


Body Image Dissatisfaction, Depression and Anxiety in a Sample of College Students



Wuman Hong^{1,*}  and Nor Shafrin Ahmad¹ 

¹School Of Educational Studies, Universiti Sains Malaysia, USM Penang 11800, Malaysia

Abstract:

Background: Body dissatisfaction is a common and important issue, especially for college students. It can lead to a number of negative outcomes. However, existing researches still lack attention to cultural background differences, gender differences and grade differences in body image dissatisfaction and related depression and anxiety among college students.

Aim: This study aimed to examine cultural, gender, and grade level differences in body dissatisfaction with depression and anxiety in a population of college students in China.

Methods: This study was conducted with students from a college in southern China. Three hundred twenty-nine questionnaires were administered through a random sampling method, and 150 students (67 male and 83 female) with body image dissatisfaction were finally screened. Data were analyzed using Spearman's correlation coefficient, regression analysis, Mann-Whitney U test, and homogeneity of variance test.

Results: Findings showed that body satisfaction was negatively correlated with depression and anxiety, and predictive of depression and anxiety, with no gender differences among Chinese college students. However, regarding grade level differences, body image dissatisfaction showed a significant difference in freshman and senior years.

Conclusion: The relationship between body image dissatisfaction and depression and anxiety is universal in the Chinese cultural context. Future research and college mental health education are recommended to focus on gender and grade level differences in body image dissatisfaction.

Keywords: Body image dissatisfaction, Depression, Anxiety, Gender, Grade, Education.

© 2024 The Author(s). Published by Bentham Open.

This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International Public License (CC-BY 4.0), a copy of which is available at: <https://creativecommons.org/licenses/by/4.0/legalcode>. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

*Address correspondence to this author at the School Of Educational Studies, Universiti Sains Malaysia, 11800 USM Penang, Malaysia; E-mail: hongwuman@student.usm.my

Cite as: Hong W, Ahmad N. Body Image Dissatisfaction, Depression and Anxiety in a Sample of College Students. Open Psychol J, 2024; 17: e18743501303541. <http://dx.doi.org/10.2174/0118743501303541240521104133>



Received: February 15, 2024

Revised: May 9, 2024

Accepted: May 15, 2024

Published: June 06, 2024



Send Orders for Reprints to reprints@benthamscience.net

1. INTRODUCTION

Body image dissatisfaction refers to the negative perception and attitude individuals have towards their own bodies [1], including their size, shape, and appearance. It is an important issue [2] that affects individuals across various age groups and both genders [1]. Meanwhile, it has been a public health issue [3] that has been found to have a negative impact on mental health [2]. For example, it can lead to excessive dieting, eating

disorders, and other health risk behaviors [4].

At present, most of the research on body image dissatisfaction has been focused on females, and a small number of studies on males and gender differences [5]. It may be due to the fact that most of the factors affecting body image dissatisfaction point to females. For instance, the socio-culturally constructed standard of "thin ideal" for females has become a global issue [6], forcing many of

them to strive for thinness [7]. In addition, social metaphors or symbols often infiltrate people's lives through the media, and scholars found a positive correlation between length of exposure to media and body image dissatisfaction among women of multiple races [8]. But it does not mean that there is no need to focus on male body image dissatisfaction. In fact, research on male body image has been largely ignored [5]. Gender is one of the themes in body image research [9]. It has been proven that male body image dissatisfaction is also on the rise [10]. In addition, although the concept of body dissatisfaction originated in the West, the phenomenon is no longer limited to Western countries [11]. Therefore, scholars calling attention to male body image dissatisfaction, Primus argued that it is not a women-only issue [12]. Barnes *et al.* believed that prospective research should focus on the types of male body image dissatisfaction [4].

Although body image dissatisfaction exists in all age groups, it is particularly prevalent among youth. Body image dissatisfaction is most pronounced during adolescence through early adulthood, increases with age [13], and is most prevalent in the college population [14]. Tripartite Influence Model in sociocultural theory is commonly used to explain the causes of body image dissatisfaction [1], but the college student population has their special characteristics. Purton *et al.* suggested that intrinsic weight bias plays a more pronounced role in college students' body image dissatisfaction [15]. Media exposure increases body shame and body surveillance behaviors among college students in both genders [16].

Within the college student population, the same phenomenon exists where there is more concern about female body image dissatisfaction than male. Green and Pritchard believed body image dissatisfaction is usually considered a female-related issue [17], and although the average body satisfaction of boys is lower than that of girls, boys are also dissatisfied with their bodies, mainly in terms of their pursuit of muscle mass. Thus, it is necessary to examine body image dissatisfaction among college males.

Most of the current research on college students has explored based on the whole group, but it is also worth exploring whether body image dissatisfaction varies among students of different grades. For freshmen, Howard *et al.* believed that girls' stress due to transitional adjustment could lead to increased body image dissatisfaction [18]. For seniors, Zabinski *et al.* believed that intervening in body image dissatisfaction would help college seniors make the transition to working adults [19]. There has been little discussion about the intermediate grades, perhaps due to the fact that they do not have to deal with life-shocking events such as environmental adaptation or employment. Still, body image dissatisfaction is just as prevalent and noteworthy in this group.

Body image dissatisfaction and mental health are closely linked [3]. Regarding the negative outcomes of body image dissatisfaction, studies often focus on

depression and anxiety in individuals. These negative effects have been shown to be present in the college population as well [20]. Depression and anxiety are common mental health problems among college students and have a significant impact on their academic performance, personal growth, and career development [21]. However, research on the relationship between the two has focused mainly on Western countries [4, 22], with little attention to other regions, such as Southeast Asia [23], Arabian region [24], and so on. It is evident that there is a lack of research on the relationship between body image dissatisfaction and depression and anxiety in the Chinese cultural context, and in order to understand whether these relationships are generalizable, the present study was proposed to be conducted in the Chinese context.

1.1. Aims of the Study

Based on the above, research on body image dissatisfaction has lacked attention to the male population, grade level differences and cultural differences among college student populations. Its relationship with depression and anxiety was also not yet clarified in the Chinese college population. Thus, the aim of this study was to examine the relationship between body image dissatisfaction with depression and anxiety. It also explores gender differences in body image dissatisfaction as well as depression and anxiety among college students in the context of Chinese culture. In addition, most of the research on body image in college students has examined entire groups of students [16, 25, 26]. Thus, this study also discussed participants categorized by grade level, with the purpose of exploring whether there were grade-level differences in college students' body image dissatisfaction, depression and anxiety, furthermore providing targeted data for other intervention studies on reducing college students' body image dissatisfaction.

1.2. Body Image Dissatisfaction and Depression and Anxiety

According to the APA dictionary of Psychology [27], depression refers to two meanings, one being an emotional state that manifests itself as unhappiness or even extreme sadness and frustration, which interferes with normal daily life, and the other being a depressive disorder. In this study, depression refers to depressive disorder. Anxiety refers to the emotional state of worry and nervousness and additionally to anxiety disorders [27].

Depression and anxiety are usually discussed together in studies of the relationship with body image dissatisfaction. Scholars have supported the idea that body image satisfaction and depression and anxiety are negatively correlated [28-30]. Based on the above, the sociocultural definition of the "thin ideal" as an aesthetic standard for females, Sides-Moore and Tochkov's study found that when females saw pictures of slim, beautiful women, their satisfaction with their own body image became lower, and was associated with depression [31]. Body image dissatisfaction is considered to be a detrimental factor leading to depression, which can easily

arise when the ideal state of appearance is not achieved by altering or modifying one's appearance, and body image dissatisfaction and depression also lead to the probability of other mental health issues [32]. Body image dissatisfaction is also a predictor of anxiety [33]. Depression, anxiety, and perception of body image are correlated and support the idea that depression and anxiety accompany each other [34].

In order to test whether the relationship between body image dissatisfaction, depression and anxiety is generalizable in the Chinese cultural context, the present study hypothesized (H1) that body image satisfaction and depression, body image satisfaction and anxiety are negatively and linearly correlated.

1.3. Gender Differences in Body Image Dissatisfaction

In its manifestations, gender differences in body image dissatisfaction are largely due to differences in socio-cultural standards that demand slimness for females [6] and body shaping based on muscle building for males [35]. For college students, societal culture is influenced primarily through peers and the media [36]. Media spin can cause girls to constantly strive for slimness [37], even though most of them are not obese. This also leads them to pay more attention to external information related to being "fat" or "thin" [38]. As girls become more dissatisfied with their bodies, they increase their weight control behaviors, such as dieting [11]. Females invest more time in the pursuit of the perfect body image than males [5]. Compared to girls, boys' weight control behaviors are manifested in a focus on body shape and muscle mass.

On the outcome variable, body satisfaction is negatively correlated with depression and anxiety [39, 40]; it is reflected to varying degrees in both genders. Females have higher levels of body dissatisfaction than males, and this difference is also reflected in the depression triggered by body image dissatisfaction [41]. Barnes *et al.* [4] found that body image dissatisfaction in males was positively associated with depression and anxiety and pointed to muscularity and thinness, and called for future research to focus on the relationship between body image dissatisfaction and depression and anxiety in males.

Since current researches focus more on females, in order to test whether there is a gender difference in body image dissatisfaction, this study hypothesized (H2) that there are gender differences in body image dissatisfaction, depression and anxiety and that females have a higher level of dissatisfaction than males.

1.4. Grade Differences in Body Image Dissatisfaction

Research on differences in body image dissatisfaction among students in different grades of college is limited. For example, Gao *et al.* [42] found a more significant relationship between body image dissatisfaction and anxiety in freshman girls. Cruz-Bojórquez *et al.* found that body image dissatisfaction affects the career choices of freshmen nutrition majors [43]. Zabinski *et al.* examined

the impact of physical activity on seniors' adjustment to the workplace after graduation [19]. These studies illustrate that there are grade-level differences in body image dissatisfaction, and it is worth exploring whether there are also grade-level differences in the effects of body image dissatisfaction on depression and anxiety. In addition, current research is predominantly focusing on freshmen and seniors, and it is worth exploring the status of intermediate grades.

For the purpose of detecting grade-level differences in body image dissatisfaction, this study hypothesized (H3) that there are grade level differences in body image dissatisfaction, depression and anxiety and that freshmen and seniors have higher levels than intermediate grades.

2. METHODS

2.1. Participants

The participants were from a college in Southern China. The scales were distributed to students through random sampling, and 329 scales were eventually collected, with 318 valid scales and a valid collection rate of 96.657%. Participants were aged 18-24. Among all valid questionnaires, 117 are males (36.792%) and 201 are females (63.208%). Regarding grades, 70 were freshmen (22.013%), 76 were in second year (23.899%), 122 were in third year (38.365%), and 50 were in fourth year (15.723%).

In the division of extreme groups, 27% of the high and low score ends were taken as the high and low groups [44], and this approach was also used in Chen's [45] study on body image of college students, *i.e.*, those with a mean score of less than 3 were defined as having body image dissatisfaction or very dissatisfied. According to this approach, students with body image dissatisfaction were screened from the validated questionnaires (Table 1). Out of 318 scales, 150 participants with varying degrees of body image dissatisfaction were screened. Although the fourth-grade students screened 2 more males than females for the presence of body image dissatisfaction, overall, 67 males and 83 females had body image dissatisfaction, representing 44.667% and 55.333% of the participants. Overall body image dissatisfaction rate of 47.170%.

Table 1. Subject information.

	Item	N	Percent
Gender	Male	67	44.667%
	Female	83	55.333%
Grade	Grade 1	44	29.333%
	Grade 2	33	22.000%
	Grade 3	41	27.333%
	Grade 4	32	21.333%

2.2. Measurements Body image dissatisfaction

The Multidimensional Body-Self Relations Questionnaire (MBSRQ) is a self-report questionnaire with 69 items designed to assess body image attitude [46]. It contains seven factor subscales and three additional subscales, namely, Appearance Evaluation, Appearance Orientation,

Fitness Evaluation, Fitness Orientation, Health Evaluation, Health Orientation, Illness Orientation, Body Areas Satisfaction Scale, Overweight Preoccupation and Self-classified Weight. Three of the subscales related to the appearance factor (*i.e.*, Appearance Evaluation, Appearance Orientation and Body Areas Satisfaction Scale) measure an individual's body image satisfaction [46]. The Chinese version of the Multidimensional Body-Self Relations Questionnaire (MBSRQ) developed by Wang and Wang [47] was selected for this study and only the three subscales related to the assessment of body satisfaction were used. Wang and Wang [47] reported that the translated questionnaire was normally distributed and internally consistent with a Cronbach's alpha of .72, supporting the validity of the questionnaire. The Cronbach's alpha of the three subscales used in this study are .72 (Appearance Evaluation), .84 (Appearance Orientation) and .75 (Body Areas Satisfaction Scale). The subscales are scored on a five-point Likert scale from 1 (strongly disagree or strongly dissatisfied) to 5 (strongly agree or strongly satisfied), after reverse scoring, where necessary, and calculate the total score.

2.2.1. Depression

The Self-Rating Depression Scale (SDS) is a 20-item scale designed to measure levels of depression [48]. The Chinese version developed by Wang and Chi [49] was used in this study. Scored on a four-point scale ranging from 1 (a little of the time) to 4 (most of the time). Wang and Chi [49] measured participants using both the Hamilton Depression Scale (HAMD) and the Self-Rating Depression Scale (SDS), which reported a Spearman's ρ of .783 and is suitable for adults.

2.2.1. Anxiety

The Self-Rating Anxiety Scale (SAS) is a 20-item scale designed to measure levels of anxiety [50]. The Chinese version developed by Wang and Chi [51] was used in this study and scored on a four-point scale ranging from 1 (a little of the time) to 4 (most of the time). Wang and Chi [52] measured participants using both the Hamilton Anxiety Scale (HAMA) and the Self-Rating Anxiety Scale (SDS), which reported a Spearman's ρ of .768 and is suitable for adults.

2.3. Procedure

This study first received permission from the college administration and a participant recruitment notice was issued through their Mental Health Education and Counseling Center. Students were informed of the purpose of this study and volunteered to participate in completing the questionnaire. Using WenJuanXing (a Chinese online survey software) as a data collection tool, participants completed and submitted the scale online by scanning a QR code.

3. RESULTS

3.1. Subject Information

Table 2 reports the descriptive statistics of the

variables in this study. Since the data on body image dissatisfaction, depression and anxiety did not fit a normal distribution, the Spearman coefficient was chosen for analysis. The results (Table 3) showed $\rho = -.560$, $p < .001 < .01$ between body image satisfaction and depression; and $\rho = -.658$, $p < .001 < .01$ between body image satisfaction and anxiety, illustrating a negative correlation between body image satisfaction and depression, and a negative correlation between body image satisfaction and anxiety. To explore whether body image dissatisfaction was predictive of depression and anxiety (Table 4 and 5), it was found through regression analysis that body image dissatisfaction predicted 10.400% of depression ($\beta = -.322$, $t = -4.139$, $p < .001$) and predicted 16.600% of anxiety ($\beta = -.407$, $t = -5.424$, $p < .001$).

Table 2. Descriptive statistics of the variables.

Variable	N	Mean	Std. Deviation	Variance
MBSRQ	150	2.436	.480	.230
SDS	150	57.087	10.117	102.362
SAS	150	50.060	11.342	128.647
Valid N (listwise)	150	-	-	-

Table 3. Correlations between body image dissatisfaction and depression and anxiety.

		MBSRQ	SDS	SAS
Spearman's rho	MBSRQ	1.000	-.560**	-.658**
			<.001	<.001
		150	150	150

Table 4. Regression analysis of body satisfaction on depression.

Constant	β	R ²	t	p	F
MBSRQ	-.322	.104	-4.139	<.001	17.132

Furthermore, the number of "very dissatisfied" and "mostly dissatisfied" for each item on Body Areas Satisfaction Scale (subscales of the MBSRQ) were: Face (facial features, complexion) 132, Hair (color, thickness, texture) 151, Lower torso (buttocks, hips, thighs, legs) 192, Mid torso (waist, stomach) 162, Upper torso (chest or breasts, shoulders, arms) 168, Muscle tone 166, Weight 179, Height 190, Overall appearance 120.

Table 5. Regression analysis of body satisfaction on anxiety.

Constant	β	R ²	t	p	F
MBSRQ	-.407	.166	-5.424	<.001	29.418

3.2. Body Image Dissatisfaction and Depression and Anxiety between Genders

According to descriptive statistics (Table 6), body image dissatisfaction, depression, and anxiety differed in

mean and standard deviation according to gender grouping. The Mann-Whitney U test revealed that the p values of body image dissatisfaction and depression and anxiety were greater than .050 in both gender groups (Table 7), so there was no significant difference.

Table 6. Group statistics.

	Gender	N	Mean	Std. Deviation	Std. Error Mean
MBSRQ	Male	67	2.457	.458	.056
	Female	83	2.419	.499	.055
SDS	male	67	55.224	10.675	1.304
	female	83	58.590	9.442	1.036
SAS	male	67	48.851	11.381	1.390
	female	83	51.036	11.285	1.239

3.3. Body Image Dissatisfaction in Different Grades

Based on descriptive statistics (Table 8), there were differences in body image dissatisfaction across the four grades. The levels of dissatisfaction, in descending order, are Grade 4 (M=2.153), Grade 1 (M=2.252), Grade 3 (M=2.666) and Grade 2 (M=2.670). In order to test whether their differences were significant or not, a

homogeneity of variance test was used. The results (Table 9) showed significant differences between Grade 1 and Grade 2, Grade 1 and Grade 3, Grade 4 and Grade 2, Grade 4 and Grade 3. However, there was no significant difference in depression and anxiety levels.

Table 7. Hypothesis test summary.

S.No.	Null Hypothesis	Test	Sig. ^{ab}	Decision
1	The distribution of MBSRQ is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.738	Retain the null hypothesis.
2	The distribution of SDS is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.059	Retain the null hypothesis.
3	The distribution of SAS is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.266	Retain the null hypothesis.

Note: a. The significance level is .050.
b. Asymptotic significance is displayed.

Table 8. Intergender group statistics.

Grade	MBSRQ	SDS	SAS
Grade 1	Mean	2.252	58.477
	N	44	44
	Std. Deviation	.6143	10.566
Grade 2	Mean	2.670	58.788
	N	33	33
	Std. Deviation	.263	10.148
Grade 3	Mean	2.666	55.146
	N	41	41
	Std. Deviation	.264	8.668
Grade 4	Mean	2.153	55.906
	N	32	32
	Std. Deviation	.404	11.029
Total	Mean	2.436	57.087
	N	150	150
	Std. Deviation	.480	10.117

Table 9. Multiple comparisons.

Dependent Variable	(I)Grade	(J)Grade	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
						Lower Bound	Upper Bound	
MBSRQ	Bonferroni	Grade1	Grade2	-.418*	.098	.001	-.679	-.157
			Grade3	-.415*	.092	.001	-.661	-.168
			Grade4	.098	.099	1.000	-.165	.362
	Grade2	Grade3	.004	.099	1.000	-.262	.269	
		Grade4	.516*	.105	.001	.235	.798	
		Grade3	Grade4	.513*	.100	.001	.245	.780
SDS	Bonferroni	Grade1	Grade2	-.311	2.324	1.000	-6.527	5.906
			Grade3	3.331	2.191	.783	-2.529	9.191
			Grade4	2.571	2.345	1.000	-3.701	8.843
	Grade2	Grade3	3.642	2.360	.750	-2.672	9.955	
		Grade4	2.882	2.504	1.000	-3.816	9.579	
		Grade3	Grade4	-.760	2.381	1.000	-7.128	5.608

(Table ;) contd....

Dependent Variable	(I)Grade	(J)Grade	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
						Lower Bound	Upper Bound	
SAS	Bonferroni	Grade1	Grade2	3.932	2.601	.797	-3.026	10.890
			Grade3	4.659	2.452	.356	-1.900	11.218
			Grade4	2.159	2.625	1.000	-4.861	9.179
	Grade2	Grade3	.727	2.642	1.000	-6.339	7.794	
		Grade4	-1.773	2.803	1.000	-9.269	5.724	
		Grade3	Grade4	-2.500	2.665	1.000	-9.627	4.627

Note:* The mean difference is significant at the 0.05 level.

4. DISCUSSION

The present study was designed to determine body image dissatisfaction, depression and anxiety among youth in a Chinese cultural context. The current status and interrelationships of body image dissatisfaction, depression, and anxiety were examined in students at a college in southern China, and the current status of these variables in different groups was explored based on gender and grade level. It was also to verify whether the current research findings on body image dissatisfaction and, depression and anxiety are generalizable in the Chinese cultural context.

First, the overall body image dissatisfaction was investigated; the rate of body image dissatisfaction was 47.170%, and there was a negative correlation between body image satisfaction and depression and body image dissatisfaction and anxiety. This result is consistent with previous findings [28-30]. This may be due to the fact that the more exposure to Western culture, the lower the level of body image satisfaction [52], furthermore, the development of the media provides an effective means of disseminating culture. In addition, Chen and Jackson confirmed the similarity of cognitive biases triggered by body image dissatisfaction across cultures by taking American and Chinese college students as study subjects [53]. Body image dissatisfaction was predictive of depression and anxiety, and this finding was congruent with previous studies [32-34]. However, body image dissatisfaction only partially predicted depression and anxiety, which may be due to the larger number of factors contributing to depression and anxiety. For example, Bhujade believed that depression and anxiety in college students were related to academic stress [54], and Gao *et al.* believed that anxiety in college students was related to personality [42]. In sum, hypothesis 1 (H1) can be established.

Second, body image dissatisfaction was detected separately in both genders. Although body image dissatisfaction, depression and anxiety showed numerical inconsistencies between the genders, differences in the analysis of variance showed no significant differences between the genders in these variables. This result is inconsistent with existing studies and hypothesis 2 (H2) is rebutted. Existing research has demonstrated gender differences in the manifestation of body image dissatisfaction [6, 35, 11], but there are still differing findings regarding gender differences in levels of negative mental health outcomes that may need to be considered in

conjunction with other correlates [55]. In addition, the insufficient sample size of this study, in which only students from one college were selected as subjects, may also have contributed to the absence of significant differences in body image dissatisfaction between the genders.

Third, differences in the "grade" dimension of body image dissatisfaction, depression and anxiety were examined. The results revealed that body image dissatisfaction was most significant in grades 1 and 4, and that dissatisfaction was higher in grade 4 than in grade 1. Overall, the levels of body image dissatisfaction in the middle two grades were close to each other, and the four grades showed a U-shaped structure of body image dissatisfaction. In addition, there were no significant differences in depression and anxiety across the four grades. Therefore, hypothesis 3 (H3) partially hold and it can be argued that there are grade-level differences in body image dissatisfaction. Due to the limited research on grade-level differences in body image dissatisfaction among college students, this study cannot be compared extensively with the results of other studies. However, the current study shows that scholars have focused on freshmen and grade 4 groups [19, 43], which may briefly indicate that body image dissatisfaction is more pronounced in these two grades.

Furthermore, the results of the Body Areas Satisfaction Scale' survey on specific body part dissatisfaction, the level of dissatisfaction in descending order: lower torso (buttocks, hips, thighs, legs), height, weight, upper torso (chest or breasts, shoulders, arms, muscle tone, mid torso (waist, stomach), hair (color, thickness, texture), face (facial features, complexion), overall appearance. These results help to understand the specific manifestations of body image dissatisfaction among Chinese college students and inform the content focus of the intervention design.

The present study is an extension of existing theories in terms of their regional applicability, as well as a supplement to existing research findings. For example, the generalizability of the relationship between body image dissatisfaction and depression and anxiety in the Chinese cultural context was verified; specific data support was provided for grade-level differences in body image dissatisfaction.

There are also studies by Chinese scholars on body image dissatisfaction among college students. Wang *et al.* demonstrated that body image dissatisfaction was

positively correlated with negative emotions and negatively correlated with self-esteem level and subjective well-being [56]. Wang *et al.* demonstrated a positive correlation between body image dissatisfaction and mental health by using depression level as a measure of mental health [57]. These studies have been conducted with the whole group of college students. It can be seen that although studies of college students' body image dissatisfaction in the context of Chinese culture do exist, the types of negative outcomes focused on are few, and discussions from the grade level dimension are lacking, and this study is a supplement to the above-mentioned shortcomings.

It is worth noting that future research on gender differences in body image dissatisfaction could be combined with other factors [54], such as other negative consequences triggered by body image dissatisfaction. In terms of grade level differences, future research could focus on two groups, freshmen and seniors, due to the adaptive stress created by freshman year in facing a new environment would have an impact on body image [18] and seniors need to face pressures arising from employment issues. On this basis, the inspiration for future research is also reflected in whether there are professional differences in body image dissatisfaction within the college student population.

CONCLUSION

The prevalence of body image dissatisfaction has begun to attract the attention of Chinese scholars and has been verified to be positively correlated with many negative emotions [58]. At the same time, the prominence of body image dissatisfaction in the college population suggests that this issue cannot be ignored. In college mental health education, it is recommended that body appreciation, cognitive construction, and emotional regulation be included to help students reduce body image dissatisfaction as well as weaken its negative effects. Additionally, the grade level difference is also a worthy concern and can be especially considered to be guided in conjunction with important life events for the students. The absence of grade-level significant differences in depression and anxiety suggests that perhaps their levels are just on the high side, and is an issue that needs to be brought to the attention of school administrators.

LIMITATIONS

Although this study provides informative findings into the relationship between body image dissatisfaction and mental health outcomes among college students, it is important to recognize its limitations. The limitations include: (1) Sampling Bias: This study was conducted with students from one college, which may limit the generalizability of the findings to all Chinese college students. (2) Cross-Sectional Nature: This study only focused on the relationship between body image dissatisfaction and depression and anxiety at specific time points, a longitudinal study would be beneficial in establishing an understanding of causality or long-term effects. (3) Self-Report Measures: The use of self-report

measures may introduce bias and subjectivity. For example, recall bias may affect the accuracy of participants' responses to their body image dissatisfaction and mental health symptoms.

CONCLUSION

This study explored the level of body image dissatisfaction and its relationship with depression and anxiety among college students, categorized and discussed according to gender and grade level, using a sample of students from a college in southern China. This study was based on the Chinese cultural context, and validates once again that body image satisfaction is negatively associated with depression and anxiety among college students and varies across grades. It both complements existing research and informs future research directions.

AUTHORS' CONTRIBUTIONS

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to its submission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study complied with ethical protocols obtained from Chaozhou Teachers College Hanshan Normal University regarding the survey of their students.

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Prior to their participation, informed consent was obtained from all participants, ensuring their voluntary and informed agreement to take part in the study.

AVAILABILITY OF DATA AND MATERIALS

All data were obtained from students at Chaozhou Teachers College Hanshan Normal University.

STANDARDS OF REPORTING

STROBE and SAGER guidelines were followed.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest financial or otherwise.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the participants for their support of this study.

REFERENCES

- [1] Grogan S. *Body image: Understanding body dissatisfaction in men, women and children*. Routledge 2021. <http://dx.doi.org/10.4324/9781003100041>
- [2] Grogan S. *Book Review: Body image: Understanding body dissatisfaction in men, women, and children*. (3rd Ed.), London: Routledge 2021. <http://dx.doi.org/10.1177/0959353521999496>
- [3] Bucchianeri MM, Neumark-Sztainer D. Body dissatisfaction: An overlooked public health concern. *J Public Ment Health* 2014; 13(2): 64-9. <http://dx.doi.org/10.1108/JPMH-11-2013-0071>
- [4] Barnes M, Abhyankar P, Dimova E, Best C. Associations between body dissatisfaction and self-reported anxiety and depression in otherwise healthy men: A systematic review and meta-analysis. *PLoS One* 2020; 15(2): e0229268. <http://dx.doi.org/10.1371/journal.pone.0229268> PMID: 32097427
- [5] Quittkat HL, Hartmann AS, Düsing R, Buhlmann U, Vocks S. Body dissatisfaction, importance of appearance, and body appreciation in men and women over the lifespan. *Front Psychiatry* 2019; 10: 864. <http://dx.doi.org/10.3389/fpsy.2019.00864> PMID: 31920737
- [6] Swami V. Cultural influences on body size ideals. *Eur Psychol* 2015; 20(1): 44-51. [https://doi.org/10.1027/1016-9040/a000150]. <http://dx.doi.org/10.1027/1016-9040/a000150>
- [7] Rajagopalan J, Shejwal B. Influence of sociocultural pressures on body image dissatisfaction. *Psychol Stud* 2014; 59(4): 357-64. <http://dx.doi.org/10.1007/s12646-014-0245-y>
- [8] Schooler D. Real women have curves: A longitudinal investigation of TV and the body image development of Latina adolescents. *J Adolesc Res* 2008; 23(2): 132-53. [https://doi.org/10.1177/0743558407310712]. <http://dx.doi.org/10.1177/0743558407310712>
- [9] Grogan S. *Body image and health: Contemporary perspectives*. *J Health Psychol* 2006; 11(4): 523-30. <http://dx.doi.org/10.1177/1359105306065013> PMID: 16769732
- [10] Liu S, Ma J, Fan Z, Yu C, Wang K, Littleton HL. Dysmorphic appearance concern among Chinese adolescents and emerging adults. *J Obsessive Compuls Relat Disord* 2023; 36: 100778. [https://doi.org/10.1016/j.jocrd.2022.100778]. <http://dx.doi.org/10.1016/j.jocrd.2022.100778>
- [11] Ganesan S, Ravishankar SL, Ramalingam S. Are body image issues affecting our adolescents? A cross-sectional study among college going adolescent girls. *Indian J Community Med* 2018; 43 (Suppl. 1): S42. http://dx.doi.org/10.4103/2Fijcm.IJCM_62_18
- [12] Primus M. *Body dissatisfaction and males: A conceptual model*. *Scholarly Horizons: University of Minnesota. Morris Undergraduate Journal* 2014; 1(1): 6. <http://dx.doi.org/10.61366/2576-2176.1005>
- [13] Wang SB, Haynos AF, Wall MM, Chen C, Eisenberg ME, Neumark-Sztainer D. Fifteen-year prevalence, trajectories, and predictors of body dissatisfaction from adolescence to middle adulthood. *Clin Psychol Sci* 2019; 7(6): 1403-15. <http://dx.doi.org/10.1177/2167702619859331> PMID: 32864198
- [14] Ge D. Factors influencing the formation of negative body image among college students. *Psychol Monogr* 2019; (19): 15-7.
- [15] Purton T, Mond J, Cicero D, *et al*. Body dissatisfaction, internalized weight bias and quality of life in young men and women. *Qual Life Res* 2019; 28(7): 1825-33. <http://dx.doi.org/10.1007/s11136-019-02140-w> PMID: 30783875
- [16] Ellis S, Pritchard M, Kozmiuk E. *Body Dissatisfaction in College Students* 2023. Available from: http://works.bepress.com/mary_pritchard/85/
- [17] Green SP, Pritchard ME. Predictors of body image dissatisfaction in adult men and women. *Soc Behav Personal* 2003; 31(3): 215-22. [https://doi.org/10.2224/sbp.2003.31.3.215]. <http://dx.doi.org/10.2224/sbp.2003.31.3.215>
- [18] Howard LM, Romano KA, Heron KE. Prospective changes in disordered eating and body dissatisfaction across women's first year of college: The relative contributions of sociocultural and college adjustment risk factors. *Eat Behav* 2020; 36: 101357. <http://dx.doi.org/10.1016/j.eatbeh.2019.101357> PMID: 31785454
- [19] Zabinski MF, Calfas KJ, Gehrman CA, Wilfley DE, Sallis JF. Effects of a physical activity intervention on body image in university seniors: Project GRAD. *Ann Behav Med* 2001; 23(4): 247-52. http://dx.doi.org/10.1207/S15324796ABM2304_3 PMID: 11761341
- [20] Abdel Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alex J Med* 2017; 53(1): 77-84. [https://doi.org/10.1016/j.ajme.2016.01.005]. <http://dx.doi.org/10.1016/j.ajme.2016.01.005>
- [21] Beiter R, Nash R, McCrady M, *et al*. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *J Affect Disord* 2015; 173: 90-6. <http://dx.doi.org/10.1016/j.jad.2014.10.054> PMID: 25462401
- [22] Jill Thompson A, Poyrazli S, Miller E. Western media and body image dissatisfaction in young women in developing nations. *Eurasian J Educ Res* 2020; 20(90): 1-22. <http://dx.doi.org/10.14689/ejer.2020.90.3>
- [23] Swami V, Frederick DA, Aavik T, *et al*. The attractive female body weight and female body dissatisfaction in 26 countries across 10 world regions: results of the international body project I. *Pers Soc Psychol Bull* 2010; 36(3): 309-25. <http://dx.doi.org/10.1177/0146167209359702> PMID: 20179313
- [24] Hakim RF, Alrahmani DA, Ahmed DM, Alharthi NA, Fida AR, Al-Raddadi RM. Association of body dysmorphic disorder with anxiety, depression, and stress among university students. *J Taibah Univ Med Sci* 2021; 16(5): 689-94. <http://dx.doi.org/10.1016/j.jtumed.2021.05.008> PMID: 34690648
- [25] Aparicio-Martinez P, Perea-Moreno AJ, Martinez-Jimenez MP, Redel-Macias MD, Pagliari C, Vaquero-Abellan M. Social media, thin-ideal, body dissatisfaction and disordered eating attitudes: An exploratory analysis. *Int J Environ Res Public Health* 2019; 16(21): 4177. <http://dx.doi.org/10.3390/ijerph16214177> PMID: 31671857
- [26] Sampath H, Soohinda G, Mishra D, Dutta S. Body dissatisfaction and its relation to Big Five personality factors and self-esteem in young adult college women in India. *Indian J Psychiatry* 2019; 61(4): 400-4. http://dx.doi.org/10.4103/psychiatry.IndianJPsychiatry_367_18 PMID: 31391645
- [27] VandenBos GR. *APA dictionary of psychology*. American Psychological Association 2007.
- [28] Marsella AJ, Shizuru L, Brennan J, Kameoka V. Depression and body image satisfaction. *J Cross Cult Psychol* 1981; 12(3): 360-71. <http://dx.doi.org/10.1177/0022022181123007>
- [29] Paans NPG, Bot M, Brouwer IA, Visser M, Penninx BWJH. Contributions of depression and body mass index to body image. *J Psychiatr Res* 2018; 103: 18-25. <http://dx.doi.org/10.1016/j.jpsychires.2018.05.003> PMID: 29758472
- [30] Azhaar M, Anwaar M, Dawood M, Ali M, Shoaib S. Relationship between body dissatisfaction. Depression and anxiety among young adults. *Int J Soc Sci* 2020; IX(2): 21-39. <http://dx.doi.org/10.20472/SS2020.9.2.002>
- [31] Sides-Moore L, Tochkov K. The thinner the better? Competitiveness, depression and body image among college student women. *Coll Stud J* 2011; 45(2): 439-49.
- [32] Sharpe H, Patalay P, Choo TH, *et al*. Bidirectional associations between body dissatisfaction and depressive symptoms from adolescence through early adulthood. *Dev Psychopathol* 2018; 30(4): 1447-58. <http://dx.doi.org/10.1017/S0954579417001663> PMID: 29144209
- [33] Duchesne AP, Dion J, Lalonde D, *et al*. Body dissatisfaction and psychological distress in adolescents: Is self-esteem a mediator? *J Health Psychol* 2017; 22(12): 1563-9. <http://dx.doi.org/10.1177/1359105316631196> PMID: 26929171
- [34] Kostanski M, Gullone E. Adolescent body image dissatisfaction:

- Relationships with self-esteem, anxiety, and depression controlling for body mass. *J Child Psychol Psychiatry* 1998; 39(2): 255-62.
PMID: 9669238
- [35] Shi QY, Kou H, Chen H. Changes in ideal body size in men and factors influencing it. *Xinli Kexue Jinzhan* 2017; 25(4): 627.
<http://dx.doi.org/10.3724/SP.J.1042.2017.00627>
- [36] Shen J, Chen J, Tang X, Bao S. The effects of media and peers on negative body image among Chinese college students: A chained indirect influence model of appearance comparison and internalization of the thin ideal. *J Eat Disord* 2022; 10(1): 49.
<http://dx.doi.org/10.1186/s40337-022-00575-0> PMID: 35413877
- [37] Glashouwer KA, Bennik EC, de Jong PJ, Spruyt A. Implicit measures of actual versus ideal body image: Relations with self-reported body dissatisfaction and dieting behaviors. *Cognit Ther Res* 2018; 42(5): 622-35.
<http://dx.doi.org/10.1007/s10608-018-9917-6> PMID: 30237650
- [38] Yu XJ, Zhou HL, Xu ZG. Attentional bias toward body information in women with body image disorders: Implications for courtship motivation. *Psychological Techniques and Applications* 2019; 7(11): 658-64.
- [39] Fernández-Bustos JG, Infantes-Paniagua Á, Gonzalez-Martí I, Contreras-Jordán OR. Body dissatisfaction in adolescents: Differences by sex, BMI and type and organisation of physical activity. *Int J Environ Res Public Health* 2019; 16(17): 3109.
<http://dx.doi.org/10.3390/ijerph16173109> PMID: 31461855
- [40] Cruz-Sáez S, Pascual A, Włodarczyk A, Echeburúa E. The effect of body dissatisfaction on disordered eating: The mediating role of self-esteem and negative affect in male and female adolescents. *J Health Psychol* 2020; 25(8): 1098-108.
<http://dx.doi.org/10.1177/1359105317748734> PMID: 30101609
- [41] Mintz LB, Betz NE. Sex differences in the nature, realism, and correlates of body image. *Sex Roles* 1986; 15(3-4): 185-95.
[https://scihub.se/10.1007/BF00287483/metrics].
<http://dx.doi.org/10.1007/BF00287483>
- [42] Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among college students: A longitudinal study from China. *J Affect Disord* 2020; 263: 292-300.
<http://dx.doi.org/10.1016/j.jad.2019.11.121> PMID: 31818792
- [43] Cruz-Bojórquez RM, Balam-Campos E, Aranda-González II, Pérez-Izquierdo JO, Avila-Escalante ML. Influence of body dissatisfaction in the choice of the career of student's new entry to nutrition. *Psychology* 2019; 10(14): 1923-37.
<http://dx.doi.org/10.4236/psych.2019.1014124>
- [44] Dai HQ, Zhang F, Chen XF. Psychological and educational measurement. Jinan University Press 2007.
- [45] Chen Y R. A study on the characteristics of college students' body imagery. *Sports World: Scholarly* 2016.
- [46] Cash T F. The multidimensional body-self relations questionnaire. Unpublished test manual 2000; 2: 1-12.
- [47] Wang CS, Wang CH. The revision of the translated multidimensional body-self relations questionnaire. *Bulletin of Sport and Exercise Psychology of Taiwan* 2004; (5): 101-26.
- [48] Zung WWK. A self-rating depression scale. *Arch Gen Psychiatry* 1965; 12(1): 63-70.
<http://dx.doi.org/10.1001/archpsyc.1965.01720310065008> PMID: 14221692
- [49] Wang ZY, Chi YF. Self-depression scale (SDS). *Shanghai Psychiatry* 1984; 2(2): 71-2.
- [50] Zung WWK. A rating instrument for anxiety disorders. *Psychosomatics* 1971; 12(6): 371-9.
[http://dx.doi.org/10.1016/S0033-3182\(71\)71479-0](http://dx.doi.org/10.1016/S0033-3182(71)71479-0) PMID: 5172928
- [51] Wang ZY, Chi YF. Self-assessment scale of anxiety (SAS). *Shanghai Psychiatry* 1984; 2(1): 73-4.
- [52] Holmqvist K, Frisén A. Body dissatisfaction across cultures: Findings and research problems. *Eur Eat Disord Rev* 2010; 18(2): 133-46.
<http://dx.doi.org/10.1002/erv.965> PMID: 19806598
- [53] Chen H, Jackson T. Are cognitive biases associated with body image concerns similar between cultures? *Body Image* 2005; 2(2): 177-86.
<http://dx.doi.org/10.1016/j.bodyim.2005.03.005> PMID: 18089185
- [54] Bhujade VM. Depression, anxiety and academic stress among college students: A brief review. *IJHW* 2017; 8: 7.
- [55] He J, Sun S, Zickgraf HF, Lin Z, Fan X. Meta-analysis of gender differences in body appreciation. *Body Image* 2020; 33: 90-100.
<http://dx.doi.org/10.1016/j.bodyim.2020.02.011> PMID: 32151993
- [56] Wang K, Liang R, Ma ZL, *et al.* Body image attitude among Chinese college students. *PsyCh J* 2018; 7(1): 31-40.
<http://dx.doi.org/10.1002/pchj.200> PMID: 29297988
- [57] Wang X, Lu C, Niu L. Body image construction and mental health levels among college students: A data survey of Chinese university students. *Front Public Health* 2023; 11: 1268775.
<http://dx.doi.org/10.3389/fpubh.2023.1268775> PMID: 37869184
- [58] Ma J, Wang K, Thompson JK. Translation and psychometric properties of the Chinese version of the sociocultural attitudes towards appearance questionnaire-4 (SATAQ-4) in college students. *Body Image* 2023; 45: 172-82.
<http://dx.doi.org/10.1016/j.bodyim.2023.02.011> PMID: 36934561