

Developing a Structural Equation Model of Disordered Eating Behaviors in Patients With Obesity Based on Perfectionism and the Behavioral Activation/Inhibition Systems, With the Mediating Role of Emotion Dysregulation

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Article Info

Article type:

Original Article

How to cite this article:

Dehghanian, E., Taghinezhad, N., & Amirfakhraei, A. (2027). Developing a Structural Equation Model of Disordered Eating Behaviors in Patients With Obesity Based on Perfectionism and the Behavioral Activation/Inhibition Systems, With the Mediating Role of Emotion Dysregulation. *Applied Family Therapy Journal*, 8(2), 1-17.

<http://dx.doi.org/10.61838/kman.aftj.5901>



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ABSTRACT

Objective: The present study aimed to develop and test a structural equation model of disordered eating behaviors in patients with obesity based on perfectionism and the behavioral activation/inhibition systems, with the mediating role of emotion dysregulation.

Methods and Materials: This descriptive-correlational study employed a structural equation modeling approach. The statistical population consisted of all women with obesity and a body mass index greater than 30 who attended the Baraka Obesity Treatment Clinic in Tehran during 2025–2026. Of these individuals, 250 were selected through convenience and voluntary sampling. The data collection instruments included the Eating Attitudes Test developed by Garner et al. (1982), the Frost Multidimensional Perfectionism Scale (Frost et al., 1990), the Behavioral Inhibition System/Behavioral Activation System Scales developed by Carver and White (1994), and the Difficulties in Emotion Regulation Scale developed by Gratz and Roemer (2004), all of which had demonstrated satisfactory validity and reliability in Iranian samples. The data were analyzed using Pearson's correlation coefficient and structural equation modeling in LISREL.

Findings: The findings indicated that the conceptual model had an acceptable fit, CFI = .96, RMSEA = .069, and $\chi^2/df = 1.70$. Perfectionism had significant direct effects on disordered eating behaviors ($\beta = .18$, $p < .05$) and emotion dysregulation ($\beta = .48$, $p < .001$). The behavioral activation system (BAS) and behavioral inhibition system (BIS) had significant direct effects on emotion dysregulation ($\beta = .25$ and $\beta = .38$, respectively, $p < .01$), whereas their direct effects on disordered eating behaviors were not significant. The indirect effect of perfectionism on disordered eating behaviors through emotion dysregulation was confirmed ($\beta = .264$), indicating partial mediation. In contrast, emotion dysregulation fully mediated the relationships of BAS ($\beta = .137$) and BIS ($\beta = .209$) with disordered eating behaviors. The final model explained 44% of the variance in disordered eating behaviors and 52% of the variance in emotion dysregulation.

Conclusion: The findings suggest that emotion dysregulation functions as a key mediating mechanism in the relationships of perfectionism and behavioral brain systems with disordered eating behaviors among women with obesity. Therefore,

psychological interventions designed to improve emotion-regulation skills and modify perfectionistic standards may contribute to reducing disordered eating behaviors and facilitating more effective obesity management. Future research should test this model in diverse populations, including men and different age groups, using longitudinal designs.

Keywords: *behavioral brain systems, disordered eating behaviors, emotion dysregulation, obesity, perfectionism, structural equation modeling*

1. Introduction

Obesity is one of the most pressing contemporary public health concerns because of its rapidly increasing prevalence, complex etiology, and substantial physical, psychological, social, and economic consequences. Although obesity is commonly defined on the basis of excessive body fat accumulation and is frequently operationalized using a body mass index of 30 or higher, it cannot be adequately understood as the simple consequence of an imbalance between energy intake and energy expenditure. Current perspectives conceptualize obesity as a chronic, multifactorial, and relapsing condition that emerges through interactions among biological vulnerabilities, environmental exposures, dietary patterns, psychological processes, and sociocultural pressures. Its association with cardiovascular disease, type 2 diabetes, several cancers, musculoskeletal problems, and reduced quality of life has made effective prevention and treatment a global priority (Abad-Jiménez & Vezza, 2025). The urgency of this issue is especially evident in regions undergoing rapid nutritional and lifestyle transitions, where energy-dense foods, sedentary behavior, and unhealthy dietary habits have become increasingly prevalent. In the Eastern Mediterranean Region, for example, poor dietary patterns and obesity have been identified as major contributors to the growing burden of noncommunicable diseases (Al-Jawaldeh & Abbass, 2022). These observations underscore the importance of moving beyond purely biomedical or weight-centered explanations and examining the psychological mechanisms that contribute to maladaptive eating and weight-management difficulties.

Among the psychological and behavioral factors relevant to obesity, disordered eating behaviors are particularly important. Disordered eating behaviors include a broad range of maladaptive attitudes and practices related to food, weight, and body shape, such as restrictive dieting, binge eating, food preoccupation, emotional eating, compensatory behaviors, and excessive cognitive control over eating. These behaviors may occur below the diagnostic threshold of a formal eating disorder while still producing considerable

distress, impaired functioning, weight fluctuation, and increased vulnerability to later psychopathology. Disordered eating is not limited to individuals with low body weight or clinically diagnosed eating disorders; it is also common among individuals with overweight and obesity, in whom restrictive eating, loss-of-control eating, and recurrent overeating may coexist. Such patterns can create self-perpetuating cycles in which rigid dietary control is followed by emotional distress, perceived failure, overeating, guilt, and renewed restriction. The clinical relevance of these behaviors is supported by evidence showing that eating disorders and severe eating-related psychopathology are associated with elevated morbidity and excess mortality (Iwajomo et al., 2021). Accordingly, identifying factors that predict disordered eating among individuals with obesity is important not only for weight management but also for the prevention of more severe psychological and medical outcomes.

Disordered eating behaviors are distributed across diverse populations and are shaped by developmental, health-related, and sociocultural factors. Research among female university students has shown that problematic eating attitudes may be associated with body dissatisfaction, weight-related concerns, and other psychosocial vulnerabilities (Damtie et al., 2024). Similarly, adolescents living with chronic medical conditions such as type 1 diabetes may experience disordered eating and body-shape dissatisfaction because dietary monitoring, weight concerns, and disease-management demands can intensify attention to food and appearance (Daniel et al., 2023). Body image concerns and disordered eating are also highly relevant in elite athletes, for whom performance demands, aesthetic expectations, weight-category requirements, and pressure to maintain a specific physique may increase vulnerability (Fatt et al., 2024). These findings demonstrate that disordered eating cannot be attributed to a single demographic or diagnostic group. Rather, it reflects a convergence of individual vulnerabilities and contextual pressures. Women with obesity may be especially vulnerable because they are frequently exposed to weight stigma, repeated dieting, social

comparison, critical comments, and internalized ideals concerning body size and self-control.

Family and interpersonal environments may further shape eating-related attitudes and emotional responses. Negative parental comments regarding weight or body shape have been systematically associated with disordered eating behaviors, suggesting that repeated criticism or evaluative feedback can contribute to body dissatisfaction, dietary restraint, and maladaptive eating patterns (Díaz de León Vázquez & Unikel Santoncini, 2019). Parenting experiences may also influence eating behavior indirectly through the development of emotion-regulation capacities. During childhood and adolescence, caregivers play an important role in helping individuals identify, tolerate, express, and manage emotional states. Invalidating, overly critical, inconsistent, or psychologically controlling parenting may interfere with the acquisition of adaptive emotion-regulation skills, whereas supportive parenting can promote emotional awareness and effective coping (Morris et al., 2017). These developmental processes are relevant to later eating behavior because individuals who cannot manage distress adaptively may use eating restriction, overeating, or food-related control as strategies for reducing emotional discomfort.

One of the most widely investigated personality-related risk factors for disordered eating is perfectionism. Perfectionism is a multidimensional construct involving excessively high personal standards, concern over mistakes, doubts about actions, perceived parental expectations, parental criticism, and a strong preference for organization. Contemporary conceptualizations distinguish between perfectionistic strivings, which involve demanding standards and achievement-oriented tendencies, and perfectionistic concerns, which involve fear of mistakes, harsh self-evaluation, uncertainty, and perceived discrepancy between expectations and performance. Although certain perfectionistic tendencies may appear adaptive in achievement contexts, rigid and self-critical perfectionism is associated with psychological distress and maladaptive coping. After more than three decades of research, multidimensional perfectionism is recognized as a transdiagnostic vulnerability factor implicated in depression, anxiety, eating pathology, interpersonal difficulties, and impaired self-worth (Smith et al., 2022).

Perfectionism may contribute to disordered eating through several mechanisms. Individuals with elevated perfectionism may adopt unrealistic standards concerning body shape, weight, dietary control, or appearance and interpret minor deviations from these standards as evidence

of failure. When body-related goals are inflexible, ordinary fluctuations in eating or weight can trigger guilt, shame, self-criticism, and compensatory restriction. Perfectionistic individuals may also engage in dichotomous thinking, categorizing food and eating behavior as entirely “good” or “bad” and viewing imperfect dietary adherence as total loss of control. Such cognitive rigidity can increase vulnerability to binge-restrict cycles. A systematic review of adolescent studies found a consistent relationship between perfectionism and eating-related symptoms, although the strength of this association varied across perfectionism dimensions and eating outcomes (Vacca et al., 2021). Furthermore, interactions between maladaptive perfectionism and cognitive emotion-regulation strategies appear to intensify eating-disorder symptoms among female college students, suggesting that perfectionism may become especially harmful when individuals rely on ineffective strategies for managing negative experiences (Tng & Yang, 2021).

Evidence also indicates that perfectionism may be associated with specific eating patterns through emotional and cognitive pathways. Emotional eating and perfectionism have both been identified as predictors of binge-eating symptoms, and perfectionism may help explain the association between emotional eating and body mass index (Bernabéu-Brotóns & Marchena-Giráldez, 2022). In adolescents, emotion regulation and perfectionism have been linked to eating-disorder symptoms through cognitive eating patterns, indicating that perfectionistic concerns may shape how individuals think about food and respond to emotional states (Mohorić et al., 2023). More recent work has further suggested that body-related emotion intolerance may be associated with restrictive eating differently depending on dimensions of perfectionism (Solomon-Krakus et al., 2025). Taken together, these findings suggest that perfectionism may influence disordered eating directly through rigid standards and self-critical evaluation and indirectly through impaired emotional processing.

Emotion dysregulation is therefore a central construct in understanding maladaptive eating. Emotion regulation refers to the processes through which individuals identify, monitor, evaluate, and modify emotional reactions in accordance with situational demands and personal goals. Emotion dysregulation includes difficulties accepting emotional responses, maintaining goal-directed behavior during distress, controlling impulses, recognizing emotional states, accessing effective regulation strategies, and achieving emotional clarity. Individuals with high emotion

dysregulation may experience emotions as overwhelming, unacceptable, or uncontrollable and may turn to eating-related behaviors for immediate relief. Restriction can create a temporary sense of control, whereas binge eating or emotional eating may reduce distress through sensory reward, distraction, or short-term mood alteration. Although these behaviors may initially reduce negative affect, their longer-term consequences, including guilt, physical discomfort, weight gain, and self-criticism, can further increase emotional distress.

Prospective evidence indicates that particular dimensions of emotion dysregulation predict both the onset and persistence of eating-disorder behaviors, supporting the possibility that emotional difficulties are not merely consequences of disordered eating but active risk and maintenance factors (McClure et al., 2022). Emotional eating is frequently described as a relief mechanism through which individuals attempt to cope with psychological distress, even though repeated reliance on this strategy may impair well-being and contribute to problematic weight outcomes (Jurek & Maruda, 2024). A path-model study similarly demonstrated an interplay among emotion dysregulation, psychological distress, emotional eating, and weight status, indicating that impaired regulation may connect emotional suffering with maladaptive eating and obesity-related outcomes (Usubini et al., 2023). Thus, emotion dysregulation may represent a shared pathway through which multiple psychological vulnerabilities are translated into disordered eating behavior.

In addition to perfectionism and emotion regulation, neurobehavioral sensitivity to reward and punishment may provide an important explanatory framework. Reinforcement Sensitivity Theory proposes two major motivational systems: the behavioral activation system and the behavioral inhibition system. The behavioral activation system is sensitive to reward, incentive cues, and goal attainment and is associated with approach motivation, reward responsiveness, drive, and fun seeking. The behavioral inhibition system is sensitive to punishment, uncertainty, conflict, and threat and is associated with avoidance, vigilance, anxiety, and heightened negative affect. Individual differences in these systems influence how people respond to appetitive and aversive stimuli. Contemporary neurophysiological research indicates that behavioral activation and inhibition tendencies are related to distinguishable patterns of functional brain networks, supporting the biological basis of these motivational traits (Anderson & Perone, 2023).

The behavioral activation system may be particularly relevant to eating because highly palatable foods act as powerful reward stimuli. Individuals with greater reward sensitivity may experience stronger motivation to approach energy-dense foods, greater responsiveness to food cues, and more difficulty resisting immediate gratification. A systematic review of reward sensitivity, eating behavior, and obesity-related outcomes found that reward-related traits were associated with food intake, overeating, binge-type behavior, and weight-related indicators, although findings varied according to the measures and populations examined (Sutton et al., 2022). Increased behavioral activation may therefore contribute to disordered eating by amplifying approach tendencies toward food, particularly in emotionally distressing or cue-rich environments. Nevertheless, reward sensitivity may not lead directly to eating pathology in all individuals. Its behavioral expression may depend on emotional awareness, impulse control, and the availability of adaptive regulatory strategies.

The behavioral inhibition system may also be associated with maladaptive eating, although through a different pathway. High BIS sensitivity is characterized by heightened responsiveness to threat, criticism, uncertainty, and potential punishment. Individuals with strong inhibition sensitivity may experience greater anxiety, worry, shame, and avoidance, all of which can increase vulnerability to maladaptive coping. Evidence suggests that the association between BIS-related personality characteristics and binge eating may operate through negative affect, indicating that behavioral inhibition may influence eating behavior indirectly by intensifying emotional distress (Wilson et al., 2021). Reward and punishment sensitivities have also been associated with various disordered eating behaviors in both men and women, although the patterns differ according to the type of eating behavior and individual characteristics (Eneva et al., 2017). In restrictive eating disorders, altered responses to affect, reward, and punishment have likewise been proposed as important mechanisms contributing to avoidance of food, rigid control, and persistent symptoms (Sala et al., 2018).

The emotional consequences of BAS and BIS sensitivity may be especially important. Behavioral activation and inhibition are associated with positive and negative affect, but emotional intelligence and emotion-processing capacities may mediate these relationships. Research has shown that trait emotional intelligence mediates associations between BAS/BIS and affective experiences, suggesting that motivational sensitivities do not necessarily produce

emotional outcomes directly; rather, their effects may depend on individuals' capacities to understand and regulate emotion (Merchán-Clavellino et al., 2019). This possibility is highly relevant to disordered eating. Elevated reward sensitivity may increase exposure to appetitive impulses, whereas elevated punishment sensitivity may increase distress and avoidance. When emotion-regulation abilities are inadequate, both tendencies may be expressed through maladaptive eating. Thus, emotion dysregulation may function as a common mechanism linking apparently different motivational systems to similar eating-related outcomes.

Personality characteristics more broadly have also been linked to body-image dissatisfaction and disordered eating. Differences in traits such as neuroticism, conscientiousness, and sensitivity to evaluation may influence body-related beliefs and eating patterns, with potentially different associations among men and women (MacNeill et al., 2017). These findings further support the need to examine disordered eating using multidimensional models that integrate personality, affective, motivational, and behavioral processes. Perfectionism may heighten evaluative standards, BIS may amplify sensitivity to failure or criticism, and BAS may increase responsiveness to rewarding food cues. Emotion dysregulation may then determine whether these vulnerabilities are managed adaptively or expressed through restriction, emotional eating, binge eating, or food preoccupation.

The significance of studying these mechanisms is further reinforced by the broader biological consequences associated with obesity and metabolic disease. Chronic metabolic dysregulation may influence cellular processes involved in survival, proliferation, and tissue repair. For example, diabetes has been shown to dysregulate microRNAs associated with survival, proliferation, and self-renewal in cardiac progenitor cells, illustrating that metabolic disease can produce biological alterations extending beyond weight itself (Purvis et al., 2021). Although such cellular mechanisms are distinct from the psychological pathways examined in the present study, they demonstrate the systemic consequences of metabolic disorders and strengthen the rationale for identifying modifiable behavioral and emotional factors that may support more effective obesity prevention and treatment.

Despite substantial evidence linking perfectionism, behavioral activation and inhibition, emotion dysregulation, and eating pathology, several gaps remain. Many studies have examined only bivariate relationships or focused on

adolescents, university students, athletes, or individuals with diagnosed eating disorders. Fewer studies have simultaneously tested perfectionism and BAS/BIS as predictors of disordered eating in women with obesity. In addition, the direct effects of these variables may obscure more complex indirect processes. Perfectionism may have both a direct relationship with disordered eating and an indirect relationship through emotion dysregulation. In contrast, behavioral activation and inhibition may influence eating primarily by increasing emotional reactivity, impulsivity, distress, or difficulty accessing effective coping strategies. Testing these possibilities requires a structural model capable of estimating direct, indirect, and total effects simultaneously.

A structural equation modeling framework is particularly appropriate because the principal constructs are multidimensional and cannot be adequately represented by single observable indicators. Perfectionism includes concerns about mistakes, doubts about actions, parental influences, personal standards, and organization. BAS includes drive, reward responsiveness, and fun seeking, whereas emotion dysregulation includes several distinguishable but related deficits. Disordered eating likewise encompasses dieting, bulimic tendencies, food preoccupation, and oral control. Modeling these constructs as latent variables can reduce measurement error and provide a more precise evaluation of the theoretical relationships among them. Such an approach may clarify whether emotion dysregulation is a partial mediator of the perfectionism–disordered eating relationship and a full mediator of the relationships between behavioral brain systems and disordered eating.

Understanding these pathways also has practical implications. Obesity interventions that focus exclusively on calorie restriction or physical activity may be insufficient when maladaptive eating is maintained by self-criticism, reward sensitivity, punishment sensitivity, and inability to tolerate emotional distress. Individuals with strong perfectionistic concerns may require interventions targeting rigid standards, all-or-nothing thinking, and shame following perceived dietary failure. Individuals with elevated BAS sensitivity may benefit from strategies for managing food-related reward cues and delaying impulsive responses, whereas those with elevated BIS sensitivity may require interventions addressing anxiety, avoidance, and sensitivity to criticism. Across these patterns, emotion-regulation training may provide a shared therapeutic target by improving emotional awareness, acceptance, impulse

control, goal-directed behavior, and access to adaptive coping strategies.

Accordingly, the aim of the present study was to develop and test a structural equation model of disordered eating behaviors in women with obesity based on perfectionism and the behavioral activation and inhibition systems, with the mediating role of emotion dysregulation.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a descriptive-correlational design with an emphasis on structural equation modeling (SEM). Relationships among latent and observed variables were examined within a conceptual model that included perfectionism as an exogenous variable; the behavioral activation and behavioral inhibition systems (BAS/BIS) as exogenous variables; emotion dysregulation as a mediating variable; and disordered eating behaviors as the endogenous variable. Data were collected through both library-based and field methods. First, the theoretical literature was reviewed to establish the scientific foundations of the model. Subsequently, during the field phase, measurement instruments were administered to the statistical sample to quantify the study variables.

The statistical population consisted of all women with obesity and a body mass index (BMI) greater than 30 who attended the Baraka Obesity Treatment Clinic in Tehran during 2025–2026. Given the nature of structural equation modeling, which requires an adequate sample size to reduce sampling error and increase statistical power in parameter estimation, the minimum sample size was set at 200 based on Kline's (2011) recommendation that at least 200 participants are appropriate for structural equation modeling. Convenience and voluntary sampling methods were used. After coordinating with the clinic administrators, the researcher attended the clinic, reviewed the patients' records, and identified eligible individuals. Following the provision of a complete explanation of the study objectives and the acquisition of written informed consent, the questionnaires were administered to the participants. The inclusion criteria were having at least a high school diploma, not taking psychiatric medications, willingness to complete the questionnaires, and having a BMI greater than 30. Individuals who did not meet these criteria were excluded from the study.

2.2. Measures

Disordered eating behaviors, which constituted the principal dependent variable of the study, were assessed using the Eating Attitudes Test developed by Garner et al. (1982). This 20-item scale was scored on a six-point Likert scale ranging from 1 = always to 6 = never and comprised three subscales: dieting, bulimia and food preoccupation, and oral control. The total score was obtained by summing the item scores. This instrument has demonstrated satisfactory reliability in Iranian studies. Khodabakhsh and Kiani (2014) reported a Cronbach's alpha coefficient of .87, whereas Mehdizadeh (2011) reported a coefficient of .860 for the total scale. Perfectionism, the predictor variable, was assessed using the Frost Multidimensional Perfectionism Scale (FMPS), developed by Frost et al. (1990). This instrument consists of 35 items rated on a five-point Likert scale ranging from strongly disagree to strongly agree and measures six subscales: concern over mistakes, doubts about actions, parental expectations, parental criticism, personal standards, and organization. The total score is obtained by summing the items of the five principal subscales, excluding the organization subscale, with higher scores indicating higher levels of perfectionism. In the Iranian version, an internal consistency coefficient of .86 and a test–retest reliability coefficient of .90 have been reported, indicating acceptable validity and reliability in the Iranian population. The behavioral brain systems were measured using the Behavioral Inhibition System/Behavioral Activation System Scales developed by Carver and White (1994). This 24-item self-report scale comprises seven items assessing the behavioral inhibition system (BIS), 13 items assessing the behavioral activation system (BAS) across the three components of drive, reward responsiveness, and fun seeking, and four filler items. Items are scored on a four-point Likert scale. Studies conducted with Iranian samples have reported internal reliability coefficients of .69 and .78 for the behavioral inhibition and behavioral activation subscales, respectively, as well as satisfactory convergent validity. Emotion dysregulation, which was considered the mediating variable in the conceptual model, was assessed using the Difficulties in Emotion Regulation Scale (DERS) developed by Gratz and Roemer (2004). This 36-item scale is rated on a five-point Likert scale ranging from 1 = almost never to 5 = almost always and assesses six dimensions: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse-control difficulties, lack of emotional awareness, limited access to emotion-

regulation strategies, and lack of emotional clarity. Higher scores indicate greater difficulty regulating emotions. International and Iranian studies have reported high internal consistency for the scale, with Cronbach's alpha coefficients of .93 in the original sample and .81 in an Iranian sample, demonstrating the instrument's psychometric robustness.

2.3. Data Analysis

The collected data were ultimately analyzed at descriptive and inferential levels. At the descriptive level, frequency, percentage, mean, standard deviation, skewness, and kurtosis were calculated. At the inferential level, Pearson's correlation coefficient was used to examine relationships among the variables, and structural equation modeling was conducted in LISREL to evaluate the fit of the conceptual model and the structural relationships among the latent variables.

3. Findings and Results

The findings of the present study are presented in two sections: descriptive and inferential. In the descriptive section, measures of central tendency and dispersion,

including the mean, standard deviation, minimum, maximum, skewness, and kurtosis, were calculated for each principal study variable. To assess the reliability of the measurement instruments in the current sample, Cronbach's alpha coefficients were also calculated for all questionnaires and their subscales. In the inferential section, the statistical assumptions of normality, linearity, and absence of multicollinearity were first examined. Pearson's correlation matrices were subsequently calculated for the principal variables and their subscales. The measurement model, using confirmatory factor analysis, was then fitted for each study construct, and standardized factor loadings were reported. Finally, the structural model was tested using structural equation modeling in LISREL. Model-fit indices, direct path coefficients, indirect or mediating effects estimated through bootstrapping, summaries of direct, indirect, and total effects, and coefficients of determination (R^2) for the endogenous variables were calculated and reported. The statistical sample comprised 250 women with obesity and a BMI greater than 30 who attended the Baraka Obesity Treatment Clinic in Tehran and completed the questionnaires. The participants' mean age was 38.4 years ($SD = 7.2$), and their mean BMI was 34.7 ($SD = 3.1$).

Table 1

Descriptive Statistics for the Principal Study Variables

Variable	n	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Age (years)	250	38.4	7.2	22	55	-0.4	-0.3
Body mass index (BMI)	250	34.7	3.1	30.1	42.5	0.6	0.2
Perfectionism (FMPS)	250	124.5	17.8	85	168	-0.2	-0.5
Behavioral activation system (BAS)	250	34.8	6.2	18	48	-0.1	-0.4
Behavioral inhibition system (BIS)	250	18.2	4.1	8	28	0.3	-0.2
Emotion dysregulation (DERS)	250	102.5	24.3	52	165	0.5	0.1
Disordered eating behaviors (EAT-26)	250	54.6	11.9	28	98	0.2	-0.3

An examination of skewness and kurtosis indicated that the values for all variables fell within the range of ± 2 . Skewness values ranged from -0.6 to +0.5, and kurtosis values ranged from -0.5 to +0.2. These findings supported the normality of the data distributions and confirmed that the assumption of normality required for parametric tests was satisfied. To assess the reliability of the research instruments

in the current sample, Cronbach's alpha coefficients were calculated for all questionnaires and their subscales. The results are presented in Table 2. All coefficients were within the acceptable range, exceeding .70, and indicated satisfactory internal consistency of the measurement instruments in the study population.

Table 2

Cronbach's Alpha Coefficients for the Questionnaires and Subscales

Questionnaire/Subscale	Number of Items	Cronbach's α
Disordered eating behaviors (EAT-26)	20	.89
Dieting	10	.84
Bulimia and food preoccupation	5	.78
Oral control	5	.71
Frost Multidimensional Perfectionism Scale (FMPS)	35	.87
Concern over mistakes	9	.85
Doubts about actions	4	.78
Parental expectations	5	.81
Parental criticism	4	.72
Personal standards	7	.76
Organization	6	.83
Behavioral brain systems (BIS/BAS)	20	—
BAS, total	13	.79
Drive	4	.73
Reward responsiveness	5	.70
Fun seeking	4	.71
BIS	7	.76
Difficulties in Emotion Regulation Scale (DERS)	36	.92
Nonacceptance of emotional responses	6	.87
Difficulties engaging in goal-directed behavior	6	.84
Impulse-control difficulties	6	.89
Lack of emotional awareness	6	.75
Limited access to emotion-regulation strategies	8	.84
Lack of emotional clarity	4	.80

After confirming the reliability of the instruments and the normality of the data distributions, the assumptions of linearity and absence of multicollinearity were also examined. Scatterplots confirmed linear relationships between the predictor and criterion variables. The variance inflation factor (VIF) was below 10 for all variables, ranging

from 1.8 to 3.2, and tolerance values were above .10, ranging from .31 to .56. These findings indicated that there was no substantial multicollinearity in the data. Pearson's correlation coefficients were subsequently calculated among the principal study variables, as presented in Table 3.

Table 3

Pearson Correlation Matrix for the Principal Study Variables

Variable	1	2	3	4	5
1. Perfectionism	1				
2. BAS	.231*	1			
3. BIS	.342**	-.168	1		
4. Emotion dysregulation	.512**	.274*	.385**	1	
5. Disordered eating behaviors	.427**	.308*	-.156	.560**	1

As shown in Table 3, perfectionism was positively and significantly correlated with disordered eating behaviors at the .01 level, $r = .427$, $p < .001$. A positive and significant correlation was also observed between perfectionism and emotion dysregulation, $r = .512$, $p < .001$. The behavioral activation system was positively and significantly correlated with disordered eating behaviors, $r = .308$, $p < .01$, and with emotion dysregulation, $r = .274$, $p < .05$. A positive and

significant correlation was found between the behavioral inhibition system and emotion dysregulation, $r = .385$, $p < .001$. However, the correlation between BIS and disordered eating behaviors was not statistically significant, $r = -.156$, $p > .05$. The strongest positive correlation was observed between emotion dysregulation and disordered eating behaviors, $r = .560$, $p < .001$, indicating a relatively strong relationship between these two variables.

After the statistical assumptions had been confirmed, a measurement model using confirmatory factor analysis was fitted for each study construct. The findings indicated that the measurement models for all latent variables had satisfactory fit. Standardized factor loadings for the

indicators of the latent variables are presented in Table 4. All factor loadings were statistically significant at the .001 level and ranged from .53 to .81, indicating strong relationships between the indicators and their respective constructs.

Table 4

Standardized Factor Loadings for the Measurement Model

Construct	Indicator	Factor Loading	Standard Error	t
Perfectionism	Concern over mistakes	.76	.04	18.90
	Doubts about actions	.70	.05	16.45
	Parental expectations	.68	.05	15.80
	Parental criticism	.65	.06	14.20
	Personal standards	.72	.05	17.10
	Organization	.58	.07	12.50
BAS	Drive	.66	.06	14.70
	Reward responsiveness	.63	.06	13.50
	Fun seeking	.59	.07	12.80
BIS	BIS total score	.74	.05	17.80
Emotion dysregulation	Nonacceptance of emotional responses	.78	.04	20.00
	Difficulties engaging in goal-directed behavior	.72	.05	17.60
	Impulse-control difficulties	.81	.04	21.50
	Lack of emotional awareness	.53	.07	11.60
	Limited access to emotion-regulation strategies	.80	.04	20.10
	Lack of emotional clarity	.69	.05	16.40
Disordered eating behaviors	Dieting	.79	.04	19.50
	Bulimia and food preoccupation	.72	.05	17.50
	Oral control	.61	.06	13.80

After fitting the measurement model, the structural model was tested using structural equation modeling in LISREL.

Model fit was evaluated using several indices, the results of which are summarized in Table 5.

Table 5

Fit Indices for the Structural Equation Model

Index	Obtained Value	Recommended Value
χ^2/df	1.70	< 3
RMSEA	.069	< .08
CFI	.96	> .90
GFI	.92	> .90
AGFI	.89	> .85
NFI	.94	> .90
IFI	.95	> .90
SRMR	.058	< .08

The ratio of chi-square to degrees of freedom, $\chi^2/df = 242.2/141.65 = 1.70$, was below 3, indicating satisfactory model fit. The root mean square error of approximation was $RMSEA = .069$, which was below .08 and indicated an acceptable fit. The comparative fit index was $CFI = .96$, the normed fit index was $NFI = .94$, and the incremental fit index was $IFI = .95$. All these values exceeded .90 and confirmed an excellent fit. The goodness-of-fit index was $GFI = .92$,

and the adjusted goodness-of-fit index was $AGFI = .89$, both of which were acceptable. The standardized root mean square residual was $SRMR = .058$, which was below .08 and indicated adequate model fit. Overall, all fit indices fell within the recommended ranges, demonstrating that the structural model adequately fitted the study data.

The direct path coefficients among the study variables, together with the standardized coefficients, standard errors, *t* statistics, and significance levels, are presented in Table 6.

Table 6

Direct Path Coefficients in the Structural Equation Model

Path	Standardized Coefficient	Standard Error	<i>t</i>	Significance
Perfectionism → Emotion dysregulation	.48	.06	6.28	<i>p</i> < .001
BAS → Emotion dysregulation	.25	.07	3.45	<i>p</i> < .01
BIS → Emotion dysregulation	.38	.07	5.12	<i>p</i> < .001
Emotion dysregulation → Disordered eating behaviors	.55	.05	7.34	<i>p</i> < .001
Perfectionism → Disordered eating behaviors	.18	.07	2.65	<i>p</i> < .05
BAS → Disordered eating behaviors	.09	.07	1.23	ns
BIS → Disordered eating behaviors	−.07	.07	−0.94	ns

As shown in Table 6, the path from perfectionism to emotion dysregulation was statistically significant, with a standardized coefficient of .48 and a *t* value of 6.28, *p* < .001. The path from the behavioral activation system to emotion dysregulation was significant, with a standardized coefficient of .25 and a *t* value of 3.45, *p* < .01. The path from the behavioral inhibition system to emotion dysregulation was also significant, with a standardized coefficient of .38 and a *t* value of 5.12, *p* < .001. In addition, the path from emotion dysregulation to disordered eating behaviors was significant, with a standardized coefficient of .55 and a *t* value of 7.34, *p* < .001. The direct path from

perfectionism to disordered eating behaviors was significant, with a standardized coefficient of .18 and a *t* value of 2.65, *p* < .05. However, the direct path from the behavioral activation system to disordered eating behaviors, $\beta = .09$, *t* = 1.23, and the direct path from the behavioral inhibition system to disordered eating behaviors, $\beta = -.07$, *t* = −0.94, were not statistically significant at the .05 level.

To examine the indirect or mediating effects of emotion dysregulation on the relationships between the predictor variables and disordered eating behaviors, bootstrapping with 5,000 resamples was used. The results are presented in Table 7.

Table 7

Indirect Effects of Emotion Dysregulation

Indirect Path	Indirect Effect	Standard Error	95% Confidence Interval	Type of Mediation
Perfectionism → Emotion dysregulation → Disordered eating behaviors	.264	.056	[.186, .345]	Partial
BAS → Emotion dysregulation → Disordered eating behaviors	.137	.043	[.068, .215]	Full
BIS → Emotion dysregulation → Disordered eating behaviors	.209	.049	[.123, .302]	Full

The indirect effect of perfectionism on disordered eating behaviors through emotion dysregulation was .264 (.48 × .55), with a 95% confidence interval of [.186, .345]. Because the confidence interval did not include zero, the indirect effect was statistically significant. Given that the direct path from perfectionism to disordered eating behaviors was also significant, $\beta = .18$, while the total effect increased to .444 after the mediating effect was included, approximately 59% of the total effect was indirect. Therefore, partial mediation by emotion dysregulation in the relationship between perfectionism and disordered eating behaviors was confirmed. The indirect effect of the behavioral activation

system on disordered eating behaviors through emotion dysregulation was .137, with a 95% confidence interval of [.068, .215], indicating a statistically significant indirect effect. However, because the direct path from BAS to disordered eating behaviors was not significant, $\beta = .09$, full mediation by emotion dysregulation was confirmed. The indirect effect of the behavioral inhibition system on disordered eating behaviors through emotion dysregulation was .209, with a 95% confidence interval of [.123, .302], indicating a significant effect. Given that the direct BIS path was not significant, $\beta = -.07$, emotion dysregulation fully mediated the relationship between BIS and disordered eating

behaviors. To provide a more comprehensive representation of the effects, Table 8 summarizes the direct, indirect, and

total effects of the predictor variables on disordered eating behaviors.

Table 8

Summary of the Direct, Indirect, and Total Effects of the Predictor Variables on Disordered Eating Behaviors

Predictor Variable	Direct Effect	Indirect Effect Through Emotion Dysregulation	Total Effect	Percentage of Effect That Was Indirect
Perfectionism	.18*	.264**	.444	59%
BAS	.09 (ns)	.137**	.227	100%
BIS	-.07 (ns)	-.209**	-.139	100%
Emotion dysregulation	.55**	—	.55	—

Note. $p < .05$. $p < .01$. ns = not significant.

The total effect of perfectionism on disordered eating behaviors was .444, comprising a direct effect of .18 and an indirect effect of .264. This finding indicates that approximately 59% of the total effect of perfectionism was transmitted through emotion dysregulation. The total effect of BAS on disordered eating behaviors was .227, and the total effect of BIS was -.139. Given that their direct effects were not significant, the effects of these two variables were

entirely indirect and operated through emotion dysregulation. Moreover, the effect of emotion dysregulation on disordered eating behaviors was primarily direct, $\beta = .55$. Finally, coefficients of determination (R^2) were calculated for the endogenous variables to indicate the proportions of variance explained by the predictor variables. The results are presented in Table 9.

Table 9

Coefficients of Determination and Estimation Errors for the Structural Equations

Structural Equation	R^2	Adjusted R^2	Standard Error of the Estimate
Emotion dysregulation predicted by perfectionism, BAS, and BIS	.52	.50	16.4
Disordered eating behaviors predicted by perfectionism, BAS, BIS, and emotion dysregulation	.44	.42	9.8

The results indicated that perfectionism, BAS, and BIS explained 52% of the variance in emotion dysregulation, $R^2 = .52$. In addition, perfectionism, BAS, BIS, and emotion dysregulation jointly explained 44% of the variance in disordered eating behaviors, $R^2 = .44$. These values indicate the relatively strong predictive capacity of the model and demonstrate that approximately half of the variance in emotion dysregulation and disordered eating behaviors was explained by the variables included in the model. Overall, the findings indicated that the proposed structural model adequately explained the relationships among the study variables. Emotion dysregulation functioned as a key mediating variable in the relationships of perfectionism and behavioral brain systems with disordered eating behaviors. Except for the direct BAS and BIS paths, which were explained through full mediation, the other hypothesized paths were statistically significant at acceptable levels. These findings suggest that perfectionism predicts disordered eating behaviors both directly and indirectly by increasing difficulties in emotion regulation. In contrast, the effects of the behavioral activation and inhibition systems on disordered eating behaviors operate exclusively through

emotion dysregulation, which functions as a common mediating mechanism in these relationships.

4. Discussion

The present study aimed to develop and test a structural equation model of disordered eating behaviors in women with obesity based on perfectionism and the behavioral activation and inhibition systems, with emotion dysregulation serving as a mediating variable. The findings demonstrated that the proposed structural model had satisfactory fit indices and was capable of explaining a substantial proportion of the variance in the principal endogenous variables. Specifically, perfectionism, the behavioral activation system (BAS), and the behavioral inhibition system (BIS) collectively explained 52% of the variance in emotion dysregulation, whereas perfectionism, BAS, BIS, and emotion dysregulation jointly explained 44% of the variance in disordered eating behaviors. Perfectionism had significant direct effects on both emotion dysregulation and disordered eating behaviors. BAS and BIS significantly predicted emotion dysregulation, but their direct paths to

disordered eating behaviors were not significant. Emotion dysregulation, in turn, had the strongest direct effect on disordered eating behaviors. The mediation analyses indicated that emotion dysregulation partially mediated the relationship between perfectionism and disordered eating behaviors and fully mediated the relationships of BAS and BIS with disordered eating behaviors. These results support a multidimensional explanation of disordered eating in obesity in which personality-related standards, motivational sensitivities, and emotional-processing deficits operate in an interconnected manner.

The significant direct relationship between perfectionism and disordered eating behaviors indicates that women with obesity who endorse higher perfectionistic standards, greater concern over mistakes, stronger doubts about their actions, and more self-critical evaluations are more likely to exhibit maladaptive eating attitudes and behaviors. This result is consistent with the extensive literature identifying perfectionism as a transdiagnostic vulnerability factor in eating pathology. Multidimensional perfectionism, particularly its maladaptive dimensions, is associated with rigid personal standards, fear of failure, discrepancy between actual and ideal performance, and persistent self-criticism (Smith et al., 2022). In the domain of eating and body image, these tendencies may be expressed through unrealistic expectations regarding weight, appearance, food intake, and dietary control. When individuals cannot maintain these demanding standards, ordinary dietary deviations may be interpreted as complete failure, thereby increasing guilt, shame, dietary restriction, binge eating, or recurrent preoccupation with food.

The present finding is also aligned with evidence demonstrating a consistent association between perfectionism and eating-related symptoms among adolescents and young adults (Vacca et al., 2021). Perfectionistic individuals may pursue an idealized body weight or shape through rigid and inflexible eating rules, and they may evaluate their self-worth according to their ability to adhere to those rules. Such patterns can foster dichotomous thinking, whereby eating is categorized as completely controlled or completely uncontrolled. A minor departure from a dietary plan may consequently lead to abandonment of restraint and subsequent overeating. The relationship observed in the present study is also consistent with findings that emotional eating and perfectionism predict binge-eating symptoms and that perfectionistic tendencies may contribute to the association between emotional eating and body mass index (Bernabéu-Brotóns &

Marchena-Giráldez, 2022). Therefore, perfectionism appears to influence disordered eating not merely as a general personality characteristic but as a cognitive-affective style that organizes body-related goals and responses to perceived dietary failure.

The significant direct effect of perfectionism on emotion dysregulation further suggests that individuals with stronger perfectionistic tendencies experience greater difficulty identifying, accepting, and managing emotional states. This finding is theoretically plausible because maladaptive perfectionism is often accompanied by intolerance of error, harsh self-evaluation, heightened sensitivity to criticism, and suppression of emotions perceived as signs of weakness or inadequacy. When negative emotions arise, perfectionistic individuals may judge themselves for experiencing distress rather than responding with acceptance and adaptive regulation. Such secondary evaluations can intensify emotional arousal and reduce access to effective coping strategies. The result is consistent with evidence showing that perfectionism and emotion-regulation strategies interact in predicting eating-disorder symptoms in female students (Tng & Yang, 2021). It also corresponds with findings that emotion regulation, perfectionism, and cognitive eating patterns are interrelated in the development of eating-disorder symptoms (Mohorić et al., 2023).

The relationship between perfectionism and emotional difficulties may be especially important in women with obesity because they are often exposed to weight-related stigma, social evaluation, repeated dieting experiences, and internalized beliefs that body weight reflects personal discipline or moral worth. Under such circumstances, perfectionistic standards regarding body shape and self-control may become increasingly salient. Failure to achieve or maintain a desired weight may trigger shame, frustration, hopelessness, and self-criticism. The recent finding that body-related emotion intolerance is associated with restrictive eating as a function of multidimensional perfectionism further supports the view that perfectionism shapes the way individuals react to difficult body-related emotions (Solomon-Krakus et al., 2025). Thus, women with obesity who are both perfectionistic and intolerant of body-related emotional experiences may be particularly likely to use restrictive or otherwise disordered eating as an attempt to regulate distress or restore a sense of control.

Emotion dysregulation had the strongest direct association with disordered eating behaviors in the structural model. This result indicates that difficulties accepting emotions, controlling impulses, maintaining goal-directed

behavior during emotional arousal, recognizing emotional experiences, accessing appropriate regulation strategies, and achieving emotional clarity are central predictors of maladaptive eating in women with obesity. This finding is consistent with prospective evidence showing that distinct dimensions of emotion dysregulation predict the onset and persistence of eating-disorder behaviors (McClure et al., 2022). It also supports the conceptualization of eating behavior as an emotion-regulation strategy. When individuals lack adaptive methods for tolerating or modifying distress, food restriction, overeating, binge eating, or excessive cognitive control over food may provide short-term relief, distraction, or emotional numbing.

The positive relationship between emotion dysregulation and disordered eating is also aligned with the view that emotional eating functions as a temporary relief mechanism in response to psychological distress (Jurek & Maruda, 2024). Highly palatable food may reduce negative affect through sensory pleasure and activation of reward processes, while restriction may create a temporary experience of mastery or emotional control. However, these effects are usually short-lived. Subsequent guilt, physical discomfort, weight concerns, and perceived loss of control may intensify negative emotions, producing a cyclical relationship between distress and disordered eating. The findings of the present study are compatible with a path-model analysis showing that emotion dysregulation, psychological distress, emotional eating, and weight status are dynamically interconnected (Usubini et al., 2023). Accordingly, emotion dysregulation may constitute a core psychological process linking emotional distress to both disordered eating and obesity-related outcomes.

The partial mediating role of emotion dysregulation in the relationship between perfectionism and disordered eating behaviors was another important finding. The indirect effect accounted for approximately 59% of the total effect of perfectionism, while the direct effect remained significant. This pattern indicates that perfectionism predicts disordered eating through at least two pathways. First, it directly contributes to maladaptive eating through rigid dietary standards, fear of weight gain, excessive concern over mistakes, and all-or-nothing evaluations of eating behavior. Second, it indirectly increases disordered eating by impairing emotional regulation. Perfectionistic individuals may experience stronger negative emotional reactions when they fail to meet self-imposed expectations, and they may have difficulty accepting or managing these emotions.

Eating-related behaviors may subsequently be used to reduce distress, punish the self, or regain perceived control.

This partial mediation finding is consistent with the literature suggesting that perfectionism does not operate in isolation but interacts with affective and cognitive processes. Mohorić et al. found that cognitive eating patterns mediated associations among emotion regulation, perfectionism, and eating-disorder symptoms, highlighting the importance of intervening mechanisms (Mohorić et al., 2023). Similarly, the interaction between multidimensional perfectionism and maladaptive cognitive emotion-regulation strategies has been shown to predict more severe eating-disorder symptoms (Tng & Yang, 2021). The current study extends these findings to women with obesity and demonstrates that general emotion dysregulation is a major, but not exclusive, pathway connecting perfectionism to disordered eating. Therefore, interventions that focus solely on emotional regulation may reduce a large proportion of the effect of perfectionism, but directly addressing perfectionistic beliefs and rigid dietary standards may also be necessary.

The significant effect of BAS on emotion dysregulation indicates that greater reward sensitivity, drive, and fun seeking are associated with increased difficulties regulating emotions. Although BAS is generally linked to approach motivation and positive affect, elevated behavioral activation may also be associated with impulsivity, heightened responsiveness to immediate rewards, and difficulty delaying gratification. Food, particularly highly palatable and energy-dense food, represents a potent source of reward. Individuals with strong BAS sensitivity may experience more intense appetitive reactions to food cues and greater difficulty controlling behavior when emotionally aroused. The finding is compatible with evidence that reward sensitivity is related to eating behavior, overeating, binge-type eating, and obesity-related outcomes (Sutton et al., 2022). It is also consistent with research linking reward and punishment sensitivity to disordered eating behaviors in both women and men (Eneva et al., 2017).

However, BAS did not have a significant direct effect on disordered eating once emotion dysregulation was included in the model. Instead, its relationship with disordered eating was fully mediated by emotion dysregulation. This result suggests that reward sensitivity alone may not inevitably lead to maladaptive eating. Rather, the effect of BAS may depend on the individual's ability to manage reward-related impulses, emotional arousal, and appetitive motivation. A person with high BAS sensitivity but effective emotion-regulation skills may experience strong food-related reward

responses without developing disordered eating. In contrast, when reward sensitivity is combined with impulse-control difficulties, limited access to adaptive strategies, or inability to maintain goal-directed behavior under distress, appetitive motivation may be translated into overeating, binge eating, or persistent food preoccupation.

This interpretation is consistent with evidence that the emotional consequences of BAS/BIS sensitivity are partly shaped by emotional intelligence and emotional-processing capacities (Merchán-Clavellino et al., 2019). Trait emotional intelligence has been found to mediate the relationship between behavioral motivational systems and affective states, implying that reward and punishment sensitivity may influence behavior through the way emotions are understood and managed. The present study similarly suggests that emotion dysregulation serves as the mechanism through which BAS contributes to disordered eating. This finding may explain why previous research on direct associations between reward sensitivity and obesity-related outcomes has sometimes yielded inconsistent results: the relationship may vary according to emotional-regulation abilities, environmental food exposure, impulsivity, and the specific type of eating behavior assessed.

The significant path from BIS to emotion dysregulation indicates that greater sensitivity to punishment, threat, uncertainty, and conflict is associated with greater difficulty regulating emotional experiences. Individuals with high BIS sensitivity are more likely to experience anxiety, worry, vigilance, behavioral inhibition, and negative affect. Recurrent sensitivity to possible failure or criticism may produce intense emotional distress and promote avoidant coping strategies. The present finding aligns with research indicating that negative affect serves as an important mechanism in the pathway from BIS-related personality characteristics to binge eating (Wilson et al., 2021). It also corresponds with broader evidence linking punishment sensitivity to disordered eating patterns (Eneva et al., 2017) and with theoretical accounts emphasizing the roles of affect, reward, and punishment in restrictive eating disorders (Sala et al., 2018).

The absence of a significant direct path from BIS to disordered eating, together with its significant indirect effect through emotion dysregulation, supports full mediation. This result indicates that heightened punishment sensitivity may contribute to disordered eating only when it produces emotional distress that cannot be managed adaptively. Women with high BIS sensitivity may be especially reactive to weight criticism, perceived dietary failure, social

judgment, or uncertainty regarding treatment outcomes. These experiences may generate shame, anxiety, or hopelessness. If such emotions are not accepted or regulated effectively, eating may become a means of avoidance or relief. In this sense, BIS appears to create an emotional vulnerability rather than directly causing maladaptive eating.

The correlation between BIS and disordered eating was nonsignificant, which further supports this indirect interpretation. Bivariate associations can sometimes conceal opposing behavioral tendencies. High BIS may contribute to restrictive eating in some individuals through fear of weight gain while contributing to emotional overeating in others through anxiety and negative affect. These patterns may offset one another at the aggregate level, resulting in a weak direct association. Once emotion dysregulation is considered, however, the shared emotional pathway becomes evident. This observation reinforces the value of structural equation modeling for distinguishing direct from indirect effects and for identifying psychological mechanisms that cannot be adequately captured through simple correlations.

The results also demonstrated significant associations among perfectionism, BAS, BIS, and emotion dysregulation, supporting an integrated model rather than isolated explanations. Disordered eating in obesity appears to result from the interaction of evaluative standards, sensitivity to reward and punishment, and emotional-regulation deficits. Perfectionism may increase sensitivity to personal failure; BAS may heighten responsiveness to food reward; and BIS may intensify anxiety and sensitivity to criticism. Emotion dysregulation can transform each of these vulnerabilities into maladaptive eating behavior. This integrated interpretation is compatible with personality-based research showing that individual differences contribute to body dissatisfaction and disordered eating, with some variation across genders (MacNeill et al., 2017). It is also consistent with evidence that interpersonal and developmental experiences, including parental criticism and negative comments about weight and shape, can contribute to disordered eating and emotional vulnerability (Díaz de León Vázquez & Unikel Santoncini, 2019).

The relevance of parental and developmental factors may be particularly pronounced for perfectionism and emotion regulation. Critical or highly demanding family environments can contribute to concern over mistakes, perceived parental expectations, and chronic doubts about personal adequacy. At the same time, parenting practices influence the development of emotional awareness,

acceptance, and regulation during childhood and adolescence (Morris et al., 2017). Consequently, perfectionistic tendencies and emotion dysregulation may share developmental roots. Negative weight-related comments can further connect these vulnerabilities to eating behavior by encouraging body dissatisfaction and restrictive or compensatory practices (Díaz de León Vázquez & Unikel Santoncini, 2019). Although the current study did not directly examine developmental experiences, the inclusion of parental dimensions in the perfectionism construct supports the relevance of this explanatory framework.

The findings should also be understood within the broader clinical significance of disordered eating and obesity. Disordered eating behaviors are observed across diverse populations, including university students, adolescents with chronic illness, and elite athletes (Damtie et al., 2024; Daniel et al., 2023; Fatt et al., 2024). These behaviors may increase psychological distress, interfere with treatment adherence, and contribute to more severe eating pathology. Eating disorders are also associated with substantial excess mortality, underscoring the importance of early identification and prevention (Iwajomo et al., 2021). In individuals with obesity, repeated dieting and emotional overeating may additionally undermine long-term weight management and contribute to metabolic risk. Obesity itself is a major global health challenge requiring interventions that address biological, behavioral, and psychological determinants rather than relying exclusively on weight reduction (Abad-Jiménez & Vezza, 2025). Unhealthy dietary patterns and obesity also contribute substantially to the burden of noncommunicable diseases, particularly in regions undergoing rapid nutritional transitions (Al-Jawaldeh & Abbass, 2022).

5. Conclusion

Although the biological consequences of metabolic disease were not directly assessed in this study, evidence that diabetes can dysregulate microRNAs associated with cellular survival, proliferation, and self-renewal illustrates the systemic impact of metabolic disorders (Purvis et al., 2021). This broader biological context highlights the importance of identifying modifiable psychological mechanisms that influence eating behavior and weight-related health. By demonstrating that emotion dysregulation accounts for a substantial proportion of the effects of perfectionism and behavioral brain systems, the present findings provide a potential target for psychologically

informed obesity interventions. Overall, the model suggests that disordered eating among women with obesity is not simply a matter of insufficient dietary discipline; rather, it reflects a complex interaction among self-evaluative standards, biologically influenced motivational sensitivities, and difficulties processing and regulating emotions.

6. Limitations & Suggestions

The present study had several limitations. First, its cross-sectional and correlational design prevents definitive conclusions regarding causal direction. Although the structural model was theoretically grounded, it cannot establish whether perfectionism and BAS/BIS sensitivity precede emotion dysregulation and disordered eating or whether recurrent eating problems intensify emotional difficulties and perfectionistic self-evaluation. Second, the study relied exclusively on self-report questionnaires, which may be affected by response bias, social desirability, limited self-awareness, and inaccurate recall. Third, the sample consisted only of women with obesity who attended a single obesity-treatment clinic in Tehran and were selected through convenience and voluntary sampling. This limits the generalizability of the findings to men, individuals with obesity who do not seek treatment, people from different cultural or socioeconomic contexts, and individuals with different levels of obesity. Fourth, potentially relevant variables such as depression, anxiety, weight stigma, body-image dissatisfaction, impulsivity, trauma history, dietary restraint, medication use, and metabolic conditions were not included in the model. Finally, although the model explained substantial proportions of variance, more than half of the variance in disordered eating remained unexplained, indicating that additional psychological, biological, and environmental factors should be considered.

Future studies should use longitudinal, prospective, and experimental designs to clarify the temporal and causal relationships among perfectionism, behavioral activation and inhibition, emotion dysregulation, and disordered eating. Testing the model at several time points would make it possible to determine whether changes in emotion dysregulation precede changes in eating behavior and whether emotion dysregulation predicts the persistence or recurrence of maladaptive eating. Replication is recommended in larger and more diverse samples, including men, adolescents, older adults, individuals from different cultural backgrounds, treatment-seeking and non-treatment-seeking populations, and participants across different BMI

categories. Future models should incorporate additional variables such as body dissatisfaction, weight stigma, anxiety, depression, impulsivity, self-compassion, experiential avoidance, attachment style, and perceived social support. Clinical interviews, behavioral eating tasks, ecological momentary assessment, physiological indicators, and neuropsychological measures could be used alongside self-report instruments. Researchers should also compare alternative models, examine differences among specific forms of disordered eating, and test whether gender, age, obesity severity, or psychiatric symptoms moderate the proposed pathways.

The findings suggest that obesity-treatment programs should routinely assess disordered eating, perfectionistic beliefs, reward and punishment sensitivity, and emotion-regulation difficulties rather than focusing exclusively on body weight, diet, and physical activity. Psychological interventions should teach patients to identify and accept emotional states, tolerate distress, control impulses, maintain goal-directed behavior during emotional arousal, and use adaptive regulation strategies. Cognitive and behavioral techniques should also address rigid personal standards, all-or-nothing dietary thinking, excessive concern over mistakes, and self-criticism after perceived dietary lapses. Patients with high reward sensitivity may benefit from strategies for managing food cues, delaying gratification, planning responses to high-risk situations, and developing alternative sources of reward. Those with high punishment sensitivity may require additional support for anxiety, shame, avoidance, and fear of social evaluation. An integrated multidisciplinary approach involving psychologists, dietitians, physicians, and other health professionals may improve both eating-related outcomes and the long-term effectiveness of obesity management.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors have equally contributed to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

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