Article

new media & society
2021, Vol. 23(12) 3448–3465

DOI: 10.1177/1461444820956368
journals.sagepub.com/home/nms
SAGE

What do others' reactions to body posting on Instagram tell us? The effects of social media comments on viewers' body image perception

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Abstract

Studies have highlighted the influence of social media comments on users' perceptual consequences, but whether this holds true in the body image context is still largely unknown. This experimental study investigated the effects of social media comments on ideal body perception and how it influences one's own body satisfaction. Results showed that comments guided the viewers' perceptions of what is considered as "ideal" body. Viewers of favorable comments to body posting reported greater idealization of the body imagery (i.e. ideal-enhancing effects), whereas viewers of unfavorable comments showed a lower level of idealization (i.e. ideal-derogating effects). Also, the indirect effects of comments on body satisfaction via idealization were moderated by individual self-discrepancy between personal ideal and own body. This study sheds light on potentially inspiring or protective role of comments against perfect-looking bodies on social media while calling attention to the need for reconsidering the media effects theory for body image.

Keywords

Body image, comments, Instagram, self-discrepancy, social comparison, social media

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Introduction

It is well recognized that media play a dominant role in influencing norms and beauty standards about what an ideal body is. To date, findings of empirical studies have demonstrated detrimental effects of body images from media, increasing young adults' body image concerns and related psychological distress including their dissatisfaction with own body (e.g. Fardouly and Holland, 2018; Fatt et al., 2019; Kleemans et al., 2018). More recently, a growing body of literature has paid attention to the effects of body image from newer media sources such as social media platforms. Social media offer a constant stream of curated appearance and physical images promoting a typical ideal such as the thin ideal for women and the muscular ideal for men (Cohen et al., 2019). Against this backdrop, Perloff (2014) emphasized that the effects of new media could be more powerful than traditional media regarding body concerns.

Earlier studies have primarily focused on the social media usage itself, that is, how frequently individuals use and are exposed to social media, in association with their body dissatisfaction (Ahadzadeh et al., 2017; Brown and Tiggemann, 2016; Lup et al., 2015). However, it is of note that one important characteristic that sets social media apart from other traditional media is social interaction, which is well represented in other users' comments to a social media posting (Krämer et al., 2019; Lee et al., 2015). Indeed, studies have shown that social media comments influence message perception and processing, sometimes even overriding the effects of the main content of a message (e.g. Waddell and Sundar, 2017; Walther et al., 2010). Despite the growing evidence that highlights the social influence of comments, however, whether or not this holds true in the body image context is still unknown and remains nearly unexplored. Given that social media consumption and participation occupy a huge portion of young adults' daily lives, taking the effects of comments into account seems indispensable and important in addressing the body image concerns in the new media environment.

To address this gap, this study attempts to incorporate the potential effects of *comments*—the quintessential social media feature—into the study of social media body image. Applying recent literature that highlights the social influence of comments to the media studies of body image, this study attempts to contribute to a better understanding of social media body image. Specifically, this research investigated how social media comments to a body image posting may exert influence on young adults' perceptions of ideal body, and subsequently, their own body perception (i.e. body satisfaction). It was further examined how this whole process of social comparison differs by the self-discrepancy that individuals have between their personal ideal and own body. As one of the first few studies to test the effects of social media comments on body image perception, this research contributes to the literature by providing important new insights into the study of body image in new media environment.

Literature review

What makes body image special in the social media environment?

Media effects studies have established that the impact of media body image on individuals' own body dissatisfaction is explained by two important mechanisms, internalization

of the idealness depicted in the media and social comparison with their own body (Fardouly and Holland, 2018; Thompson et al., 1999). That is, media body image guides what is considered an ideal body which promotes comparing that ideal body and one's own body. Recently, studies on social media body image have raised consideration of the contextualized effects of body image. For instance, a study showed that body image exposure could yield positive consequences of increased body satisfaction when the body was contextualized to trigger self-improvement rather than self-evaluation (Veldhuis et al., 2017). Similarly, in another study, participants reported less positive impression of the source of the body posting on social media when the body was negatively contextualized as not real but "manipulated" (Fardouly and Holland, 2018). More closely related to this study, young adults, especially adolescent girls, were found to be more likely to idealize an extremely thin body when it was described as reachable and desirable, and such idealization produced positive effects on their weight-related attitudes and beliefs (Veldhuis et al., 2014).

These findings suggest that social media body postings may not always result in detrimental effects via enhanced idealization but may play a protective role against such effects (e.g. Andrew et al., 2015; Halliwell, 2013). In other words, it is likely how the depicted body is contextualized that determines the ideal perception of the body, influencing one's body concerns. Notably, however, prior research has predominantly examined the contextualized effects of media body within the body image itself using a disclaimer (Fardouly and Holland, 2018) or additional text directly attached to body image (Veldhuis et al., 2017), which constitutes an element of the body image itself. To my best knowledge, there is only one study that considered the contextualized body image independent from the body posting with peer influence (Veldhuis et al., 2014). To further extend this reasoning in light of social media context where users not only consume body images but also produce and share them through interactive features like comments, this study investigates if such comments influence viewers' body image perception, and if so, how.

Effects of social media comments on ideal perception and body satisfaction

An increasing number of studies have investigated the effects of exposure to idealized body imagery through social media on body perceptions (Ahadzadeh et al., 2017; Brown and Tiggemann, 2016; Lup et al., 2015; Meier and Gray, 2014; Perloff, 2014; Simpson and Mazzeo, 2017; Tiggemann and Zaccardo, 2015, 2018). Their primary focus is on the predominance of visual communication, in that social media provide more opportunities for users to compare their appearances to others (e.g. Fardouly and Vartanian, 2016). Notably, studies have revealed that it is the time spent on photo-related activities such as viewing, commenting, liking, and sharing photos of others which was related to the degree one compared one's own to others' appearances, with resulting negative feelings about oneself (Kim and Chock, 2015; Meier and Gray, 2014). However, beyond the extent of media usage or exposure itself to body imagery, which had been the main interest of earlier studies in television and magazines (Hargreaves and Tiggemann, 2002; Tiggemann and McGill, 2004; Willis and Knobloch-Westerwick, 2014), it warrants due

weight to the consideration that social media afford different ways of communication than what mass or other traditional media do.

One of the defining features of social media is the availability of other media users' reactions or thoughts in the comments. Unlike traditional media, social media are unique in that comments made by other users are presented with the original posting. Indeed, what we see in the social media environment is not only the body image that a posting visually contains but also other users' opinion and reactions to the body postings. Among others, what makes social media interesting and special is that other users' comments influence the way we experience media. Social media comments provide users with the ability not only to express their own opinion but also to monitor the other viewers' collective reactions (Waddell and Sundar, 2017). Earlier research has revealed that exposure to social media comments affects media users' subsequent evaluations of and attitudes toward the media content (Lee and Jang, 2010; Von Sikorski and Hänelt, 2016; Waddell and Sundar, 2017; Walther et al., 2010). For instance, a study by Walther et al. (2010) found that participants' evaluation of an anti-marijuana public service announcement (PSA) YouTube video as well as their attitudes toward the issue itself (i.e. anti-marijuana) was influenced by whether the accompanying comments were supportive or derisive of the PSA video.

In a different context of social television, Waddell and Sundar (2017) found that participants adjusted their attitudes toward television programming according to the opinion of other viewers expressed in the comments, which also affected the level of their program enjoyment as a result. Specifically, the viewers adopted attitudes in line with the sentiment expressed by other viewers in the comments, such that negative (compared to positive) social media comments generated lower level of program enjoyment. Moreover, this effect did not vary depending on individual differences in message processing styles. Waddell and Sundar (2017) explained that social media comments serve as bandwagon, or consensus cues, affecting users' perceptions of content, yielding subsequent comments-consistent attitudes and behavior. This approach of social media comments as bandwagon cues hints at the social influence of comments on body image viewers' perceptions. That is, other users' comments to the body posting may contextualize the body image to influence viewers' body image perceptions.

Based on this, this study speculates that different valence of social media comments to a body posting may play either ideal-enhancing or ideal-derogating effects on viewers' perceptual consequences of body image. More specifically, comments that are either favorable or unfavorable to a body posting will guide viewers' perception of the depicted body as ideal in a comment-consistent way and thereby influences own body satisfaction. Therefore, the following hypotheses are proposed:

H1: Viewers of favorable comments to the social media body posting will report greater idealization of the depicted body than their counterparts, namely, (a) viewers of unfavorable comments to the body posting and (b) viewers of no-comment (ideal-enhancing effects).

H2: Viewers of unfavorable comments to the social media body posting will report lower idealization of the depicted body than their counterparts (ideal-derogating effects).

H3: Social media comments will affect viewers' body satisfaction through the mediating pathway of ideal perception of body posting (indirect effects).

Moderating effects of self-discrepancy

Will idealization of social media body posting always lead to one's own body dissatisfaction? Responses to social media comments may vary based on individual differences in self-discrepancy (Higgins, 1987). Self-discrepancy posits that every individual holds several points of view toward oneself including actual self, ideal self, and ought self. Previous research has shown that an inconsistency between one's actual self and ideal or ought self generates negative feelings such as emotional distress and psychological anxiety (e.g. Ahadzadeh et al., 2017; Strauman and Higgins, 1987; Yu et al., 2013). Indeed, in the context of body image, high levels of self-discrepancy have been found to be linked to various types of psychological distress including emotional vulnerabilities (Cash and Szymanski, 1995), eating disorders (Strauman et al., 1991), and weight concerns (Bessenoff, 2006).

Relevant literature suggests that the impact of body image exposure on one's body satisfaction may depend upon the level of self-discrepancy one holds. For example, it was found that participants with greater self-discrepancy between personal ideal and one's actual self were more likely to engage in social comparison than those with low self-discrepancy (Yu et al., 2013). Similarly, participants with high levels of self-discrepancy were more likely to compare themselves with what is depicted in thin-ideal advertisements, and besides, resulted in greater self-directed negative consequences including weight concerns, mood, appearance-related self-esteem, and depressive symptoms (Bessenoff, 2006). Social comparison, especially an upward one, is known to be associated with a negative self-appraisal or feeling bad about oneself like body dissatisfaction (Knobloch-Westerwick, 2015). However, increasing evidence has also demonstrated that exposure to an ideal body image may serve motivation or inspiration accompanied by positive affect (e.g. self-determination theory; Deci and Ryan, 2012), yielding self-inspiring effects such as adopting a less extreme diet (Harrison et al., 2006). This is especially the case for the individuals with low self-discrepancy (Knobloch-Westerwick and Romero, 2011) given that such "role models" would seem more attainable or self-relevant to them compared to those with high self-discrepancy between personal ideal and own body (e.g. Lockwood and Kunda, 1997; Luong et al., 2019). Raising a consideration of self-discrepancy in the effects of body image, these studies suggest that although a body depicted in a social media posting is perceived as ideal, it would not necessarily lead to negative outcomes such as body dissatisfaction for those with low self-discrepancy. That is, it is self-discrepancy that may determine the directions and outcomes of social comparison.

Taken together, this study speculates that the effect of social media comments on viewers' body satisfaction will be mediated by the idealization of the body posting, but the nature of such indirect effect will be moderated by the level of individual's self-discrepancy. As this moderated mediation model of social media body image comments has not been assessed yet conceptually or empirically, the following research question was proposed:

RQ1: Will the effects of social media comments on one's body satisfaction via ideal perception of body posting be moderated by the level of individual self-discrepancy?

Method

This study used an experimental design to test the effects of social media comments on body posting viewers' ideal body perception and own body satisfaction. Instagram is a photo-based social media being used by 75% of young adults aged between 18 and 24 (Pew Research Center, 2019). In light of its popularity (De Vries et al., 2018; Kleemans et al., 2018; Tiggemann and Zaccardo, 2018), the stimulus materials were created to resemble a typical Instagram posting. Participants were randomly assigned to an Instagram body posting (1) with comments that are favorable or (2) unfavorable to the depicted body, or (3) without any comment.

Participants and procedure

Eligible participants (Instagram users between 18 and 24 years of age) were recruited through Qualtrics online panels ($N=330$). While prior studies on body image and body concerns have primarily examined the effects among *females* (e.g. Posavac et al., 1998; Tiggemann et al., 2009), still other studies have worked on men's body dissatisfaction as well, most of which concerns being underweight, lacking muscle mass, or not having a V-shaped physique (Agliata and Tantleff-Dunn, 2004; Harvey and Robinson, 2003; Law and Labre, 2002; McCabe and Ricciardelli, 2004). For example, for British undergraduates of both genders, body satisfaction decreased after exposure to the photos of attractive same-gender models (Grogan et al., 1996). Therefore, this study included both genders ($n_{male}=175$, $n_{female}=155$). A total of 330 participants with an average age of 21.73 (standard deviation [*SD*] = 2.99) completed the study. The average body mass index (BMI) for participants, calculated by the measures of height and weight, was 25.10 (*SD* = 7.94), 26.26 for female (*SD* = 8.48), and 24.14 for male (*SD* = 7.34). A total of 147 participants (48.0%) were normal weight, followed by overweight (22.5%), obese (18%), and underweight (11.4%) based on the widely used BMI categories that World Health Organization (2017) suggested (BMI $<$ 18.5: underweight, 18.5 $\leqslant$ BMI $<$ 25: normal weight, 25 $\leqslant$ BMI $<$ 30: overweight, and BMI $\geqslant$ 30: obesity). Regarding ethnicity, most participants reported themselves to be White/Caucasian (58.2%), followed by Hispanic (15.8%), African American (12.7%), Asian (10.9%), and 2.4% who chose the "Other" option.

After a brief introduction, participants were asked to identify how they would describe their gender, and then they were randomly assigned to one of three conditions that involved a model whose gender was matching with participants' self-reported gender, followed by four comments which unanimously were either favorable or unfavorable to the body posting. Following the exposure to the social media body posting, participants were presented with the questions for a manipulation check as well as discrepancy perceptions and the ratings of life satisfaction including body satisfaction. The main variables of interest, self-discrepancy and body satisfaction, were measured in the post-test only to avoid sensitizing participants to such questionnaires and affecting their responses

to the manipulations. Participants were then moved to the last page of debriefing information after answering several demographic questions.

Stimuli

Body images to be used as stimulus materials were created by adopting both female and male model images purchased from *shutterstock* (www.shutterstock.com). Both images highlighted the models' fit body, and a separate pilot test using Amazon MTurk ensured that these images were seen as ideal to some extent. Four comments were then added in the comment section right next to the body posting, just as in a real Instagram interface, except for a no-comment control condition where only the body imagery was presented without any comments (see Kleemans et al., 2018). To enhance ecological validity, the comments were made by modifying the actual comments on Instagram's body postings (e.g. Such a perfect body! Very fit and healthy; I'd rather put that "sweat, time, devotion into something meaningful other than the appearance!). A list of comments can be found in the Supplemental Materials and the full stimuli images used in the study are available upon request from the author.

Measures

Body satisfaction. A visual analog scale (VAS) which has been used in experimental studies as well as cross-sectional surveys (Agliata and Tantleff-Dunn, 2004; Knobloch-Westerwick, 2015; Knobloch-Westerwick and Romero, 2011; Tiggemann et al., 2009) was used to measure participants' body dissatisfaction. The format employs semantic anchors of *Very Unsatisfied* and *Very Satisfied* at the end of a 400-point scale line where participants can click anywhere on the line and drag the mark along the line. It is known that the VAS scale creates "improved sensitivity to small changes" (Tiggemann et al., 2009: 79), and its lack of numbers and reference points makes it more difficult for participants to recall previous responses (Knobloch-Westerwick, 2015). Following Knobloch-Westerwick and Romero (2011), two dimensions of interest—satisfaction with body shape and satisfaction with body weight—were embedded in a set of distractor questions borrowed from a life satisfaction scale (Ferrans and Powers, 1985). Among the seven items, participants were by far least satisfied with their finances ($M = 209.35$, $SD = 118.21$), followed by body shape ($M = 218.97$, $SD = 116.34$) and body weight ($M = 223.56$, $SD = 121.12$). The two relevant items on body shape and body weight were correlated at $r = .78$ ($p < .001$), and thus they were collapsed into a measure of body dissatisfaction ($M = 221.26$, $SD = 112.08$).

Self-discrepancy. Cash and Szymanski's (1995) Body-Image Ideals Questionnaire (BIQ) was used to assess self-discrepancy. Out of 10 attributes included in the original scale (e.g. height, skin complexion, hair texture and thickness, facial features, body proportions, weight, chest size, physical strength, and physical coordination), body proportions and body weight were used for this study. There are two components of the scale, perceived *discrepancy* and *importance* of the ideal, both of which are used for the final construct of cross-product, *weighted discrepancy*. Participants were asked to think about their personal ideal (how they wish or prefer to be) and to rate on a 4-point scale to measure how much

their own body resembles or matches the ideal (Ahadzadeh et al., 2017; Cash et al., 2004). Discrepancy was rated on a scale ranging from −1 (exactly as I am) to +3 (very unlike me) and Importance was rated on a scale ranging from 0 (not important) to 3 (very important). And finally, the Weighted Discrepancy score is the mean of two (Discrepancy × Importance) cross-products. Cash and Szymanski (1995) emphasized that assigning 0 to an unimportant ideal "results in a cross-product of 0, properly discounting the extent of discrepancy" and assigning −1 to any matched (non-discrepant) ideal "creates continuity of the Weighted Discrepancy score from very important self-ideal congruities to very important discrepancies." (p. 469) The final measure of discrepancy in terms of body proportion ($M=2.82$, $SD=2.57$) and body weight ($M=2.51$, $SD=2.91$) was moderately correlated, $r=.63$, $p<.001$, and thus averaged ($M=2.66$, $SD=2.48$). By using a median split (e.g. Bessenoff, 2006), two groups (low discrepancy $n=183$ vs high discrepancy $n=147$) were created to make this variable suitable for the analysis.

Ideal perception of body posting. Participants were asked to indicate the extent to which they think the depicted body was ideal on 7-point scale ($M=4.72$, $SD=1.76$).

BMI. Participants were asked to report their height and weight in inch and pound, which was later then used to calculate an estimate of BMI (BMI = kg/m^2). The measure was embedded in other demographic questions on the same page ($M=25.10$, $SD=7.94$).

Results

Randomization check

A series of one-way analyses of variance (ANOVAs) and chi-square tests were conducted to ensure that there were no initial differences across different comment conditions in age, $F(2, 327)=0.438$, $p=.645$; ethnicity, $\chi^2(8, N=330)=1.69$, $p=.989$; BMI, $\chi^2=(4, N=306)=1.70$, $p=.791$; and self-esteem, $F(2, 327)=0.128$, $p=.880$. Randomization was thus successful.

Manipulation check

Participants evaluated the comments they had read on a 7-point scale (1 = "Very unfavorable to the body in the post"; 7 = "Very favorable to the body in the post"). Comments that are favorable to the depicted body ($M=6.35$, $SD=0.75$) were rated significantly higher than the scale midpoint (4), one-sample $t(85)=29.13$, $p<.001$, whereas comments that are unfavorable to the depicted body ($M=2.39$, $SD=1.23$) were rated significantly lower than the scale midpoint (4), one-sample $t(95)=-12.82$, $p<.001$, both of which were in the intended direction. This corroborated successful manipulation of the valence of comments.

Test of hypotheses

Table 1 presents descriptive statistics of and zero-order correlations among the key variables in this study.

Table 1. Descriptive statistics and zero-order correlations of key variables.

Variable	*M* (*SD*)	1.	2.	3.	4.	5.
1. Gender		–				
2. BMI	25.10 (7.94)	.133*	–			
3. Self-discrepancy	2.66 (2.48)	.17**	.229***	–		
4. Idealization	4.72 (1.76)	−.073	.001	.092	–	
5. Body satisfaction	221.26 (112.08)	−.203***	−.384***	−.462***	.045	–

SD: standard deviation; BMI: body mass index.
*$p < .05$; **$p < .01$; ***$p < .001$.

The first two hypotheses predicted direct effects of social media comments on the ideal perception of body posting. To test this, a one-way analysis of covariance (ANCOVA) was conducted with BMI and gender as covariates. Results indicated that there was a significant difference in ideal perception of the body posting across different comment conditions, $F(2, 301) = 5.755$, $p = .004$, $\eta_p^2 = .037$. Post hoc analyses using Tukey's HSD (honest significant difference) indicated that the valence of comments generated different levels of idealization such that the participants who viewed favorable comments to depicted body reported greater level of ideal perception of the body posting ($M = 5.08$, $SD = 1.61$) than viewers of unfavorable comments ($M = 4.19$, $SD = 1.74$), $p = .001$, supporting H1(a). However, the difference in their ideal perception of body posting was not significant between the viewers of favorable comments groups and no-comment control group ($M = 4.86$, $SD = 1.79$), $p = .195$, rejecting H1(b). Therefore, H1 was partially supported. Viewers of unfavorable comments to depicted body, on the other hand, reported significantly lesser idealization of the depicted body ($M = 4.19$, $SD = 1.74$) than both groups, that is, favorable comments ($M = 5.08$, $SD = 1.61$), $p = .001$, as well as viewers of no-comment control condition ($M = 4.86$, $SD = 1.79$), $p = .016$; thus, H2 was fully supported. Figure 1 illustrates these differences.

To examine whether the valence of social media comments had indirect effects on viewers' body satisfaction via ideal body perception (H3), and whether this relationship is moderated by self-discrepancy (RQ1), I tested a moderated mediation model (see Figure 2) using Hayes' (2018) PROCESS Model 14. As Hayes and Preacher (2014) suggested for a multicategorical predictor, indicator coding was employed to produce two dummy variables, using 95% bias-corrected bootstrap confidence intervals (CIs, with 10,000 bootstrap samples). No-comments control condition was used as a reference group.

Results revealed a significant moderated mediation effects of unfavorable comments (vs no-comment control) on the body satisfaction via idealization, index = .08, bootstrapped standard error (*SE*) = .046, 95% CI = [0.0041, 0.1806], $R^2 = .24$, $p < .001$, suggesting the significant difference of the indirect effects of unfavorable comments between high versus low self-discrepant individuals. More specifically, unfavorable comments produced a lower level of body idealization (vs no-comments condition), $\beta = -0.39$, $p = .003$, 95% CI = [−0.6380, −0.1314], which, in turn, led to greater body satisfaction, moderated by the individual level of self-discrepancy, $\beta = -0.21$, $p = .035$, 95% CI = [−0.3983, −0.0142]. On the other hand, compared to the no-comments condition,

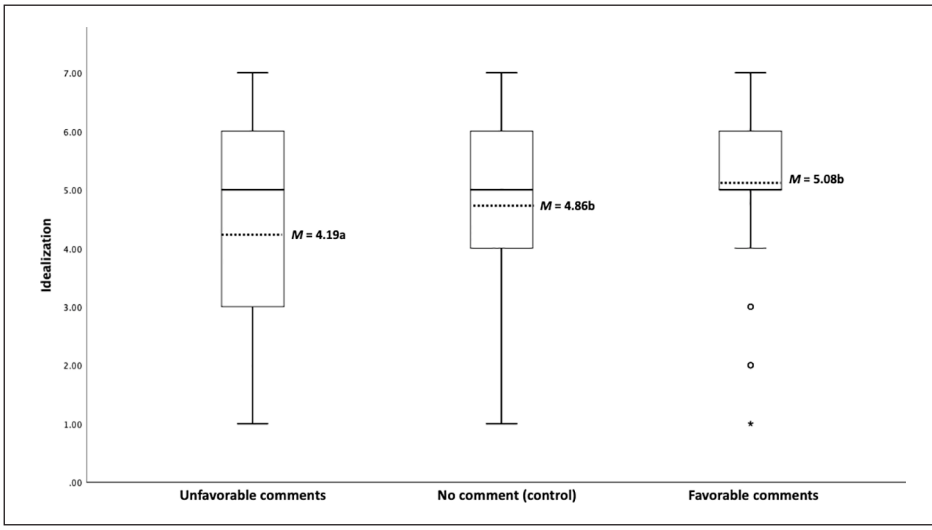

Figure 1. Box plot of the body idealization across different types of comments.
Note. Bold line denotes median, while dotted line represents mean with no letters in common significantly different to each other.

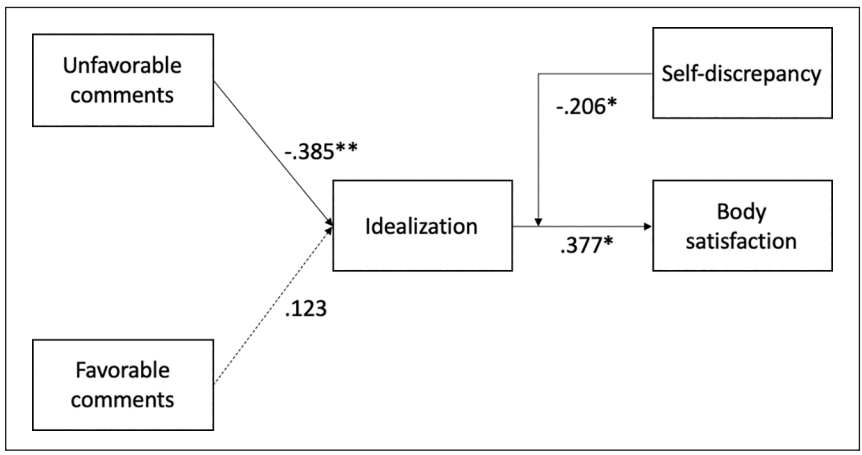

Figure 2. Estimated coefficients for multicategorical moderated mediation model.
Note. The no-comment control condition was used as reference group. Standardized coefficients with 95% confidence intervals. Dotted lines indicate non-significant pathway.

favorable comments generated no significant moderated mediation effects (see Table 2). To better understand the conditional indirect effects, estimated values of body satisfaction are plotted in Figure 3. It illustrates the pattern that the relationship between ideal body perception and own body satisfaction differed by the level of self-discrepancy: among high self-discrepant individuals, the more ideal the body posting was perceived,

Table 2. Model coefficients for the conditional process model.

Antecedent	Consequent							
	Idealization (*M*)				Body satisfaction (*Y*)			
	β	*p*	Lower	Upper	β	*p*	Lower	Upper
Constant	0.080	.323	−0.079	0.239	1.342	<.001	1.032	1.652
Unfavorable comments (X_1)	−0.385	.003	−0.638	−0.131	−0.037	.750	−0.267	0.192
Favorable comments (X_2)	0.123	.357	−0.139	0.385	0.184	.125	−0.051	0.419
Idealization (*M*)	–	–	–	–	0.377	.013	0.080	0.675
Discrepancy (*Z*)	–	–	–	–	−0.948	<.001	−1.140	−0.755
$M \times Z$	–	–	–	–	−0.206	.035	−0.398	−0.014

The no-comment control condition was used as reference group. Standardized coefficients with 95% confidence intervals.

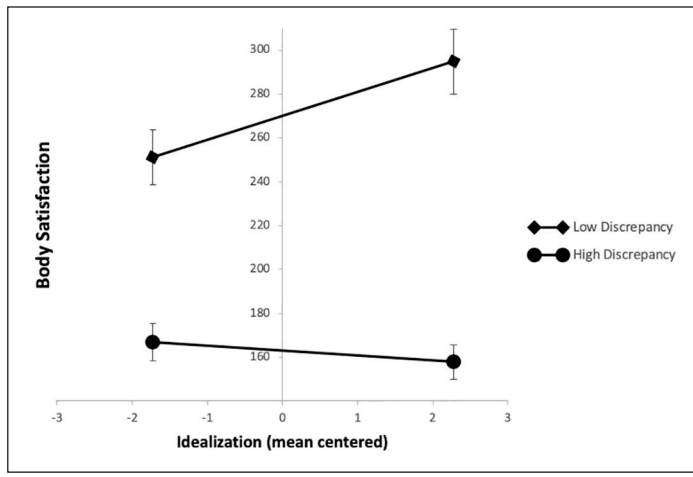

Figure 3. Interaction effects of idealization and self-discrepancy on body satisfaction.
Note. Idealization was mean centered according to Aiken and West's (1991) recommendations for assessing interactions. Error bars represent 95% confidence interval.

the lower the body satisfaction was; among low self-discrepant individuals, however, such idealization led to greater body satisfaction.

Discussion

Scholars have called for more research into the body image concerns in social media environment (e.g. Kleemans et al., 2018; Perloff, 2014). Responding to this call while extending previous literature, this study addressed the questions of how others' reactions to a body posting on Instagram affect young adults' ideal perception and body satisfaction. Despite the relevance of the topic, social media comments are still largely unexplored in

the body image literature. Informed by previous research on the bandwagon effects of social media comments (Waddell and Sundar, 2017), this study tested the effects of comments on viewers' ideal perception of body posting. I then further attempted to explain the conditions under which such comments influence individuals' own body satisfaction via the idealization.

In support of the hypotheses, results showed that exposure to other users' comments affected the extent to which viewers perceived the body posting as ideal. Specifically, viewers of favorable comments reported greater idealization of the body, whereas viewers of unfavorable comments showed a lower level of idealization. In other words, the degree to which participants perceived the social media body posting as ideal was in the same direction with the valence of comments about the body. Furthermore, results revealed that the indirect effects of social media comments on body satisfaction via idealization differed by individual self-discrepancy such that the increased idealization positively influenced one's body satisfaction among participants with little discrepancy between personal ideal and own body perception, and the other way around for the high self-discrepant participants.

These findings contribute to the existing research in important ways by extending the two important theoretical constructs underlying the mechanisms of media effects on body image: (1) idealization and (2) social comparison processes. First, the findings indicate that social media comments guide viewers' perception of how much the body posting is considered as ideal. Specifically, social media comments exert either ideal-enhancing or ideal-derogating effects depending on whether the comments are favorable or unfavorable to the depicted body, directing viewers' ideal perception of the body posting. In particular, such ideal-derogating effects of unfavorable comments to the body posting suggest that others' feedback on body posting may have power to mitigate the body image concerns on social media by helping viewers adopt a broader conceptualization of beauty standards of bodies and fostering body appreciation (Cohen et al., 2019). This pattern is consistent with what previous studies have shown regarding the social media comments' bandwagon effects on the television program evaluation (Waddell and Sundar, 2017), news perception (Neubaum and Krämer, 2017; Waddell, 2018), persuasion with PSA message (e.g. Shi et al., 2014; Walther et al., 2010), and weight-related attitudes (Veldhuis et al., 2014). What these findings including this study suggest is that the effects of comments occur by inducing viewers to adopt attitudes or evaluations consistent with the sentiment expressed by other viewers. Given peer influence that fosters respect and appreciation of body matters in allaying the body image concerns (Paraskeva et al., 2017), it will be important to examine ways to unravel and theorize the social influence of comments in encouraging the respect and appreciation of body through social media.

This is among the first few studies to investigate the causal effects of social media comments on body image. Compared to how much other areas have explored the effects of comments, little is known about the social influence of comments on body image perception. As Kleemans et al. (2018) also noted, the effects of exposure to social media body image are not yet established well. Given that the defining feature of social media is the presence of other users' feedback, this study adds new insights to the growing, yet primarily correlational, body of research on social media body image (Ahadzadeh et al., 2017; Brown and Tiggemann, 2016; Kim and Chock, 2015; Lup et al., 2015; Meier and

Gray, 2014). In addition, the finding of the indirect effects of social media comments on body satisfaction via ideal perception of body posting further supports the long-standing notion that idealization is a pivotal pathway in the media effects on body image perception (e.g. Fatt et al., 2019).

Second, this study extends previous research about media effects on body image by elaborating the mechanisms underlying social comparison processes. The moderating role of self-discrepancy contributes to a more nuanced understanding of the body image processes. The results revealed that the idealization of body image does not always produce negative effects: for those individuals with lower discrepancy between personal ideal and self, ideal body perception rather positively affected one's own body satisfaction. Such enhancing effects of ideal body to people with low self-discrepancy could be accounted for by the self-determination theory (Deci and Ryan, 2012) that highlights one's motivation, goals, and aspiration for perceptions, cognitions, and other related well-beings. From this perspective, ideal body exposure might have made the self-enhancing motivation more salient, especially among people with low self-discrepancy compared to those with high self-discrepancy who are likely to have little motivation due to the huge discrepancy and gap one already has. Indeed, it is when the portrayed idealness is perceived to be *attainable* that self-improvement and self-enhancement rather than self-evaluation motives are provoked by ideal body exposure (e.g. Knobloch-Westerwick, 2015; Lockwood and Kunda, 1997; Veldhuis et al., 2017). Therefore, for the low self-discrepant individuals, ideal body image may seem closer or similar to one's own thus attainable rather than unrealistic at all, resulting in self-enhancement and inspiration. For those low discrepant individuals in this study, idealization produced a greater body satisfaction by self-enhancing motives presumably because the depicted body was perceived to be similar and/or attainable. In contrast, for those high discrepant individuals who are less happy with their body, the idealized body posting might have rather aggravated the existing discrepancy, resulting in a lower body satisfaction. To better support this explanation, including measures of perceived similarity or attainability will be an interesting future topic.

Limitation and future direction

This study comes with some limitations that can be improved through further research. First, to enhance ecological validity, the stimulus materials contained both body image and comments. However, this also means it may not be possible to differentiate the impact of the body image and the comments. It is of note that I included a true control group of no-comments (image only) to increase the internal validity by enabling the comparisons of the existence of comments and further between the different valence of comments groups. Although the inclusion of carefully chosen control group should be considered a strength of this study, it still raises the possibility that the observed effects could be attributable to the combined effects of the visual body imagery and the textual comments attached to it. Testing the relative or interactive effects of textual (i.e. comments) versus visual (i.e. body imagery) message was beyond the scope of this study, thus I did not include the message modalities as a factor. However, future experimental studies should aim to tease apart this aspect. For example, social media comments' effects observed in

this study may be further examined whether the effects differ across the various types of body image, and if so, how it negotiates the overall effects in influencing the ideal perception and other body concerns (Veldhuis et al., 2014). Another possibility is that such effects may differ by individuals' dominant motivation for message processing (Waddell, 2018). That is, some individuals may have greater dispositional susceptibility to how others think of what ideal body is represented in the social media comments than to a visual imagery of the body posting itself. Extending the findings, a suggestion for future research would be to take into consideration who might be more likely to identify with verbal message (i.e. social media comments) than visual message (i.e. social media body posting) to examine this assumption (e.g. Krämer et al., 2019). Investigating with whom (or what) individuals are more likely to identify (social media commenters vs depicted body imagery), or what makes them more or less susceptible to such effects, will help to further elucidate the social influence of comments on body image as well as provide a more nuanced explanation of why social media comments guide viewers' perceptions of what is considered as ideal body. By focusing on technological affordances and modalities of social media body image messages, future studies could contribute to establishing the comments' boundary effects on body image perceptions and advancing the current understanding of social media body image.

The use of a single message design should also be noted when interpreting the results. Participants viewed only a single body image posting; thus, it cannot be ruled out that idiosyncratic characteristics of such a message may have affected participants' responses (Reeves and Geiser, 1994). To minimize the impact of confounding factors associated with a single message design, future work should replicate the findings reported here while tapping into the use of multiple body image messages for each comments condition to obtain more robust conclusion. After all, by using different body images combined with different comments, future studies can overcome the aforementioned limitations while killing two birds with one stone.

The last limitation is related to the lack of pre-exposure measure of body image, which was intentionally not included prior to the message exposure in order to avoid priming or sensitizing participants to the issue of body image. Inevitably, it raises the possibility that ideal perception of body posting influences the following self-discrepancy measure or vice versa. Although the results of this study confirmed that the participants' self-discrepancy and ideal perception of body posting were not significantly correlated, and besides, there was no difference in self-discrepancy across different experimental groups, I speculate that the best efforts to make a clearer distinction of self-discrepancy as a self-evaluative measure (Bessenoff, 2006) and idealization as a measure of body posting perception could be made by different question orders. Therefore, future studies may consider measuring the individual differences in the level of self-discrepancy before body posting exposure in order to ensure that individual self-discrepancy is independent from experimental stimulus. Embedding the measure among other irrelevant distractor questions may help tackle the sensitivity issue (e.g. Knobloch-Westerwick and Romero, 2011).

Despite these limitations, this study demonstrates novel and promising initial findings regarding the effects of social media comments on body image and perceptions. The findings that the sentiment expressed by other users in the comments can have

ideal-enhancing or ideal-derogating effects showcase the bandwagon influence in the social media body image perception. In addition, identifying the mechanism underlying different patterns of the indirect effects of ideal-enhancing or ideal-derogating comments depending on individuals' self-discrepancy significantly extends previous research on the media effects of body image to a relatively novel domain of social media.

Acknowledgements

The author would like to thank Margaret McLaughlin, Sheila Murphy, and three anonymous reviewers for their insightful comments on earlier versions of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The work reported here was supported by the Annenberg School for Communication and Journalism, University of Southern California.

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Supplemental material

Supplemental material for this article is available online.

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