The Relationship of Eating Patterns with Emotion Regulation Difficulties and Psychopathology in Obesity Patients

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WHAT IS ALREADY KNOWN ON THIS TOPIC?

- *Emotional eating and obesity are commonly linked to psychological factors such as depression, anxiety, and difficulty managing emotions. However, few studies have examined how these variables interact in clinical populations.*

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ABSTRACT

Objective: This study aims to examine the relationship between eating styles (emotional eating, external eating, and restrained eating), emotion regulation difficulties, and psychopathological conditions in individuals with obesity. Given the strong association between pathological eating behaviors—such as emotional eating and binge eating disorder—and psychological factors like depression, anxiety, and stress, this study explores how these interactions contribute to obesity. Understanding these relationships may provide valuable insights for developing more effective intervention strategies in obesity treatment.

Methods: This study included obese patients, demographically matched controls recruited from a university hospital outpatient clinic, and social media announcements. Participants aged 18-55 with sufficient cognitive ability to complete assessments were included, while those with severe psychopathology or substance misuse were excluded. Data were collected using the Dutch eating behavior questionnaire, the difficulties in emotion regulation scale, and the symptom checklist-90-revised. Ethical approval was obtained, and all participants gave informed consent.

Results: Obese individuals showed significantly higher emotional eating, emotion regulation difficulties, and psychological distress than controls. Emotional eating was positively correlated with impulse regulation difficulties, depression, anxiety, and phobic anxiety. Regression analysis identified depression and phobic anxiety as key predictors of emotional eating, emphasizing the impact of psychological distress on eating behaviors.

Conclusion: The study reveals the exacerbation of symptoms in obese individuals during emotional distress and highlights the role of emotion regulation difficulties in the worsening of eating behaviors.

Keywords: Eating behaviors, emotion regulation, obesity, psychopathology

WHAT THIS STUDY ADDS ON THIS TOPIC?

- *This study shows that emotional eating in people with obesity is strongly associated with emotion regulation difficulties—especially impulse control—and specific psychiatric symptoms such as depression and phobic anxiety.*
- *Psychological distress and emotion regulation problems significantly impact eating behavior in obesity.*
- *Effective obesity treatment should integrate emotion regulation and mental health interventions, not just diet and exercise plans.*

INTRODUCTION

Obesity is a widespread public health problem across all segments of society, arising from the interaction of biological, psychological, and environmental factors and often fueled by inadequate diets and low physical activity.[1] It is closely linked with mental health, making their interplay an area of growing scientific interest. Research has demonstrated that obesity and psychiatric conditions such as depression, anxiety, and eating disorders are highly comorbid, suggesting a complex, bidirectional relationship.[2-4]

Eating patterns play a crucial role in understanding obesity-related behaviors. These patterns are shaped by physiological, psychological, social, and genetic influences.[5,6] The literature highlights 3 main psychological theories of overeating: the psychosomatic theory, the externality theory, and the restraint theory. The psychosomatic theory views emotional eating as an abnormal response to stress, often linked to poor interoceptive awareness and difficulty distinguishing between hunger and emotional states. The externality theory emphasizes the influence of external food cues, such as sights and smells, over internal hunger signals. Meanwhile, the restraint theory explains overeating as a breakdown of self-control following dietary restriction, often associated with emotional vulnerability.[7,8] Emotion dysregulation is central to these patterns, with evidence showing its role in obesity and binge eating disorder. Negative emotions can trigger overeating, making weight control more challenging for many individuals.[9] Emotion regulation is defined as an individual's ability to inhibit impulsive reactions, maintain goal-directed behavior, control physiological arousal, and sustain attention despite intense emotions.[9-11] Studies suggest that it is the ability—or inability—to regulate emotions, rather than the mere frequency of negative emotions, that predicts maladaptive coping strategies such as overeating.[9-11]

Obesity is associated with a high prevalence of psychiatric comorbidities, including depression, anxiety, and eating disorders. These conditions can intensify overeating and weight gain, compounded by factors such as social isolation, low energy, and impaired self-control.[12,13] Although existing studies have established a link between obesity and psychiatric comorbidities, most have focused on individual variables in isolation, with limited examination of how disordered eating patterns, emotion dysregulation, and psychiatric symptoms interact within the same clinical sample. As a result, the combined role of these factors in the maintenance of obesity remains poorly understood, and targeted interventions addressing these interconnections have yet to be fully developed.[14,15]

The present study hypothesizes that higher levels of depression, anxiety, and stress will be associated with greater emotion dysregulation and more maladaptive eating patterns (emotional, external, and restrictive) in patients with obesity. By simultaneously assessing these variables, this research aims to fill a critical gap in the literature and provide a more comprehensive understanding of the interplay between psychiatric comorbidities and disordered eating. The findings may contribute to the development of more effective, targeted intervention and treatment strategies for obesity that address its complex psychological underpinnings.

MATERIAL AND METHODS

This case-control study was conducted in Ege University Faculty of Medicine, Department of Psychiatry, İzmir, Türkiye, between October 1, 2015, and March 31, 2016. The Ethical Committee of Ege University Faculty of Medicine approved the study protocol (Approval no: 15-3; Date: 20.03.2015).

Participants

The study included obese patients and control subjects who were demographically (i.e., age, gender, education level, and working status) matched with the obesity group from the applications made through Ege University Faculty of Medicine, Department of Psychiatry, Consultation-Liaison Psychiatry Outpatient Clinic, Department of Endocrinology and Metabolic Diseases, and announcements via social networks of the researchers.

The inclusion criteria were being between 18 and 55 years of age, having a sufficient educational level and cognitive abilities to fill in the forms and scales to be used, and a body mass index (BMI) ≥ 30 for the obese and BMI = 18.5-25 for the control groups. The BMI measurements were taken by the researchers at the clinic on the day the scales were administered. Participants with psychopathological symptoms that may affect reality testing and decision-making abilities, i.e., psychotic state, severe anxiety or depression, alcohol or substance misuse, and mental retardation, were excluded. A psychiatric evaluation was conducted by a senior psychiatry resident with more than 4 years of

clinical experience, using the Structured Clinical Interview for DSM-5 Disorders—Clinician Version[16] in addition, the scoring of the scales was also done by the same researcher. Of the 179 obese patients identified from clinic records and new applicants, 66 were found to have undergone bariatric surgery, 29 could not be reached at their contact numbers, 16 did not meet the criteria in the preliminary interview, and 18 refused to participate. In the detailed psychiatric examination, 7n people were found to have moderate to severe depressive disorder, 3 people had attention deficit hyperactivity disorder, 2 people had psychotic symptoms, and 2 people had significant forgetfulness; therefore, these individuals were excluded from the study. From the remaining possible participants, 14 of them did not attend the clinic on the day of evaluation, thus complete data were obtained from a total of 22 obese patients.

All participants gave written informed consent, and anonymity was preserved. The work was conducted according to the Declaration of Helsinki.

Procedure

The patients were assessed using the Dutch eating behavior questionnaire (DEBQ), difficulties in emotion regulation scale (DERS), and symptom checklist-90-revised (SCL-90-R).

Dutch Eating Behavior Questionnaire: It is a 5-point Likert-type self-report scale consisting of 33 items developed by van Strein et al[17] in 1986. This scale was developed to assess eating behaviors that may cause or contribute to excessive weight gain and consists of 3 subscales: emotional eating, external eating, and restrictive eating. The validity and reliability study of the scale was conducted by Bozan et al in 2011.[6]

Difficulties in Emotion Regulation Scale: It is a 36-item, 5-point Likert-type scale developed by Gratz and Roemer to measure difficulties in emotion regulation. The most important feature of the scale is that it assesses difficulties in emotion regulation in 6 different dimensions (acceptance, goals, impulse, awareness, strategies, and clarity) as well as the general difficulty in emotion regulation.[18] The Turkish validity and reliability study of the scale was conducted by Rugancı and Gençöz.[19]

Symptom Checklist-90-Revised: This scale, developed by Derogatis in 1977, is used to screen for psychiatric symptoms and the level of distress/strain the person is experiencing. It is a 5-point Likert-type self-report scale with a total of 90 items. The scale includes subscales for somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid thought, and psychoticism. The average of all items completed on the scale constitutes the general symptom level, and the increase in this score indicates the distress that people feel due to psychiatric symptoms. The positive symptom total (PST), which is the total score of the questions excluding those with a 0 score, reflects the psychiatric symptoms that the person perceives in themselves. The positive symptom level is obtained by dividing the sum of the rating scores of the questions given 0 points by the PBT, and the increase in this score indicates the level of distress that the person feels due to the symptoms they perceive in themselves.[20] Turkish validity and reliability study of the scale was conducted.[21]

Statistical Analysis

Statistical analyses of the data were performed using SPSS version 26.0 (IBM SPSS Corp.; Armonk, NY, USA) with the alpha level set at <0.05. To compare the demographic and clinical data between the obesity and control groups, various statistical methods were utilized to ensure the appropriateness of each test for the data. Specifically, independent samples t-test was applied to evaluate differences in age and BMI. For categorical variables such as gender, education level, work status, and the presence of medical diseases, Pearson's chi-square test was employed. In cases where the assumptions of Pearson's chi-square test were not met, Fisher's exact test was utilized to analyze eating disorder diagnoses, thereby ensuring accurate statistical inference.

Given the distribution of the data, the comparisons of the DEBQ, DERS, and SCL-90-R scores between the 2 groups were conducted using the Mann–Whitney U test. This non-parametric statistical test was selected as it is suitable for evaluating differences between independent groups when the assumption of normality is not met. To further enhance the robustness of the findings and account for potential limitations related to sample size and non-normal distribution, Monte Carlo simulations with 1000 permutations were applied to improve the accuracy of P-value estimation.

Spearman's correlation test was employed to explore the relationships between eating behavior and other psychometric measures in the obesity group, as it is appropriate for assessing the direction and strength of associations between non-normally distributed variables. Finally, to identify predictors of emotional eating in individuals with obesity, a multiple linear regression analysis was performed. In this analysis, the dependent variable was the DEBQ-emotional eating score, while the independent variables included DERS-impulse, SCL-90-PST, depression, anxiety, phobic anxiety, and psychoticism scores. The enter method was used to include all predictors in the model.

RESULTS

Demographic and Clinical Results

The analysis of demographic and clinical data revealed no statistically significant differences between the 2 groups in terms of age, gender, educational status, working status, night eating syndrome, binge eating disorder, and other eating disorders. However, significant differences were observed between the groups regarding BMI, the presence of medical diseases, and emotional eating scores (Table 1).

Comparison Results Between the Groups

The comparison of psychological and behavioral scores between the obesity and control groups revealed several statistically significant differences, highlighting the unique characteristics of individuals with obesity (Table 2).

The total score of DEBQ was significantly higher in the obesity group (mean ± SD: 2.60 ± 0.55) compared to the control group (2.06 ± 0.44), indicating a more pronounced overall eating-related behavior in individuals with obesity (U = 102.00, P < .001). The emotional eating subscale also showed a notable difference, with the obesity group scoring higher (2.35 ± 1.20) than the control group (1.47 ± 0.60), suggesting greater emotional influences on eating behavior (U = 132.00, P = .009).

The total score of DERS was significantly elevated in the obesity group (73.19 ± 14.76) compared to the control group (63.68 ± 15.47), reflecting greater overall difficulties in emotion regulation

Table 1. Demographic and Clinical Characteristics of the Groups

	Obesity Group (n = 22)	Control (n = 22)	Comparison
Age (mean ± SD)	35.18 ± 8.29	34.32 ± 8.19	t = 0.348[a], P = .730
Gender (F/M)	6/16	7/15	χ^2 = 0.109[b], P = .741
Education			
Primary	–	1 (2.3%)	χ^2 = 2.492[b], P = .646
Middle	1 (2.3%)	–	
High	4 (9.1%)	5 (11.4%)	
Undergraduate	10 (22.7%)	11 (25%)	
Postgraduate	7 (15.9%)	5 (11.4%)	
Working status			
Student	4 (9.1%)	4 (9.1%)	χ^2 = 0.000[b], P = 1.000
Working	17 (38.6%)	17 (38.6%)	
Not working	1 (2.3%)	1 (2.3%)	
BMI (mean ± SD)	37.98 ± 6.55	23.28 ± 2.42	t = 9.875[a], P < .001**
Medical diseases			
None	5 (11.4%)	18 (40.9%)	χ^2 = 15.792[b], P < .001**
One	9 (20.5%)	3 (6.8%)	
Multiple	8 (18.2%)	1 (2.3%)	
Eating disorders			
Other eating disorders	2 (4.5%)	3 (6.8%)	P = 1.000[c]
Night eating syndrome	3 (6.8%)	–	P = .233[c]
Binge eating disorder	5 (11.4%)	–	P = .048*[c]
Emotional eating	10 (22.7%)	2 (4.5%)	χ^2 = 7.333[b], P = .007**

BMI, body mass index; F, female; M, male; SD, standard deviation.
[a]Independent sample t-test.
[b]Pearson's Chi-square test.
[c]Fisher's exact test.
*P < .05.
**P < .01.

(U = 148.50, P = .027). The awareness subscale was also significantly higher in the obesity group (16.18 ± 3.36) than in the control group (13.68 ± 3.12), indicating reduced emotional awareness in individuals with obesity (U = 140.50, P = .016).

The global severity index of SCL-90-R was significantly higher in the obesity group (0.80 ± 0.60) compared to the control group (0.41 ± 0.32), suggesting a greater overall psychological symptom burden (U = 147.50, P = .028). The positive symptom distress index showed a significant difference, with the obesity group scoring higher (1.60 ± 0.46) than the control group (1.29 ± 0.26), indicating greater distress caused by psychological symptoms (U = 131.00, P = .008). Among specific symptom domains, somatization scores were higher in the obesity group (0.94 ± 0.77) compared to the control group (0.43 ± 0.33), reflecting greater physical symptom reporting (U = 155.00, P = .040). Interpersonal sensitivity was elevated in the obesity group (0.79 ± 0.72) relative to the control group (0.43 ± 0.55), signifying increased interpersonal discomfort (U = 156.00, P = .040). Depression scores were significantly greater in the obesity group (0.87 ± 0.68) compared to the control group (0.44 ± 0.43), highlighting more

Table 2. Comparison of DEBQ, DERS, and SCL-90-R Scores Between 2 Groups

	Obesity Group (Mean ± SD)	Control (Mean ± SD)	Comparison
DEBQ			
Total	2.60 ± 0.55	2.06 ± 0.44	U = 102.00, P < .001**
External	3.17 ± 0.84	2.70 ± 0.74	U = 160.00, P = .050*
Emotional	2.35 ± 1.20	1.47 ± 0.60	U = 132.00, P = .009**
Restrained	2.37 ± 0.67	2.18 ± 0.61	U = 205.00, P = .396
DERS			
Total	73.19 ± 14.76	63.68 ± 15.47	U = 148.50, P = .027*
Non-acceptance	11.14 ± 5.38	9.05 ± 3.93	U = 190.50, P = .225
Goals	12.14 ± 3.94	11.23 ± 3.46	U = 209.50, P = .450
Impulse	10.91 ± 3.73	9.36 ± 3.55	U = 173.50, P = .106
Awareness	16.18 ± 3.36	13.68 ± 3.12	U = 140.50, P = .016*
Strategies	13.68 ± 4.92	12.55 ± 3.94	U = 211.00, P = .462
Clarity	9.15 ± 3.13	7.82 ± 2.74	U = 170.50, P = .098
SCL-90-R			
Global severity index	0.80 ± 0.60	0.41 ± 0.32	U = 147.50, P = .028*
Positive symptom total	40.18 ± 23.23	27.05 ± 19.01	U = 162.00, P = .061
Positive symptom distress	1.60 ± 0.46	1.29 ± 0.26	U = 131.00, P = .008**
Somatization	0.94 ± 0.77	0.43 ± 0.33	U = 155.00, P = .040*
Obsessive-compulsive	1.12 ± 0.83	0.68 ± 0.43	U = 174.00, P = .107
Interpersonal sensitivity	0.79 ± 0.72	0.43 ± 0.55	U = 156.00, P = .040*
Depression	0.87 ± 0.68	0.44 ± 0.43	U = 152.50, P = .036*
Anxiety	0.63 ± 0.58	0.35 ± 0.27	U = 186.00, P = .184
Hostility	0.85 ± 0.75	0.34 ± 0.33	U = 145.50, P = .021*
Phobic anxiety	0.29 ± 0.39	0.14 ± 0.25	U = 185.50, P = .107
Paranoid ideation	0.88 ± 0.83	0.49 ± 0.46	U = 186.50, P = .192
Psychoticism	0.49 ± 0.58	0.23 ± 0.32	U = 173.50, P = .100

DEBQ, Dutch eating behavior questionnaire; DERS, difficulties in emotion regulation scale; SCL-90-R, the symptom check list-90-revised.
*P < .05.
**P < .01.

depressive symptoms (U = 152.50, P = .036). Hostility was markedly higher in the obesity group (0.85 ± 0.75) than in the control group (0.34 ± 0.33), reflecting increased feelings of aggression (U = 145.50, P = .021).

Relationships Between Eating Behaviors and Psychometric Measures in the Obesity Group

The Spearman's correlation analysis revealed several significant associations between eating behavior scales (DEBQ) and psychometric measures (DERS and SCL-90-R), suggesting interconnected psychological and emotional processes in individuals with obesity (Table 3):

• Impulse regulation and emotional eating: A significant positive correlation was observed between impulse regulation difficulties

Table 3. Relationship of Eating Behaviors with Other Psychometric Data in the Obesity Group

	DEBQ-Total		DEBQ-External		DEBQ-Emotional		DEBQ-Restrained	
	r_s	P	r_s	P	r_s	P	r_s	P
DERS								
Total	0.384	.077	0.152	.500	0.392	.071	−0.078	.731
Non-acceptance	0.175	.436	−0.004	.985	0.225	.314	−0.072	.749
Goals	0.261	.240	0.243	.277	0.187	.405	−0.064	.777
Impulse	0.578	.005**	0.276	.213	0.501	.018*	−0.072	.751
Awareness	−0.199	.375	0.095	.673	−0.117	.604	−0.195	.384
Strategies	0.370	.090	0.036	.875	0.306	.167	0.074	.742
Clarity	0.034	.880	−0.102	.652	0.191	.396	−0.001	.996
SLC-90-R								
Global severity index	0.397	.067	0.207	.355	0.381	.080	−0.079	.728
Positive symptom total	0.435	.043*	0.226	.312	0.424	.049*	−0.047	.834
Positive symptom distress	0.197	.380	0.065	.773	0.282	.203	−0.117	.603
Somatization	0.260	.242	−0.009	.968	0.308	.163	−0.048	.831
Obsessive-compulsive	0.284	.201	0.215	.336	0.262	.240	−0.057	.800
Interpersonal sensitivity	0.385	.076	0.183	.414	0.304	.169	0.138	.541
Depression	0.521	.013*	0.245	.271	0.472	.027*	−0.006	.978
Anxiety	0.431	.045*	0.056	.804	0.435	.043*	0.095	.676
Hostility	0.374	.086	0.248	.266	0.342	.120	−0.054	.810
Phobic anxiety	0.542	.009**	0.280	.207	0.580	.005**	−0.037	.87
Paranoid ideation	0.280	.206	0.150	.506	0.237	.289	−0.078	.729
Psychoticism	0.497	.019*	0.212	.344	0.499	.018*	−0.058	.796

DEBQ, Dutch eating behavior questionnaire; DERS, difficulties in emotion regulation scale; SCL-90-R, the symptom check list-90-revised.
*$P < .05$.
**$P < .01$.

(DERS-Impulse) and the emotional eating subscale (DEBQ-emotional) ($r = 0.501$, $P = .018$). This indicates that individuals experiencing greater difficulty in controlling impulsive behaviors may be more prone to emotionally driven eating patterns.

• Psychological distress and eating behaviors: The PST from the SCL-90-R, reflecting the number of reported psychological symptoms, was positively correlated with both the total score of eating behaviors (DEBQ-total) ($r = 0.435$, $P = .043$) and emotional eating (DEBQ-emotional) ($r = 0.424$, $P = .049$). These findings highlight a relationship between general psychological symptom burden and maladaptive eating behaviors, particularly emotional eating.

• Specific psychological symptoms: Depression symptoms (SCL-90-R, depression) were positively correlated with both the total DEBQ score ($r = 0.521$, $P = .013$) and emotional eating ($r = 0.472$, $P = .027$), indicating that depressive symptoms may play a key role in shaping eating behavior, especially emotional eating. Anxiety (SCL-90-R-anxiety) exhibited a significant positive correlation with the total DEBQ score ($r = 0.431$, $P = .045$) and emotional eating ($r = 0.435$, $P = .043$), suggesting that heightened anxiety levels are closely linked to maladaptive eating responses.

• Phobic anxiety and emotional eating: A notable positive relationship was found between phobic anxiety (SCL-90-R, phobic anxiety) and emotional eating (DEBQ-emotional) ($r = 0.580$, $P = .005$),

suggesting that individuals with higher levels of phobic anxiety may rely on emotional eating as a coping mechanism.

• Psychoticism and eating behaviors: Psychoticism symptoms (SCL-90-R, psychoticism) were positively associated with both the total DEBQ score ($r = 0.497$, $P = .019$) and emotional eating ($r = 0.499$, $P = .018$), further underscoring the impact of psychological distress on maladaptive eating behaviors.

Regression Analysis
The multiple regression analysis revealed that the model significantly predicted DEBQ-emotional, $F_{(6, 15)} = 4.091$, $P = .012$, indicating that the independent variables collectively explained a significant portion of the variance in the dependent variable. The model demonstrated a moderately strong relationship, with an R-value of 0.788 and an R^2 value of 0.621, suggesting that the predictors could explain approximately 62.1% of the variance in DEBQ-emotional. The adjusted R^2 value was 0.469, accounting for the number of predictors in the model.

Examining the individual predictors, PST ($P = .015$), depression ($P = .042$), and phobic anxiety ($P = .024$) were found to be significant predictors of emotional eating. Psychoticism ($P = .055$) and anxiety ($P = .070$) showed marginal significance, while impulse ($P = .559$) was not a significant predictor (Table 4).

These findings suggest that higher levels of depression and phobic anxiety are positively associated with emotional eating, while PST

Table 4. Summary of Multiple Linear Regression Results

Predictors	Unstandardized Coefficients (β)	Standard Error	Standardized Coefficients (β)	t	P
Constant	1.784	0.826	–	2.159	.047*
Impulse	0.054	0.090	0.166	0.597	.559
PST	−0.082	0.030	−1.589	−2.754	.015*
Depression	3.228	1.448	1.826	2.229	.042*
Anxiety	2.012	1.031	0.972	1.951	.070
Phobic anxiety	3.504	1.397	1.150	2.508	.024*
Psychoticism	−3.641	1.748	−1.751	−2.083	.055

PST, positive symptom total.
*$P < .05$

negatively predicts emotional eating. Conversely, psychoticism and anxiety approached significance, indicating potential relationships that may require further investigation.

DISCUSSION

In this study, eating patterns, emotion regulation difficulties, and psychopathological symptoms of obese individuals were compared with normal-weight individuals, and the relationships between these parameters were examined in obese individuals.

The DEBQ-total scores, emotional eating, and external eating scores of obese individuals were significantly higher compared to controls. These findings support the common view that obesity and overeating are frequently associated with negative emotional states and that emotional eating plays an essential role in the development of obesity.[22] The higher tendency for external eating in obese individuals suggests that food stimuli strongly influence these individuals and that environmental factors rather than internal signals influence eating behaviors. Findings on emotional eating emphasize that emotional stress and negative emotions can trigger binge eating behavior.[23]

The DERS total scores were significantly higher in the obesity group than in the controls. In addition, some findings related to the DERS sub-dimensions are also noteworthy; lack of mindfulness was significantly higher in the obesity group than in the control group. In correlation analyses, it was observed that especially the "impulse" sub-dimension had a strong relationship with emotional eating in obese individuals. It has been shown in previous studies that impairments in the reward system are associated with overeating in obese individuals by affecting impulsivity.[24] These results suggest that some emotion regulation difficulties are more prominent in obese individuals than in normal-weight individuals and that they experience inadequacy in coping strategies with negative emotions, but also suggest that obese individuals will show lower compliance with interventions related to weight control if they do not gain the ability to manage their emotional states more effectively.[25]

According to SCL-90-R results, both distress-related scores and psychopathological symptoms such as somatization, interpersonal sensitivity, depression, and hostility were higher in the obesity group than in the control group; in addition, depression, anxiety, phobic anxiety, and psychoticism scores were positively associated with emotional eating behavior. The findings support the view that

psychological difficulties are closely related to both emotional eating and obesity development, that psychopathological symptoms in obese individuals may have a complex structure, and that psychiatric problems should be addressed together in obesity intervention.[26]

Importantly, the results highlight that psychological and emotional regulation factors play a pivotal role in the eating behavior of obese individuals, suggesting that targeted psychosocial interventions as part of a multidisciplinary approach could be highly beneficial.

Specifically, cognitive-behavioral therapy (CBT) can be utilized to help patients recognize and restructure the maladaptive thoughts and behavioral patterns that drive emotional and external eating. The CBT techniques can also aid in addressing the psychological barriers associated with body image, low self-esteem, and interpersonal sensitivities that often accompany obesity.[27,28]

Emotion regulation skills training and third-wave cognitive-behavioral therapies that target emotion regulation skills (e.g., dialectical behavior therapy, acceptance and commitment therapy) can further support obese individuals in gaining better control over their emotional responses, reducing impulsivity, and building resilience in the face of negative affect. These interventions can be pivotal in shifting the use of food from a coping mechanism for distress to a more balanced and conscious behavior[29,30]

In addition, mindfulness-based interventions (such as mindfulness-based stress reduction and mindfulness-based cognitive therapy) can foster greater awareness of internal hunger and satiety cues, reduce reactivity to external food triggers, and help patients cultivate a more adaptive and accepting relationship with their emotions and eating habits.[31-33]

Incorporating these tailored psychosocial interventions, alongside medical treatment and nutritional support, has the potential to optimize long-term outcomes in the treatment and prevention of obesity. Future studies evaluating the efficacy of such interventions will be vital for gaining a deeper understanding of how psychological factors can be leveraged to support weight management.

The main limitations of the study are its single-center, cross-sectional design, and relatively small sample size. Although the small sample size was eliminated with the Monte Carlo method, sample diversity and potential selection bias (e.g., recruitment from 2 departments of 1 center and via social media announcements) may limit the generalizability of the findings. In addition, unmeasured confounding

variables, such as medication use and comorbidities, could have influenced the results. Moreover, longitudinal studies with larger samples, assessing interventions aimed at improving emotion regulation skills or addressing psychopathological factors, may provide a deeper understanding of the role of psychological factors in the development and treatment of obesity.

In conclusion, the findings highlight the multidimensional and complex nature of obesity, especially its psychological aspects. Notably, a significant positive relationship was observed between phobic anxiety and emotional eating, suggesting that individuals with higher levels of phobic anxiety may be more prone to relying on emotional eating as a coping mechanism. In addition, psychoticism symptoms were positively associated with indicators of problematic eating behavior. These results underscore the critical role that specific psychiatric symptoms can play in the development and maintenance of disordered eating patterns. The effects of phobic anxiety and psychoticism on dysfunctional eating behavior warrant further investigation, as this line of inquiry may lead to the development of new, targeted psychotherapeutic approaches for obese individuals. Ultimately, these findings emphasize the value of a multidisciplinary approach—integrating medical treatments with psychosocial interventions—to address psychiatric comorbidities, foster emotional regulation, and support long-term, sustainable weight control and healthier eating habits.

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