

Selfie-viewing and facial dissatisfaction among Chinese adolescents: A moderated mediation model of general attractiveness internalization and body appreciation

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ABSTRACT

The present study examined whether selfie-viewing (i.e., viewing other people's selfie posts and related likes/comments) on social networking sites (SNSs) was positively associated with adolescents' facial dissatisfaction and whether this association was mediated by general attractiveness internalization. We also tested whether the indirect link between selfie-viewing and facial dissatisfaction by general attractiveness internalization would be moderated by body appreciation. Furthermore, potential gender differences were explored. The model was tested with 1496 Chinese adolescent boys and girls who completed questionnaires regarding selfie-viewing, general attractiveness internalization, body appreciation, and facial dissatisfaction. Results indicated that selfie-viewing was positively related to facial dissatisfaction and this relationship was mediated by general attractiveness internalization. Furthermore, body appreciation moderated the indirect relation between selfie-viewing and facial dissatisfaction via general attractiveness internalization. Gender did not moderate the mediation model. Findings from the current study provide new insights into the relation between SNS use and body image and highlight the potential value of promoting body appreciation in the prevention of body image concerns.

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1. Introduction

Social networking sites (SNSs), such as Facebook, Instagram, and Wechat, are Internet-based sites on which users can create personal profiles; “friend” others; share content with others; as well as view, comment, and “like” others' updates (Cohen, Newton-John, & Slater, 2018). A substantial number of studies have documented that SNS use is related to body image concerns, such as body dissatisfaction, drive for thinness, and weight concerns (Fardouly & Vartanian, 2016; Holland & Tiggemann, 2016; Rodgers & Melioli, 2015). This association is demonstrated among both adolescents (Tiggemann & Slater, 2013, 2014) and adults (Fardouly & Vartanian, 2015; Fardouly, Willburger, & Vartanian, 2018; Stronge et al., 2015), and among people from different cultures (Howard, Heron, MacIntyre, Myers, & Everhart, 2017; Wei, Sun, Lian, & Song, 2017). The influence of SNS use on body image concerns has also been supported by longitudinal (de Vries, Peter, de Graaf, & Nikken, 2016;

Smith, Hames, & Joiner, 2013; Tiggemann & Slater, 2017) and experimental (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015; Mabe, Forney, & Keel, 2014) research.

Some studies have shown that specific activities on SNS, such as photo-activities, are more strongly related to body image concerns compared to general SNS use (Cohen et al., 2018; Kim & Chock, 2015; Mabe et al., 2014; Meier & Gray, 2014). For example, a recent study with adult women found that it was selfie activities on SNS, rather than general SNS use, that was associated with body-related concerns (Cohen et al., 2018). A selfie is a self-portrait picture taken by oneself via a smartphone or digital camera and usually posted on SNS (Wang, Yang, & Haigh, 2016; Zheng, Ni, & Luo, 2019). Sharing selfies on SNS has become a popular activity among adolescents and young adults (Katz & Crocker, 2015; Senft & Baym, 2015) and is now a global phenomenon (Shah & Tewari, 2016).

A number of studies have been conducted to explore the relation between selfie activities and body image (Cohen et al., 2018; Lonergan et al., 2019; McLean, Paxton, Wertheim, & Masters, 2015; Mills, Musto, Williams, & Tiggemann, 2018; Shah & Tewari, 2016; Vendemia & DeAndrea, 2018). It is important to note, however, that these studies, with the exception of Vendemia and DeAndrea, only focus on behaviors from the content creators' perspective (i.e.,

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selfie-taking, selfie-posting, and selfie-editing) while disregarding the audience (i.e., selfie viewers). Research suggests that people spend more time observing than posting content on SNS (Pempek, Yermolayeva, & Calvert, 2009) and that people report seeing selfies often or always on those sites (Porch, 2015). Given the dynamic nature of SNS interactions and the interactive nature of selfies, it is important to explore the effect of selfie-viewing (i.e., viewing other people's selfie posts and related likes/comments) on users' body image (Vendemia & DeAndrea, 2018).

1.1. Selfie-viewing and facial dissatisfaction

Most previous research on the relationship between selfie activities and body image has focused on body shape, size, or weight dissatisfaction (Cohen et al., 2018; McLean et al., 2015; Porch, 2015). However, selfies predominantly include portrait photos rather than full-bodied images (Cohen et al., 2018) and therefore a person's facial attractiveness may be salient when examining selfies (Porch, 2015). Thus, research into selfies and body image may benefit from focusing on facial dissatisfaction rather than general body dissatisfaction (Cohen et al., 2018; Prieler & Choi, 2014).

The link between selfie-viewing on SNS and facial dissatisfaction might be particularly important to examine in China. According to a recent statistical report, China has the highest number of SNS users in the world and that number is predicted to substantially increase in the next five years (Statista, 2019). In recent years, the Chinese plastic surgery market has grown six times faster than the global average (Plastic Surgery Practice, 2017) and the most popular surgeries among Chinese are double-eyelid and face slimming surgeries (Dragon Social, 2018), which may reflect the prevalence of facial dissatisfaction among Chinese.

Viewing others' selfies on SNS may have a negative impact on individuals' facial satisfaction. Based on the hyperpersonal model of computer-mediated communication (CMC), users are able to present themselves selectively online (Walther, 1996) and, most often, they show the positive aspects of themselves by using strategic self-presentation (Bareket-Bojmel, Moran, & Shahar, 2016). Specific to selfies, people can edit or modify their selfies to create the most attractive images of themselves before sharing them on SNS (Chua & Chang, 2016; Fox & Rooney, 2015; Fox & Vendemia, 2016; Porch, 2015; Stefanone, Yue, & Toh, 2018). However, despite undergoing a substantial amount of editing, selfies are often described as being effortless and based on natural beauty (Porch, 2015). As a result, people's facial satisfaction may be negatively impacted by viewing these carefully constructed selfies.

Although direct evidence for the effect of selfie-viewing on facial dissatisfaction remains sparse, previous research indicates that participants feel less satisfied with their physical appearance after viewing images of physically attractive others on Facebook (Kim & Park, 2016). Specific to selfie-viewing, studies show that selfie-viewing has negative effects on self-esteem, body esteem, and life satisfaction (Porch, 2015; Wang et al., 2016). Considering the potential negative influence of selfie-viewing and the fact that selfies are often portraits images, it is plausible that selfie-viewing would be associated with facial dissatisfaction.

1.2. General attractiveness internalization as a mediator

A potential variable that may mediate the association between selfie-viewing and facial dissatisfaction is general attractiveness internalization. According to the tripartite influence model, socio-cultural factors (i.e., pressures from media, family, and peers) influence people's body dissatisfaction via two mechanisms: appearance comparisons and thin ideal internalization (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Research has shown that internalization of the thin ideal and muscular ideal mediate the

association between sociocultural factors and body dissatisfaction (Bair, Kelly, Serdar, & Mazzeo, 2012; Karazsia & Crowther, 2009; Stratton, Donovan, Bramwell, & Loxton, 2015; Tiggemann & Miller, 2010). While thin-ideal internalization and muscular-ideal internalization involve the acceptance of a particular body size, shape, or weight as being attractive, general attractiveness internalization involves the acceptance of an overall look or appearance as being attractive, which includes the face (Schaefer, Harriger, Heinberg, Soderberg, & Thompson, 2017). As discussed above, selfies mainly focus on facial appearance, rather than body size, shape or weight, it is thus reasonable to expect that general attractiveness internalization would mediate the association between selfie-viewing and facial dissatisfaction.

People usually modify their selfies before sharing them on SNS by removing the "unfavorable" aspects of their appearance (e.g., freckles, pimples, and moles) and adding desirable features such as whitening skin, widening eyes, elongating faces, sharpening noses, and smoothing wrinkles (Abidin, 2016; Stefanone et al., 2018). Some photo-taking apps can even automatically embellish the selfies with beauty filters while the photos are taken. As a result, selfies on SNS may have some common features and therefore convey idealized facial beauty (just as airbrushing of models in magazines conveys idealized bodies; Barlett, Vowels, & Saucier, 2008; Halliwell & Dittmar, 2004). For instance, in China, people edit their selfies to give themselves big eyes, a pointy chin, a high-bridged nose, and fair skin. This particular look is called the "Wang Hong face" or "Internet celebrity face" (BBC News, 2016), which is similar to the beauty norm prescribed in traditional media in terms of its unattainability (Fitzsimmons-Craft et al., 2012). Viewing such selfies on SNS may enhance the salience of the facial beauty ideal, which may increase the extent to which people internalize that ideal. Others' feedback on selfies may also reinforce the ideals. According to social reinforcement theory, attitudes and behaviors can be reinforced by comments or actions from media, family, and peers (Thompson & Stice, 2001; Tiggemann, Hayden, Brown, & Veldhuis, 2018). In this way, "likes" and comments attached to the selfies may socially reinforce the importance of the appearance ideals displayed in the selfies. Consequently, people may feel dissatisfied with their own facial appearance if they do not reach these standards.

1.3. Body appreciation as a moderator

Although selfie-viewing may predict facial dissatisfaction through general attractiveness internalization, not all individuals who view selfies internalize the ideals to the same extent and suffer from facial dissatisfaction. Individual characteristics that moderate the relationships between selfie-viewing, general attractiveness internalization, and facial dissatisfaction may partly explain the heterogeneity of the results. One possible variable that may moderate these links is body appreciation. Body appreciation is defined as accepting, holding favorable opinions toward, and respecting the body, while also rejecting media-promoted appearance ideals as the only form of human beauty (Avalos, Tylka, & Wood-Barcalow, 2005; Tylka & Wood-Barcalow, 2015). According to Levine and Smolak (2016), positive body image should be regarded as a protective factor for negative body image. Body appreciation, as a key characteristic of positive body image (Wood-Barcalow, Tylka, & Augustus-Horvath, 2010), can also have a buffering role for negative body image. For instance, previous studies have found that body appreciation has a moderate-to-strong negative association with body dissatisfaction (Avalos et al., 2005; Webb, Butler-Ajibade, & Robinson, 2014). Note that body appreciation focuses on the "body" in general terms (rather than on specific body parts), and also relates to overall appearance and has a positive relation to favorable appearance evaluation (Avalos et al., 2005; Tylka & Wood-Barcalow, 2015).

Body appreciation may moderate the indirect relation between selfie-viewing and facial dissatisfaction via general attractiveness internalization. First, body appreciation may moderate the association between selfie-viewing and general attractiveness internalization. Body appreciation has been shown to protect one's body image by allowing one to resist the internalization of unrealistically narrow standards of beauty promulgated in the media (Avalos et al., 2005; Tylka & Wood-Barcalow, 2015). That is, those with high body appreciation will have the attitude that beauty comes in many forms and is not limited to a single societal ideal. Therefore, individuals with high levels of body appreciation are less likely to internalize the appearance ideals depicted in the media. Likewise, when individuals with high body appreciation view selfies on SNS, they may not internalize the facial appearance ideal that is depicted in many selfies. Although there is no direct research on the moderating role of body appreciation, a recent study showed that a concept related to body appreciation, self-compassion (i.e., taking a kind and nonjudgmental attitude toward oneself and being open to one's own suffering; Neff, 2003), buffered the relationship between media thinness-related pressure and thin-ideal internalization (Tylka, Russell, & Neal, 2015). Therefore, we expected that body appreciation might ameliorate the relationship between selfie-viewing and general attractiveness internalization.

Second, the path from general attractiveness internalization to facial dissatisfaction may also be moderated by body appreciation. Specifically, for those who have high body appreciation, even if they internalize the facial appearance ideals, their facial satisfaction may not be affected because they accept, hold favorable opinions toward, and respect their own bodies. One study found that women with high thin-ideal internalization and low body appreciation reported more salient appearance-discrepancies when they viewed images of models compared to the control group (Halliwell, 2013). However, women who were high in both thin-ideal internalization and body appreciation rated appearance-discrepancies to be less important than did the control group. This finding suggests that body appreciation ameliorates the influence of thin-ideal internalization on appearance dissatisfaction such that women who internalize the thin ideal but also appreciate their bodies were less affected after viewing images of media models. Extrapolating from this research, body appreciation may moderate the relation between general attractiveness internalization and facial dissatisfaction.

1.4. The role of gender

Previous studies suggest that females report more concerns about facial appearance (Chen, Jackson, & Huang, 2006) and post more selfies on SNS (Dhir, Pallesen, Torsheim, & Andreassen, 2016; Sorokowska et al., 2016; Sorokowski et al., 2015) than males do. However, whether the direct and indirect associations between selfie-viewing and facial dissatisfaction through general attractiveness internalization differ between males and females are largely unknown.

Prior research that examines the moderating role of gender in the relationship between media use and body image has reported conflicting findings. Some studies show that gender differences exist in the link between media use and body image (Hargreaves & Tiggemann, 2004; Sampasa-Kanyinga, Chaput, & Hamilton, 2016). For example, one study found that viewing idealised media images increased girls' body dissatisfaction but not boys' (Hargreaves & Tiggemann, 2004). In other studies, however, males and females do not differ in the relation between SNS use and body image-related variables (de Vries et al., 2016; Haferkamp & Krämer, 2011; Kim & Chock, 2015; Rousseau, Eggermont, & Frison, 2017; Stronge et al., 2015). For example, SNS use has been shown to play a negative role in adolescents' body image, regardless of gender (de Vries

et al., 2016). Considering these inconsistent findings in previous research, the role of gender in the direct and indirect associations between selfie-viewing and facial dissatisfaction is examined largely for exploratory purposes in the present study.

1.5. The present study

Overall, the present study aimed to: (1) examine the relationship between selfie-viewing and facial dissatisfaction, (2) investigate whether general attractiveness internalization would mediate that relationship, (3) explore whether the indirect relationship between selfie-viewing and facial dissatisfaction through general attractiveness internalization would be moderated by body appreciation (moderated mediation model, see Fig. 1), and (4) investigate the possible moderating role of gender. Given that adolescents are more likely to post selfies, use photographic filters (Dhir et al., 2016; Jang, Han, Shih, & Lee, 2015), and worry more about their facial appearance (Chen et al., 2006) than adults, it is particularly important to investigate these relationships in adolescents. Based on the literature reviewed above, we proposed the following hypotheses:

Hypothesis 1. Selfie-viewing would be positively related to facial dissatisfaction among adolescents.

Hypothesis 2. General attractiveness internalization would mediate the relation between selfie-viewing and adolescents' facial dissatisfaction.

Hypothesis 3. Body appreciation would moderate the indirect relation between selfie-viewing and adolescents' facial dissatisfaction. Specifically, the indirect association would be weaker for adolescents with higher levels of body appreciation.

2. Method

2.1. Participants and procedure

Participants were 1496 adolescents from three middle schools and two high schools in China, among which 764 (51%) were boys and 732 (49%) were girls. The participants' ages ranged from 12 to 19, with an average age of 15.47 years ($SD = 1.85$), and their mean body mass index (BMI: kg/m^2) was 20.53 ($SD = 3.66$).

Ethical approval was gained from the Ethics Committee of Renmin University of China. The survey was advertised as an investigation into Internet use and mental health and was administered in classrooms by trained graduate research assistants. Privacy and anonymity of the study were emphasized and informed consent was obtained from all participants and one of their parents before data collection. Participants were asked to complete a list of questions regarding demographic items, selfie-viewing, general attractiveness internalization, facial dissatisfaction, and body appreciation.

2.2. Measures

2.2.1. Selfie-viewing

Three items were used to assess selfie-viewing. Similar to Diefenbach and Christoforakos (2017), we measured participants' frequencies of viewing selfies on SNS by asking "How often do you usually view selfies from others on SNS?" Response options ranged from 1 = *very infrequently* to 6 = *several times a day*. Similar to previous research (Choi, Sung, Lee, & Choi, 2017; Lee & Sung, 2016), the second and third items assessed the degree to which one observes others' selfies by asking "Do you carefully examine others' selfies?" and "Do you carefully examine the comments and number of 'likes' on others' selfies?" Participants responded to these two items using a 7-point scale (1 = *not at all*, 7 = *very much*). Because three items

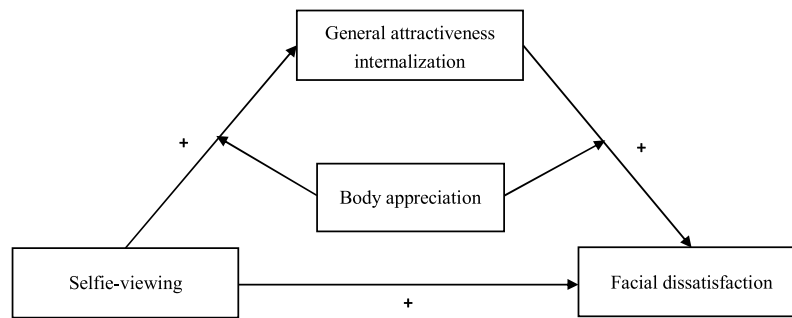


Fig. 1. The proposed moderated mediation model.

used different response ranges, all the items were standardized by using *z*-scores. Mean scores were computed, with higher scores indicating higher levels of selfie-viewing. For the current study, the Cronbach's α was .65 (scales with a small number of items—in this case three items—tend to have lower alpha values).

2.2.2. General attractiveness internalization

General attractiveness internalization was assessed using the Internalization: General Attractiveness subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4-Revised (SATAQ-4R; Schaefer et al., 2017). This subscale assesses a more general desire to be physically attractive rather than achieving a specific appearance ideal. It was translated into Chinese by the first author and back-translated into English by a member of the English Department at a University in China. Participants were asked to indicate their level of agreement with six statements using a 5-point scale with response options ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). A representative item was: "It is important to me to be attractive." After reverse coding relevant items, mean scores were computed with higher values indicating greater general attractiveness internalization. Because this scale has not previously been validated in a Chinese sample, we conducted a confirmatory factor analysis for it. Results of confirmatory factor analysis showed that this measure had good fit, $\chi^2/df = 2.37$, $p < .05$; RMSEA = .032; CFI = .995; TLI = .991. In the present study, the Cronbach's α was .80.

2.2.3. Body appreciation

The Body Appreciation Scale-2 (BAS-2) developed by Tylka and Wood-Barcalow (2015) was administered to assess participants' levels of body appreciation. Participants responded to 10 items, using a 5-point scale ranging from 1 = *never* to 5 = *always*. A representative item was: "I appreciate the different and unique characteristics of my body." Higher scores on the BAS-2 indicated higher body appreciation. This scale has been successfully validated among Chinese samples (Swami, Ng, & Barron, 2016). For the present study, the Cronbach's α was .88.

2.2.4. Facial dissatisfaction

Facial dissatisfaction was assessed using the Facial Appearance Concern subscale of the Negative Physical Self Scale (Chen et al., 2006). The Facial Appearance Concern subscale consists of 11 items and is comprised of three sub-dimensions: cognition-affect (e.g., "I am depressed about how my face looks"), behavior (e.g., "If it is possible, I will change the way my face looks"), and projection (e.g., "People around me do not like the way my face looks"). All items were rated on a 5-point scale ranging from 0 = *never* to 4 = *always*. Items were averaged to form a total score, with higher scores indicating more facial dissatisfaction. The Facial Appearance Concern subscale has a stable factor structure as well as good reliability and

validity among Chinese samples (Chen et al., 2006; Jackson & Chen, 2008). For the current study, the Cronbach's α was .90.

3. Results

3.1. Preliminary analyses

The percentage of individual missing data points was small (<2%). Missing data were handled via pairwise deletion. Means, standard deviations, and correlations for all variables are presented in Table 1. Selfie-viewing was positively associated with general attractiveness internalization and facial dissatisfaction; general attractiveness internalization was positively correlated with facial dissatisfaction; and body appreciation was negatively associated with facial dissatisfaction. The associations between selfie-viewing and body appreciation as well as general attractiveness internalization and body appreciation were not significant. Given that selfie-viewing was positively related to facial dissatisfaction, Hypothesis 1 was supported.

3.2. Testing for mediation effect

The PROCESS macro (Model 4) in SPSS (Hayes, 2013) was used to test whether general attractiveness internalization mediates the link between selfie-viewing and facial dissatisfaction (Hypothesis 2). In the present study, we generated 95% bias-corrected confidence intervals on the basis of 1000 bootstrap samples to test for the significance of the effect. We calculated *z*-scores for each variable prior to the analysis because the PROCESS macro does not report standardized coefficients. Age was entered as a covariate in the analysis because it was related to facial dissatisfaction in previous research (Jackson & Chen, 2008) and was associated with selfie-viewing and facial dissatisfaction in the present study. Mediation analysis showed that general attractiveness internalization mediated the association between selfie-viewing and facial dissatisfaction (see Table 2). The indirect effect of selfie-viewing on facial dissatisfaction via general attractiveness internalization was significant, $ab = 0.12$, $SE = 0.01$, 95% CI = [0.09, 0.15]. The indirect effect accounted for 74.03% of the total effect. This finding indicates general attractiveness internalization mediated the relation between selfie-viewing and facial dissatisfaction. Therefore, Hypothesis 2 was supported.

3.3. Testing for moderated mediation

The PROCESS macro (Model 58) in SPSS (Hayes, 2013) was used to test whether body appreciation moderates the indirect relation between selfie-viewing and facial dissatisfaction via general attractiveness internalization (Hypothesis 3). Specifically, we estimated the moderating effect of body appreciation on the relation between

Table 1
Means, standard deviations, and zero-order correlations for main study variables.

Variables	M	SD	1	2	3	4	5
1. Age	15.47	1.85	1				
2. Selfie-viewing	0.00	0.76	.23**	1			
3. General attractiveness internalization	3.44	0.71	.09**	.30**	1		
4. Body appreciation	3.59	0.81	-.03	.04	-.01	1	
5. Facial dissatisfaction	1.04	0.76	.07*	.17*	.41**	-.38**	1

Note. Mean for selfie-viewing was calculated by averaging z-scores of all items.

** $p < .01$.

Table 2
Testing the mediation effect of selfie-viewing on facial dissatisfaction.

predictors	Model 1 (facial dissatisfaction)		Model 2 (internalization)		Model 3 (facial dissatisfaction)	
	b	t	b	t	b	t
Age	.02	1.31	.01	0.81	.01	1.08
Selfie-viewing	.16	5.99***	.29	11.57***	.04	1.61
Internalization					.39	15.99**
R ²	.03		.09		.17	
F	21.73***		73.28***		102.19**	

Note. Internalization = general attractiveness internalization.

*** $p < .001$.

Table 3
Testing the moderated mediation effect of selfie-viewing on facial dissatisfaction.

Predictors	Model 1 (internalization)		Model 2 (facial dissatisfaction)	
	b	t	b	t
Age	.01	0.77	.01	0.35
Selfie-viewing	.30	11.61***	.06	2.61**
Body appreciation	-.02	-1.00	-.38	-17.79***
Selfie-viewing × body appreciation	-.01	-0.39		
Internalization			.40	18.00***
Internalization × body appreciation			-.14	-7.19***
F	36.89***		152.41***	
R ²	.09		.34	

Note. Internalization = general attractiveness internalization.

** $p < .01$.

*** $p < .001$.

(1) selfie-viewing and general attractiveness internalization and (2) general attractiveness internalization and facial dissatisfaction.

As Table 3 illustrates, the interaction between selfie-viewing and body appreciation on general attractiveness internalization was nonsignificant, $b = -.01$, $p = .70$. This finding suggests that the relationship between selfie-viewing and general attractiveness internalization was not moderated by body appreciation. The positive association between general attractiveness internalization and facial dissatisfaction, however, was moderated by body appreciation, $b = -.14$, $p < .001$. For descriptive purposes, we plotted the predicted facial dissatisfaction by general attractiveness internalization separately for high and low body appreciation (1 SD above the mean and 1 SD below the mean, respectively) (see Fig. 2). Simple slopes analyses indicated that for individuals who had lower levels of body appreciation, higher levels of internalization were associated with higher levels of facial dissatisfaction, $b_{\text{simple}} = .54$, $p < .001$. For those with higher levels of body appreciation, the association between general attractiveness internalization and facial dissatisfaction was also significant, but the magnitude of the association was smaller, $b_{\text{simple}} = .26$, $p < .001$.

The bias-corrected percentile bootstrap results further indicated that the indirect effect of selfie-viewing on facial dissatisfaction via general attractiveness internalization was moderated by body appreciation. Specifically, for individuals with low body appreciation, the indirect effect of selfie-viewing on facial dissatisfaction was significant, $b = 0.16$, $SE = 0.02$, 95% CI = [0.13, 0.21]. The indirect effect was also significant for individuals higher in body apprecia-

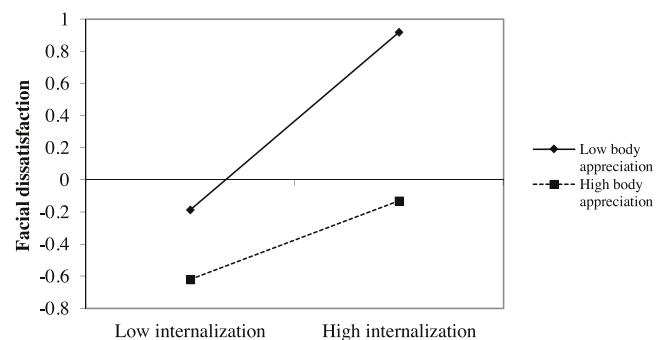


Fig. 2. The interaction between general attractiveness internalization and body appreciation on facial dissatisfaction.

tion, but the magnitude of the indirect effect was weaker, $b = 0.08$, $SE = 0.01$, 95% CI = [0.05, 0.10]. Given that body appreciation only moderated the second stage of the mediation process, namely the path from general attractiveness internalization to facial dissatisfaction, Hypothesis 3 was only partially supported.

3.4. Testing the role of gender

Means and standard deviations for each of the study variables are shown separately for boys and girls in Table 4. Results of independent samples *t*-tests showed that girls had more selfie-viewing,

Table 4
Means, standard deviations, and independent samples *t*-tests comparisons between boys and girls.

Variables	<i>M</i> (<i>SD</i>)		<i>t</i>	<i>d</i>
	Boys	Girls		
Selfie-viewing	−0.08 (0.78)	0.08 (0.72)	4.18***	0.21
General attractiveness internalization	3.29 (0.77)	3.43 (0.73)	3.72***	0.19
Body appreciation	3.67 (0.80)	3.51 (0.81)	3.96***	0.20
Facial dissatisfaction	1.02 (0.78)	1.06 (0.74)	1.22	0.05

Note. Mean for selfie-viewing was calculated by averaging *z*-scores of all items.

*** $p < .001$.

Table 5
Testing the moderating role of gender in the mediation model.

Predictors	Model 1 (internalization)		Model 2 (facial dissatisfaction)	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Age	.02	1.11	.01	1.04
Selfie-viewing	.27	7.04***	.09	2.32*
Gender	−.13	−2.65**	.02	0.44
Selfie-viewing × gender	.03	0.64	.02	0.49
Internalization			.38	10.59***
Internalization × gender			−.08	−1.65
<i>F</i>	37.69***		51.49***	
<i>R</i> ²	.09		.17	

Note. Gender was dummy coded such that male = 1 and female = 0. Internalization = general attractiveness internalization.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

higher general attractiveness, and lower body appreciation than boys. There was no significant difference in facial dissatisfaction between boys and girls.

We tested the moderating role of gender in the mediation model with PROCESS macro (Model 59) by Hayes (2013). As Table 5 illustrates, the interaction between selfie-viewing and gender on general attractiveness internalization was not significant. Further, the interactions between selfie-viewing and gender and between general attractiveness internalization and gender on facial dissatisfaction were also nonsignificant. These results indicate that gender did not moderate the direct or indirect relationships between selfie-viewing and facial dissatisfaction.

4. Discussion

The relationship between SNS use and body image has garnered extensive empirical support (for reviews, see Fardouly & Vartanian, 2016; Holland & Tiggemann, 2016; Rodgers & Melioli, 2015). However, much less is known about the relationship between selfie-viewing and facial dissatisfaction. Drawing on aspects of the tripartite influence model (Thompson et al., 1999), the present study examined the relationship between selfie-viewing and facial dissatisfaction among adolescents as well as the mediating role of general attractiveness internalization in this association. Our findings indicated that selfie-viewing was positively related to facial dissatisfaction and that this positive association was mediated by general attractiveness internalization. We further investigated the moderating role of body appreciation in the indirect relation and found that body appreciation moderated the link from general attractiveness internalization to facial dissatisfaction. Finally, we tested the role of gender in the mediation model and found that the results did not differ by gender.

4.1. Selfie-viewing and facial dissatisfaction

One of the main contributions of this study lies in exploring the association between selfie-viewing and facial dissatisfaction. Results of the present study showed that selfie-viewing was pos-

itively related to facial dissatisfaction, suggesting that viewing selfies on SNS may have a negative influence on adolescents' facial satisfaction. This finding is congruent with the tripartite influence model, which posits that sociocultural pressures are predictors of body dissatisfaction. People may feel pressure to focus on their facial appearance when they view beautiful selfies of their friends which usually have been carefully edited, modified, and selected before posting on SNS (Chua & Chang, 2016). As a result, they may feel dissatisfied with their own facial appearance. It is important to note, however, that because this study is correlational, the other direction is also possible. People who are more dissatisfied with their face may seek out other peoples' selfies in order to determine what is beautiful or get inspiration for makeup trends. Future research should use a longitudinal design to test the possible bidirectional relationship between selfie-viewing and facial dissatisfaction.

4.2. The mediating role of general attractiveness internalization

Consistent with our hypothesis, the current study found that general attractiveness internalization mediated the positive association between selfie-viewing and facial dissatisfaction. This finding indicates general attractive internalization is an underlying mechanism that could explain the impact of selfie-viewing on facial dissatisfaction. This result is consistent with the tripartite influence model, which suggests that internalization of the societal beauty ideal is an important mediating process underlying the relations between sociocultural factors and body dissatisfaction. In recent years, the mediating role of internalization of the appearance ideal has also been documented by a wealth of empirical studies in the context of social media (An, 2017; Bair et al., 2012; Fardouly et al., 2018; Tiggemann & Miller, 2010; Tiggemann & Slater, 2014). It is important to note, however, that these studies tested the mediating role of internalization of the appearance ideal mainly focusing on body shape, body size, and weight dissatisfaction. Responding to scholars' recommendation that research on body image should move beyond focusing on the thin ideal because body dissatisfaction can be caused by various body parts (e.g., facial features, skin

color, and eye shape; Prieler & Choi, 2014), the present study examined the mediating effect of general attractiveness internalization in the relation between selfie-viewing and facial dissatisfaction. This finding extends the existing literature and highlights the necessity to examine different body parts and internalization of different ideals when doing research on body image.

4.3. The moderating role of body appreciation

This study examined the moderating role of body appreciation in the indirect association between selfie-viewing and facial dissatisfaction via general attractiveness internalization. Results indicated that the indirect relation was moderated by body appreciation although body appreciation only moderated the second stage of the mediation model (i.e., the pathway from general attractiveness internalization to facial dissatisfaction). This result is congruent with the finding of Halliwell (2013) that women who internalize the thin ideal but also have high body appreciation report less negative influences from the media compared to those with high thin ideal internalization but low body appreciation. That is, body appreciation can ameliorate the negative effect of body ideal internalization on body image. Specifically, body appreciation describes a capacity to accept, hold favorable opinions toward, and respect one's own body (Avalos et al., 2005; Tylka & Wood-Barcalow, 2015). In this way, higher levels of body appreciation might allow individuals to tolerate the difference between their own appearance and the appearance ideal. Therefore, people with high body appreciation are less likely to experience dissatisfaction with their appearance even though they internalize the appearance ideal described in the media.

Contrary to our expectation, body appreciation did not moderate the relation between selfie-viewing and general attractiveness internalization. A possible explanation for this null result relates to the measure of general attractiveness internalization used in the present study. General attractiveness internalization refers to a more general desire to be physically attractive, not to achieve a specific appearance ideal, such as a thin or muscular ideal (Schaefer et al., 2017). Therefore, for individuals with high body appreciation, even if they have the attitude that beauty is not limited to a single societal ideal, they could desire to be physically attractive in general and thus have high general attractiveness internalization. This speculation is consistent with our finding that the relationship between general attractiveness internalization and body appreciation was not significant. However, more research is needed to determine why body appreciation and general attractiveness internalization are not related.

4.4. The role of gender

In contrast to previous research (Chen et al., 2006), boys had similar levels of facial dissatisfaction as girls in the present study. This finding might be understood by considering the idolatry phenomenon in China today. There is an increasing number of male celebrities with typically androgynous features becoming popular in China, which usually have pretty faces. Furthermore, these young male celebrities are now often seen wearing and advertising makeup and beauty products (Jing Daily, 2018). As a result, adolescent boys who are at a stage when body image awareness is developing rapidly (Lindberg, Grabe, & Hyde, 2007) may be influenced by such cultural standards and become more concerned about their facial appearance compared to earlier generations. For example, the sales volume of male beauty products has almost doubled year-on-year from 2015 to 2017 according to the data released by China's e-commerce platform (Jing Daily, 2018). In terms of the moderating role of gender, our study did not find gender differences in the mediation model. These findings indicate that these relation-

ships may be similar for boys and girls. Considering that this is the first study to examine the relation between selfie-viewing and facial dissatisfaction and the mediating role of general attractiveness internalization, further exploration of any gender differences in these associations is needed in future research.

4.5. Limitations and implications

Several limitations in the present study should be noted. First, the current research was cross-sectional in design, and thus causal inferences cannot be made. Future studies should use longitudinal or experimental designs (e.g., Fardouly & Rapee, 2019) to determine the direction of the relationship between selfie-viewing and facial dissatisfaction. Second, the model in the present study was only tested on a sample of adolescents in China and findings may not generalize to other samples. Future research should test this model in more diverse samples, such as samples with other age groups or other cultures. Third, the scales of body appreciation and general attractiveness internalization both focus on general appearance, not specifically on facial appearance. Future research could use measures of internalization and appreciation that are specifically related to the face. Additionally, the measure of selfie-viewing used in the study contained items assessing a variety of different behaviours, including viewing and examining the selfies and the comments/likes those selfies receive, which may have been responsible for the low internal reliability of the scale items. More valid and specific scales measuring selfie-viewing should be developed in future research. Finally, the present study only considered the mediating role of general attractiveness internalization. Other mediating variables could be investigated in future research. For example, appearance comparison is the other mechanism proposed by the tripartite influence model (Thompson et al., 1999) and there is a growing body of research on the importance of appearance comparisons on SNS (Fardouly, Pinkus, & Vartanian, 2017; Fardouly & Vartanian, 2015; Fardouly et al., 2018; Feltman & Szymanski, 2018; Tiggemann et al., 2018).

Despite these limitations, the present study has both theoretical and practical implications. From a theoretical perspective, findings of this study offer additional empirical evidence for the tripartite influence model in the context of SNS by exploring the relationship between selfie-viewing and facial dissatisfaction as well as the mediating role of general attractiveness internalization in this link. These results can provide new insights into the relation between SNS use and body image and shed light on a potential underlying mechanism between selfie-viewing and facial dissatisfaction. From a practical perspective, findings of the present study can offer a novel avenue for mitigating the negative effect of social media on body image. Our findings indicate that body appreciation can protect adolescents from risk factors for the development of body dissatisfaction, which suggests that promoting adolescents' body appreciation may be an effective intervention strategy (Perloff, 2014). Schools may play an important role in cultivating adolescents' body appreciation. Programs that can improve adolescents' body appreciation could be set up and teachers could be trained to help students develop positive body image. A broader conceptualization of beauty could also be fostered in schools in order to improve the body appreciation of students.

4.6. Conclusions

This study found that selfie-viewing was positively related to facial dissatisfaction and this relation was mediated by general attractiveness internalization. Furthermore, body appreciation moderated the indirect association between selfie-viewing and facial dissatisfaction. Findings of this study extend the extant

literature and the tripartite influence model by exploring the association between selfie-viewing and facial dissatisfaction and the mediating role of general attractiveness internalization in this relationship. Further, our findings highlight the potential value of promoting body appreciation in the prevention of body image concerns.

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References

- Abidin, C. (2016). "Aren't these just young, rich women doing vain things online?": Influencer selfies as subversive frivolity. *Social Media+ Society*, 2, 1–17. <http://dx.doi.org/10.1177/2056305116641342>
- An, X. (2017). Social networking site uses, internalization, body surveillance, social comparison and body dissatisfaction of males and females in mainland China. *Asian Journal of Communication*, 27, 616–630. <http://dx.doi.org/10.1080/01292986.2017.1365914>
- Avalos, L., Tylka, T. L., & Wood-Barcalow, N. (2005). The Body Appreciation Scale: Development and psychometric evaluation. *Body Image*, 2, 285–297. <http://dx.doi.org/10.1016/j.bodyim.2005.06.002>
- Bair, C. E., Kelly, N. R., Serdar, K. L., & Mazzeo, S. E. (2012). Does the Internet function like magazines? An exploration of image-focused media, eating pathology, and body dissatisfaction. *Eating Behaviors*, 13, 398–401. <http://dx.doi.org/10.1016/j.eatbeh.2012.06.003>
- Bareket-Bojmel, L., Moran, S., & Shahr, G. (2016). Strategic self-presentation on Facebook: Personal motives and audience response to online behavior. *Computers in Human Behavior*, 55, 788–795. <http://dx.doi.org/10.1016/j.chb.2015.10.033>
- Barlett, C. P., Vowels, C. L., & Saucier, D. A. (2008). Meta-analyses of the effects of media images on men's body-image concerns. *Journal of Social and Clinical Psychology*, 27, 279–310. <http://dx.doi.org/10.1521/jscp.2008.27.3.279>
- BBC News. (2017). Wang Hong: China's online stars making real cash Retrieved from. <https://www.bbc.com/news/world-asia-china-36802769>
- Chen, H., Jackson, T., & Huang, X. (2006). The Negative Physical Self Scale: Initial development and validation in samples of Chinese adolescents and young adults. *Body Image*, 3, 401–412. <http://dx.doi.org/10.1016/j.bodyim.2006.07.005>
- Choi, T. R., Sung, Y., Lee, J.-A., & Choi, S. M. (2017). Get behind my selfies: The Big Five traits and social networking behaviors through selfies. *Personality and Individual Differences*, 109, 98–101. <http://dx.doi.org/10.1016/j.paid.2016.12.057>
- Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. *Computers in Human Behavior*, 55, 190–197. <http://dx.doi.org/10.1016/j.chb.2015.09.011>
- Cohen, R., Newton-John, T., & Slater, A. (2018). 'Selfie'-objectification: The role of selfies in self-objectification and disordered eating in young women. *Computers in Human Behavior*, 79, 68–74. <http://dx.doi.org/10.1016/j.chb.2017.10.027>
- de Vries, D. A., Peter, J., de Graaf, H., & Nikken, P. (2016). Adolescents' social network site use, peer appearance-related feedback, and body dissatisfaction: Testing a mediation model. *Journal of Youth and Adolescence*, 45, 211–224. <http://dx.doi.org/10.1007/s10964-015-0266-4>
- Dhir, A., Pallesen, S., Torsheim, T., & Andreassen, C. S. (2016). Do age and gender differences exist in selfie-related behaviours? *Computers in Human Behavior*, 63, 549–555. <http://dx.doi.org/10.1016/j.chb.2016.05.053>
- Diefenbach, S., & Christoforakos, L. (2017). The selfie paradox: Nobody seems to like them yet everyone has reasons to take them. An exploration of psychological functions of selfies in self-presentation. *Frontiers in Psychology*, 8. <http://dx.doi.org/10.3389/fpsyg.2017.00007>
- Fardouly, J., & Rapee, R. M. (2019). The impact of no-makeup selfies on young women's body image. *Body Image*, 28, 128–134. <http://dx.doi.org/10.1016/j.bodyim.2019.01.006>
- Fardouly, J., & Vartanian, L. R. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body Image*, 12, 82–88. <http://dx.doi.org/10.1016/j.bodyim.2014.10.004>
- Fardouly, J., & Vartanian, L. R. (2016). Social media and body image concerns: Current research and future directions. *Current Opinion in Psychology*, 9, 1–5. <http://dx.doi.org/10.1016/j.copsyc.2015.09.005>
- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image*, 13, 38–45. <http://dx.doi.org/10.1016/j.bodyim.2014.12.002>
- Fardouly, J., Pinkus, R. T., & Vartanian, L. R. (2017). The impact of appearance comparisons made through social media, traditional media, and in person in women's everyday lives. *Body Image*, 20, 31–39. <http://dx.doi.org/10.1016/j.bodyim.2016.11.002>
- Fardouly, J., Willburger, B. K., & Vartanian, L. R. (2018). Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways. *New Media & Society*, 20, 1380–1395. <http://dx.doi.org/10.1177/1461444817694499>
- Feltman, C. E., & Szymanski, D. M. (2018). Instagram use and self-objectification: The roles of internalization, comparison, appearance commentary, and feminism. *Sex Roles*, 78, 311–324. <http://dx.doi.org/10.1007/s11199-017-0796-1>
- Fitzsimmons-Craft, E. E., Harney, M. B., Koehler, L. G., Danzi, L. E., Riddell, M. K., & Bardone-Cone, A. M. (2012). Explaining the relation between thin ideal internalization and body dissatisfaction among college women: The roles of social comparison and body surveillance. *Body Image*, 9, 43–49. <http://dx.doi.org/10.1016/j.bodyim.2011.09.002>
- Fox, J., & Rooney, M. C. (2015). The Dark Triad and trait self-objectification as predictors of men's use and self-presentation behaviors on social networking sites. *Personality and Individual Differences*, 76, 161–165. <http://dx.doi.org/10.1016/j.paid.2014.12.017>
- Fox, J., & Vendemia, M. A. (2016). Selective self-presentation and social comparison through photographs on social networking sites. *Cyberpsychology, Behavior and Social Networking*, 19, 593–600. <http://dx.doi.org/10.1089/cyber.2016.0248>
- Haferkamp, N., & Krämer, N. C. (2011). Social comparison 2.0: Examining the effects of online profiles on social-networking sites. *Cyberpsychology, Behavior and Social Networking*, 14, 309–314. <http://dx.doi.org/10.1089/cyber.2010.0120>
- Halliwell, E. (2013). The impact of thin idealized media images on body satisfaction: Does body appreciation protect women from negative effects? *Body Image*, 10, 509–514. <http://dx.doi.org/10.1016/j.bodyim.2013.07.004>
- Halliwell, E., & Dittmar, H. (2004). Does size matter? The impact of model's body size on women's body-focused anxiety and advertising effectiveness. *Journal of Social and Clinical Psychology*, 23, 104–122. <http://dx.doi.org/10.1521/jscp.23.1.104.26989>
- Hargreaves, D. A., & Tiggemann, M. (2004). Idealized media images and adolescent body image: "Comparing" boys and girls. *Body Image*, 1, 351–361. <http://dx.doi.org/10.1016/j.bodyim.2004.10.002>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Holland, G., & Tiggemann, M. (2016). A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image*, 17, 100–110. <http://dx.doi.org/10.1016/j.bodyim.2016.02.008>
- Howard, L. M., Heron, K. E., MacIntyre, R. I., Myers, T. A., & Everhart, R. S. (2017). Is use of social networking sites associated with young women's body dissatisfaction and disordered eating? A look at Black–White racial differences. *Body Image*, 23, 109–113. <http://dx.doi.org/10.1016/j.bodyim.2017.08.008>
- Jackson, T., & Chen, H. (2008). Sociocultural predictors of physical appearance concerns among adolescent girls and young women from China. *Sex Roles*, 58, 402–411. <http://dx.doi.org/10.1007/s11199-007-9342-x>
- Jang, J. Y., Han, K., Shih, P. C., & Lee, D. (2015). Generation like: Comparative characteristics in Instagram. Paper presented at the Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, Seoul, Republic of Korea.
- Jing Daily. (2018). *Men & makeup: The changing face of Chinese beauty* Retrieved from. <https://jingdaily.com/men-make-up/>
- Karaszia, B. T., & Crowther, J. H. (2009). Social body comparison and internalization: Mediators of social influences on men's muscularity-oriented body dissatisfaction. *Body Image*, 6, 105–112. <http://dx.doi.org/10.1016/j.bodyim.2008.12.003>
- Katz, J. E., & Crocker, E. T. (2015). Selfies and photo messaging as visual conversation: Reports from the United States, United Kingdom and China. *International Journal of Communication*, 9, 1861–1872.
- Kim, J. W., & Chock, T. M. (2015). Body image 2.0: Associations between social grooming on Facebook and body image concerns. *Computers in Human Behavior*, 48, 331–339. <http://dx.doi.org/10.1016/j.chb.2015.01.009>
- Kim, M., & Park, W. (2016). Who is at risk on Facebook? The effects of Facebook News Feed photographs on female college students' appearance satisfaction. *The Social Science Journal*, 53, 427–434. <http://dx.doi.org/10.1016/j.soscj.2016.08.007>
- Lee, J. A., & Sung, Y. (2016). Hide-and-seek: Narcissism and selfie-related behavior. *Cyberpsychology, Behavior and Social Networking*, 19, 347–351. <http://dx.doi.org/10.1089/cyber.2015.0486>
- Levine, M. P., & Smolak, L. (2016). The role of protective factors in the prevention of negative body image and disordered eating. *Eating Disorders*, 24, 39–46. <http://dx.doi.org/10.1080/10640266.2015.1113826>
- Lindberg, S. M., Grabe, S., & Hyde, J. S. (2007). Gender, pubertal development, and peer sexual harassment predict objectified body consciousness in early adolescence. *Journal of Research on Adolescence*, 17, 723–742. <http://dx.doi.org/10.1111/j.1532-7795.2007.00544.x>
- Lonegan, A. R., Bussey, K., Mond, J., Brown, O., Griffiths, S., & Murray, S. B., et al. (2019). Me, my selfie, and I: The relationship between editing and posting selfies and body dissatisfaction in men and women. *Body Image*, 28, 39–43. <http://dx.doi.org/10.1016/j.bodyim.2018.12.001>

- Mabe, A. G., Forney, K. J., & Keel, P. K. (2014). Do you “like” my photo? Facebook use maintains eating disorder risk. *International Journal of Eating Disorders*, 47, 516–523. <http://dx.doi.org/10.1002/eat.22254>
- McLean, S. A., Paxton, S. J., Wertheim, E. H., & Masters, J. (2015). Photoshopping the selfie: Self photo editing and photo investment are associated with body dissatisfaction in adolescent girls. *International Journal of Eating Disorders*, 48, 1132–1140. <http://dx.doi.org/10.1002/eat.22449>
- Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, Behavior and Social Networking*, 17, 199–206. <http://dx.doi.org/10.1089/cyber.2013.0305>
- Mills, J. S., Musto, S., Williams, L., & Tiggemann, M. (2018). “Selfie” harm: Effects on mood and body image in young women. *Body Image*, 27, 86–92. <http://dx.doi.org/10.1016/j.bodyim.2018.08.007>
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2, 223–250. <http://dx.doi.org/10.1080/15298860309027>
- Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students’ social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, 30, 227–238. <http://dx.doi.org/10.1016/j.appdev.2008.12.010>
- Perloff, R. M. (2014). Social media effects on young women’s body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles*, 71, 363–377. <http://dx.doi.org/10.1007/s11199-014-0384-6>
- Plastic Surgery Practice. (2017). *About face: China’s plastic surgery market grows six times faster than global average* Retrieved from: <http://www.plasticsurgerypractice.com/2017/08/about-face-chinas-plastic-surgery-market-grows-six-times-faster-than-global-average/>
- Porch, T. (2015). *Society, culture, and the selfie: Analysis of the impact of the selfie practice on women’s body image*. Atlanta: Emory University.
- Prieler, M., & Choi, J. (2014). Broadening the scope of social media effect research on body image concerns. *Sex Roles*, 71, 378–388. <http://dx.doi.org/10.1007/s11199-014-0406-4>
- Rodgers, R. F., & Melioli, T. (2015). The relationship between body image concerns, eating disorders and Internet use, Part I: A review of empirical support. *Adolescent Research Review*, 1–25. <http://dx.doi.org/10.1007/s40894-015-0016-6>
- Rousseau, A., Eggermont, S., & Frison, E. (2017). The reciprocal and indirect relationships between passive Facebook use, comparison on Facebook, and adolescents’ body dissatisfaction. *Computers in Human Behavior*, 73, 336–344. <http://dx.doi.org/10.1016/j.chb.2017.03.056>
- Sampasa-Kanyinga, H., Chaput, J. P., & Hamilton, H. A. (2016). Use of social networking sites and perception and intentions regarding body weight among adolescents. *Obesity Science & Practice*, 2, 32–39. <http://dx.doi.org/10.1002/osp4.26>
- Schaefer, L. M., Harriger, J. A., Heinberg, L. J., Soderberg, T., & Thompson, J. K. (2017). Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire–4-Revised (SATAQ–4R). *International Journal of Eating Disorders*, 27, 54–67. <http://dx.doi.org/10.1002/eat.22590>
- Senft, T. M., & Baym, N. K. (2015). What does the selfie say? Investigating a global phenomenon introduction. *International Journal of Communication*, 9, 1588–1606.
- Shah, R., & Tewari, R. (2016). Demystifying ‘selfie’: A rampant social media activity. *Behaviour & Information Technology*, 35, 864–871. <http://dx.doi.org/10.1080/0144929X.2016.1201693>
- Smith, A. R., Hames, J. L., & Joiner, T. E. (2013). Status update: Maladaptive Facebook usage predicts increases in body dissatisfaction and bulimic symptoms. *Journal of Affective Disorders*, 149, 235–240. <http://dx.doi.org/10.1016/j.jad.2013.01.032>
- Dragon Social. (2018). *Chinese plastic surgery trends you need to know about* Retrieved from: <https://www.dragonsocial.net/blog/chinese-plastic-surgery-trends-you-need-to-know-about/>
- Sorokowska, A., Oleszkiewicz, A., Frackowiak, T., Pisanski, K., Chmiel, A., & Sorokowski, P. (2016). Selfies and personality: Who posts self-portrait photographs? *Personality and Individual Differences*, 90, 119–123. <http://dx.doi.org/10.1016/j.paid.2015.10.037>
- Sorokowski, P., Sorokowska, A., Oleszkiewicz, A., Frackowiak, T., Huk, A., & Pisanski, K. (2015). Selfie posting behaviors are associated with narcissism among men. *Personality and Individual Differences*, 85, 123–127. <http://dx.doi.org/10.1016/j.paid.2015.05.004>
- Statista. (2019). *Number of social network users in selected countries in 2018 and 2023 (in millions)* Retrieved from: <https://www.statista.com/statistics/278341/number-of-social-network-users-in-selected-countries/>
- Stefanone, M. A., Yue, Z., & Toh, Z. (2018). A social cognitive approach to traditional media content and social media use: Selfie-related behavior as competitive strategy. *New Media & Society*, 1–19. <http://dx.doi.org/10.1177/1461444818795488>
- Stratton, R., Donovan, C., Bramwell, S., & Loxton, N. J. (2015). Don’t stop till you get enough: Factors driving men towards muscularity. *Body Image*, 15, 72–80. <http://dx.doi.org/10.1016/j.bodyim.2015.07.002>
- Stronge, S., Greaves, L. M., Milojev, P., West-Newman, T., Barlow, F. K., & Sibley, C. G. (2015). Facebook is linked to body dissatisfaction: Comparing users and non-users. *Sex Roles*, 73, 200–213. <http://dx.doi.org/10.1007/s11199-015-0517-6>
- Swami, V., Ng, S. K., & Barron, D. (2016). Translation and psychometric evaluation of a Standard Chinese version of the Body Appreciation Scale–2. *Body Image*, 18, 23–26. <http://dx.doi.org/10.1016/j.bodyim.2016.04.005>
- Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science*, 10, 181–183. <http://dx.doi.org/10.1111/1467-8721.00144>
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Association.
- Tiggemann, M., & Miller, J. (2010). The Internet and adolescent girls’ weight satisfaction and drive for thinness. *Sex Roles*, 63, 79–90. <http://dx.doi.org/10.1007/s11199-010-9789-z>
- Tiggemann, M., & Slater, A. (2013). NetGirls: The Internet, Facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders*, 46, 630–633. <http://dx.doi.org/10.1002/eat.22141>
- Tiggemann, M., & Slater, A. (2014). NetTeens: The Internet and body image concerns in preteenage girls. *The Journal of Early Adolescence*, 34, 606–620. <http://dx.doi.org/10.1177/0272431613501083>
- Tiggemann, M., & Slater, A. (2017). Facebook and body image concern in adolescent girls: A prospective study. *International Journal of Eating Disorders*, 50, 80–83. <http://dx.doi.org/10.1002/eat.22640>
- Tiggemann, M., Hayden, S., Brown, Z., & Veldhuis, J. (2018). The effect of Instagram “likes” on women’s social comparison and body dissatisfaction. *Body Image*, 26, 90–97. <http://dx.doi.org/10.1016/j.bodyim.2018.07.002>
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale–2: Item refinement and psychometric evaluation. *Body Image*, 12, 53–67. <http://dx.doi.org/10.1016/j.bodyim.2014.09.006>
- Tylka, T. L., Russell, H. L., & Neal, A. A. (2015). Self-compassion as a moderator of thinness-related pressures’ associations with thin-ideal internalization and disordered eating. *Eating Behaviors*, 17, 23–26. <http://dx.doi.org/10.1016/j.eatbeh.2014.12.009>
- Vendemia, M. A., & DeAndrea, D. C. (2018). The effects of viewing thin, sexualized selfies on Instagram: Investigating the role of image source and awareness of photo editing practices. *Body Image*, 27, 118–127. <http://dx.doi.org/10.1016/j.bodyim.2018.08.013>
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23, 3–43. <http://dx.doi.org/10.1177/009365096023001001>
- Wang, R., Yang, F., & Haigh, M. M. (2016). Let me take a selfie: Exploring the psychological effects of posting and viewing selfies and groupies on social media. *Telematics and Informatics*, 34, 274–283. <http://dx.doi.org/10.1016/j.tele.2016.07.004>
- Webb, J. B., Butler-Ajibade, P., & Robinson, S. A. (2014). Considering an affect regulation framework for examining the association between body dissatisfaction and positive body image in Black older adolescent females: Does body mass index matter? *Body Image*, 11, 426–437. <http://dx.doi.org/10.1016/j.bodyim.2014.07.002>
- Wei, Q., Sun, X., Lian, S., & Song, Y. (2017). The effect of using social networking sites on body image satisfaction: The mediating role of body image comparison and the moderating role of self-objectification. *Journal of Psychological Science*, 40, 920–926. <http://dx.doi.org/10.16719/j.cnki.1671-6981.20170422>
- Wood-Barcalow, N. L., Tylka, T. L., & Augustus-Horvath, C. L. (2010). “But I like my body”: Positive body image characteristics and a holistic model for young-adult women. *Body Image*, 7, 106–116. <http://dx.doi.org/10.1016/j.bodyim.2010.01.001>
- Zheng, D., Ni, X. L., & Luo, Y. J. (2019). Selfie posting on social networking sites and female adolescents’ self-objectification: The moderating role of imaginary audience ideation. *Sex Roles*, 80, 325–331. <http://dx.doi.org/10.1007/s11199-018-0937-1>