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# The Relationship Between Fitness Posts Exposure on Social Media and Female Appearance Self-Esteem: A Perspective of Sexual Objectification

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**Abstract:** Social media generally refers to all kinds of websites or applications which allow users to present the contents created by themselves on the platform and counteract with other users. Today, it is a common phenomenon for females to view fitness posts on social media. Although past research has revealed the significantly negative relationship between social media exposure and global self-esteem, it is still unclear that how specific social media activities will have an influence on specific domains of self-esteem. Given that, with 246 female undergraduates as participants, the current research used the questionnaire survey method to examine the relationship between fitness posts exposure on social media and appearance self-esteem, and the underlying mechanisms. Regression analyses showed that, after control for the possible confounding variables, fitness posts exposure on social media was significantly and negatively related to appearance self-esteem ( $\beta = -0.18, p = 0.003$ ), but not significantly related to global self-esteem ( $\beta = 0.09, p = 0.10$ ). Further analyses suggested that the sexual objectification theory provided a feasible explanation for the correlation between fitness posts exposure on social media and appearance self-esteem. Specifically, further mediation analyses showed that fitness posts exposure on social media was related to appearance self-esteem via two possible mediation paths: (1) fitness posts exposure  $\rightarrow$  body surveillance  $\rightarrow$  appearance self-esteem, 95% CI [-0.08, -0.01]; (2) fitness posts exposure  $\rightarrow$  body surveillance  $\rightarrow$  body shame  $\rightarrow$  appearance self-esteem, 95% CI [-0.07, -0.02]. We also found that when the indirect effects were considered, the direct effect between fitness posts exposure and appearance self-esteem was not significant, 95% CI [-0.20, 0.03]. The current research firstly demonstrated the correlation between fitness posts exposure on social media and appearance self-esteem, and also specified activities that may raise potential harms on self-esteem of users.

**Keywords:** Social Media, Fitness, Self-Objectification, Appearance Self-Esteem, Female

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## 1. Introduction

In modern society, social media has become a part of our daily life. Via social media, people can communicate with others at any time regardless of where they live, which effectively facilitates interpersonal communications in daily life and interpersonal collaboration at work. Moreover, social media allows users to share unique contents created by themselves with others on the platform, such as a wonderful travel experience, an exquisite dinner cooked by the poster, an

exciting reunion after a long separation, and of course, also including fitness posts. Following the definition by Arroyo and Brunner (2016), in the present research, fitness posts refer to a variety of contents presented on social media relevant to fitness, including text messages, photos, short videos, and specific sport performances [1].

Today, fitness is popular across the world. Although people engage in the fitness activity for a variety of reasons (e.g., maintaining body healthy), shaping an ideal body image is a primary concern for many people, especially for females.

Indeed, compared to males, a perfect body image is considered to be more helpful for females to achieve competitive advantages in society and mobile toward upper social class [2]. This may partially explain why females than males make more efforts to shape their body image and try their best to become a “thin” girl. Correspondingly, it is also more likely for females to share their body images or fitness experiences on social media when they have completed a physical activity or made new progress in body mass index (BMI) [3]. Despite the fact that female social media users post the contents relevant to fitness with a positive motivation (e.g., encouraging themselves to make a new progress), due to the positive self-presentation tendency on social media, according to the findings of past research, it is seemingly inevitable for these fitness posts to have detrimental effects on self-esteem of other users exposed to these posts.

It should be pointed out, although past research consistently demonstrates the significantly negative relationship between social media exposure and self-esteem, prior research does not examine whether specific social media activities will produce different influences on specific domains of self-esteem. So, to date, it is still unclear how fitness posts exposure on social media will be related to specific domains of self-esteem. To fill this gap, the current research exclusively investigated the relationship between fitness posts exposure on social media and appearance self-esteem, and the underlying mechanisms, so that we can deepen the understanding in this area.

## 2. Literature Review

### 2.1. Fitness Posts on Social Media

Generally, social media can refer to all kinds of websites or applications which allow users to present the contents created by themselves on the platform and counteract with other users on the platform [4]. According to this definition, social media includes a variety of social networking websites and applications, such as Facebook, YouTube, Instagram, QQ (popular in China-Mainland), WeChat (popular in China-Mainland), and so on. A typical characteristic of social media, different from traditional media (e.g., television and magazine), is that social media users can autonomously determine whether they will update their status and which kind of contents they will present on the platform. Consequently, in most cases, social media users tend to select those better things in life and present them on social media platforms, which is the so-called positive self-presentation on social media [5].

Past research indicates that the positive self-presentation on social media may enable social media users to mistakenly perceive that others seemingly are superior than themselves on multiple aspects, and others always are experiencing a more wonderful life than them. Empirical research suggests that this misperception will lead to a series of negative influences on mental health, such as lower self-esteem, depression, and social anxiety [6]. In line with previous research, the positive self-presentation also exists when social media users display

their body image on the platform. For example, to make their body image adhere to the ideal standard to a large extent, after a fitness activity, females may take a deep breath to show their “A4 waist”, and then take a selfie prepared for the presentation on social media. Ironically, due to the positive self-presentation tendency, the so-called ideal standard of body image on social media indeed is less likely to be attained in reality.

### 2.2. Fitness Posts Exposure on Social Media and Appearance Self-Esteem

Self-esteem is considered to represent a subjective evaluation for self-worth — high self-esteem means that the self is “good enough” and low self-esteem means that the self is “not good enough” [7]. Prior literature suggests that self-esteem is so important for the self-concept that people seemingly try their best to enhance their self-esteem by all possible approaches, and a simple but effective way assessing self-esteem is to compare one person with another similar person [8]. According to the comparison directions, social comparison can be classified into upward social comparison and downward social comparison. The so-called upward social comparison implies that one person compare him/herself with another one who is superior than the person on specific domains. In contrast, the so-called downward social comparison implies that one person compare him/herself with another one who is inferior than the person on specific domains. A large body of research suggests that compared to downward social comparison, upward social comparison is more likely to harm self-esteem.

As mentioned in the begging section of the article, due to the positive self-presentation tendency on social media, social media users are more likely to suffer from upward social comparison rather than downward social comparison on social media [9]. Moreover, considering that people often automatically compare themselves with similar others, for social media users, the occurrence of upward social comparison may be out of awareness. With respect to the current research, regardless of intentions of fitness post publishers, these fitness posts to a large extent provide an ideal body image allowing other users compare themselves with the standard. However, the problem is that, these ideal body images are indeed difficult to achieved. As a result, when social media users browse these fitness posts, they may mistakenly conclude that they possess an awful body image, thus harming appearance self-esteem. So, we hypothesized that,

*Fitness posts exposure on social media was significantly and negatively correlated with appearance self-esteem (Hypothesis 1a).*

We notice that past research has revealed the significant correlation between social media exposure and self-esteem [10]. However, the research did not distinguish appearance self-esteem from global self-esteem. In other words, prior research may have mixed the effects of social media exposure on appearance self-esteem and global self-esteem. According to our reasoning, fitness posts exposure is more likely to harm appearance self-esteem than global self-esteem. So,

considering that we conceptually make appearance self-esteem separate from global self-esteem in the current research, we hypothesized that,

*Fitness posts exposure on social media was not significantly related to global self-esteem (Hypothesis 1b).*

### **2.3. The Mechanisms Between Fitness Posts Exposure and Appearance Self-Esteem**

With the mechanisms underlying the relationship between fitness posts exposure on social media and appearance self-esteem, sexual objectification theory may provide a possible approach [11]. According to the propositions of the theory, under social-cultural contexts highlighting the role of females' physical appearance in determination of their worth, females tend to be perceived as objects and are based on their physical appearance to assess their worth. It should be pointed out, although the objectification theory is not exclusively applied for females, a widely accepted phenomenon is that the objectification tendency is more likely to be observed on females than on males.

In modern society, on various of traditional and social media platforms, there are numerous of pictures or photos displaying the so-called ideal body images for females. Consequently, for females, the more frequently they access the contents relevant to female body image on social media, the more likely they internalize the social ideal for female body. This process generally is called self-objectification [11]. For females with self-objectification, they tend to look their body from an observer' perspective and associate their body with self-worth to a large extent. In this situation, it is reasonable for females to put more attention on their body and devote more efforts to achieving ideal body. The objectification theory terms this process as body surveillance. That is to say, fitness posts exposure on social media is supposed to be positively correlated with body surveillance.

Upon the occurrence of body surveillance, it is almost inevitable for social media users to dissatisfy their body images, as the social ideal for body image actually is hard to achieve. Nevertheless, due to internalizing social ideal for body image, female social media users often cannot realize this issue. In contrast, any discrepancies between ideal body image and the self can be interpreted as they are inferior to the desired self, which will contribute to increasing body shame. That is to say, body surveillance can be positively related to body shame. Supporting this supposition, empirical research concerning eating disorder has demonstrated that those individuals experiencing higher body surveillance also report higher body shame [12, 13]. More importantly, higher body shame has been found to be correlated with lower-esteem. For example, with 200 Canadian undergraduates as participants (including males and females), researchers examined the relationship between body surveillance and self-esteem and the underlying mechanisms. The results showed that participants with higher body surveillance also showed higher body shame, and higher body shame in turn was correlated with lower self-esteem [14]. Overall, we hypothesized that,

*Fitness posts exposure on social media was related to*

*self-esteem via the chain-mediating role of body surveillance and body shame (Hypothesis 2).*

### **2.4. The Current Research**

As we have discussed, although past research has demonstrated the correlation between social media and self-esteem, to our knowledge, there is little research investigating whether the significant correlation exists between fitness posts exposure on social media and self-esteem. Additionally, previous researchers mainly focus on the relationship between social media use and global self-esteem, relatively ignoring specific domains of self-esteem. Given these considerations, by adopting a questionnaire survey, the current research firstly examined the relationship between fitness posts exposure on social media and self-esteem, and the underlying mechanisms.

## **3. Method and Results**

### **3.1. Participants**

In the current research, the sample size was determined in terms of the calculation of G\*power 3.1 [15]. A predetermined medium effect size ( $\beta = 0.22$ ) and the 0.05 significance required at least 215 participants. Considering possible invalid data, we finally recruited 246 female college students ( $M_{age} = 19.58$  years old,  $SD = 0.77$ , ranging from 18.25 to 23.33 years old; 243 Han nationality, 1 Hui nationality, and 2 Mongol nationality) to participate in the survey.

### **3.2. Measures**

*The measure of fitness posts exposure.* The fitness posts exposure on social media was measured by the scale developed by Arroyo and Brunner (2016), which consisted of 6 items aiming to assess participants' frequency of accessing fitness posts on social media [1]. For example, an example item was to ask participants to report how often they access "fitness inspiration quotations or images" on social media. Participants needed to give their answer on the 7-point scale (1 = *never*, 7 = *always*) The frequency of fitness posts exposure was generated by summing the score on each item, with higher value indicating higher exposure frequency to fitness posts. In the current research, the internal consistency coefficient was 0.92.

*The measure of body surveillance.* The Surveillance subscale of the Objectified Body Consciousness scale developed by McKinley and Hyde (1996) was employed to assess participants' body surveillance [16]. The subscale consisted of 8 items and participants needed to indicate to what extent they agree with each item on the 7-point scale (e.g., *I rarely think about how I look*, 1 = *strongly disagree*, 7 = *strongly agree*). Body surveillance was reflected by averaging scores on all items (some items were reversely scored) and higher scores indicated higher body surveillance. The internal consistency coefficient of the scale was 0.79.

*The measure of body shame.* In the current research, body shame was measured via the body shame subscale of the Objectified Body Consciousness Scale developed by

McKinley and Hyde (1996) [16]. The subscale consisted of 8 items and participants needed to provide their agreement for each item on the 7-point scale (e.g., *I feel ashamed of myself when I haven't made the effort to look my best*, 1 = *strongly disagree*, 7 = *strongly agree*). After the item 5 and 7 were reverse-scored, body shame of each participant was calculated by averaging the scores on all items, which higher values indicating higher body shame. In the current research, the internal consistency coefficient of the scale was 0.86.

*The measure of global self-esteem.* Global self-esteem of participants was measured by the Chinese version of the Rosenberg Self-Esteem Scale [17]. The scale includes 10 items and participants need to indicate whether they agree the description of each item and provide their answers on the 4-point scale (e.g., *On the whole, I am satisfied with myself*, 1 = *strongly disagree*, 4 = *strongly agree*). One thing that we needed to explain in advance was that, participants in the current research were asked to report their evaluations about themselves when they were exposed to fitness posts on social media rather than in general situations. In other words, state self-esteem rather than trait self-esteem was measured in the current research. In the current research, the internal consistency coefficient was 0.90.

*The measure of appearance self-esteem.* In the current research, the appearance self-esteem of participants was assessed by the Appearance subscale of the State Self-Esteem Scale by Heatherton and Polivy (1991) [18]. This subscale includes six items and participants need to provide their agreement for each item on the 5-point scale (1 = *not at all*, 5 = *extremely*). An example item was that *I am pleased with my appearance right now*. The internal consistency coefficient was 0.82 in the current research.

*The measure of demographic information.* In addition to the measures of the above key variables, we also collected participants' demographic information, including age, nationality, residence (city/country), and subjective social status.

### 3.3. Procedure

The survey was carried out in a group of 40~60. Prior to filling out the questionnaire, we firstly introduced the academic purpose of the survey for participants and the

collected data can be used only for academic purpose. Participants can continue the survey after they signed the informed consent. In the beginning section of each scale, we provided a detailed instruction about how they should respond to each item. During the period of completing the questionnaire survey, researchers also gave them an explicit reminder that they should carefully read those items and provide their answers truthfully. After completing all tasks, they were thanked and paid (5 RMB, approximate 0.8 USD).

## 3.4. Results

### 3.4.1. Descriptive Statistics

In the current research, SPSS 23.0 was used to create the database for analyzing the collected data. The Macro Process developed by Hayes (2013) was used to detect the chain-mediating role of body surveillance and body shame between fitness posts exposure and appearance self-esteem [19]. The process applies the bootstrapping method to generate a 95% interval to detect the indirect effect (resampling 5000 times in the current research), and if the interval does not contain zero, the indirect will be considered to be reliable, otherwise it will be considered to be not reliable.

Prior to conducting regression analyses, we firstly performed correlation analyses between variables. As shown in Table 1, fitness posts exposure was found to be significantly correlated with body surveillance, body shame, and appearance self-esteem,  $ps < 0.01$ , but the correlation between fitness posts exposure and global self-esteem was not significant,  $r = 0.08$ . In addition, body surveillance was found to be significantly and positively correlated with body shame,  $p < 0.01$ , and body surveillance was significantly and negatively correlated with appearance and global self-esteem,  $ps < 0.01$ . Similarly, body shame also was significantly and negatively related to appearance and global self-esteem, and the correlation between appearance self-esteem and global self-esteem also was significant,  $ps < 0.01$ . In addition to these key findings, the correlation analysis also found that subjective social status was significantly and negatively correlated with body surveillance and body shame,  $ps < 0.01$ , but significantly and positively correlated with appearance and global self-esteem,  $ps < 0.01$ .

Table 1. Means, standard deviations, and correlations between variables.

	<i>M</i>	<i>SD</i>	Fitness posts exposure	Body surveillance	Body shame	appearance self-esteem	Global self-esteem	Residence	Subjective Social status
Fitness posts exposure	24.47	9.41	1						
Body surveillance	4.36	0.99	0.25**	1					
Body shame	3.08	1.18	0.19**	0.49**	1				
appearance self-esteem	19.37	4.96	-0.19**	-0.35**	-0.46**	1			
Global self-esteem	30.69	5.68	0.08	-0.23**	-0.42**	0.52**	1		
Residence	-	-	-0.14*	-0.06	-0.02	0.05	0.07	1	
Subjective Social status	6.09	1.54	-0.02	-0.23**	-0.23**	0.50**	0.17**	0.04	1

Note. *M* = mean value, *SD* = standard deviation. \* $p < 0.05$ , \*\* $p < 0.01$ . For the variable *residence*, country was coded as 0 and city was coded as 1.

### 3.4.2. Tests for Hypothesis 1a and 1b

To examine whether fitness posts exposure would be related to appearance and global self-esteem, we performed

two linear regression equations in which appearance and global self-esteem were regressed on fitness posts exposure separately. Before entering into the regression equation, all variables were standardized. To control for possible

confounding effects, subjective social status and residence were included in the equation as control variables. The results showed that, after the effects of subjective social status and residence were taken into account, fitness posts exposure still showed a significant prediction on appearance self-esteem,  $\beta = -0.18, p = 0.003$ . The result suggested that more fitness posts exposures were related to lower appearance self-esteem, thus supporting our Hypothesis 1a. In contrast, the prediction effect of fitness posts exposure on global self-esteem was not significant,  $\beta = 0.09, p = 0.10$ , which indicated that when the relationship between fitness posts exposure and appearance self-esteem was exclusively detected, fitness posts exposure actually could not exert a significant influence on global self-esteem, thus supporting our Hypothesis 1b.

**3.4.3. Test for Hypothesis 2**

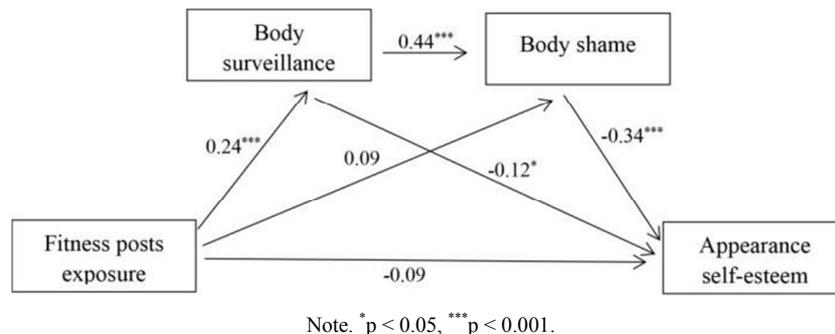
As we have mentioned above, the Macro Process (model 6) by Hayes (2013) was used to examine the chain-mediating role of body surveillance and body shame between fitness posts exposure and appearance self-esteem (bootstrapping 5000 times). Again, residence and subjective social status were taken into account as covariates. The mediation analysis results were presented in Table 2. As shown in Table 2, the total indirect

effect between fitness posts exposure and appearance self-esteem was significant, 95% CI [-0.17, -0.04], which consisted of two significantly indirect paths: Fitness posts exposure  $\rightarrow$  body surveillance  $\rightarrow$  appearance self-esteem, 95% CI [-0.08, -0.01], and Fitness posts exposure  $\rightarrow$  body surveillance  $\rightarrow$  body shame  $\rightarrow$  appearance self-esteem, 95% CI [-0.07, -0.02]. Specifically, as shown in Figure 1, fitness posts exposure had a significantly positive prediction on body surveillance ( $\beta = 0.24, p < 0.001$ ) and the latter further produced a significantly negative prediction on appearance self-esteem ( $\beta = -0.12, p = 0.05$ ), thus demonstrating the mediating role of body surveillance between fitness posts exposure and appearance self-esteem. Additionally, body surveillance also was found to be significantly and positively related to body shame ( $\beta = 0.44, p < 0.001$ ), and body shame was further significantly and negatively related to appearance self-esteem ( $\beta = -0.34, p < 0.001$ ), thus demonstrating the chain-mediating role of body surveillance and body shame between fitness posts exposure and appearance self-esteem (Hypothesis 2). When indirect effects were taken into account, the direct effect between fitness posts exposure and appearance self-esteem was not significant,  $\beta = -0.09, p = 0.14$ .

**Table 2.** Direct and indirect effects between fitness posts exposure and appearance self-esteem.

Direct effect	Effect	SE	LLCI	ULCI	Ratio
Fitness posts exposure $\rightarrow$ appearance self-esteem	0.09	0.06	-0.20	0.03	47.37%
Indirect effect	-0.10	0.03	-0.17	-0.04	52.63%
Path 1: Fitness posts exposure $\rightarrow$ body surveillance $\rightarrow$ appearance self-esteem	-0.03	0.02	-0.08	-0.01	15.79%
Path 2: Fitness posts exposure $\rightarrow$ body surveillance $\rightarrow$ body shame $\rightarrow$ appearance self-esteem	-0.04	0.01	-0.07	-0.02	21.05%
Path 3: Fitness posts exposure $\rightarrow$ body shame $\rightarrow$ appearance self-esteem	-0.03	0.02	-0.08	0.01	15.79%

Note. SE= standard error, LLCI= lower limit of confidence interval, and ULCI= upper limit of confidence interval.



**Figure 1.** Specific acting paths between fitness posts exposure and appearance self-esteem were presented schematically.

**4. Discussion**

In the current research, with 246 female college students as participants, we employed the questionnaire survey to examine the relationship between fitness posts exposure on social media and appearance self-esteem, and found that fitness posts exposure on social media was significantly and negatively related to appearance self-esteem, but not significantly related to global self-esteem. Further analyses showed that body surveillance and body shame played the chain-mediating role between fitness posts exposure on social

media and appearance self-esteem. Additionally, body surveillance also was unexpectedly found to mediate the relationship between fitness posts exposure and appearance self-esteem. The current research carries implications for understanding how social media use will harm users' self-esteem.

**4.1. Fitness Posts Exposure and Appearance Self-Esteem**

In the present research, a significantly negative correlation was found between fitness posts exposure and appearance self-esteem, thus firstly demonstrating that accessing fitness posts on social media may raise negative influences on

appearance self-esteem of social media users. We notice that, prior research has revealed that social media use can produce positive influences on self-esteem of users while other research has revealed the detrimental effects of social media use on self-esteem of users [5, 20]. We speculated that previous inconsistent findings may be because social media users engage in different social media activities. At least, according to the findings of the current research, browsing fitness posts shared by other users can be significantly related to lower appearance self-esteem. Moreover, by means of pushing similar contents, a function widely existing in social media platforms, even if a female occasionally browses fitness posts on social media, she may be frequently exposed to fitness posts in the following social media use. In this case, many females actually may be exposed to fitness posts in a passive and unobtrusive way, which in turn can harm their appearance self-esteem for a long time.

Rosenberg *et al.* (1995) have proposed that global self-esteem and specific domains of the self-esteem in nature are different concepts and also related to different behavioral consequences [21]. Supporting this proposition, the present research found that, whereas a significantly negative correlation was found between fitness posts exposure and appearance self-esteem, no significant correlation was observed between fitness posts exposure and global self-esteem. That means, browsing fitness posts shared on social media may cause users' dissatisfaction about their own body, but on the whole, this dissatisfaction can't significantly decrease their perception about global self-worth. Indeed, past research has demonstrated that social media use can lead to female users' dissatisfaction for their body image [3, 22]. The current research extends previous research by further specifying activities on social media that may cause body image dissatisfaction — actively or passively exposing themselves to fitness posts on social media. Additionally, we must realize that there may be some possible moderators moderating the relationship between fitness posts exposure and global self-esteem. For example, for females with high self-objectification, whose physical appearance often carries more weights in determining of self-worth, fitness posts exposure may exert more negative effects on their global self-esteem than those females with low self-objectification.

#### ***4.2. The Chain-Mediating Role of Body Surveillance and Body Shame***

The current research found that fitness posts exposure was negatively related to appearance self-esteem via the chain-mediating role of body surveillance and body shame. Body surveillance and body shame are widely considered to be typical indexes of female self-objectification. Considering that our research found that fitness posts exposure was positively related to body surveillance and body surveillance was further positively related to body shame, we may conclude that fitness posts exposure may contribute to the self-objectification of females. For females with self-objectification tendency, they tend to overestimate the

role of physical appearance in determining of self-worth. As a consequence, when they can't achieve the social ideal for body image, it is not surprising for them to perceive lower self-esteem. Ironically, for females with self-objectification, they may devote a lot of time and energy to shaping their body image, even suffering from eating disorder, which to a large extent forms a vicious circle [23]. Given that social media use has a series of negative consequences on mental health, researchers have recommended promoting and encouraging the so-called social media literacy, which aims to make social media users can understand the generation and propagation processes of social media contents, and the relationships between them and users [1]. With respect to the research, when social media users browse fitness posts, if websites or applications can explicitly remind that excessively focusing on their own body image is associated with a series of psychological consequences, their self-objectification tendency may be weakened, and correspondingly, the possible negative effects of fitness posts exposure on appearance self-esteem may be alleviated. This issue deserves further investigation.

We notice that there was an unexpected finding that body surveillance mediated the relationship between fitness posts exposure and appearance self-esteem. For this unexpected finding, we speculated that it may be because most female undergraduates tend to put more weights on physical appearance in evaluation of self-worth, a phenomenon called appearance contingent self-worth. Supporting our speculation, past research has revealed that females with appearance contingent self-worth are inclined to show higher body surveillance and lower satisfaction with their body image. As an example, Noser and Zeigler-Hill (2014) have recruited 465 female undergraduates as participants and examined the relationship between appearance contingent self-worth and appearance self-worth, and the underlying mechanisms [2]. The results showed that, those female undergraduates who assess self-worth relying more on physical appearance were more likely to report lower appearance self-esteem and body surveillance mediated the relationship between them, displaying a similar result pattern with the current research. Considering that assessing the extent to which female college students show appearance contingent self-worth is not our major focus, we did not make further investigation on this issue in the current research, but it deserves our further attention in future research.

#### ***4.3. Limitations and Future Work***

There were several limitations existing in the present research. Firstly, the current research in nature belongs to the correlational research design, so we can't confirm the effect direction between fitness posts exposure on social media and appearance self-esteem. Under this situation, as we have speculated, it is possible that enabling females to be exposed to fitness posts led to lower appearance self-esteem, whereas it is seemingly plausible that those females with lower appearance self-esteem were more likely to actively access fitness posts on social media so that they can achieve

ideal body images. Given this potential limitation, conducting another lab experiment in future may be necessary in order to clarify the effect direction between fitness posts exposure and appearance self-esteem. Secondly, the objectification theory was used to elucidate the mechanisms underlying the relationship between fitness posts exposure and appearance self-esteem. In theory, the objectification theory is suitable for both males and females. However, following previous research, the present research only included female participants, which raised the question that whether the results pattern observed on females can be generalized to males [24]. Given that, in future work, we can attempt to test the generalization of our findings across males and females. Finally, the sample of the current research exclusively consisted of college students. Compared to other age groups, college students often have more free time and also spend more time on social media [25]. As a result, it is actually unclear for us to what extent the findings observed in the research is suitable for other age groups. This issue needs to be solved in future research.

## 5. Conclusion

By using a questionnaire survey, the current research examined the relationship between fitness posts exposure on social media and appearance self-esteem, and the underlying mechanisms. The results showed that the more frequently females accessed fitness posts shared on social media, the more likely they perceived lower appearance self-esteem. Further analyses showed that the objectification theory provided a possible theoretical-framework for explaining this negative correlation — body surveillance and body shame played the chain-mediating role between fitness posts exposure and appearance self-esteem. The current research firstly demonstrated the correlation between fitness posts exposure and appearance self-esteem, and also specified activities that may raise potential harms on the self-esteem of users.

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