinese female participants, with a mean age of 19.81 years (SD = 1.34) and a mean BMI of 20.34 (SD = 3.60). Based on the WHO Asia-Pacific guidelines, 22.6% were classified as underweight (BMI < 18.5), 56.0% as having normal weight (BMI 18.5–22.9), 11.9% as overweight (BMI 23.0–24.9), and 9.5% as obese (BMI \geq 25.0).

3.2 Descriptive statistics

Table 3 summarizes the means and variations for each scale (including CV adjusted scores), providing a basis for comparing the specific impacts of different imagery stimuli. The results revealed distinct patterns across experimental conditions: for the thin-ideal groups (TP, TA), the covariate-adjusted posttest scores (post-CV adjusted BAS-2 and FAS) were consistently lower than their respective pretest scores (pre-BAS-2, pre-FAS). Conversely, the full-figured groups (FP, FA) and Scenery group (S) demonstrated higher posttest scores compared to baseline measurements. Notably, the thin active group (TA) showed higher covariate-adjusted posttest scores (BAS-2 = 37.46, FAS = 560.84) than their posed-only counterparts (TP) across both measures (BAS-2 = 32.54, FAS = 503.59). While the two full-figured groups (FP, FA) showed minor differences in their covariate-adjusted posttest scores.

3.3 State body appreciation

The first contrast (models vs. scenery) revealed a significant effect, $F_{(1, 414)} = 124.41, p < 0.001, \eta^2 = 0.379$, indicating that exposure to model images significantly reduced body appreciation compared to the control group. The second contrast (thin vs. full models) was also significant, $F_{(1, 414)} = 27.00, p < 0.001, \eta^2 = 0.117$, showing that thin models elicited lower body appreciation than full-sized models, supporting H1. The third contrast (thin posed vs. thin active) showed a significant difference, $F_{(1, 414)} =$

TABLE 3 Descriptive statistics for body and functionality appreciation across the five conditions.

Measure	TP (<i>n</i> = 84) M(SD)	TA (<i>n</i> = 84) M(SD)	FP (<i>n</i> = 84) M(SD)	FA (<i>n</i> = 84) M(SD)	S (<i>n</i> = 84) M(SD)
BAS-2					
Pre	37.12 (8.05)	39.02 (9.09)	38.45 (8.76)	40.95 (7.20)	35.21 (8.79)
Post	31.45 (8.64)	38.19 (9.73)	40.69 (8.09)	43.14 (6.87)	36.21 (8.77)
Post (CV adjusted)	32.54 ^a (SE = 0.58)	37.46 ^a (SE = 0.58)	40.65 ^a (SE = 0.58)	40.68 ^a (SE = 0.59)	38.93 ^a (SE = 0.59)
FAS					
Pre	582.52 (107.87)	610.62 (99.44)	572.24 (137.97)	591.43 (140.92)	529.07 (180.51)
Post	513.76 (119.99)	590.62 (99.44)	586.05 (129.82)	605.52 (128.65)	577.31 (175.56)
Post (CV adjusted)	503.59 ^b (SE = 6.26)	560.84 ^b (SE = 6.29)	591.94 ^b (SE = 6.26)	593.58 ^b (SE = 6.27)	623.32 ^b (SE = 6.34)

CV, covariate; SE, standard error; ^aEvaluate the covariate in the model using the following value: Pre-BAS = 38.24; ^bEvaluate the covariate in the model using the following value: Pre-FAS = 578.58.

10.90, $p < 0.001$, $\eta^2 = 0.051$, indicating that posed images further decreased body appreciation within the thin model group, thus H2 was not supported. The fourth contrast (full posed vs. full active) was not significant, $F_{(1, 414)} = 3.57$, $p = 0.060$, $\eta^2 = 0.017$, suggesting that pose had no effect within the full-sized model group, leading to the rejection of H4.

3.4 State functionality appreciation

The first contrast (models vs. scenery) revealed a significant effect, $F_{(1, 414)} = 165.04$, $p < 0.001$, $\eta^2 = 0.447$, indicating that model images significantly reduced functionality appreciation compared to the control condition. The second contrast (thin vs. full models) also showed a significant effect, $F_{(1, 414)} = 7.49$, $p < 0.001$, $\eta^2 = 0.035$, with thin models associated with lower functionality appreciation, supporting H1. The third contrast (thin posed vs. thin active) was significant, $F_{(1, 414)} = 9.28$, $p < 0.001$, $\eta^2 = 0.044$, and the fourth contrast (full posed vs. full active) revealed a strong effect, $F_{(1, 414)} = 48.10$, $p < 0.001$, $\eta^2 = 0.191$, indicating that posing notably decreased functionality appreciation, especially within the full-model group. As a result, H3 was not supported, while H5 was supported. Table 4 shows the summary of hypothesis testing results.

4 Discussion

This study was among the first to explore functionality-focused interventions within the Chinese context. The results provide valuable insights into the impact of functionality-focused interventions on body and functionality appreciation among young women in China. The results revealed two main findings: (i) Viewing full-figured model images can significantly increase body and functionality appreciation compared with thin-ideal model images, and (ii) functionality-focused interventions can potentially buffer the negative impacts of thin-ideal images.

4.1 Influence of model size

Consistent with previous research, our study revealed that viewing full-figured models significantly increased body and functionality appreciation, while viewing thin-ideal models had the opposite effect, decreasing both (Hendrickse et al., 2021). This result underscores that the body size of the model is a primary determinant influencing young women's body image. According to sociocultural theory, two key mechanisms that influence body image are the internalization of appearance ideals (Jung et al., 2022) and appearance-based social comparison (Fioravanti et al., 2022). In Chinese society, cultural norms often idealize thinness as the standard of beauty for women (Wu et al., 2021). As a result, young Chinese women are often influenced by this pervasive ideology and internalize "thinness" as their aesthetic benchmark, shaping their perceptions of beauty (Jackson et al., 2021). Festinger (1954) further suggests that the direction of social comparisons, whether upward or downward, depends on individuals' internal mindsets, determining whether they feel superior or inferior to the models in images. When viewing thin-ideal models, participants are influenced by societal norms that promote such body types as the ideal. Consequently, when they perceive their own bodies as less slender than those of the models, they engage in upward comparisons, leading to self-dissatisfaction (Tiggemann and Polivy, 2010). In contrast, when exposed to full-figured models, whose body types diverge from the societal ideal, participants are less likely to engage in upward comparisons. In fact, if participants themselves have thin body types, they may even engage in downward comparisons, which could reinforce a sense of superiority (Vogel et al., 2014).

Recent studies support these findings, suggesting that exposure to idealized body images exacerbates negative body image, whereas exposure to non-idealized models can have a positive influence. For example, Hendrickse et al. (2021) highlight the detrimental effects of thin-ideal models on women's self-objectification. Similarly, Rodgers et al. (2021) argue that media portrayals adhering to narrow beauty standards intensify feelings of inadequacy and body dissatisfaction. On the other hand, studies have shown that exposure to overweight models can promote positive body image

TABLE 4 Summary of hypothesis testing results.

Hypothesis	Comparison	Outcome variable	F (1, 414)	p	η^2	Result	Supported
H1	Thin vs. Full-figured models	Body and functionality appreciation	27.00/7.49	<0.001	0.117 / 0.035	Thin models ↓ appreciation	Yes
H2	Thin posed vs. Thin active	Body appreciation	10.90	<0.001	0.051	Posed ↓ more than active	No
H3	Thin posed vs. Thin functional	Functionality appreciation	9.28	<0.001	0.044	Functional ↓ more than posed	No
H4	Full posed vs. Full active	Body appreciation	3.57	0.060	0.017	No significant difference	No
H5	Full posed vs. Full functional	Functionality appreciation	48.10	<0.001	0.191	Functional ↓ more than posed	Yes

F-values for H1 are shown for both body (27.00) and functionality (7.49) appreciation outcomes.

and reduce body dissatisfaction. For example, [Moreno-Domínguez et al. \(2018\)](#) suggest that seeing overweight models may improve body image. [Clayton et al. \(2017\)](#) also reported that participants who viewed plus-sized models had the highest body satisfaction and the least amount of social comparison. Reducing the frequency of appearance comparisons can help mitigate upward comparisons, although such comparisons often occur automatically upon first glance ([Mulgrew and Courtney, 2022](#)). This evidence suggests that exposing young women to social media images featuring models who deviate from societal ideals, particularly average and plus-sized models, may reduce upward social comparisons and foster positive body image.

4.2 Effects of functionality-focused interventions

The results of this study show that, within thin conditions, viewing functionality-focused model images can lead to greater body and functionality appreciation than viewing posed-only images. This result aligns with that of [Alleva et al. \(2016\)](#), who suggested that emphasizing body functionality can foster a more positive body image. Moreover, some of the latest relevant studies also indicate the positive effect of functionality-focused interventions in promoting positive body image. For example, [Brooks et al. \(2023\)](#) and [Walker and Murray \(2022\)](#) demonstrated the positive effects of body functionality-focused ME (FME) on patients' state body satisfaction, indicating that functionality-focused interventions can reduce body dissatisfaction and promote more positive body image. The result may be due to the different comparison processes between posed images and functional images. The posed-only images emphasize women's appearance attributes, triggering upward social comparisons ([Festinger, 1954](#)) as viewers evaluate themselves against idealized beauty standards. According to social comparison theory, such upward comparisons with unattainable ideals often lead to negative self-evaluations ([Festinger, 1954](#)), thereby exacerbating more appearance-based social comparison and self-objectification among young women. In contrast, functionality-focused images focus on the physical capability of bodies, moving viewers' attention from their appearances to functionalities, which can potentially decrease

the frequency of appearance comparisons and improve their appreciation of functionality. Hence, this result provides evidence for the use of functionality-focused images as an intervention to reduce negative body images from ideal images on social media.

However, some studies have expressed different opinions on the positive effects of functionality-focused images. [Mulgrew et al. \(2020\)](#) and [Williamson and Karazsia \(2018\)](#) indicate that there is no significant effect of presenting functionality-focused images on participants' overall body image. This is probably due to the mere presence of functionality-focused content, as [Alleva and Tylka \(2021\)](#) noted that some functionality-based images depict only physical capabilities and internal processes rather than a holistic sense of body functionality. In addition, these types of images still portray unrealistic images or even more unattainable images than appearance-focused images because of the presence of muscles ([Dignard and Jarry, 2021](#)). Some studies support this view; for example, [Mulgrew and Tiggemann \(2018\)](#) suggest that functionality-based depictions, reflections, and comparisons may produce even worse outcomes than those based on appearance. Similarly, [Mulgrew et al. \(2020\)](#) noted that viewing functional images can significantly decrease appearance and functionality satisfaction and that women may not be able to effectively buffer the negative influence of functional ideal images. These studies present the negative side of functionality-focused images, providing the opposite view on this topic as in this study.

These differing results may be attributed to the lack of critical discourse surrounding the "muscle ideal" imagery on Chinese social media. Most women in China continue to admire muscular female bodies without question. Chinese feminism on social media primarily focuses on resisting the "pale, young, slim" ideal ([Liu and Li, 2024](#)), with much of the positive body content promoting women's health, linking fitness and healthy eating with positive self-image ([Xu et al., 2023](#)). Additionally, the exceptional performances of Chinese female athletes in international competitions, widely celebrated by domestic media, have positioned them as symbols of feminist empowerment and equality ([Gao, 2013](#)). The muscular strength and power cultivated through fitness also aligns with the growing "#girls help girls" movement promoted on Chinese social media ([Yang and Hu, 2024](#)). As a result, Chinese women tend to admire muscular bodies sculpted through diet and exercise rather than critique them ([Lee, 2024](#)), often subconsciously associating such functional and muscular physiques with feminist ideals,

perceiving these practices as effective strategies for combating body anxiety, and enhancing body positivity. Conversely, many Western scholars have highlighted the problematic nature of “fitspiration,” arguing that it represents a new form of aesthetic domination over women (Jeronimo and Carraca, 2022). Some have even described it as “a wolf in sheep’s clothing,” emphasizing how these images disguise themselves as positive body content while continuing to perpetuate body anxieties under the guise of promoting health (Uhlmann et al., 2018). For Western women, the awareness of these pitfalls has allowed them to identify and critique the underlying negative messages conveyed by such imagery, leading to more negative feedback in surveys more readily. Conversely, Chinese women, influenced by the societal glorification of athletic women and the lack of critical awareness surrounding the “muscle ideal,” may still perceive such imagery positively. Even when experiencing subtle negative psychological effects, they may consciously provide survey responses that align with prevailing societal expectations rather than their personal feelings.

Notably, the research findings revealed that, even after adjusting for CV, the thin active group presented significantly greater average levels of body and functionality appreciation ($M_{BAS}= 37.46$, $SE = 0.58$; $M_{FAS}= 560.84$, $SE = 6.30$) than did the thin posed group ($M_{BAS}= 32.50$, $SE = 0.58$; $M_{FAS}= 503.59$, $SE = 6.26$). However, both groups exhibited a notable decline in posttest scores relative to their pretest scores. This finding indicates that while functionality-focused interventions can partially buffer the negative body image impacts of thin-ideal posed images, the mere inclusion of thin models results in a significant reduction in participants’ body image. Therefore, the primary strategy for promoting positive body image remains reducing media exposure to thin-ideal body types, with functionality-focused interventions serving as supplementary measures. For example, showcasing more representations of individuals with average or fuller body types while engaging in sports or physical activities could be a more effective approach. Moreover, the findings revealed that the full active group demonstrated significantly greater appreciation of body functionality ($M_{BAS}= 40.68$, $SE = 0.59$; $M_{FAS}= 593.58$, $SE = 6.27$) than did the full posed group ($M_{BAS}= 40.65$, $SE = 0.58$; $M_{FAS}= 591.94$, $SE = 6.26$). This underscores the positive impact of such practices, supporting the inclusion of diverse body types in active contexts to enhance body image and functionality appreciation.

4.3 Limitation of the study

This study has several limitations that should be addressed in future research. First, the sample consisted solely of Asian Chinese female university students aged between 18 and 22 years, which may limit the generalizability of the findings to individuals of different ages, genders, or cultural backgrounds. Although participants showed variation in BMI, the proportion of those classified as overweight or obese was relatively low at 21.4%, and the average BMI remained within the normal range. This limited representation of higher-BMI individuals may constrain the applicability of the results to populations with greater body diversity and reduce the ability to examine differential responses

to media image exposure across weight groups. In addition, individuals are more likely to relate to models who resemble themselves (de Lenne et al., 2023), so the absence of full-figured participants may have weakened the effectiveness of full-figured imagery stimuli in the experiment. Future research should aim to recruit more diverse samples, particularly including individuals with higher body weight, to better understand the variability in media image processing and to enhance the ecological validity of functionality-focused interventions.

Second, the study did not systematically assess potential differences in comparison processes (e.g., upward vs. downward) between functional and posed images, which have been shown to differentially impact body image outcomes (O’Brien et al., 2009). This methodological limitation leaves open the possibility that directional comparison effects may partially account for the observed differences in body perception. Future studies should incorporate standardized measures of both social comparison tendency and directionality, particularly to examine whether functional imagery’s apparent benefits may stem from inducing more benign forms of upward comparison (e.g., inspirational vs. detrimental) relative to posed images.

Last, while our findings suggest functionality-based images may buffer some negative effects of traditional thin ideals, we acknowledge this intervention could potentially promote new forms of bodily standards. The observed post-test declines in body satisfaction across both groups suggest that presenting thin models, even in a functionality-focused context, may continue to evoke idealization effects. This limitation suggests our paradigm may reflect a partial shift from aesthetic to “functional ideals” rather than complete liberation from comparison processes. Future research should directly assess whether functional ideals emerge as distinct comparison targets and examine their differential impacts.

5 Conclusions

This study is among the first to experimentally investigate the impact of functionality-focused imagery within a Chinese digital media environment. Using ecologically valid stimuli from Xiaohongshu, it provides important evidence regarding the effects of functionality-focused interventions on body and functionality appreciation among young Chinese women. The findings reveal that exposure to full-figured models significantly enhances body and functionality appreciation, while thin-ideal models tend to reduce these measures. Further, the results indicate that functionality-focused interventions can significantly buffer the negative effects of thin-ideal imagery. This may be because such interventions redirect attention from appearance to physical capabilities, partially alleviating the harmful impact of thin-idealized images. Cultural factors have shaped these outcomes, as Chinese women generally hold positive attitudes toward muscular and functionally capable bodies, which contrasts with certain Western perspectives.

Although functionality-focused interventions showed some success in mitigating the impact of thin-ideal media imagery, it is important to note that both thin-ideal posed images and thin-ideal functionality-focused images ultimately led to a decline in body and functionality appreciation. This finding highlights

that positive social media interventions should primarily focus on presenting diverse body types, with model pose-based interventions serving only as a supplementary strategy. Future studies could explore whether full-figured models in different states (e.g., active vs. still) elicit different effects on viewers' body perception, thereby providing more nuanced guidance for body-positive media interventions.

Despite these insights, the generalizability of the study is limited by a relatively homogenous sample and the absence of direct measurement of social comparison processes. Future research should include more diverse samples, examine the underlying mechanisms of comparison more deeply, and investigate whether the functionality ideal may evolve into a new body standard. Additionally, while this study highlights the potential benefits of functionality-focused imagery, there is a risk of inadvertently reinforcing a new "functional ideal." As noted in prior research on artificial tanning promotions, media often fail to disclose the full risks associated with idealized body portrayals (Team and Markovic, 2006). Similarly, the current promotion of functional bodies may also obscure critical discourse, and future research should address this concern explicitly.

In summary, this study addresses the gap in the applicability of functionality-focused interventions within the Chinese context, thereby expanding the sample scope in this field. Moreover, by adopting an experimental perspective, the study offers conclusions that differ from findings based on Western samples, highlighting the critical role of cultural context in shaping body image perceptions. Additionally, the findings of this study provide several practical recommendations tailored for Chinese social media, which can serve as valuable references for future media practitioners.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Universiti Malaya Research Ethics Committee (UMREC). The studies were

conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

SS: Conceptualization, Writing – original draft, Formal analysis, Investigation, Resources, Software, Visualization, Project administration, Validation, Writing – review & editing, Data curation, Methodology. HM: Conceptualization, Methodology, Project administration, Supervision, Writing – review & editing. MS: Methodology, Supervision, Conceptualization, Writing – review & editing.

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Appendix A

Appendix A.1

SBAS-2 (CN/EN):

1. 现在,我尊重自己的身体/Right now, I respect my body
2. 此时此刻,我自觉的我的身材还算不错/At this moment, I feel good about my body.
3. 现在,我觉得我的身材有些还算不错的地方/Right now, I feel that my body has at least some good qualities.
4. 此时此刻,我对我的身材抱有正面的态度/At this moment, I take a positive attitude toward my body.
5. 现在,我关注我的身体所需/Right now, I am attentive to my body's needs
6. 此时此刻,我喜欢我的身体/At this moment, I feel love for my body.
7. 现在,我欣赏我自己所拥有独特和不同的体型/Right now, I appreciate the different and unique characteristics of my body.
8. 此时此刻,我用正面的态度来对待我的身体 例如,抬高头和对人微笑/At this moment, my behavior reveals my positive attitude toward my body; for example, I hold my head high and smile.
9. 现在,我安逸于自己的体型/Right now, I am comfortable in my body.

10. 此时此刻,, 虽然我不像媒体的人物那样吸引,但我仍然觉得自己美丽/At this moment, I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors)

Appendix A.2

FAS (CN/EN)

1. 现在,我对自己身体的健康心存感激,尽管它并不总是像我希望的那样健康/Right now, I am grateful for the health of my body, even if it is not always as healthy as I would like it to be.
2. 此时此刻,我感谢我的身体,感谢它所能做的一切/At this moment, I appreciate with my body what it is capable of doing.
3. 现在,我感谢我的身体让我能够与他人交流和互动/Right now, I appreciate that my body allows me to communicate and interact with others.
4. 此时此刻,我承认并感激我的身体让我感觉良好和/或放松/At this moment, I acknowledge and appreciate when my body feels good and/or relaxed.
5. 现在,我感谢我的身体让我能够从事我喜欢或认为重要的活动/Right now, I am grateful that my body enables me to engage in activities that I enjoy or find important.
6. 此时此刻,我觉得我的身体为我做了很多./At this moment, I feel that my body does so much for me.
7. 现在,我尊重我的身体所发挥的功能/Right now, I respect my body for the functions that it performs