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ORIGINAL ARTICLE

Body dissatisfaction and non-suicidal self-injury among Chinese young adults: a moderated mediation analysis

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Abstract

Objective Extensive evidence from Western societies supports the role for body dissatisfaction in the etiological models of non-suicidal self-injury (NSSI). However, research of the underlying mechanisms of this relationship has been limited, especially in China. Therefore, the aim of this study was to examine the association between body dissatisfaction and NSSI among college students in China. Possible mediating roles for psychological distress and disordered eating, as well as a moderating role for self-compassion, were also examined.

Methods College students ($n = 655$, $M_{age} = 20.32$ years, $SD = 1.02$) were recruited from Henan province, China. Each participant completed questionnaires regarding body dissatisfaction, psychological distress, disordered eating, and self-compassion.

Results A close to medium positive relationship between body dissatisfaction and NSSI was revealed with $r = 0.24$ ($p < .001$). The relationship was found to be fully mediated by psychological distress and disordered eating. The mediation role for disordered eating was found to be further moderated by self-compassion, suggesting that self-compassion acted as a buffer against the relationship between disordered eating and NSSI.

Conclusion These findings indicate that body dissatisfaction, psychological distress, disordered eating, and self-compassion may play important roles in Chinese young adults' NSSI. Researchers and practitioners need to pay closer attention to the underlying mechanisms of how body dissatisfaction links to NSSI to deepen the understanding of their linkage as well as to provide appropriate interventions.

Level of evidence Level V, cross-sectional descriptive study.

Keywords Body dissatisfaction · Psychological distress · Disordered eating · Non-suicidal self-injury

Introduction

Non-suicidal self-injury (NSSI) is defined as intentional damage to one's own body without suicidal intent [1]. For example, NSSI can involve cutting, scratching, hitting, or carving [2]. NSSI has also been reported to correlate with mood disorders such as depression, bipolar disorder [3], and future suicide attempts and ideation [4]. A meta-analysis conducted by Swannell et al. [5] identified the overall prevalence of NSSI to be 17.2%, 13.4%, and 5.5% among adolescents, young adults, and adults, respectively. In China, according to a recent large-scale epidemiological study, the prevalence of NSSI was 17.0% among Chinese adolescents and young adults [6]. Thus, NSSI is increasingly being recognized as a vital mental health concern, especially among Chinese young adults [7–9].

Considering the negative effects of NSSI, research efforts have been devoted to understanding the factors contributing to NSSI [2, 10, 11]. In particular, body dissatisfaction is recognized as an important factor [12, 13]. Body dissatisfaction is about the negative and subjective evaluations of one's physical appearance, including both body size and shape [14]. According to the Interpersonal Psychological Theory (IPT) [15, 16], when a person feels like a burden (i.e., perceived burdensomeness) to others and has a sense of thwarted belongingness (e.g., feeling of loneliness), the person may tend to have intentions for NSSI. Considering that previous studies also showed that individuals with body

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dissatisfaction might experience more feelings of burdensomeness and loneliness [17, 18], the IPT can help elucidate the link from body dissatisfaction to NSSI.

On the other hand, a number of studies have suggested that a positive correlation existed between body dissatisfaction and negative affect [19–21]. Moreover, negative affect is also very important for the initiation of NSSI acts (e.g., negative body image; [13]). According to the integrated theoretical model of NSSI proposed by Klonsky [2], negative emotions appear before NSSI occurs, and NSSI is a means of alleviating negative emotions. Thus, body dissatisfaction may represent a critical risk factor for NSSI [13, 22, 23]. Brausch, Gutierrez [22] reported that body dissatisfaction was significantly higher, and self-esteem was significantly lower, in two NSSI groups compared to the comparison groups of without NSSI. To date, although the relationship between body dissatisfaction and NSSI has been extensively explored, underlying mechanisms and/or protective factors remain largely unknown.

In China, although there had been studies that explored factors (e.g., emotional problems [6]) significantly predicting NSSI, few of them considered body dissatisfaction and its closely related factors (e.g., psychological distress, disordered eating behaviors, and self-compassion [24–26]). Considering psychological distress, disordered eating and self-compassion have been reported to associate with NSSI [27–30], the present study was aimed to clarify the relationships among these variables by exploring the potential mechanisms involving body dissatisfaction, psychological distress, disordered eating, self-compassion, and NSSI.

Psychological distress is a nonspecific negative emotion which includes both feelings of anxiety and depression [31]. This emotion is particularly relevant among college students, and it can negatively influence scholastic performance and physical and psychological health [32, 33]. According to the affect regulation model [34], NSSI is known as the negative reinforcement strategies to reduce, avoid, or escape from negative emotions (e.g., psychological distress). Furthermore, body dissatisfaction is positively related to psychological distress [24], which is one of the most common factors of NSSI among college students [35]. Therefore, psychological distress is likely to play a mediating role in the relationship between body dissatisfaction and NSSI.

Disordered eating behaviors are a wide range of irregular eating behaviors (e.g., emotional eating, food restriction, binge eating, and purging) that do not warrant a diagnosis of a specific eating disorder [36]. Disordered eating behaviors are also highly prevalent in non-clinical populations, for example, a recent study showed approximately a half of females and one-third of males engaging in unhealthy weight control behaviors [37]. In China, the prevalence of disordered eating is also high among female college students [38], and is as serious as it is in North American countries (e.g., the U.S.) [39, 40]. It has been observed that nearly 30% of individuals with eating disorders have reported comorbid NSSI in clinical samples [41, 42]. Wang et al. [43] reported that disordered eating, particularly restrictive eating, is related to a higher risk of NSSI among undergraduate students in the United States and disordered eating was a risk factor of future NSSI among individuals with high scores on emotion problems [44].

Body dissatisfaction has also been identified as a key etiological variable for disordered eating [45, 46]. While the relationships between body dissatisfaction, disordered eating, and NSSI remain largely unclear, there are some studies which suggest that disordered eating may provide mediating effects between body dissatisfaction and NSSI. For example, Black et al. [12] reported that the models of disordered eating explaining the link from body dissatisfaction to disordered eating may also help explain the relationship between body dissatisfaction and NSSI. In 2011, Muehlenkamp et al. [47] proposed that body dissatisfaction was a significant factor that should be considered for both understanding and investigating interventions for NSSI in patients with eating disorders. Based on previous research, it is reasonable to expect that disordered eating is likely to mediate the relationship between body dissatisfaction and NSSI.

Accumulating evidence indicates that psychological distress is one of the most common comorbidities of patients with eating disorders [48, 49]. Among non-clinical university students aged 18–20 years (44% female), significant positive correlations between depression, anxiety, and disordered eating have been demonstrated [50]. From longitudinal studies have further showed that depression was a causal contributor to disordered eating behaviors [51]. Thus, the above research findings provide an empirical basis for investigating the mediating roles of psychological distress and disordered eating in the relationship between body dissatisfaction and NSSI.

Considering the possible detrimental effects of NSSI, greater attention and prevention of NSSI should be pursued. Recently, self-compassion has been recognized as a promising potential intervention way for NSSI [52]. Self-compassion is an accommodative type of self-relation which involves individuals understanding that difficult challenges are part of the common human experience [53]. Gregory et al. [54] reported that individuals with a history of self-injury exhibited lower levels of self-compassion than those without such a history. Thus, self-compassion may facilitate the development of "correct" pain insensitiveness in those who experience NSSI. However, the role of self-compassion in relation to the association between body dissatisfaction and NSSI has not been investigated. Therefore, it would be important to explore whether self-compassion has the potential to relieve outcomes associated with body dissatisfaction.

Previous studies have suggested that self-compassion as a cognition can effectively help individuals regulate arising affect and behavior in suffering [55–58]. Self-compassion has also been found to inversely correlate with psychological distress and eating pathology [59, 60]. For example, among undergraduate students, self-compassion was found to be negatively associated with NSSI [28]. In addition, young adults with higher self-compassion tended to report lower depression and anxiety [61], which meant self-compassionate may serve as a helpful emotional regulation strategy when facing difficult times. Recently, self-compassion was identified as a significant moderator in relationships between shape and weight overvaluation and psychological distress and disordered eating [62]. Thus, self-compassion may have a protective role in the relationships between body dissatisfaction, psychological distress, disordered eating, and NSSI. In the present study, we investigated the possible moderating role for self-compassion in the possible linking mechanisms from body dissatisfaction to NSSI. Specifically, we investigated whether the same levels of body dissatisfaction, psychological distress, or disordered eating in individuals would differentially correlate with NSSI depending on whether the individuals exhibited high versus low levels of self-compassion.

In the current study, the roles of psychological distress and disordered eating as mediators, and self-compassion as a moderator, were investigated within the context of the relationship between body dissatisfaction and NSSI. We proposed the following hypotheses. First, we hypothesized that psychological distress and disordered eating would mediate a positive relationship between body dissatisfaction and NSSI. Second, we hypothesized that psychological distress (first mediator) and disordered eating (second mediator) would play serial mediating roles between body dissatisfaction and NSSI. Third, we hypothesized that self-compassion would moderate the relationships between body dissatisfaction and NSSI, between psychological distress and NSSI, and between disordered eating and NSSI (Fig. 1).

Methods

Participants and procedures

Prior to conducting this study, the study protocol was approved by the Research and Development Administration Office of Zhengzhou University. Students enrolled at a university in the Henan province of China were invited to participate in this study. The survey was conducted online on a Chinese online survey platform (i.e., Wenjuanxing). Each participant provided informed consent before they could start filling out the online survey. We successfully recruited 655 college students (M_{age} = 20.32 years, SD = 1.02), including 348 women and 307 men. Based on self-reported height and weight values, body mass indices (BMI: kg/m^2) were calculated and ranged from 13.87 kg/m^2 to 31.07 kg/m^2 (M = 21.04, SD = 2.62).

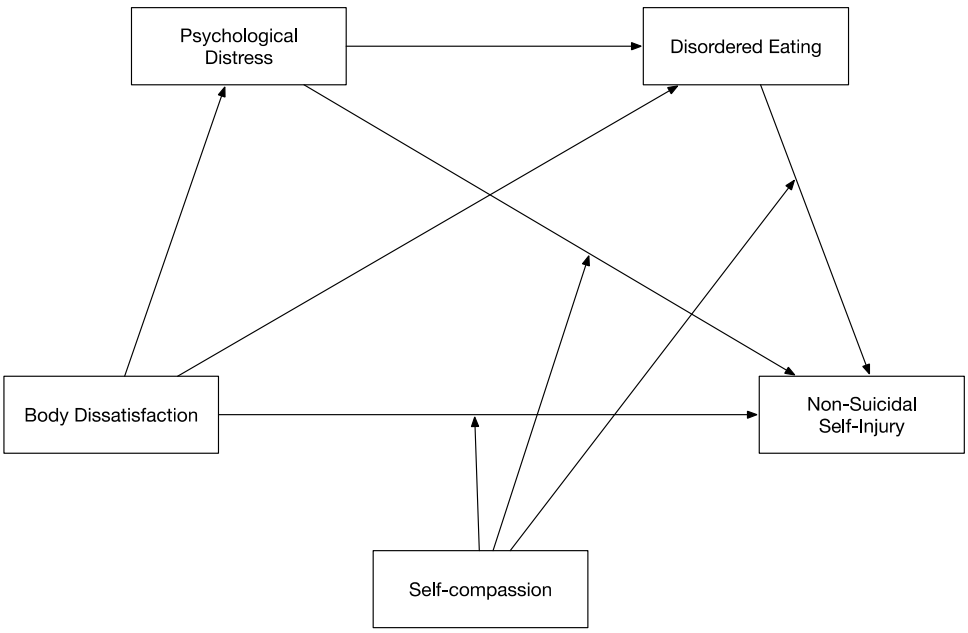

Fig. 1 Conceptual model of the moderated mediation analysis

Measures

Body dissatisfaction

The Eating Disorder Inventory-Body Dissatisfaction Subscale (EDI-BD) was used to measure body dissatisfaction [63]. It contains nine items, and each item is rated according to a 6-point Likert-type scale from 1 (never) to 6 (always). Higher scores reflect greater body dissatisfaction. The EDI-BD has been validated in both clinical and non-clinical Chinese samples, and has exhibited good psychometric properties [64]. In the present sample, the scale exhibited a Cronbach's α of 0.86.

NSSI

The Ottawa Self-Injury Inventory (OSI) was used to investigate the frequency of thoughts and actual behaviors of NSSI, self-injury methods, and the locations of participants at 1-month, 6-month, and 12-month intervals [65]. Items were rated on a 4-point frequency scale from 1 (never) to 4 (every day). Higher scores indicate higher NSSI behaviors frequencies. The OSI has been shown to be valid and reliable in both clinical and non-clinical samples [66, 67]. In the present study, we investigated 10 items NSSI behaviors of Chinese college students in the past 12 months and demonstrated reliability with Cronbach's α of 0.94.

Disordered eating

To measure disordered eating, the Short Form of the Eating Disorder Examination Questionnaire (EDE-QS) [68] was used. It reflects how frequently over the previous week a respondent experienced each symptom of disordered eating [68]. EDE-QS consisted of 12 items with response options ranging from 0 to 3. A high total score denotes a high level of eating disorder symptomatology. The EDE-QS has been validated in Chinese undergraduate students and showed good psychometric properties [69]. In the current study, we found a Cronbach's α of 0.93, indicating good internal consistency.

Psychological distress

Psychological distress was assessed by the Short Kessler Psychological Distress Scale (K6) [70]. The six-item scale includes two items which assess depression and four items which assess anxiety. Respondents completed the questions according to the frequency of symptoms experienced over the previous 30 days. A 5-point frequency scale from 0 (no time) to 4 (all time) was used, with higher scores indicating higher levels of psychological distress. The use of K6 in large telephone-based surveys (e.g., National Health Interview) showed satisfactory reliability, construct validity, and discriminant validity [71]. We used the Chinese version of K6 [72] and good internal consistency of the scale was observed (Cronbach's α, 0.92).

Self-compassion

The short form of the Self-compassion Scale (SCS-SF)[73] is a 12-item measure of an individual's tendency toward self-compassion. The SCS-SF employs a 5-point Likert scale 1 (almost never) to 5 (almost always). Higher total scores of the SCS-SF indicate greater self-compassion. The SCS-SF, as a short form, has the same factor structure, good internal consistency, and a correlation with the longer version [74]. Consequently, the brief scale is a valid instrument for measuring compassionate and uncompassionate individuals [75]. In the current study, the SCS-SF had a Cronbach's α of 0.71 for the total scale.

Data analysis

The R packages, lavaan [76] and psych [77], on R version 4.0.3 (R Core Team, 2020) were used to perform all statistical analyses. Reliability of the measures assessing the variables used was evaluated with Cronbach's α, with values greater than 0.7 considered acceptable [78]. Since all data collected were from the self-reports by the participants, we examined the common method biases with the commonly used Harman's single factor test [79]. Pearson correlation coefficients were calculated to describe the bivariate relationships among the study variables. Mediation and moderation models were examined based on the guidelines of Hayes (2017) [80]. The significance of indirect effects was examined using the bias-corrected bootstrap method, and 95% confidence intervals (CI) were calculated with 10,000 bootstrap samples. If the CI does not cover zero, the corresponding indirect effect is statistically significant. In addition, in the mediation and moderation analyses, gender, age, and BMI entered the analyses as covariates. Finally, it should be noted that there was no data missing, since the survey was quite short, and the platform has a default setting that it reminds the respondent if he or she misses any items in the survey (the respondent can also choose to proceed without filling out the missing items).

Results

Common method biases examination

All the data examined in this study derived from the participants' self-reports.

Consequently, common method biases could be present [81]. According to Podsakoff et al. [79], control of biases can be achieved from a procedural aspect (e.g., with anonymous investigations). Alternatively, Harman's single factor test can be applied. We pursued the latter and Harman's single factor analysis identified that the first factor accounts for 29.52% of the overall variance observed, a value which is less than the recommended cut-off of 40% [81]. Therefore, no serious common method biases were present in the current study.

Table 1 Means, standard deviations, and Pearson correlation matrix for the variables included ($n = 655$)

Variable	1	2	3	4	5
1. EDI-BD	1				
2. K6	.32***	1			
3. EDE-QS	.48***	.55***	1		
4. OIS	.24***	.54***	.52***	1	
5. SCS-SF	– .32***	– .35***	– .24***	– .19***	1
M	29.49	13.15	22.45	12.78	40.35
SD	9.61	5.76	8.73	5.54	5.78

Note: *EDI-BD* eating disorder inventory—body dissatisfaction subscale, *OIS* ottawa self-injury inventory, *EDE-QS* short form of the eating disorder examination questionnaire, *K6* short kessler psychological distress scale, *SCS-SF* short form of the self-compassion scale

*$p < 0.05$; **$p < 0.01$; *** $p < .001$

Descriptive and correlation analyses

Descriptive results, namely, means, *SDs*, and Pearson's correlations are described in Table 1. Specifically, significant and positive correlations were present among the variables included in mediation analysis (i.e., body dissatisfaction, psychological distress, disordered eating, NSSI). In contrast, the proposed moderating variable, self-compassion, was found to negatively and significantly correlate with body dissatisfaction, psychological distress, disordered eating, and NSSI. These relationships between variables supported further examination of our subsequent hypotheses.

Serial mediation analyses

The mediation analyses (see Table 2) showed that when covariates (gender, age, and BMI) were controlled, body dissatisfaction could significantly predict psychological distress ($\beta = 0.34$, $p < 0.001$). When covariates and psychological distress were controlled, body dissatisfaction could also significantly predict disordered eating ($\beta = 0.33$, $p < 0.001$). However, when covariates, psychological distress, and disordered eating were controlled, body dissatisfaction could not significantly predict NSSI ($\beta = -0.02$, $p = 0.498$), indicating psychological distress and disordered eating fully mediated the relationship between body dissatisfaction and NSSI. The indirect effects of body dissatisfaction on NSSI via psychological distress and disordered eating are described in Table 3. The total indirect effect of body dissatisfaction on NSSI via psychological distress and disordered eating was 0.28 (95% CI: 0.22, 0.35) described in Table 3. In particular, three specific indirect effects were observed to be significant: (1) a single mediation effect through psychological distress, with an indirect effect of 0.12 (95% CI 0.09, 0.17); (2) a single mediation effect through disordered eating, with an indirect effect of 0.11 (95% CI 0.08, 0.15);

Table 2 Standardized regression coefficients and standard errors in the serial mediation model ($n = 655$)

Antecedent variables	Consequent variables											
	Psychological distress				Disordered eating				NSSI			
	β	95% CI	SE	z	β	95%CI	SE	z	β	95% CI	SE	z
Gender	– .05	– .13–.04	.04	– 1.08	– .002	– .07–.06	.03	– .07	– .06	– .14–.01	.04	– 1.65
Age	.11	.03–.18	.04	2.69**	.06	– .01–.12	.03	1.61	.01	– .06–.07	.03	.18
BMI	– .07	– .15–.02	.04	– 1.48	.17	.10–.24	.04	4.76***	– .02	– .10–.06	.04	– .44
Body dissatisfaction	.34	.28–.41	.04	9.97***	.33	.26–.40	.04	9.27***	– .02	– .08–.04	.03	– .68
Psychological distress					.43	.36–.51	.04	11.08***	.36	.28–.45	.04	8.11***
Disordered eating									.33	.24–.43	.05	7.09***
R^2				.12				.44				.36

Note: *SE* standardized error, *CI* confidence interval

*$p < .05$, **$p < .01$, ***$p < .001$

Table 3 Three pathways of indirect effects ($n = 655$)

Indirect effects	Point estimate	95% CI	z	*SE*
Total	.28	.22–.35	8.76***	.03
Path 1: BD → PD → NSSI	.12	.09–.17	6.11***	.02
Path 2: BD → DE → NSSI	.11	.08–.15	5.89***	.02
Path 3: BD → PD → DE → NSSI	.05	.03–.07	4.77***	.01

Note: *BD* body dissatisfaction, *PD* psychological distress, *DE* disordered eating, *NSSI* non-suicidal self-injury, *SE* standardized error, *CI* confidence interval

*$p < .05$, **$p < .01$, ***$p < .001$

and (3) a serial mediation effect through both psychological distress and disordered eating, with an indirect effect of 0.05, 95% CI (0.03, 0.07). Taken together, these results indicate that psychological distress and disordered eating mediate the relationship between body dissatisfaction and NSSI, and also play a serial role.

Moderation analysis

Results about the moderating effects of self-compassion are shown in Fig. 2 and Table 4. The interaction between body dissatisfaction and self-compassion was not significant

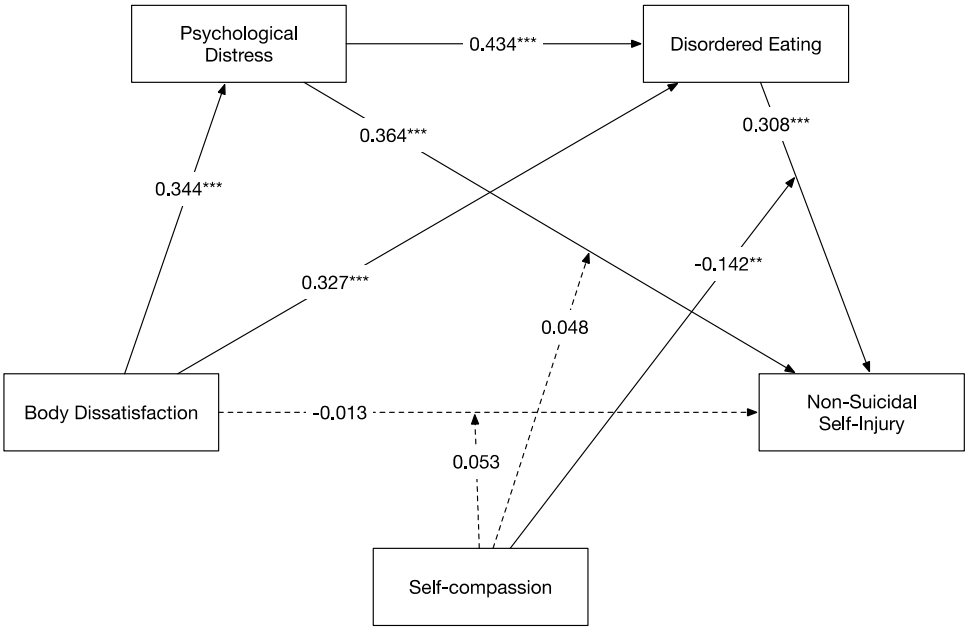

Fig. 2 Path coefficients for the moderated serial mediation model. Note: BMI, age, and gender were entered into the model as covariates; * $p < .05$, **$p < .01$, ***$p < .001$

Table 4 Standardized regression coefficients and standard errors in the moderated mediation model

Antecedent variables	Consequent variables											
	Psychological distress				Disordered eating				NSSI			
	β	95% CI	SE	z	β	95%CI	SE	z	β	95% CI	SE	z
Gender	– .05	– .13– .04	.04	– 1.08	– .002	– .07– .06	.03	– .07	– .06	– .13– .01	.04	– 1.61
Age	.11	.03– .18	.04	2.69**	.06	– .01– .12	.03	1.61	.01	– .05– .08	.03	.43
BMI	– .07	– .15– .02	.04	– 1.48	.17	.10– .24	.04	4.76***	– .01	– .09– .07	.04	– .31
Body dissatisfaction	.34	.28– .41	.04	9.97***	.33	.26– .40	.04	9.27***	– .01	– .08– .05	.03	– .41
Psychological distress					.43	.36– .51	.04	11.08***	.36	.27– .47	.05	7.44***
Disordered eating									.31	.22– .40	.05	6.70***
Self-compassion									– .02	– .10– .07	.04	– .33
BD × SC									.05	– .001– .11	.03	1.86
PD × SC									.05	– .04– .11	.04	1.22
DE × SC									– .14	– .26– .04	.06	– 2.59**
R^2				.12				.44				.36

Note: *BD* body dissatisfaction, *PD* psychological distress, *DE* disordered eating, *SC* self-compassion, *NSSI* non-suicidal self-injury, *SE* standardized error, *CI* confidence interval

*$p < .05$, **$p < .01$, ***$p < .001$

Fig. 3 Conditional effects of low (Mean – 1 SD), and high (Mean + 1 SD) levels of disordered eating on non-suicidal self-injury at low (Mean – 1 SD), and High (Mean + 1 SD) levels of self-compassion

for predicting NSSI ($\beta = 0.05$, $p = 0.063$). It was also not significant for the interaction between psychological distress and self-compassion for predicting NSSI ($\beta = 0.05$, $p = 0.221$). However, the interaction between body dissatisfaction and disordered eating was significant for predicting NSSI ($\beta = -0.14$, $p = 0.010$). In other words, the relationship between body dissatisfaction and NSSI was significantly moderated by self-compassion. To describe the interaction more directly, a figure of predicted NSSI against body dissatisfaction was plotted (See Fig. 3).

Discussion

In the present study, we examined the roles of psychological distress, disordered eating, and self-compassion in the relationship between body dissatisfaction and NSSI. Since the links between body dissatisfaction, psychological distress, disordered eating, and NSSI have previously been established, we focused on investigating potential mediating roles of psychological distress and disordered eating in the link from body dissatisfaction to NSSI. A possible moderation effect of self-compassion in the proposed mediation model from body dissatisfaction to NSSI was also examined. Results showed that the relationship between body dissatisfaction and NSSI was fully mediated by psychological distress and disordered eating, and the mediation effects were moderated by self-compassion.

Consistent with previous research [82–85], positive associations between body dissatisfaction and psychological distress, disordered eating, and NSSI were observed. The results of the current study also indicated that psychological distress and disordered eating fully mediated the relationship between body dissatisfaction and NSSI. Regarding the role of psychological distress, it has been well-documented that individuals with body dissatisfaction were more likely to experience psychological distress [24, 84, 86]. Moreover, according to the affect regulation model [34], increases in negative emotions may trigger disordered eating (e.g., binge eating [87]) and NSSI appeared to alleviate negative affect [88]. For the role of disordered eating, as documented in previous studies (e.g., [83]), body dissatisfaction could have a positive effect on NSSI in a clinical cohort of individuals with eating disorders, as well as in a non-clinical college student cohort. Thus, the results of the present study showed that disordered eating may help explain the association between body dissatisfaction and NSSI in non-clinical samples. Therefore, future interventions on NSSI of Chinese young adults may consider the roles of body dissatisfaction, psychological distress, and disordered eating.

Consistent with our expectations, self-compassion was found to moderate the path from disordered eating to NISS. Specifically, results indicated that individuals with lower levels of self-compassion tended to have a stronger relationship between disordered eating and NSSI, whereas individuals with higher levels of self-compassion have a weaker association between disordered eating and NSSI. These observations can be explained by the essence of self-compassion itself. Self-compassion as a healthy cognitive style can regulate threats and negative effect, and thus buffer against the negative consequences of detrimental effects [55, 61, 89, 90]. Meanwhile, individuals with higher levels of self-compassion were found to better regulate negative emotions so as to have better mental health [52, 91]. Thus, it is not surprising that we found individuals who had same levels

of disordered eating with higher levels of self-compassion were less likely to engage in NSSI. Taken together, these findings support the well-documented association between body dissatisfaction and NSSI, and also suggest that this association may be relieved by a buffering effect deriving from self-compassion regarding disordered eating.

However, contrary to our hypothesis, the current study showed no significant evidence of the moderating role of self-compassion on the direct path from body dissatisfaction to NSSI or on the path from psychological distress to NSSI. In previous research [52, 92], these paths were found to be moderated by self-compassion. Considering our moderation models included multiple covariates, especially disordered eating, the nonsignificant moderating effects of self-compassion may suggest that compared to the interaction between self-compassion and body dissatisfaction or the interaction between self-compassion and psychological distress, the interaction between self-compassion and disordered eating is much stronger to predict NSSI. This finding further supports that self-compassion is likely an important factor in to which extent disordered eating may contribute to NSSI [93–95].

The current results also have several practical implications to reduce NSSI among college students. First, the significant positive relationship between body dissatisfaction and NSSI implies that targeting body dissatisfaction may be a viable way to reduce NSSI. For example, as suggested in Kennedy et al. [96], improving body esteem can be helpful for reducing NSSI among individuals with weight suppression. Second, the significant mediating effects of psychological distress and disordered eating imply that mitigation of psychological distress and disordered eating may represent an effective approach to attenuate the association between body dissatisfaction and NSSI. Of note, a recent study demonstrated that treating aspects that are common to both NSSI and eating disorders may be a more successful strategy [44]. Similarly, Barlow et al. [97] previously employed a unified protocol for transdiagnostic treatment modules that appeared to achieve a successful reduction in NSSI, eating disorders, or both. Finally, the moderating effect observed for self-compassion support the development of effective interventions to reduce NSSI by cultivating individuals' self-compassion (e.g., the Compassion Focused Therapy [98]), especially considering that ample evidence suggests that self-compassion buffers against NSSI [52, 99].

There were three major limitations associated with the present study. First, since only a non-clinical sample of Chinese college students was examined, it remains unclear whether the proposed model can be generalized to clinical samples among the Chinese population (e.g., individuals with eating disorders), or further to children and adolescents. Second, as with any study conducted in a cross-sectional setting, causal relationships among the variables are not guaranteed, and longitudinal and experimental research studies are needed to explore causal relationships observed among the variables of interest. Finally, as indicated in Wang et al. [100], the use of the short form of the SCS might be a limitation, as the short form of SCS does not show the multifaceted structure of self-compassion. In this case, it would be better for future researchers to use the long form of the SCS to further explore which dimension of self-compassion may have contributed most to the moderating effect of self-compassion found in the current work.

Conclusion

Overall, the results of the present study supports that positive relationships exist between body dissatisfaction, psychological distress, disordered eating, and NSSI among Chinese young adults. In addition, mediating roles were observed for psychological distress and disordered eating in the relationship between body dissatisfaction and NSSI. As a significant moderator, self-compassion was also found to buffer the association between disordered eating and NSSI. Thus, the findings of the current study highlight the potential value of targeting body dissatisfaction, psychological distress, disordered eating, and self-compassion in interventions for NSSI.

What is already known on this subject?

Even though a number of studies have reported the association between body image issues and NSSI, the potential underlying mechanisms remains largely unexplored, especially in China where the research on body image is underrepresented. In our study, we examined the association between body dissatisfaction and NSSI among college students in China, and we also tested a moderated mediation model in which between body dissatisfaction, NSSI, psychological distress, disordered eating, and self-compassion were involved.

What does this study add?

Our results showed that there was a small-to-medium positive relationship between body dissatisfaction and NSSI. The relationship was fully mediated by psychological distress and disordered eating. The mediating role of disordered eating was further moderated by self-compassion, suggesting that self-compassion acted as a buffer against the relationship between disordered eating and NSSI. Our findings suggest that targeting body dissatisfaction, psychological distress, disordered eating, and self-compassion in interventions for NSSI.

Author contributions B.T. designed the study and drafted the manuscript. C.T. helped draft and revise the manuscript. C.Z. helped perform the statistical analysis. J.H. helped draft the manuscript, interpret the results, and revise the manuscript. All authors read and approved the final manuscript.

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Declarations

Conflict of interest No conflict of interest declared.

Ethical approval All procedures performed in this study involving human participants were in accordance with the ethical standards of Zhengzhou University and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all the surveyed participants.

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