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The mediating role of self-compassion in the relationship between positive reactivity, negative reactivity, and perfectionism with disordered eating

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Abstract:

BACKGROUND: Individuals with disordered eating are at an increased of having one or more additional risks for comorbid disorders, such as anxiety disorder, depressive disorder, and insomnia. Therefore, the present study aimed to investigate the mediating role of self-compassion in the relationship between positive reactivity, negative reactivity, and perfectionism with disordered eating.

MATERIALS AND METHODS: The study method was descriptive-correlational through structural equation modeling (SEM). The present study population included all students of the University of Tehran in the city of Tehran in 2018–2019. A total of 302 students were selected by convenience sampling method and completed questionnaires on eating attitudes test-8, self-compassion scale (short form), eating disorder inventory-perfectionism scale, and Perth emotional reactivity scale. The SEM path analysis and Pearson correlation coefficient were conducted to analyze the obtained data in SPSS-23 and Lisrel-8.80.

RESULTS: The finding of the path analysis showed that self-compassion acts as a mediating role in the relationship of disordered eating with positive and negative emotional reactivity and perfectionism. Only the direct effect coefficient of general positive reactivity on disordered eating was not significant.

CONCLUSION: Based on the results of this study, self-compassion can serve as a protective factor against negative emotional reactivity and perfectionism. Therefore, self-compassion can be considered in the development of prevention and treatment programs for disordered eating.

Keywords:

Disordered eating, emotional reactivity, perfectionism, self-compassion

Introduction

Eating disorders are complicated and multifactorial diseases that are associated with various parameters including biological, sociocultural factors, psychological, and developmental.^[1] Eating disorders have a significant correlation with psychological and physical disorders.^[2,3] The prevalence of eating disorders has increased in the last 50 years.^[4] Eating disorders have

become a major concern due to the increasing prevalence in all age, economic, social, and cultural groups.^[5] The term disordered eating characterizes several weight-related signs (such as a persistent dieting and weight concerns).^[6]

The prevalence of disturbed eating is high in the general population. The prevalence of disordered eating in Germany is in the range of 3.9^[7] to 31.6^[8] contingent on the common sample and the screening tools. Women have a higher prevalence of disordered

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eating or disturbed eating and clinical eating disorders than men. Negative body image, diet, and concerns about weight are variables that increase the risk of eating disorders.^[9] Students are at high risk for eating disorders due to academic stress, high workload, need for continuous learning, and risk of illness.^[10] Contrary to popular belief, recent longitudinal studies have shown that disordered eating behaviors persist and increase from childhood to adulthood.^[11,12] Individuals at high risk for disordered eating are at a higher chance of having a comorbid of psychiatric disorders, including anxiety, depression, and insomnia,^[6] and report a lower quality of life.^[13]

Researchers have considered the relationship between self-compassion and eating disorders and disordered eating.^[14-16] There is ample evidence that self-compassion is negatively associated with psychopathology and acts as a protective factor against various psychiatric disorders.^[17-20] Self-compassion is a protective factor against poor body image and eating psychopathology.^[16] self-compassion is related to perfectionism.^[21-23] Perfectionism is defined as a set of very high criteria for performance that is accompanied by extreme critical evaluation.^[24] Self-compassion is also associated with positive and negative emotional reactivity and difficulty regulating emotion.^[22,25-27] Emotional reactivity is the duration, intensity, span, and expansion of emotional experience.^[28]

Given the protective role of self-compassion, perfectionism is a variable that seems to be a risk factor for disordered eating and eating disorders.^[29,30] Emotional reactivity is also associated with disordered eating and eating disorders.^[31-35]

Given the protective role of self-compassion against psychopathology, it may play a mediating role in the relationship between perfectionism and emotional reactivity to disordered eating. Considering the high prevalence of disordered eating^[7,8] and high comorbidity with mental disorders and the severe consequences of disordered eating (6 and 13), determining the predictors can be an important step in the intervention and treatment of these people. See the mediating role of self-compassion in Figure 1.

Given the high prevalence of problem eating among students in Iran,^[36,37] the lack of such research is felt to identify the factors affecting the psychological consequences of disordered eating and to use the research results for treatment. This study was conducted to investigate the mediating role of self-compassion in the relationship between perfectionism and positive and negative emotional reactivity with disordered eating.

Materials and Methods

Sample

The research method was descriptive and based on the method of data collection and analysis was correlation through structural equation modeling (SEM). The present study population included all students of the University of Tehran in 2018–2019. To determine the sample size, a very important question in factor analysis is to determine the minimum sample size required to collect data related to SEM. The recommended sample size for confirmatory factor analysis is about 200 samples for ten factors.^[38] Due to the fact that in SEM, the sample size was reported to be more than 200 suitable,^[38] based on this, 340 students were selected by convenience sampling method, of which 38 had completed the questionnaires incompletely. They were excluded from the study. Based on this, the results were analyzed on 302 students (169 boys and 133 girls). Inclusion criteria for this study included being a student and satisfaction with participating in the study and exclusion criteria for severe psychiatric illness. The SEM path analysis and Pearson correlation coefficient were conducted to analyze the obtained data in SPSS-23 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) and Lisrel-8.80 (version 8.8, Jöreskog K, Sörbon D. Lisrel for Windows 8.80. 2006. Scientific Software International: Lincolnwood, IL). This research with the code of ethics (IR. IUMS. REC.1398.1138) was approved by the Iran University of Medical Sciences.

Instruments

Self-compassion scale (short form)

This scale consists of 12 items that participants answer in a 5-point Likert range from 1 (almost never) to 5 (almost always). The short form of the compassion scale has a high correlation with the long form ($r = 0.97$) and the reliability of the test-retest has been reported to be 0.92.^[39] Cronbach's alpha of this scale was 0.78.

Perth emotional reactivity scale

This scale is the most comprehensive tool for measuring the construct of emotional reactivity. This scale

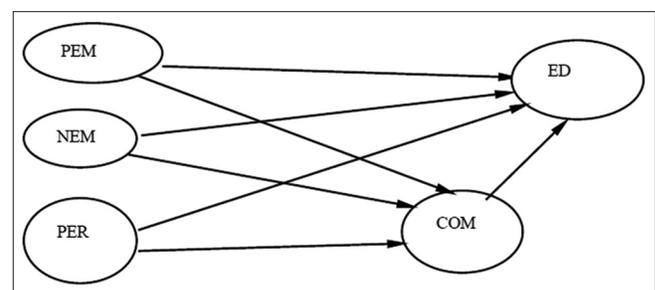


Figure 1: Hypothetical model. COM = Self-compassion; PER = Perfectionism; ED = Disordered eating; PEM = Positive emotional reactivity; NEM = Negative emotional reactivity

has 30 items that measure positive and negative emotional reactivity. The subjects respond to the item on a five-point Likert scale from strongly disagree^[1] to strongly agree.^[5,28] The Persian version of this scale was standardized by Mousavi Asl *et al.*, which has appropriate psychometric properties.^[28] Cronbach's alpha of positive reactivity and negative reactivity were 0.87 and 0.92, respectively.^[40] The reliability of the test-retest of the positive reactivity and negative reactivity were 0.86 and 0.93, respectively.^[40]

Eating disorder inventory-perfectionism scale

This questionnaire is a self-report tool for measuring eating-related perfectionism. Items on a six-point scale from 0 to 3 ("always" = 3; "usually" = 2; "often" = 1; and "sometimes," "rarely," or "never" = 0) are scored. A higher score indicates greater perfectionism.^[41]

Eating attitudes test-8

This questionnaire measures disordered eating, which is scored as 0 (almost disagree) and 1 (almost agree). This questionnaire has desirable psychometric properties.^[42] The Persian version of this scale has been standardized by Mousavi Asl *et al.*,^[43] which has good validity and reliability.^[43]

Results

Description of the sample

The results were analyzed on 302 students including 133 girls (44%) and 169 boys (56%) in the age range of 19–47. The mean and standard deviation of the subjects' age scores were 23.83 and 4.57, respectively.

The results showed that disordered eating had a positive and significant correlations with perfectionism ($r = 0.37$, $P < 0.01$) and general negative reactivity ($r = 0.57$, $P < 0.01$), while with self-compassion ($r = -0.62$, $P < 0.01$) and general positive reactivity ($r = -0.24$, $P < 0.01$) had a negative and significant correlations. Self-compassion also had a negative and significant correlations with perfectionism ($r = -0.32$, $P < 0.01$) and general negative reactivity ($r = -0.70$, $P < 0.01$), but with general positive reactivity ($r = 0.39$, $P < 0.01$) had a positive and significant correlations [Table 1].

In the hypothesized model of the study, the relationship between perfectionism, general positive reactivity, and general negative reactivity with disordered eating mediated by self-compassion was investigated. The results of the proposed model fit indices are presented in Table 2, which showed that the proposed model had the acceptable fit. Comparative fit index, normed fit index, and incremental fit index values > 0.90 were judged to indicate acceptable fit, as were root mean square error of approximation values < 0.08 .^[36] The

normal Chi-square is expected to be lower than 3 for an acceptable model.^[44]

As can be seen in Figure 2, perfectionism has a direct effect coefficient ($t = 3.26$, $\beta = 0.20$) on disordered eating which was significant. General negative reactivity had a direct effect coefficient ($t = 2.16$, $\beta = 0.18$) on disordered eating. General positive reactivity has a direct effect coefficient ($t = 0.13$, $\beta = 0.01$) on disordered eating, which is not significant. Self-compassion also had a direct effect coefficient ($t = -5.63$, $\beta = -0.64$) on disordered eating, which is significant. Given that in the SEM, the

Table 1: Mean, standard deviation, correlation between disordered eating, self-compassion, general negative reactivity, general positive reactivity, and perfectionism

Variable	Mean	SD	1	2	3	4	5
DE	2/39	2/84	1	-0.62**	0.37**	0.57**	-0.24**
SC	35/25	9/39		1	-0.32**	-0.70**	0.39**
P	8/16	4/32			1	0.38**	0.04
GNR	48/56	13/56				1	-0.27**
GPR	50/05	10/82					1

**Correlation is significant at 0.01 level. DE=Disordered eating, SC=Self-compassion, GNR=General negative reactivity, GPR=General positive reactivity, P=Perfectionism, SD=Standard deviation

Table 2: Model fit indices, the mediating role of self-compassion in the relationship between positive reactivity and negative reactivity and perfectionism with disordered eating

Indices	Quantity
PNFI	0.86
NFI	0.91
RMSEA	0.05
AGFI	0.81
IFI	0.94
CFI	0.94
χ^2/df	1.99

RMSEA=Root mean square error of approximation, NFI=Normed fit index, PNFI=Parsimony normed fit index, AGFI=Adjusted global fit index, IFI=Incremental fit index, CFI=Comparative fit index

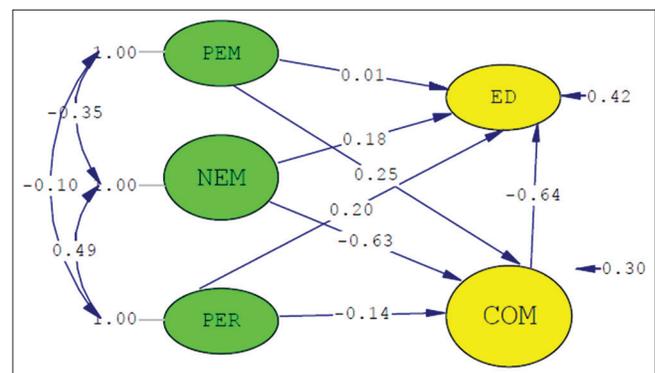


Figure 2: The mediating role of self-compassion in the relationship between positive and negative emotional reactivity and perfectionism with disordered eating. COM = Self-compassion; PER = Perfectionism; ED = Disordered eating; PEM = Positive emotional reactivity; NEM = Negative emotional reactivity

significance of the path coefficient is specified using the value of *t*. If the value of *t* is more than 1.96, the relationship between the two constructs is significant. The only direct effect of general positive reactivity on disordered eating was not significant. See the mediating role of self-compassion in Figure 2.

Discussion

Disordered eating and body image concern are common in Iran.^[36,37,45] The results showed that perfectionism has a positive and significant correlation with disordered eating. Furthermore, perfectionism was a valid predictor in the path analysis model for disordered eating. This result is consistent with the research of Johnson *et al.*, who showed that perfectionism is significantly associated with symptoms of eating disorders in adolescents and children.^[46] These results are also consistent with other studies.^[22,28-30] Perceived pressure to be perfect is a major psychological risk factor for unhealthy eating behaviors because people, peers, and social groups judge them through the lens of fitness. This connection can also be due to the fact that they expect to achieve excellent body physical (thin and lean body) by dieting.

Due to the fact that perfectionists are looking for irrational and very high standards in terms of personal goals and expectations, and people with negative perfectionism have a negative attitude towards their mistakes, they blame themselves more. Moreover, they see inconsistencies between their performance and their expectations. Negative perfectionism in people with eating disorders leads to increased unsuccessful experiences that affect their sense of worth and ultimately lead to low self-esteem and high levels of anxiety, so that they feel valued by others. They are very worried about being rejected by others. The rumination and low self-efficacy that they show prevent them from succeeding and feeling good.^[47]

The results showed that general negative reactivity had a positive and significant correlation with disordered eating. General negative reactivity was a valid predictor in the path analysis model for disordered eating. These results are consistent with other studies.^[31-35] Claes *et al.*,^[48] showed that emotional reactivity is a predisposing factor for eating disorders and nonsuicidal self-injury behavior. Disordered eating is a way to cope with stressful situations and negative moods. Emotion-based coping and avoidance strategies are related to diet, overeating, and dysfunctional eating attitudes. Women with eating disorders are more likely to use dysfunctional emotion regulation strategies such as rumination and suppression in response to negative emotions.

The results showed that general positive reactivity had a negative and significant correlation with

disordered eating. These results are consistent with other studies.^[49,50] Positive emotions may increase a person's resistance to negative events and help prevent mental and physical disorders. Positive emotion can nullify negative emotions and neutralize their destructive effects.^[51]

The path analysis model showed that self-compassion was a significant mediator between general positive reactivity, general negative reactivity, and perfectionism with disordered eating. These results are related to the results of other studies.^[23,52-55] Self-compassion mediates the relationship between maladaptive perfectionism and dissatisfaction with body image.^[23]

Self-compassion can be considered as a useful emotion-based coping strategy. Since self-compassion requires conscious awareness of one's emotions, painful and upsetting feelings are no longer avoided, but we approach them with kindness, understanding, and a sense of common humanity. Thus, negative emotions become more positive emotions and give us the opportunity to more accurately understand the situation and choose effective actions to change themselves or the situation effectively and appropriately. Self-compassion increases emotional resilience, and people with higher levels of this personality trait are less likely to be repressed.

People who have higher self-compassion try to experience less negative emotions by normalizing the experience when experiencing unpleasant events (common humanity). Compassion acts as a protective factor against the effects of negative events. Compassionate people judge themselves less harshly, accept negative life events more easily, and their self-assessments and reactions are more accurate and based on their actual performance. Judgment in these people tends neither to exaggerate self-criticism nor to a self-defensive inflation.

Self-compassion helps people assess and reevaluate situations that are less threatening and more manageable when faced with difficult situations. Furthermore, see negative events as less catastrophic. Self-compassion exercises as a form of emotion regulation can improve the ability to recognize and accept emotions, reduce emotional numbness, and reduce chronic arousal.^[44,56] People with effective emotion regulation skills are more able to practice compassion because emotional awareness and other aspects of emotion regulation are used in self-compassion exercises.^[56]

This research had some limitations that can be considered in future studies. One of the limitations of the present study is the cross-sectional design of the study, which we cannot draw causal conclusions. In future research,

experimental designs can be used. All study tools were self-reported, which could lead to bias or responses or favorable social responses. Third, this study was performed on a nonclinical population that can be performed on clinical and general populations in future studies.

Conclusion

People with disordered eating are at high risk for comorbid psychiatric disorders, including anxiety, depression, and insomnia. Based on the results of this study, self-compassion can serve as a protective factor against negative emotional reactivity and perfectionism. Therefore, self-compassion can be considered in the formulation of prevention and treatment programs for disordered eating.

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Conflicts of interest

There are no conflicts of interest.

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