

“Sweet Pie or Sweet Trap?” Mechanisms of Social Media Use in Eating Disorders

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Abstract

OBJECTIVE: To examine the effects of social media use on eating disorders and to explore the pathways of eating disorders in people with normal/abnormal perceptions of their weight. **METHODS:** The Eating Disorder Examination Self-Assessment Questionnaire, the Rosenberg Self-Esteem Scale, the Chinese Frost Perfectionism Questionnaire, and the Self-Objectification Questionnaire were used to investigate 240 Chinese social media users. **RESULTS:** Social media use and self-esteem were direct predictors of eating disorders, and body mass index partially mediated the relationship between social media use and eating disorders; perfectionism and self-objectification fully chain-mediated the relationship between social media use and eating disorders. For the non-normally perceived group, low self-esteem and perfectionism were the most significant factors in the formation of eating disorders, whereas the level of eating disorders in the normally perceived group was mainly influenced by body mass index, perfectionism and media use. **CONCLUSION:** The formation of eating disorder tendencies is a dynamic process, and the pathways of influence of different perceptual groups should not be confused.

Keywords

Eating disorders, Social media use, Perfectionism, Self-esteem, Self-objectification, Weight perception.

1. Introduction

Driven by social media, the aesthetic concept of “thinness is beauty” has been reinforced, and the extreme weight loss methods of celebrities have been packaged as the secret of rapid slimming, triggering widespread imitation. However, this kind of blind pursuit of thinness may have adverse consequences. The goal conflict theory of eating suggests that dieters have a conflict between two contradictory goals of enjoying eating and weight control[1]. According to this model, dieters tend to overeat instead because of the attentional bias toward food stimuli resulting from exposure to food cues, despite the motivation to diet in pursuit of their weight control goals [2]. Many people are caught in a “diet- overeat-diet” cycle in their quest for thinness. Given the profound impact of social media on individuals' eating habits and body image, this study wanted to explore the following questions: how does social media use affect individuals' eating behavior and psychology, which in turn leads to the occurrence of eating disorders (ED)? Are there differences in the effects of media use on the development of eating disorders across populations with different perceived weights, and how do these differences affect the pathways to eating disorders?

One study found a significant correlation between social media and the development of eating disorders, emphasizing the role of sociocultural influences in shaping body image and eating behaviors[3]. Sociocultural theory, which posits that cultural values are important to how individuals are perceived by others and how they perceive themselves, is often used to explain

the formation of body image in the presence of media[4]. One of the main mechanisms by which the media influences eating disorders is the “internalization” of unrealistic body ideals, which affects one's attitudes or behaviors toward body imagery, and the tendency to develop eating disorder when one's self differs too much from the ideal body imagery. Eating disorder is a group of physiological disorders related to psychological factors with excessive concern for food, weight and body shape, and abnormal eating behaviors as the main clinical features, and the process of forming ED is long-term and complex. Some dieters, however, do not realize that their current eating behaviors are fostering the formation of their own ED due to the misperceptions of food and their own body image generated by media misguidance. At the same time, social media platforms are prone to the “echo chamber” effect, in which social media users are exposed to similar views and body ideals for a long period of time, which promotes the users to take slimming actions, but also puts them in a state of stress, increasing their chronic psychological pressure, and making them more prone to develop a negative self-concept[5]. Low self-esteem is a significant predictor of body dissatisfaction and eating disorders, a role that is more pronounced in the female population [6], and furthermore, research has found that athletes with low levels of self-esteem are more likely to have problems with abnormal eating behaviors [7]. In contrast, high self-esteem was associated with low body monitoring and body shame, which simultaneously suggests that enhanced self-esteem may act as a protective factor against the adverse effects of social media and the negative impact of perfectionism. Therefore, the present study hypothesized that H1: Social media affects the extent of an individual's eating disorder, with body mass index (BMI) and self-esteem acting as serial mediator model.

Among the relevant psychological factors that cause eating disorder tendencies, perfectionism (both self-directed perfectionism and socially prescribed perfectionism) has been identified as one of the important factors in the development and maintenance of eating disorders[8, 9]. Social pressure to achieve perfection may lead to mental health crises in younger populations [10]; furthermore, perfectionism amplifies the effects of media pressure on body image, leading to an increase in eating disorders in prepubertal girls [11]; and individuals who make upward social comparisons on social media are more likely to experience perfectionism and eating disorders [12]. Self-objectification is a phenomenon in which individuals internalize others' perceptions of their own bodies, and factors such as low self-esteem and high perfectionism have been shown to predict levels of self-objectification, which in turn has been associated with body shame and eating disorder behaviors [13, 14]. Internalization of media standards contributes to this cycle, and individuals who are regularly exposed to appearance-focused content are more likely to develop negative body image and eating disorders[15-17]. Accordingly, this study proposes the hypothesis that H2: Perfectionism and self-objectification play a chain-mediated role in media use and eating disorders.

Eating disorders typically develop through a process of excessive weight concern, negative body self-schemas, dysfunctional eating attitudes, restricted eating (RE) behaviors, and ultimately clinical symptoms of eating disorders. Among these, eating disorder tendencies are the key point in this maladaptive process of transitioning from maladaptive psychology to maladaptive behavior. A review of the relevant literature reveals that although research on eating disorders has been abundant, and psychological - behavioral experiments based on patients with anorexia nervosa (AN) and bulimia nervosa (BN) are sufficient[18-20], there are fewer studies related to eating disorder tendencies, a marginalized population, which have received insufficient attention, and popularizing eating disorders and scientific eating way is a long way to go.

In summary, this study will examine the influence of media use on the formation of eating disorders, construct a chain mediation model (Figure 1), and on this basis, explore the differences in the influencing factors of different populations' perceptions of their own and actual body weights as normal and abnormal, and construct a pathway affecting the formation

of eating disorders, with a view to providing an entry point and a pathway to the intervention and prevention of abnormal eating behavior problems.

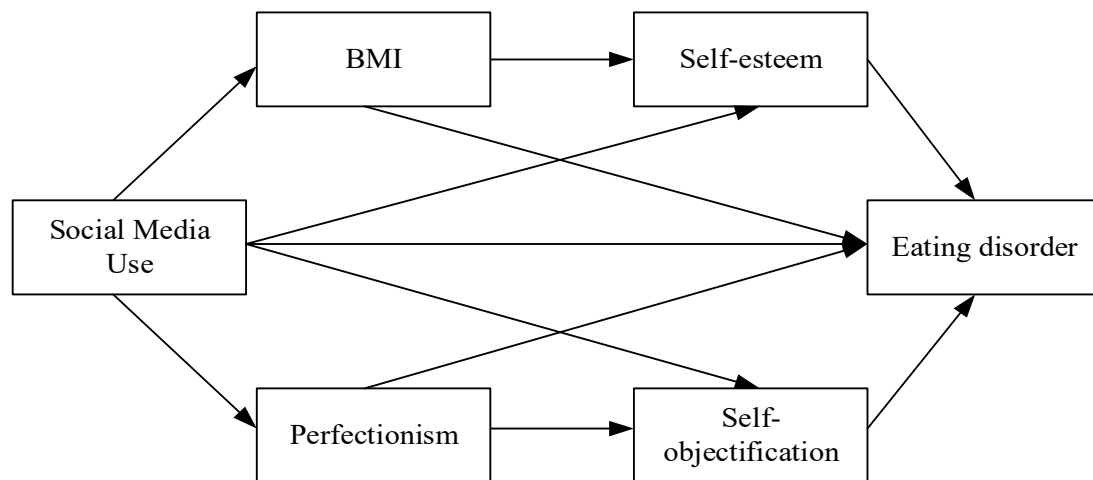


Figure 1. Hypothetical model

2. Methods

2.1. Subjects

Convenience sampling was used to distribute the questionnaires to social media users in China through the online link of Credamo. A total of 250 questionnaires were distributed, and 240 valid questionnaires were collected after excluding those who reported 0 hours of social media use. Among the valid questionnaires, 191 were female and 49 were male; the student population was 215; according to the Chinese standard of BMI, the moderate population was 157, the underweight population was 56, and the overweight and obese population was 27; the age range of the subjects was 13-35 years old; in addition to testing the hypotheses, the subjects were categorized according to their BMI and self-reported weight perceptions into perceived overweight/non-overweight + actual overweight/non-overweight (normal perceived N=143), normal perceived N=143 and overweight/non-overweight (normal perceived N=143), and normal perceived N=143. (normal perception N=143) and perceived overweight + actual normal/underweight (non-normal perception N=97) groups, and the relationship between BMI, self-objectification, perfectionism, self-esteem, and social media use with eating disorders was exploratively analyzed under this classification condition.

2.2. Tools

Subjects completed the following measurements in addition to demographic information such as height, weight, and gender.

2.2.1. Eating Disorder Symptoms

The Eating Disorder Examination Self-Assessment Questionnaire 6.0 (EDE-Q6.0) [21] was used to assess whether the subjects' eating behaviors in the past 4 weeks were predisposed to eating disorders. The Chinese version of the questionnaire was validated to have good reliability and validity. The diagnostic threshold was 1.72.

2.2.2. Social media use

Subjects will be asked, "Thinking back over the past week, how much time did you typically spend on ___ during the day? Include the total time spent on all devices." This question is asked about software commonly used by Chinese social media users, including open self-media platforms based on images and videos such as Tik Tok, Weibo, and Xiaohongshu.

2.2.3. Self-esteem

The Rosenberg Self-Esteem Scale (RSES) [22] was used to measure the level of self-esteem of individuals. There is only one dimension with 10 questions, of which 3, 5, 8, 9, and 10 are reverse scored.

2.2.4. Perfectionism

The Frost Multidimensional Perfectionism Scale (FMPS) is a multidimensional self-report scale of perfectionism[23]. It contains a total of 35 items. In this study, 27 of these entries were used, including five dimensions: worry about mistakes, organization, parental expectations, personal standards, and action doubts. The Chinese norm construction was conducted by previous researchers, and scores less than 74 were categorized as non-perfectionism, 74-90 were categorized as perfectionist tendency, and more than 90 were categorized as typical perfectionism.

2.2.5. Weight Perception

Participants are asked, "How would you describe your weight?" Response options included "very underweight," "slightly underweight," "appropriate weight," "slightly overweight" and "very overweight". Responses will be categorized into three groups: those who consider themselves overweight, those who consider themselves normal, and those who consider themselves underweight.

2.2.6. Self-objectification

The self-objectification questionnaire developed by Noll and Fredrickson [24] was used, which consists of five feature words (ability attributes) and five feature words (appearance attributes), and subjects were asked to rank how much they cared about the feature words. Self-objectification score = (total score for ranking feature words of appearance attributes) - (total score for ranking feature words of ability attributes), with scores ranging from -25 to 25, with higher scores indicating higher levels of self-objectification in individuals.

2.3. Statistical methods

SPSS 26.0 was used to proofread and verify all the data, firstly, Harman one-way test was used to test the common method bias, and descriptive statistics, independent samples t-test, ANOVA for analysis of variance, correlation analysis, regression analysis, and macros Process 4.1 plugin were used to analyze the main and mediating effects of the collected data.

3. Results

3.1. Common method bias

The Harman one-way test was used, and the variance explained by the first common factor was 26.656%, less than 40%, indicating no serious common method bias.

3.2. Factors Influencing Eating Disorder Tendencies

Differences in Body Size Perception: The non-normal perception group had significantly lower BMI and self-esteem than the normal perception group, see Table 1.

Table 1. T-test for perceptually normal and non-normal perception groups

Variables	1 non-normal n=97	2 normal n=143	F	P
BMI	20.217±2.239	21.068±3.612	5.110	0.025
Self-esteem	30.364±6.152	32.01±4.322	17.041	0.000

Differences in Self-Perceived Weight: Those who perceived themselves as overweight had significantly lower social media use than those who perceived themselves as standard weight. The three groups also showed significant differences in eating disorders, see Table 2.

Table 2. ANOVA for individuals with different self-perceptions of weight

Variables	1 Light=28	2 Standardized=129	3 Heavy=83	F	P	LSD
Social Media Use	4.348±3.071	4.572±2.619	3.488±2.255	4.613	0.011	2>1>3
Eating disorders	1.084±0.478	1.508±0.637	1.802±0.684	12.926	0.000	3>2>1

Differences in BMI Categories: Overweight individuals used social media significantly less than other groups. Underweight individuals had significantly fewer eating disorders than other groups, see Table 3.

Table 3. ANOVA for individuals in different BMI categories

Variables	1Lean=56	2Normal=157	3 overweight =27	F	P	LSD
Social Media Use	38.77±5.163	39.68±6.089	32.07±7.691	3.053	0.049	0>1>2
Eating disorders	1.412±0.54	1.754±0.655	2.062±0.748	4.121	0.017	3>2>1

3.3. Correlation Analysis of Variables

Overall Correlations: Eating disorders were significantly correlated with social media use, self-objectification, self-esteem, and perfectionism, see Table 4.

Table 4. Correlation analysis of variables

variables	M±SD	1	2	3	4	5	6
1 BMI	20.724±(3.153)	—					
2MediaUse	4.171±(2.595)	-.214**	—				
3Self-objectification	-3.57±(10.713)	-0.107	.140*	—			
4Self-esteem	31.34±(5.192)	-0.083	-0.022	-.145*	—		
5Perfectionism	61.35±(12.437)	-0.037	.247**	.228**	-.144*	—	
6EatingDisorder	1.56±(0.672)	.157*	.199**	.256**	-.394**	.379**	—

Note:*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5. Descriptive statistics and correlation analysis of variables

variables	M±SD	1	2	3	4	5	6
Non-normal perception group n=97							
1 BMI	20.217±(2.239)	—					
2MediaUse	4.095±(2.319)	-.218*	—				
3Self-objectification	-2.32±(11.5)	-0.133	0.081	—			
4Self-esteem	30.36±(6.152)	-.215*	-0.111	-.293**	—		
5Perfectionism	62.08±(12.073)	-0.018	0.182	.344**	-.260*	—	
6EatingDisorder	1.729±(0.695)	0.184	0.131	.345**	-.657**	.374**	—
Normal perception group n=143							
1 BMI	21.068±(3.612)	—					
2MediaUse	4.222±(2.774)	-.223**	—				
3Self-objectification	-4.43±(10.097)	-0.083	.186*	—			
4Self-esteem	32.01±(4.322)	-0.054	0.041	0.043	—		
5Perfectionism	60.86±(12.696)	-0.036	.285**	0.139	-0.032	—	
6EatingDisorder	1.446±(0.633)	.203*	.260**	0.155	-0.082	.381**	—

Note:*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Correlations under Perception Groups: In the non-normal perception group, BMI was negatively correlated with self-esteem, and variables were significantly correlated. In the normal perception group, BMI was correlated with eating disorders, see Table 5.

3.4. Regression analysis and mediation effect test

3.4.1. Direct Effects

Social media use, self-objectification, self-esteem, and perfectionism significantly affected eating disorders, see Table 6.

Table 6. Direct predictive effects

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance	Collinearity Statistics
	B	SE	Beta			VIF
(Constant)	1.246	0.313	—	3.984	0.000	—
1 Gender	-0.061	0.108	-0.037	-0.567	0.572	1.006
Job	0.120	0.143	0.055	0.840	0.402	0.990
Age	0.010	0.012	0.054	0.822	0.412	0.985
R=.083a	R ² =0.007		Adjusted R ² =-0.006		F=0.550	
(Constant)	0.546	0.495	—	1.104	0.271	—
2 Gender	-0.110	0.096	-0.066	-1.150	0.251	0.873
Job	0.129	0.119	0.059	1.082	0.280	0.980
Age	0.011	0.010	0.060	1.084	0.280	0.934
BMI	0.043	0.012	0.203	3.575	0.000	0.893
Media Use	0.030	0.015	0.117	1.961	0.051	0.814
Self-objectification	0.009	0.004	0.147	2.600	0.010	0.900
Self-esteem	-0.040	0.007	-0.312	-5.661	0.000	0.951
Perfectionism	0.015	0.003	0.286	4.959	0.000	0.866
R=.577b	R ² =0.333		Adjusted R ² =0.310		F=14.406**	

Note:*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

3.4.2. Mediation Effects

The chain mediation model for hypothesis 1 was first tested and the results (Tables 7 and 8) showed that media use was a significant predictor of eating disorders ($\beta = 0.059$, $p < 0.001$), media use had a significant negative effect on BMI ($\beta = -0.261$, $p < 0.001$), media use had a non-significant effect on self-esteem ($\beta = 0.177$, $p = 0.169$), the BMI had a significant effect on eating disorders ($\beta = 0.037$, $p < 0.01$) and self-esteem had a significant negative effect on eating disorders ($\beta = -0.049$, $p < 0.001$).

Table 7. Chain-mediated path regression analysis of BMI and self-esteem

Regression equation pathway	Fitting Indicator			Coefficient of significance	
	R	R-sq	F	β	t
Social media use → BMI	0.214	0.046	11.466	-0.261	-3.386***
Social media use → self-esteem	0.092	0.009	1.012	-0.083	-0.625
BMI → Self-esteem				-0.151	-1.382
Social media use → eating disorders	0.470	0.220	22.246	0.059	3.874***
BMI → eating disorders				0.037	2.957**
Self-esteem → eating disorders				-0.049	-6.493***

Note:*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The total and direct effects of social media on eating disorders were significant, and among the indirect effects, the indirect effect through BMI was significant, but the indirect effect through self-esteem was not significant. BMI and self-esteem did not constitute a chain mediation between media use and eating disorders, and could only constitute a simple mediation model of BMI as a mediator variable. The standardized coefficient of the direct effect of social media on eating disorders was 0.2281, and the standardized effect coefficient of BMI on eating disorders was 0.1747. Hypothesis 1 was partially tested.

Table 8. Breakdown of total, direct and mediating effects

	Effect value	Standard error	LLCI	ULCL	effect value
Total effect	0.052	0.017	0.019	0.084	
Direct effect	0.059	0.015	0.029	0.089	114.78%
Total indirect effect	-0.008	0.008	-0.024	0.007	-14.77%
Ind1	-0.010	0.005	-0.021	-0.002	
Ind2	0.004	0.006	-0.009	0.017	
Ind3	-0.002	0.002	-0.005	0.001	

Note: Ind1 Social media use → BMI → eating disorders; Ind2 Social media use → self-esteem → eating disorders; Ind3 Social media use → BMI → self-esteem → eating disorders

The chain mediation model of hypothesis 2 was tested and the results are shown in Tables 9 and 10, media use had a significant positive effect on perfectionism ($\beta=1.1832$, $p<0.001$), media use had a positive effect on self-objectification but it was not significant ($\beta=0.370$, $p=0.169$), perfectionism had a significant positive effect on self-objectification ($\beta=0.177$, $p<0.01$), perfectionism had a significant positive effect on eating disorders ($\beta=0.017$, $p<0.0001$), and self-objectification also had a significant positive effect on eating disorders ($\beta=0.011$, $p<0.01$).

Table 9. Chain mediated path regression analysis of perfectionism and self-objectification

Regression equation	Fitting Indicator		Coefficient of significance		
pathway	R	R-sq	F	β	t
Social media use → perfectionism	0.247	0.061	15.451	1.183	3.931**
Social media use → self-objectification	0.244	0.059	7.487	0.370	1.379
Perfectionism → self-objectification				0.177	3.163**
Social media use → eating disorders	0.427	0.182	17.555	0.025	1.590
Perfectionism → eating disorders				0.017	5.097**
Self-objectification → eating disorders				0.011	2.801**

*Note:*** $p<0.001$,** $p<0.01$, * $p<0.05$*

The Bootstrap method yielded confidence intervals that did not include 0, and the total and indirect effects were significant, suggesting a significant effect of social media indirectly influencing eating disorders through perfectionism and self-objectification. The standardized coefficient of the direct effect of media use on eating disorders was 0.1989, the standardized

coefficient of the effect of perfectionism on eating disorders was 0.3161, and the standardized coefficient of the effect of self-objectification on eating disorders was 0.1700. Hypothesis 2 was verified, and perfectionism and self-objectification acted as full chain mediators in media use and perfectionism.

Table 10. Breakdown of total, direct, and mediating effects

	Effect value	Standard error	LLCI	ULCL	effect value
Total effect	0.052	0.017	0.019	0.084	
Direct effect	0.025	0.016	-0.006	0.056	48.70%
Total indirect effect	0.026	0.007	0.014	0.041	51.30%
Ind1	0.020	0.006	0.009	0.033	39.22%
Ind2	0.004	0.003	-0.001	0.011	7.57%
Ind3	0.002	0.001	0.001	0.005	4.27%

Note: Ind1 Media use → perfectionism → eating disorder; Ind2 Media use → self-objectification → eating disorder; Ind3 Media use → perfectionism → self-objectification → eating disorder

In summary, a model of the effect of media use on eating disorders was constructed based on the results of the above hypothesis testing (Figure 2).

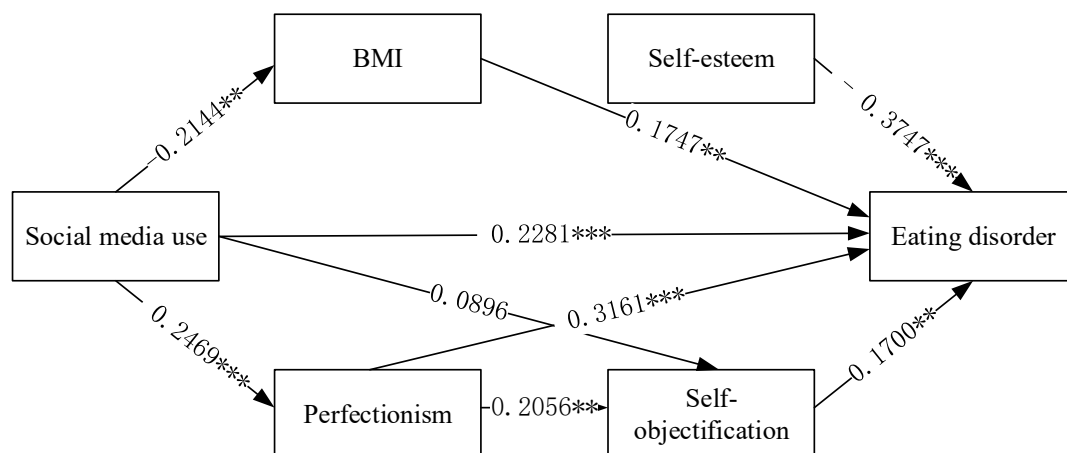


Figure 2. Modeling the effects of media use on eating disorders

3.5. Path analysis of eating disorders in different perceptual groupings

Based on the previous correlation analysis now taking the perceptual groupings into consideration, the present study conducted a stepwise regression analysis of five variables, namely, perfectionism, self-esteem, self-objectification, BMI, and media use, under the grouping condition, on the basis of which hypothesized paths for eating disorders were constructed. The results are detailed in the Table 11.

For the non-normal perception group, self-esteem and perfectionism were the most important factors influencing the formation of eating disorders, and although self-objectification did not directly predict eating disorders, it could have an indirect effect on eating disorders through self-esteem and perfectionism, i.e., self-esteem and perfectionism acted as a parallel and complete mediator between self-objectification and eating disorders; whereas, the level of eating disorders in the normal perception group was mainly influenced by media use, while BMI and perfectionism form a chain mediation between media use and eating disorders, and self-objectification can indirectly affect eating disorders through media use.

Based on the above data, the path diagrams of the influencing factors of normal perception and abnormal perception of eating disorders are as follows(Figure 3 and Figure 4).

Table 11. Regression analysis for different perceptual subgroups

Model	R	Adjusted R-square	B	Beta	t
Non-normal perception					
Self-esteem → eating disorders	0.690a	0.465	-0.068	-0.600	-7.759***
Perfectionism → eating disorders			0.013	0.218	2.822**
Self-objectification → perfectionism			0.361	0.344	3.569**
Self-objectification → self-esteem	0.293c	0.076	-0.157	-0.293	-2.987**
Normal perception					
BMI → eating disorders	0.486a	0.220	0.046	0.265	3.483***
Social media use → eating disorders			0.051	0.226	2.845**
Perfectionism → eating disorders			0.016	0.326	4.220***
Self-objectification → social media use	0.186b	0.028	0.051	0.186	2.253**
Social media use → perfectionism	0.285c	0.075	1.304	0.285	3.531***
Social media use → BMI	0.223d	0.043	-0.290	-0.223	-2.713**

Note:*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

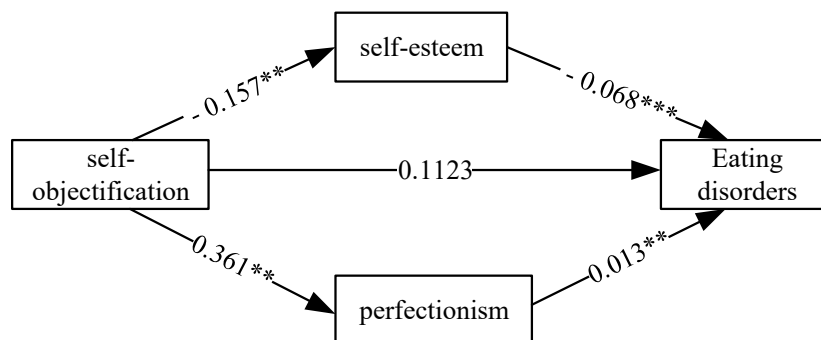


Figure 3. Path diagram of factors influencing non-normally perceived eating disorders

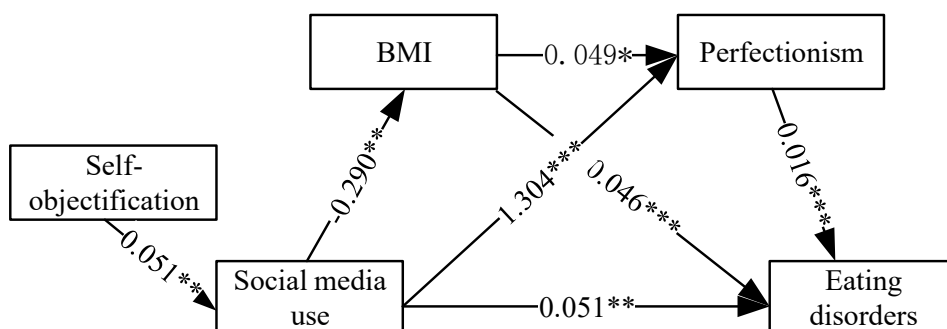


Figure 4. Path diagram of factors influencing normal perceived eating disorders

4. Discussion

Research has found that those who have incorrect perceptions of their weight have significantly lower levels of self-esteem and BMI than those individuals with normal perceptions. This

phenomenon is particularly common on social media, where people strive for a slim ideal body and closely associate their worth and self-esteem with their appearance and body shape [25]. Although factors such as perfectionism, self-esteem, and self-objectification, which are associated with eating disorders, did not exceed critical values overall, there were significant differences in self-esteem among individuals with different weight perceptions. In particular, those who perceived themselves as overweight had significantly lower levels of self-esteem than those individuals who perceived themselves as underweight or normal. Notably, the differences in self-esteem were not determined by the individuals' actual BMI levels, but rather by their weight perception. This suggests that an individual's weight perception, rather than their actual weight, is more closely related to their self-esteem status. Furthermore, it was shown that those individuals who perceived themselves as overweight had significantly higher rates of eating disorders than others and exceeded the threshold regardless of actual BMI, a finding that supports Prnjak, Jukic, Mitchison, Griffiths and Hay [26] systematic evaluation that overweight self-perceptions are associated with negative body image and lower self-worth. This association may be due to societal standards of thinness and beauty, leading those who perceive themselves as overweight to internalize stigma and negative self-evaluations. Finally, the study also found that people who perceived themselves to be overweight and individuals who were actually overweight in terms of BMI had the highest prevalence of eating disorders. This may explain the phenomenon that people engage in inappropriate weight loss behaviors because of their perceived obesity, which may ultimately lead to overeating and eating disorders[27, 28].

4.1. Relationship between social media use and eating disorders

For hypothesis one, although a chain mediation model could not be constructed, it was found that BMI partially mediated the relationship between media use and eating disorders, that physiological conditions may be an objective basis for individuals to develop eating disorders, and that media use had a negative effect on BMI, whereas BMI had a positive effect on eating disorders. This is consistent with the findings of Lonergan, Bussey, Fardouly, Griffiths, Murray, Hay, Mond, Trompeter and Mitchison [29] that adolescents with higher BMI may exhibit more avoidant behaviors on social media, and that such adolescents are also more likely to meet criteria for anorexia nervosa; Self-esteem plays a negative predictive role in eating disorders. Self-determination theory suggests that individuals have basic psychological needs for autonomy, competence, and belonging, and that individuals with high self-esteem who satisfy their basic psychological needs are able to self-accept. In addition the fear management theory of self-esteem suggests that self-esteem has the function of freeing individuals from fear, and that individuals with high self-esteem are less likely to have negative self-evaluations, are able to correctly recognize their own imperfections, and are less likely to develop eating disorders, which is also similar to the results of the study by Pelc, Winiarska, Polak-Szczybyło, Godula and Stępień [30], in which low self-esteem was a risk factor for eating disorders. It suggests that while BMI and self-esteem may not be directly linked chain mediators, they still play an important role in the relationship between media use and eating disorders. In future interventions, the independent effects of BMI and self-esteem should be considered and other possible mediators, such as body imagery and social comparison, should be explored, which may be important psychological factors influencing the development of eating disorders.

Hypothesis two was tested, with self-objectification and perfectionism acting as full chain mediators between social media use and eating disorders, a finding similar to a systematic evaluation by Carrotte and Anderson [31], where perfectionists tended to unconsciously compare upwards, i.e., to the "ideal body size/weight ", and that self-objectification to view one's own body through the lens of an observer increases the likelihood that perfectionists will make such upward comparisons and be more likely to develop eating disorders. This is also

true in the context of social media, whose use leads to body image problems, eating disorders, and poor mental health through the mediated pathways of social comparison, internalization of body ideals, and self-objectification [32]. Thus, the findings of the present study confirm the impact of social media use on an individual's psychological states and how these psychological states influence eating behaviors through chain-mediated effects. This finding has important implications for understanding the mechanisms underlying the development of eating disorders and provides potential targets for future interventions. By reducing unhealthy comparisons on social media and enhancing an individual's self-acceptance, it may help to reduce the risk of eating disorders.

4.2. Comparative analysis of pathways of influence for eating disorders in different perceptual groups

The pathway models of the effects of eating disorders differed considerably across perception groups, and the findings reveal the role that self-objectification, self-esteem, perfectionism, and social media use play in this process.

For non-normative perceiving individuals, self-esteem and perfectionism were found to be the most significant factors influencing the development of eating disorders. Although self-objectification itself does not directly predict eating disorders, it can have an indirect effect on eating disorders by influencing self-esteem and perfectionism. In other words, self-esteem and perfectionism acted as parallel and complete mediators between self-objectification and eating disorders, which is consistent with the findings of Bardone-Cone, Thompson and Miller [33] in their review of the role of self-related constructs in the development and course of eating disorders: self-objectification, self-esteem, and perfectionism, which may interact with one another, work together to develop and maintenance.

For normal perceiving individuals, the level of eating disorders is primarily directly influenced by social media use. The longer an individual uses image-based social media platforms, the more likely they are to develop an eating disorder. This may be because the more exposure to information related to food and body image in the media, the more likely normal-perceiving individuals are to develop a cognitive bias towards their own eating styles and may internalize social media idealization of body image and stigma of eating, which may trigger eating disorders[34]. The relationship between self-objectification and social media is also supported by the work of Rollero, Gattino, De Piccoli and Fedi [35] study, where mass media was the strongest predictor of self-objectification, which may lead to some bad consequences.

These findings guide researchers on the need to consider individual variability in self-perception and social media use in studying eating disorder formation. For normal-perceiving individuals, the focus should be on their social media use habits and how to reduce the internalization of unhealthy body imagery through media literacy education, while for non-normal-perceiving individuals, interventions should focus on boosting self-esteem and decreasing perfectionist tendencies.

4.3. Shortcomings and prospects

This study did not address the exploration of the impact of gender differences on eating disorders. However, gender is an important factor that cannot be ignored in the field of body imagery and eating behavior research. Although the results of the present study showed that the differences in eating disorder levels between genders did not reach statistical significance, there was a significant difference in the proportion of male and female participation in the subject recruitment process. The online sampling bias reflects to some extent that women are more concerned about their eating behavior and the influencing factors behind it compared to men. This suggests that the influence of gender differences on eating disorders cannot be ignored. In addition, although females still account for a higher percentage of eating disorder

prevalence, recent studies have found that the prevalence among males is also gradually increasing[36]. Therefore, future research could build on the present study by adding a male sample to delve deeper into how gender differences affect an individual's eating behavior and the psychological mechanisms behind it. By comparing the psychological and behavioral characteristics of different genders in the development of eating disorders, it can provide more comprehensive and in-depth insights into the study of eating disorders, and thus provide more precise strategies for the prevention and intervention of eating disorders.

5. Conclusion

Social media use and self-esteem have a direct predictive effect on eating disorders, and BMI plays a partial mediating role between social media use and eating disorders; perfectionism and self-objectification play a complete chain mediating role between social media and eating disorders. In addition, the formation of eating disorder tendencies is a dynamic process that needs to be differentiated between different perceptual groups, and understanding the pathways that influence eating disorders in different perceptual populations can help to better understand the mechanisms of eating disorder formation.

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