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The Correlation Between Body Image and Self-esteem in Adolescent

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Abstract:

This study investigates the correlation between body image and self-esteem among adolescents. Previous research has shown that dissatisfaction with the limb can have a direct impact on a person's self-esteem issues. Our primary hypothesis in the research suggested that actual body data influences an individual's self-evaluation. However, we were not able to prove this conjecture completely because the second hypothesis turned out to be the null hypothesis. However, it is reassuring to note that our main hypothesis succeeded, and, therefore, we can prove the relationship that exists between Body Image Satisfaction Scale (BISS) scores and Rosenberg Self-Esteem Scale (RSES) scores. With a range of statistical tools, such as SPSS and mapping methods, potential relationships can be analyzed. Together with the theoretical and experimental presentations in the past literature. We have successfully demonstrated that there is a positive correlation between body image and self-esteem. This experimental finding can also have some implications for society.

Keywords: self-esteem, body image, BMI, Rosenberg self-esteem scale, Body Image Satisfaction Scale

1. Introduction

In contemporary society, we often overlook self-esteem, dismissing it as simply a personality trait. However, research has demonstrated that the characteristics of self-esteem undergo notable transformations as individuals age [1].

Therefore, self-esteem plays an important role in people's lives and is closely related to their development. Individuals who face challenges or don't conform to standards of appearance often experience more stress than their peers during their growth. This leads to loss of self-esteem and marginalized behavior [2].

Given this backdrop, it is imperative that we explore the correlation between self-esteem and body image, particularly among adolescents.

Adolescents, as a group, are the most psychologically unstable period in a person's normal development [3].

They are highly sensitive to external stimuli, and most of them are extremely concerned about how they are perceived by the outside world during this period. Negative feedback can drastically skew their worldview and self-perceptions.

Our research hinges on the definitions of two key concepts. The first is self-esteem, which we define as "success divided by pretensions." This implies that self-esteem is a product of one's achievements, tempered by their aspiration[4]. The second concept is body image, which refers to "how a person perceives their physical appearance, their feelings about this perception, their beliefs about their body, and the resulting behaviors"[5]. This implies that body image comprises two chief components: the "perceptual component" and the "attitudinal component" [6]. Consequently, we designed two variables corresponding to each component: Self-satisfaction and MBI (measurement of actual physical data) for evaluation.

That leads to our main hypothesis: Body image dissatisfaction is one of the factors in teenagers' self-esteem development. The three measured variables in two correlation studies are actual body image (measured by BMI), body satisfaction(measured by BISS), and children's self-esteem (analyzed by RSES). From the earlier studies, we demonstrate the relationship between the two correlations. Firstly, we understand the correlation that teenagers' self-esteem can be affected by their actual body image, like obesity[6,7]. Moreover, how people feel about their own body will also impact their level of self-esteem[8]. For girls from India, their body dissatisfaction is closely related to their confidence [9], which is the second reinforced correlation.

Even if we only concern the people who use Instagram, the users who make social comparisons may have lower self-esteem and higher body image [10].

Overall, for most people in the world, dissatisfaction with their bodies can negatively impact their well-be-

ing. However, research on Instagram users indicates that a discrepancy often exists between individuals' actual physical health and their self-perception (according to the definition above). It's plausible that participants might have actual physical issues, necessitating the collection of physical health data. This leads to our secondary hypothesis: Physical health influences an individual's self-perception. It is possible that participants really have something bad in their bodies, so physical health collection must be required. Thus, we have a new hypothesis: physical health will reflect on people's mental cognition.

However, with the information above, we could only find the potential correlation between those three factors, so we need some further empirical evidence to prove our hypothesis.

Our research question is whether high self-satisfaction of the body correlates to high self-esteem. In addition, we want to figure out the positive correlation between these two variables, so our hypothesis is that a high level of self-satisfaction is connected to high self-esteem.

2. Method

2.1 . Participants and Procedure

Participants in our research were teenagers from high schools. The age range is 15-18 years old. The reason for choosing high school students is that adolescents show more significant results in past studies [11]. The questionnaire included the scales, which were RSES and BISS. One measured self-esteem, and the other measured body satisfaction. Plus, we further explored our idea by collecting their BMI so that we could find the relationship between their self-cognition and their true physical health. Considering that the subjects might guess the purpose of our study, causing demand characteristics [12], we misled them at the beginning of the questionnaire to make them believe that the researchers just wanted to get a sample of physical data for doing research about high school students' physical health. Deception is used in this study, but in order to avoid the disturbance from participants, we have to do this. After completing the questionnaire, we told them the true aim of the study. (Debriefing)

This was effective in ensuring the authenticity of the subjects' questionnaire completion. From the release of the questionnaire, we spent a week collecting data and putting it all together. And after eliminating the answers filled in by duplicate IPs, we started the numerical analysis.

2.2 . Questionnaire and Correlational Survey Study

The condition that the questionnaire was separated was in high school. Thus, the experiment was given in a real-life situation. We decided to experiment with an anonymous questionnaire online. This made our data volume even larger. In the questionnaire, we included basic information about the participants (i.e., body figure) as well as two scales. The two scales are the Rosenberg self-esteem scale (RSES) and the Body Image Satisfaction Rating Scale (BISS). We used the content of the two scales to quantify their self-esteem and body satisfaction, respectively. The BMI is then calculated so that we can find out the effect between a person's true physical condition and their level of body satisfaction. Additionally, since we used two questionnaires and one data collection of BMI, data triangulation is implemented in this questionnaire [13]. The three variables can then be compared with each other. Thus, the result will be more valid.

We want to figure out the correlation, a mutual relationship or connection, between two variables in the questionnaire., so this is a correlational survey study. The correlation coefficient is measured on a scale that varies from + 1 through 0 to – 1.

2.3 . Rosenberg Self-esteem Scale

RSES is a kind of self-esteem testing. It "evaluates a person's self-esteem, or confidence in and respect for him or her" [14].

In social studies, RSES is the most commonly used to measure self-esteem. The scale can judge whether a person feels in a high sense of achievement or feels like a failure. Though no more than 10 questions, RSES could find out the self-esteem level inside a human's mind. Due to the simplicity of the scale and its good use, it has gradually become a mainstream scale within the academic community.

2.4 . BISS

There are many scales in the industry for measuring body satisfaction, but we chose to use the BISS, which is a common scale used in psychiatric clinics in Western countries and has a high degree of authority [15]. Of course, there are many scientists who choose to build their own scales, but for us, the BISS is much more convenient and easier to quantify, and the language is clear without grammatical misunderstandings, so it is also more scientific.

In our case, we can divide body image into positive and negative aspects. But in our scale, we use it as both. So, it represents both satisfaction and dissatisfaction.

2.5 . SPSS

We use SPSS to evaluate the results we get. SPSS is a powerful statistical software program (IBM)[16]. In this study, we used SPSS as a data analysis tool to figure out the correlation between self-esteem, body image, and body shape.

3. Results

This is the questionnaire that supports our conclusions: https://www.wjx.cn/vm/Oh0fcxc.aspx#
The result is quite like the previous study [6].
First, we directly investigated the relationship between BMI and self-satisfaction. We checked the normal distribution of data of these two variables in advance. The graph (Figure 1) below showed the shape of the data column generally fits into the green line, which is a smooth curve with the highest point in the middle and the lowest point on the sides.

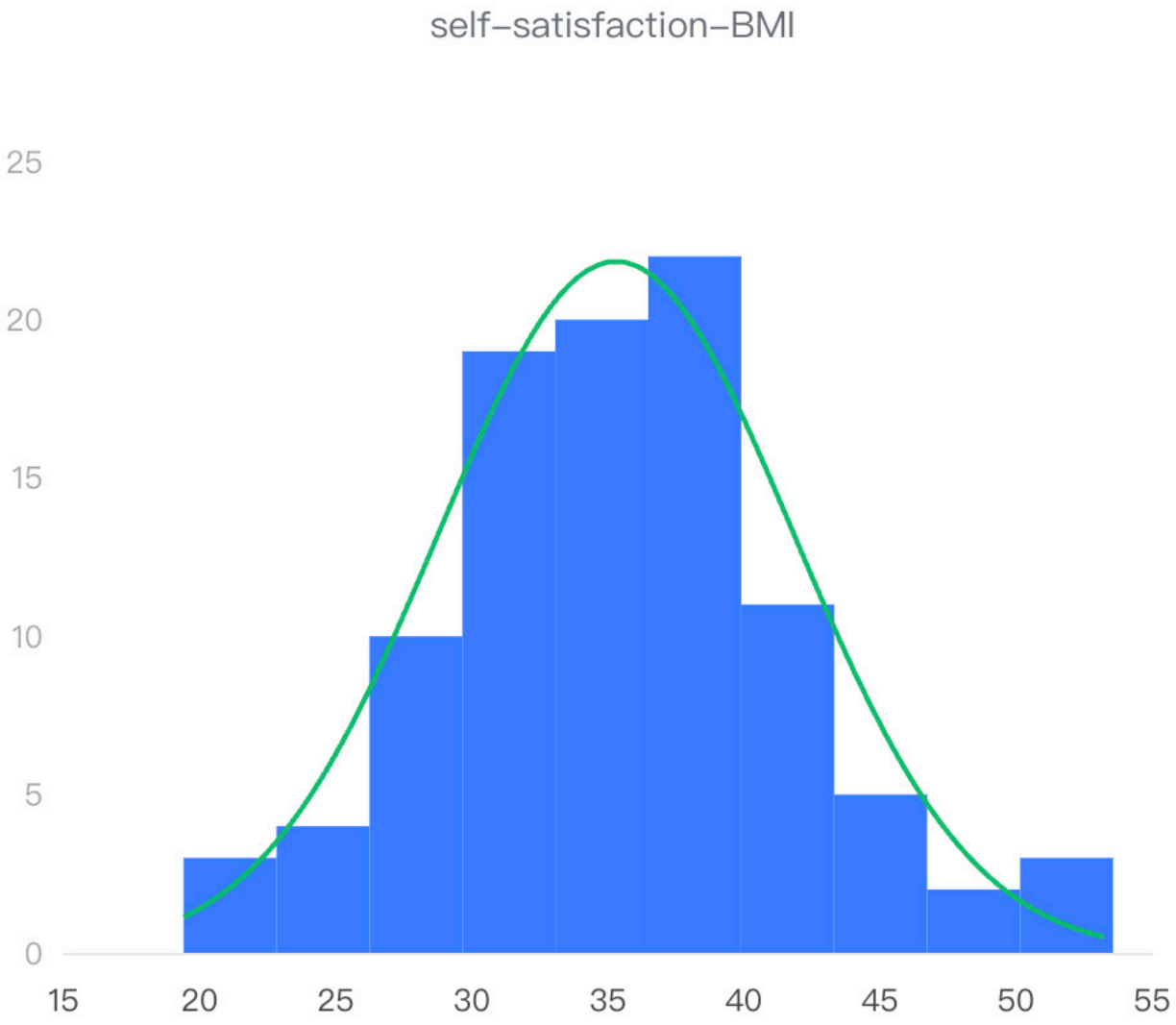

Figure 1: The distribution of self-satisfaction through BMI level

Also, BMI and self-satisfaction have a value of 1% of the P value (Table 1) and a value of Cohen's d, which is 5.14. In this case, we could say that the results reject the null hypothesis and have a high level of statistical significance. From the statistical results, we could examine that BMI and self-satisfaction has high level of positive correlation. The correlation coefficient between self-satisfaction and body shape is 0.048(Table 1), which is a positive correlation.

Table 1. SPSS of self-satisfaction and BMI

	Self-satisfaction	BMI
Self-satisfaction	1(0.000***)	0.048(0.638)

BMI	0.048(0.638)	1(0.000***)

Afterward, we investigated the relationship between self-satisfaction and self-esteem. The following image (Figure 2) is the histogram that demonstrates the distribution of results. Although they are not bordered with the green curve perfectly, we could observe that these blue columns basically fit into the line, which has the highest level in the middle and the lowest part on the left and right sides. Therefore, it's still a normal distribution.

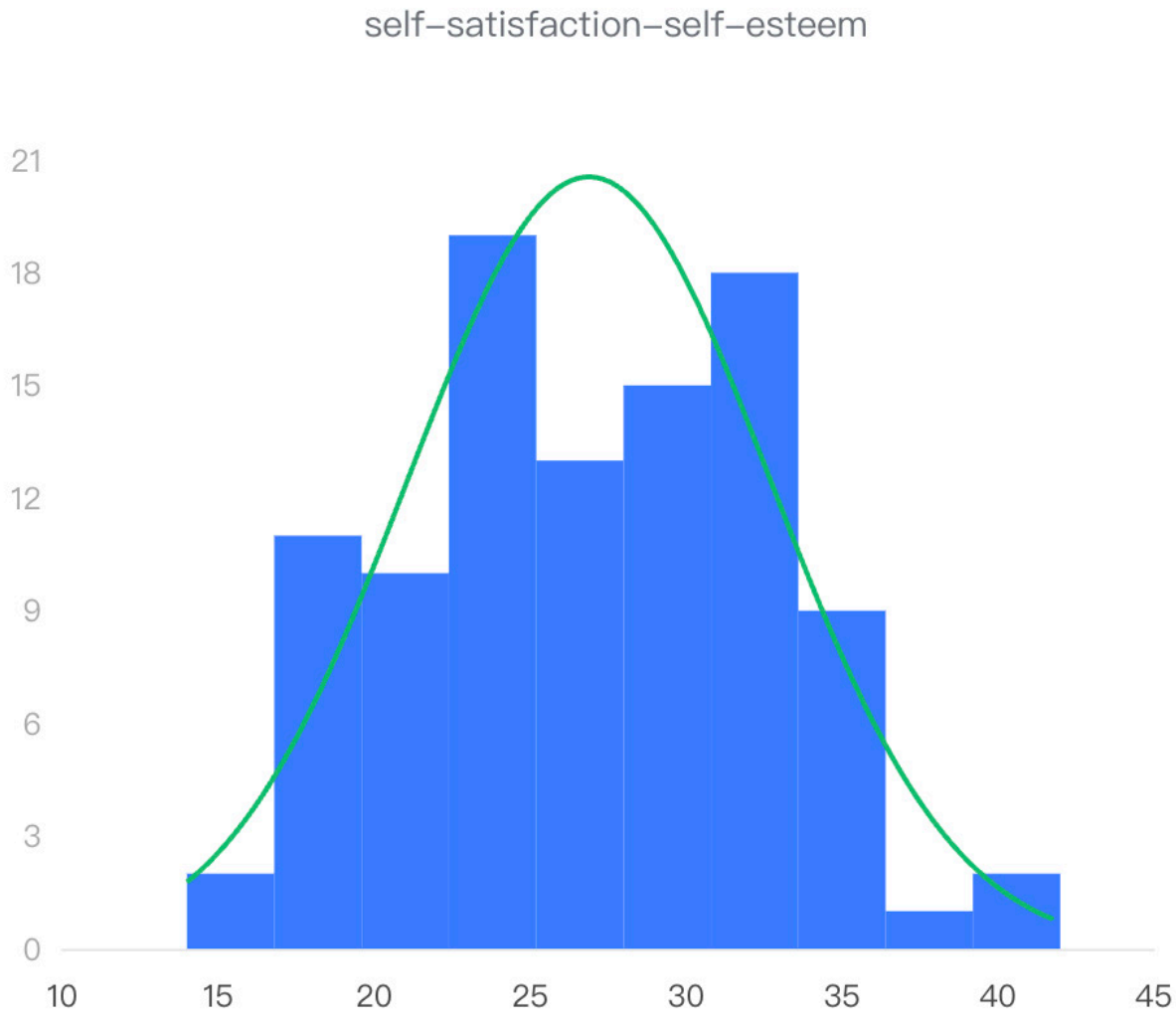

Figure 2: The correlation of self-satisfaction and self-esteem

In addition, the P value is 0.000***(Table 2), which is less than 0.05, so it demonstrates the existence of statistical significance. The 4.617 of Cohen's d, which is greater than 0.8, argues the presence of significant differences between data.

The connection between self-satisfaction and self-esteem is positively correlated. We can see from the table that 0.332 is greater than 0, which indicates a positive correlation.

Table 2. SPSS of self-satisfaction and self-esteem

	Self-satisfaction	Self-esteem
Self-satisfaction	1(0.000***)	0.332(0.001***)
Self-esteem	0.332(0.001***)	1(0.000***)

Lastly, we could directly check the relationship between body shape and self-esteem. The correlation efficiency is 0.03(Table 3), which is above 0. Although the value of this coefficient is relatively very small, it still indicates the presence of a positive correlation.

Table 3. SPSS of BMI and self-esteem

	BMI	Self-esteem
BMI	1(0.000***)	0.03(0.765)
Self-esteem	0.03(0.765)	1(0.000***)

In the first round of analysis, we have concluded the first hypothesis: the satisfaction of participants' body image of the body could positively correlate with self-esteem positively. The reason for this is that the trend lines in the charts showed a positive correlation trend (Figure 3).
As we can see in the figure (Figure 3), there is no strong correlation between teenagers' BMI and their satisfaction level with their own bodies. Although it seems like the correlation we find is not so strong, it still has reliability. Since self-esteem has so many factors that will affect the consequence, the result is the best that we can handle.

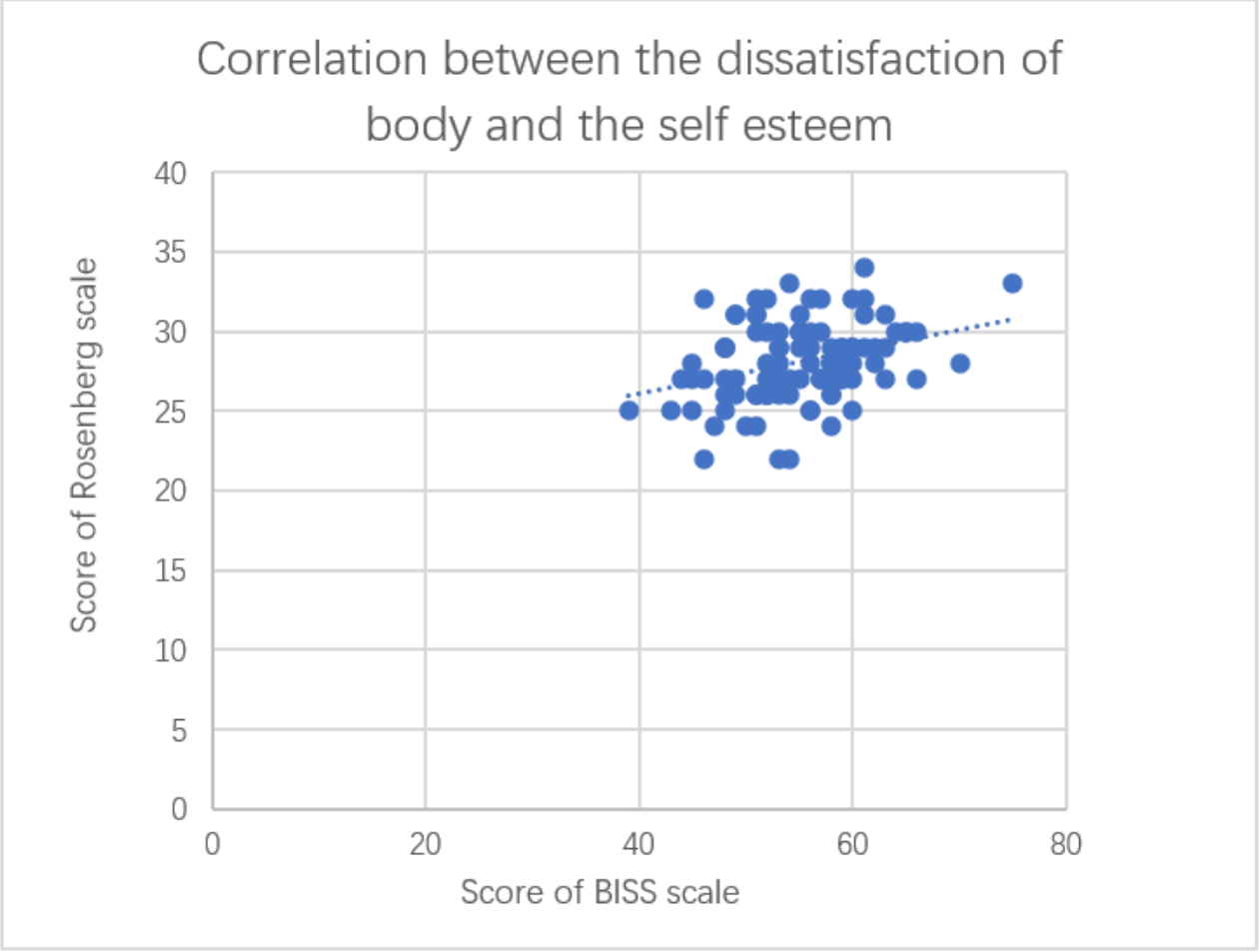

Figure 3: correlation between the dissatisfaction of body and the self-esteem

For the second analysis, we calculated the BMI from the basic physical characteristics of 101 participants. From the image(Figure 4), we can see that the BMI is a normal distribution shape, which means data is concentrated in the middle, and the frequency is higher. This also sidesteps the reliability of our data which does not differ much from the range of data given by China. In China, the standard range of BMI is 18.5-24.0. For our data, not so many

outliers. This can also be an evidence.

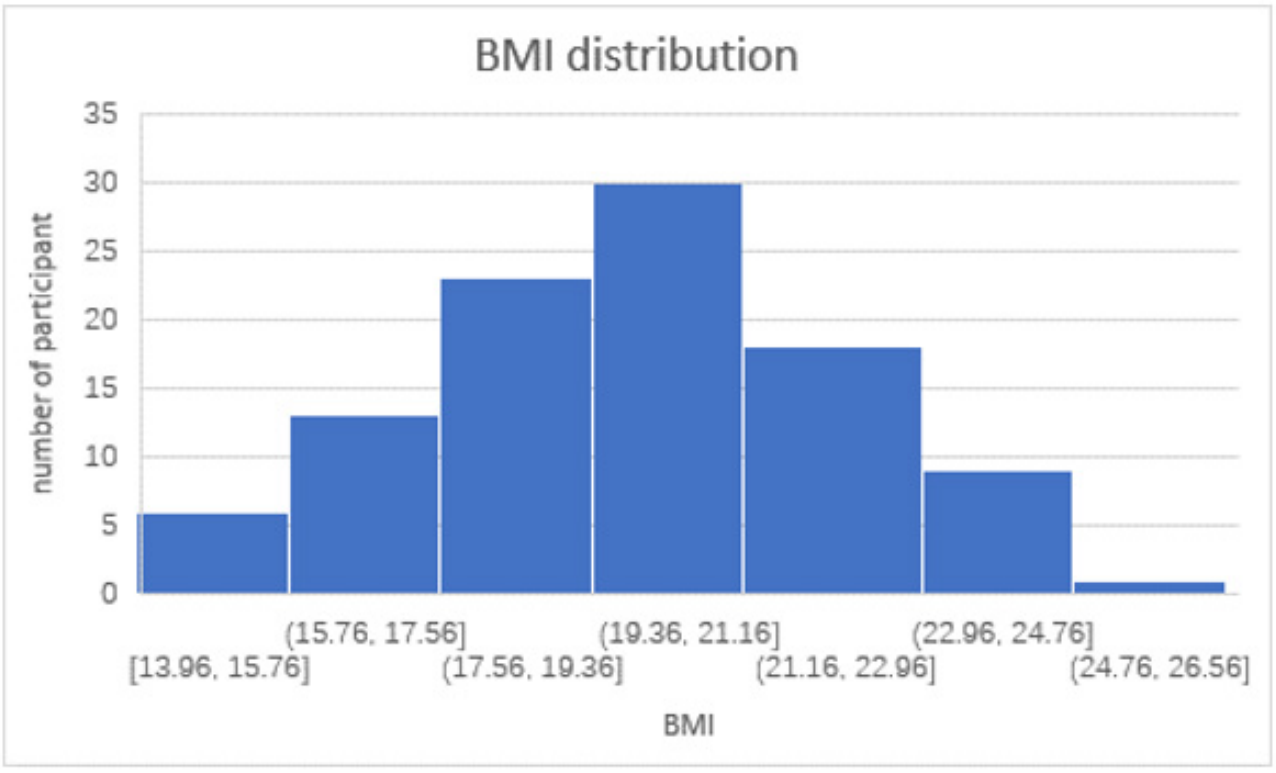

Figure 4: The distribution of BMI among participants

After our third round of data analysis, we learned that there is no strong correlation between teenagers' BMI and their satisfaction level with their own bodies. Since the correlation is approximately to be zero (Figure 5). Thus, we understand that physical health will not affect a person's body image. Therefore, we will not have an extra factor that affects the self-esteem and body image analysis.

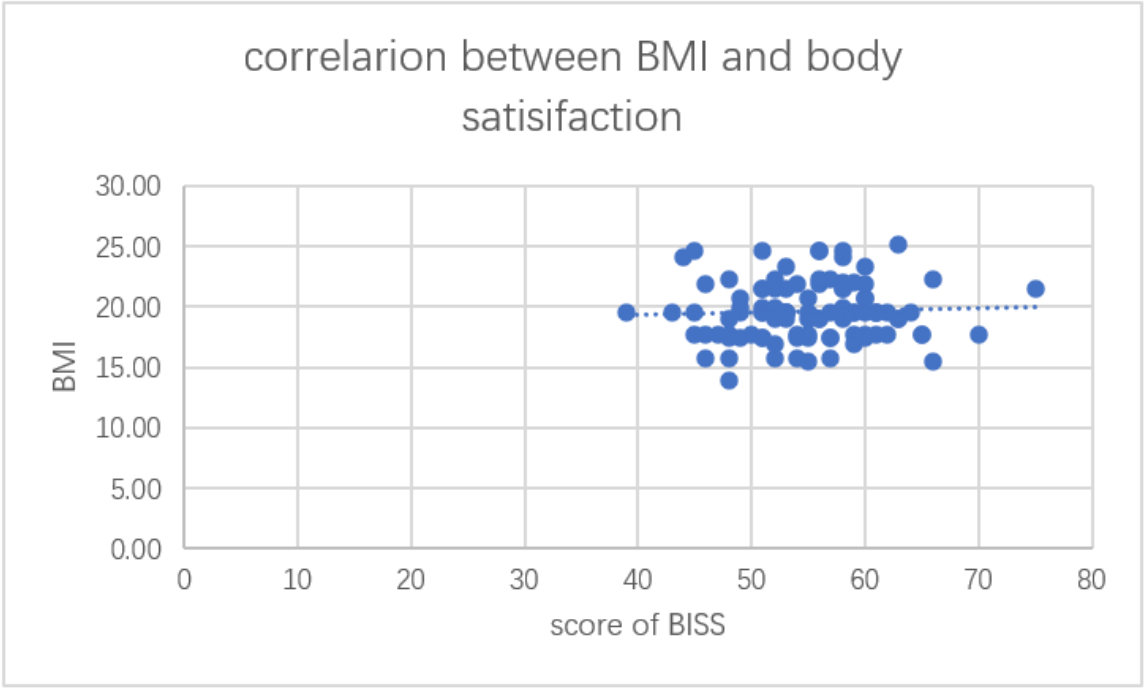

Figure 5: Correlation between BMI and body satisfaction

4. Discussion

Our correlational survey study is mainly focused on the connection and relationship between body shape and self-esteem, and our key finding is that there is a positive correlation between these two variables. Adolescents with better body shape tend to have higher levels of body satisfaction as well as self-esteem. The previous study has stated that girls who always be praised have a higher level of self-satisfaction and self-esteem[17]. This is because their self-esteem no longer comes from the judgment of their body shape and weight. Also, previous research supported the negative correlation between body mass index and rated self-esteem for Korean girls[18]. These all bolstered that the more acceptive the body shape is, the higher esteem of adolescence, especially for girls.

5. Limitations

However, there are some potential limitations that we could not cover. Firstly, our data was collected from one hundred and one participants, which is just barely enough for a questionnaire, so the data is more likely to be influenced by extreme values.

Secondly, there is an imbalance in our data source, 80% of the participants were female (Figure 6). Hence the bias in the study occurs, but even so, we still got the expected results from this questionnaire (Figure 7), so the question we need to think about here is: when adolescents are different between men and women does this affect the accuracy of the results?

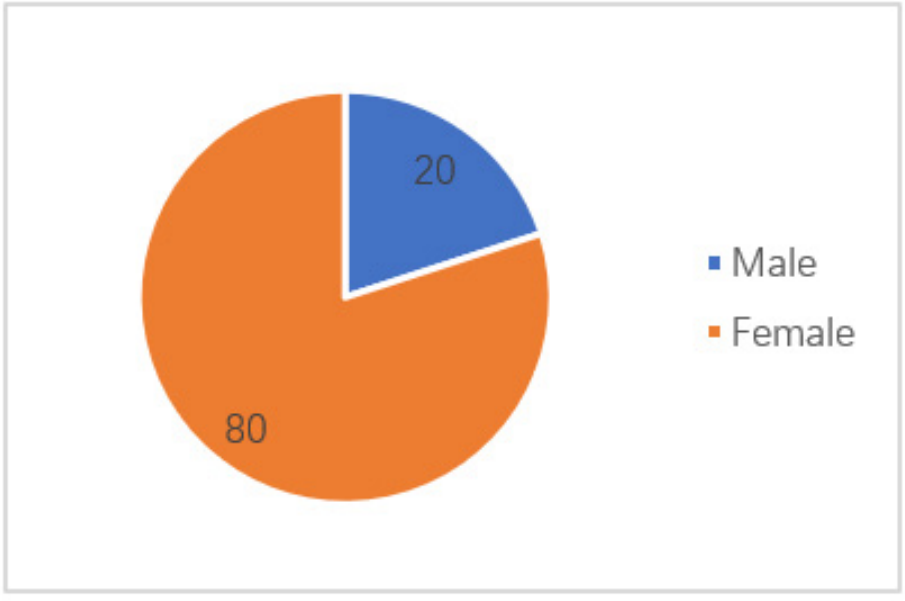

Figure 6: Sample proportion of the two gender

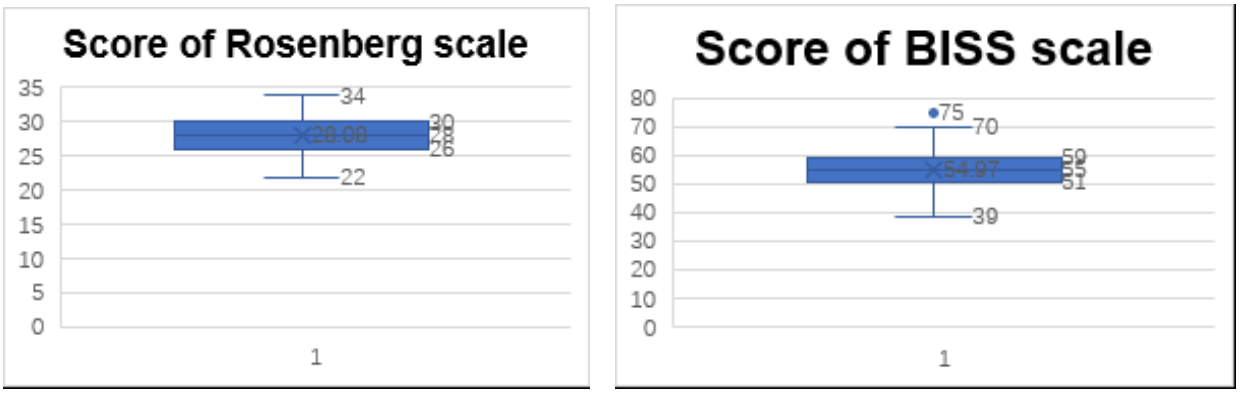

Figure 7: Box plots of the two variables: Score of Rosenberg scale and Score of BISS scale

Thirdly, RSES is widely used in Western and Asian countries, it is the most popular self-esteem scale among psy-

chologists in Asia. Thus it has high authority in this study, as the target population is Asian high school students. Comparatively, BISS is rarely used in Asia. As a result, the etic approach might influence the outcome of the correlation between these two variables [19].

6. Applications

Given the link between self-esteem and body views, we can make changes within the school context. For example, teachers should be told not to care too much about the appearance of their students and make speeches that activities such as school bullying and body abuse are strictly prohibited in schools. These can be good ways to protect students from low self-esteem as well as self-loathing as they grow up, improve their self-esteem, and help them survive in society.

In fact, today's society is extremely harsh on the body, especially the physical conditions of women. This visual guide may form a pathology in the long run, and cause women to have a harder time getting a foothold in society. People criticize and accuse fatter people overtly with abusive words on the internet, showing extreme hostility to these natural body shapes. The advertisements, trends of fashion style, and even cultural atmosphere are constantly shaping and instilling plausible cognition about good or suitable body shapes, ignoring the fact that every body shape is normal and should be embraced. In specific, some fashion styles in Asia tried to shape girls into "perfect girls" with legs as thin as sticks, waits as slim as ants, and abdomens as flat as a plain. Influencers and brands kept creating an anxious atmosphere for body shape, so those who don't fit the criteria in the upper statement are always judged by others and intensely feel disappointment toward their body. Their self-abasement gets lower, as well as their self-esteem.

From the upper study, we know that improving self-satisfaction could improve people's self-esteem as well since they appear to a positive correlation. So here is a way that could solve low self-esteem, that is, improve acceptance and satisfaction of your body.

7. Conclusion

All in all, this paper proved the relationship between self-esteem and body image satisfaction. And it concluded that when people are more satisfied with their bodies, their self-esteem is higher. This also proved the first hypothesis correct. The second hypothesis falsified that BMI does not significantly affect people's body satisfaction. This is inconsistent with the previous research and needs to be proven by a more in-depth study. The research in this project is very relevant both from an ethical and social point of view and can be directly applied to students' daily activities at a small cost.

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Chenyi Liu and Ningyue Tang contribute equally to this work and should be considered co-first authors.

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