

RESEARCH / ARAŞTIRMA

The Mediating Role of Mindful Eating in the Relationship Between Difficulties in Emotion Regulation and Emotional Eating

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ABSTRACT

Objective: This study aims to examine the relationships among emotional eating, difficulties in emotion regulation, and mindful eating; specifically, to determine whether mindful eating mediates the relationship between difficulties in emotion regulation and emotional eating.

Material and Methods: Data were collected online from 680 participants (83.5% women, 16.5% men). In addition to gathering demographic information, the Emotional Eating Scale (EES-30), Difficulties in Emotion Regulation Scale (DERS-36), and Mindful Eating Scale (MES-30) were administered. The data were analyzed using SPSS 22.0 with independent samples t-tests, ANOVA, Pearson correlation, hierarchical regression analysis, and mediation analysis via the bootstrapping method.

Results: Females, smokers, and single individuals showed significantly higher emotional eating compared to males, non-smokers, and married/divorced participants, while no differences were found across education levels. Emotional eating was positively correlated with emotion regulation difficulties ($r=0.34$, $p<0.001$) and negatively with mindful eating ($r=-0.64$, $p<0.001$). Hierarchical regression showed that emotion regulation difficulties predicted emotional eating ($\beta=0.34$, $p<0.001$), but this effect decreased when mindful eating was included ($\beta=0.17$, $p<0.001$), confirming its partial mediating role (95% CI [-0.02, -0.01]).

Conclusion: The results suggest that enhancing mindful eating practices may reduce the tendency of individuals to rely on food as a coping mechanism for emotional fluctuations, thereby helping control emotional eating behaviors.

Keywords: Emotional eating, emotional regulation, mindfulness, mindful eating.

Duygu Düzenleme Güçlüğü ve Duygusal Yeme Arasındaki İlişkide Yeme Farkındalığının Aracı Rolü

ÖZET

Amaç: Bu çalışmanın amacı, duygusal yeme, duygu düzenleme güçlüğü ve yeme farkındalığı arasındaki ilişkileri incelemek; özellikle de yeme farkındalığının, duygu düzenleme güçlüğü ile duygusal yeme arasındaki ilişkiye aracılık edip etmediğini ortaya koymaktır.

Gereç ve Yöntem: Çalışmada, çevrimiçi ortamda 680 katılımcıdan (kadın %83,5, erkek %16,5) veri toplanmıştır. Katılımcıların demografik bilgileri ile Duygusal Yeme Ölçeği (DYÖ-30), Duygu Düzenleme Güçlüğü Ölçeği (DDGÖ-36) ve Yeme Farkındalığı Ölçeği (YFÖ-30) uygulanmıştır. Veriler, SPSS 22.0 kullanılarak; bağımsız örneklem t-testi, ANOVA, Pearson korelasyonu, hiyerarşik regresyon analizi ve bootstrapping yöntemiyle aracılık analizi uygulanarak değerlendirilmiştir.

Bulgular: Kadınlar erkeklere göre, sigara içenler içmeyenlere göre ve bekârlar evli/boşanmış bireylere göre anlamlı düzeyde daha yüksek duygusal yeme davranışı sergilemiştir. Eğitim düzeyi açısından fark bulunmamıştır. Duygusal yeme, duygu düzenleme güçlükleriyle pozitif ($r=0.34$, $p<0.001$), bilinçli yeme ile negatif ilişkilidir ($r=-0.64$, $p<0.001$). Hiyerarşik regresyonda duygu düzenleme güçlükleri duygusal yeme üzerinde anlamlı yordayıcı iken ($\beta=0.34$, $p<0.001$), modele bilinçli yeme eklendiğinde bu etki azalmış ($\beta=0.17$, $p<0.001$) ve bilinçli yemenin kısmi aracılık rolü doğrulanmıştır (95% CI [-0.02, -0.01]).

Sonuç: Elde edilen sonuçlar, farkındalıkla yeme pratiklerinin geliştirilmesinin, bireylerin duygusal dalgalanmalar karşısında yemekle başa çıkma eğilimlerini azaltabileceğini, böylece duygusal yeme davranışının kontrol altına alınmasına yardımcı olabileceğini göstermektedir.

Anahtar Kelimeler: Duygusal yeme, duygu düzenleme, bilinçli farkındalık, yeme farkındalığı.

1. Introduction

1.1. Emotional Eating

Nutrition is an indispensable part of life in every process from the mother's womb until the end of life. Different eating behaviors are exhibited by individuals while meeting the need for nutrition. Many factors affect the eating behavior of individuals (1), and one of the most important of these is the emotional state of individuals (2). The relationship between eating and mood has

been researched for a long time. Emotions are an indispensable part of life. A Study shows that individuals eat in response to emotional fluctuations caused by negative or positive emotions (3). Individuals' inability to tolerate these emotional fluctuations while developing a coping mechanism by eating is called 'emotional eating'.

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1.2. Eating as an Emotion Regulation Strategy

Existing emotion regulation studies reveal that people try to regulate and change their emotions by reacting to their emotional states rather than passively experiencing them (4).

People turning to food to control their mood is one of the many possible mechanisms used to regulate their emotions. Emotion regulation dates back to early childhood experiences (5). To develop self-regulation skills, including emotion regulation, external interactive regulation by the caregiver is necessary from infancy (6). The psychodynamic perspective draws attention to the caregiver's misperception of the signals in the relationship between the caregiver and the child. This misperception may result in the caregiver constantly trying to feed the child even though the child is not hungry (7). When the relationship between the caregiver and the child is examined from a psychosomatic point of view; the caregiver's attempt to feed the infant, who is constantly emotionally stimulated (even though he/she is not hungry) due to the caregiver's misperception of the signals, results in a tendency to eat continuously to regulate his/her emotions at a later age (7). Indeed, it was observed that children whose mothers used food to soothe them at the age of 18 months tended to engage in emotional overeating when they were observed again at the age of 30 months (8). Therefore, it can be thought that individuals who continue to be fed in this way have difficulty in emotion regulation in the future and primarily use food as a means of regulating their emotions.

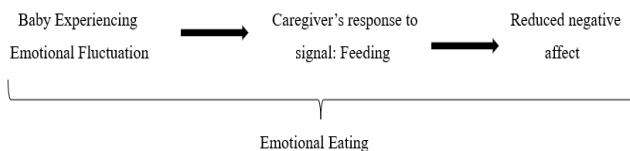


Figure 1. Food use as a tool for early emotion regulation: emotional eating (prepared by the authors using microsoft word)

Early attachment ile başlayan paragraf= Early attachment experiences affect regulation skills and determine how we respond to internal and environmental stimuli (9, 10) because infants do not come into the world with already existing regulation skills. Until the age of 3, newborns can regulate by taking advantage of the external cues given by the mother. In this process, it is known that the external cues given by the mother have an important role in the baby's relationship with food (11). In other words, the fact that the caregiver causes the infant to experience food, which can sometimes be seen as internal and sometimes as external stimuli, in a way that causes the infant to encode it as a means of emotion regulation, forms the basis for people to use food as a means of emotion regulation in the future. It can be predicted that individuals who are regulated through food will have difficulty in emotion regulation in the future and will primarily use food as a means of regulating their emotions. Eating turns into emotional eating by becoming a defensive and compulsive behavior that replaces the need to consciously express one's fluctuations and emotions (12).

Emotional eating is likely to be a learned behavior that is passed on to the child through interactions with parents or caregivers, and this process can occur in several ways. First, children may model the emotional eating behavior of the parent or caregiver. In support of this "role modeling" hypothesis, studies have shown that maternal emotional eating behavior is associated with emotional eating and overweight in the child (13-15). Second, parents can "teach" their children to eat emotionally by using emotional feeding strategies. This can happen when the parent offers food to the child when the child is anxious, angry, or sad. There is evidence that mothers' use of emotional feeding strategies increases emotional eating in children (16-18). For instance, children whose mothers frequently used emotional

feeding strategies ate more chocolate in response to negative mood arousal than those whose mothers rarely used this feeding practice (16).

Third, parents can feed their children in the same way they feed themselves. Mothers with high emotional eating scores reported higher levels of emotional feeding (19). In addition, emotional feeding was found to mediate the relationship between parent and child emotional eating (20). It was also found that negative effects (depression, anxiety, and stress) in mothers predicted mothers' emotional eating habits and, consequently, the use of emotional feeding strategies and children's emotional eating habits (18). As a result, children learn to 'swallow their emotions' within this cycle (21). Therefore, the adult individual who cannot tolerate the emotional fluctuation experienced in later years may turn to food based on the connection established in the early period. The negative affect that decreases as a result of this action may turn into a reinforced operant eating response. To get out of this behavioral cycle, experts have been working on cognitive control strategies for a long time (22). Mindfulness-based practices used in the intervention of emotion regulation difficulties and emotional eating have become very popular today. The following sections will address the effects of mindfulness-based practices on emotional eating and emotion regulation concepts.

1.3. The Mediating Role of Mindful Eating

With the pace of modern life, significant changes are observed in eating habits and emotional states. Mindful eating and emotion regulation have emerged as important tools to cope with these changing dynamics. Mindfulness strategies have long been applied in psychotherapy to treat emotion regulation difficulties (23). One of the methods that can be used to cope with emotions is the practice of 'Mindfulness' (24), which enables one to experience being here and now through meditation and to look at any situation with a non-judgmental attitude. Beyond the context of meditation, mindfulness can be seen more generally as an attitude to confront emotional states by focusing on the present experience (25).

With the increasing popularity of mindfulness-based interventions, this concept has become an effective role in the treatment of eating disorders and has shown promising results (26, 27). In the following years, the concept of mindfulness gained specific features in the treatment of eating disorders and gave birth to a new concept: mindful eating. Mindful eating, defined as the combination of eating behaviors and mindfulness, refers to the maintenance of non-judgmental awareness of one's physical and emotional sensations while eating or in a food-related environment (28). This concept is defined as noticing how and why eating behavior occurs, internalizing physical hunger and satiety signals, being aware of emotions and thoughts, and focusing on the food to be consumed at that moment without judging environmental factors and food choices, rather than what is eaten through internal and external processes (29).

Interventions based on mindful eating are used in the treatment of eating disorders such as obesity, binge eating, bulimia, and anorexia (30). On the other hand, some mindfulness-based intervention studies are also being conducted on emotional eating (31). This is because emotional eating is one of the most attention-grabbing concepts of recent times, which is based on the fact that emotional eating is considered one of the main causes of eating disorders (32). Mindfulness studies on emotional eating are promising. In non-systematic experimental studies, emotional eating behavior has been observed to decrease (33, 34). Mindfulness-based reduction in emotional eating behavior can be attributed to many reasons: biological, which is related to activations in the prefrontal cortex and anterior cingulate cortex (35); and psychological, which

encompasses learning to disengage autopilot (36). However, systematic and qualitative studies on emotional eating are needed (37).

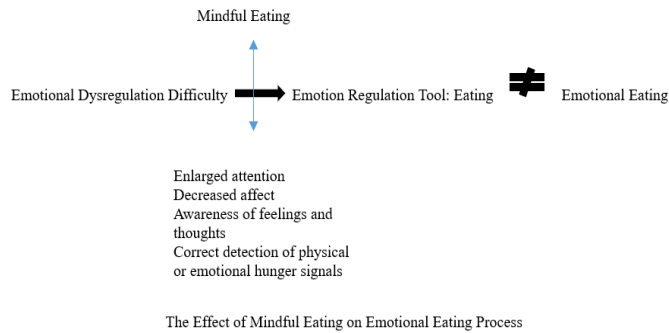


Figure 2. Mindful eating between emotion dysregulation and emotional eating (prepared by the authors using microsoft word)

Due to their effects on emotion regulation, emotional self-awareness, and adaptive coping with affect, interventions using mindfulness and mindful eating techniques have been tested in experimental studies to be effective in reducing emotional eating (38). The extended attention states of people who regularly practiced mindfulness practices were investigated. Here, meditation was mostly associated with activation in areas of attention and emotion regulation, such as the prefrontal cortex (where information from sensory and motor sources is organized and combined to decide on the behavior to be elicited) and the anterior cingulate cortex (controlling impulses, decision-making processes and regulating emotions) (36). On the other hand, fMRI studies have shown that mindfulness practices reduce activation in the amygdala region responsible for emotion regulation and emotional memory (39, 40). In addition, many fMRI studies on emotion regulation and mindfulness reveal that mindfulness is an effective method for developing and activating emotion regulation skills (41, 42). Based on these studies, it was thought that mindful eating may act as a buffer between people with emotion dysregulation and eating behavior. This study aims to examine whether there is a relationship between the concepts of emotional eating, emotion dysregulation, and mindful eating based on conceptual relationships and some experimental findings. In light of the literature, an idea has emerged that mindful eating can be activated when emotion dysregulation occurs. It creates a space for the person to decide and test the decision made between eating behavior triggered by emotions and emotion regulation (See Figure 2). In this context, it is aimed both to reveal the relationship between the variables through various variables (gender, marital status, and smoking) and to reveal the mediating role of mindful eating in the relationship between emotion regulation and emotional eating.

2. Material and Method

2.1. Research Type and Sample of the Research

The study was designed using a cross-sectional descriptive-correlational survey model. This design aims to examine the relationships between variables and to describe group differences without manipulating any conditions. Data are collected at a single point in time through self-report questionnaires, allowing both descriptive and correlational analyses

The sample of the study was determined using the snowball sampling method. Participation in the study was provided online by sharing the survey link on social media platforms and through personal networks. Participation was entirely voluntary, and informed consent was obtained from all participants. Inclusion criteria were being between 18 and 56 years of age, having sufficient literacy to complete the questionnaire, and

volunteering to participate in the study. Exclusion criteria were a self-reported current or past diagnosis of an eating disorder, a history of a severe psychiatric illness that could impair the ability to complete the questionnaire, and incomplete or inconsistent responses to the survey.

A total of 708 people participated in the study and 28 outliers (eating disorders, psychiatric illness) were identified. Outliers were removed from the data set and analyses were conducted on 680 participants. 568 women (83.5%) and 112 men (16.5%) participated in the study. The research group was between the ages of 18-56 ($\bar{x}=30.74$; $S=9.57$). When the age distribution was evaluated categorically, 358 individuals aged 18-30 years (52.6%), 229 individuals aged 31-43 years (33.6%), and 93 individuals aged 44-56 years (13.6%) participated in the study. Among the participants, 451 were married (51.6%), 294 were single (43.2%), and 35 were divorced (5.1%). Regarding educational status, 10 were primary school graduates (1.5%), 15 were middle school graduates (2.2%), 71 were high school graduates (10.4%), 470 were undergraduate level (69.1%), and 114 were postgraduates. Regarding smoking, 153 (22.5%) answered yes and 527 (77.5%) answered no.

2.2. Data Collection

2.2.1. Demographic Information Form

The demographic information collection form was prepared by the researchers. It includes items to determine the gender, age, marital status, education level, and smoking status of the individuals in the research group.

2.2.2. Emotional Eating Scale (EES-30)

The study "Development, Validity and Reliability of Turkish Emotional Eating Scale" conducted by Bilgen (43) aims to measure emotional eating. The scale consists of four sub-dimensions (Eating in Tension Situations, Eating to Cope with Negative Emotions, Self-Control, and Control in the Face of Stimuli). The scale is a 5-point Likert scale, and the items consist of "Never (1)", "Rarely (2)", "Sometimes (3)", "Often (4)" and "Always (5)" options. In the scale including 30 questions in total, the minimum score is 30 while the maximum score is 150. There are three reverse-scored items in the scale. Cronbach's Alpha internal consistency coefficient of the scale was calculated as 0.96 whereas in this study, the internal consistency coefficient was 0.93.

2.2.3. Difficulty in Emotion Regulation Scale (DERS-36)

The scale was developed by Gratz and Roemer (44). The 5-point Likert-type scale (almost never, sometimes, about half the time, most of the time, almost always) developed to assess emotion regulation difficulties consists of 36 items. The scale includes six sub-dimensions (awareness, openness, non-acceptance, impulse, goals, and strategies). The Turkish version of the scale was first adapted by Rugancı (45) and revised by Rugancı and Gençöz (46). While the Cronbach's alpha coefficient of the original scale was 0.93, the coefficients ranged from 0.88 to 0.89 for its sub-dimensions. In the Turkish adaptation, Cronbach's alpha coefficient was 0.94 for the whole scale and within the range of 0.75 and 0.90 for its sub-dimensions. In this study, the internal consistency coefficient was found to be 0.92.

2.2.4. Mindful Eating Scale (MES-30)

The Mindful Eating Questionnaire - MEQ scale developed by Framson et al. in (28) consists of 4 subscales (distraction, external factors, emotional response, and disinhibition). The scale aims to measure the level of awareness of eating behavior (28). Turkish adaptation studies were conducted by Köse et al. (29). During the pilot applications of the scale, it was found that the items were gathered under ten factors in Turkish culture while they were distributed under five factors in the US culture.

After consulting expert opinions, the non-functioning items were removed, and the scale was grouped under seven factors. The scale is scored on a 5-point Likert scale, and the items consist of "Never (1)", "Rarely (2)", "Sometimes (3)", "Often (4)" and "Always (5)" options. The scale consists of 30 items with seven sub-dimensions and 20 reverse-coded items. The sub-dimensions are listed as "Disinhibition", "Emotional Eating", "Eating Control", "Focusing", "Eating Discipline", "Awareness", and "Interference". Cronbach's Alpha internal consistency coefficient of the scale was calculated as .73 while in this study, the internal consistency coefficient was found to be 0.82.

2.3. Implementation of the Research

2.3.1. Research Data Collection

Data were collected through an online self-administered questionnaire prepared in Google Forms. The survey link was distributed via social media platforms and personal networks. Participation was voluntary, and informed consent was obtained from all participants prior to completing the questionnaire.

2.3.2. Analysis of Research Data

The data were analyzed with the SPSS 22.0 package program. To test whether the analysis methods to be applied are appropriate for the data set, normality assumptions were checked. Skewness values ranged between 0.73 and 0.00 and kurtosis values ranged between 1.3 and -.18. In line with these values, it was determined that all data were normally distributed (47). VIF values were less than 10 and tolerance values were greater than 0.10. Based on these findings, it can be said that there is no multicollinearity problem in the data set. In the next step, hierarchical regression analysis was conducted to test the prediction of the independent variables (emotional eating and difficulties in emotion regulation) on the dependent variable (mindful eating). To determine the mediating role of mindful eating between emotion dysregulation and emotional eating, the SPSS-macro program developed by Preacher and Hayes (48) and the resampling method (bootstrapping) and 10,000 iterations were used.

2.4. Ethical Aspects of the Research

The study received approval from the Duzce University Scientific Research and Publication Ethics Committee (Decision No: 2023/72). Participation was entirely voluntary, and informed consent was obtained from all participants prior to data collection. As the study included only adults capable of giving consent, parental or guardian consent was not required.

2.5. Preparation of Figures

All figures in this manuscript were produced directly by the authors. No third-party sources or previously published materials were used. The figures were created using Microsoft Word (Microsoft Corp., Redmond, WA, USA) and were prepared to better illustrate the literature, present the study design, and make the statistical results more comprehensible.

3. Results

3.1. Findings Related to Demographic Variables

According to the results of the independent samples t-test on whether emotional eating varies according to gender, the difference was found to be statistically significant [$t(678)=2.57$, $p<0.05$] against women ($\bar{x}=73.19$; $S=25.21$) compared to men ($\bar{x}=68.29$; $S=16.66$). In other words, emotional eating behavior is higher in women. Again, according to the result of the t-test in independent groups regarding whether the same variable varies depending on smoking, it was found that the difference was statistically significant [$t(678)=2.02$, $p<0.05$] in favor of smokers ($\bar{x}=75.9$; $S=25.42$) compared to non-smokers ($\bar{x}=71.34$; $S=23.59$).

In other words, the emotional eating score of smokers is higher than that of non-smokers.

When the data were analyzed according to marital status, ANOVA showed that there was a statistically significant difference between the groups in the emotional eating variable. According to the result of the Scheffe test conducted by considering the homogeneity of variances, it was found that single ($\bar{x}=76.84$; $S=26.61$) individuals had higher emotional eating scores than married ($\bar{x}=69.32$; $S=21.39$) and divorced ($\bar{x}=65.60$; $S=21.05$) individuals. In other words, the frequency of emotional eating behavior of single individuals is higher than that of married and divorced individuals. As a result of a one-way analysis of variance according to educational status categories, it was found that the difference was not statistically significant [$F(1.583)=0.56$, $p>0.05$].

3.2. Findings Related to the Prediction of Emotional Eating

The relationship between the variables was examined with the Pearson Product Moment Correlation Coefficient (Table 1). According to the correlation results, Emotional Eating has a significant positive relationship with Difficulties in Emotion Regulation ($r=0.343$, $p<0.001$) and a significant negative relationship with Mindful Eating ($r=-0.649$, $p<0.001$). There was a significant negative correlation between Mindful Eating and Difficulties in Emotion Regulation ($r=-0.307$, $p<0.001$).

Table 1. Relationships between emotional eating, difficulty in emotion regulation, and mindful eating			
Variables	1	2	3
Emotional Eating (1)	1		
Emotion Dysregulation (2)	0.343***	1	
Mindful Eating (3)	-0.649***	-0.307***	1
*** $p<0.001$			

Hierarchical regression analysis was conducted to understand whether Difficulties in Emotion Regulation and Mindful Eating predicted Emotional Eating. Hierarchical regression results are given in Table 2. In the first step of the analysis, difficulties in emotion regulation predicted emotional eating in a positive and significant way and explained 12% of the total variance. In the second step, mindful eating was added to the model. Mindful eating significantly predicted emotional eating negatively and contributed 32% of the total variance explained. Thus, emotion dysregulation and mindful eating explained 44% of the total variance. Mindful eating, which was included in the model in the second step, reduced the effect of emotion dysregulation on emotional eating from $\beta=0.34$ to $\beta=0.17$. These results suggest that mindful eating may have a mediating variable role between emotion dysregulation and emotional eating. To determine the significance level of this effect, the mediation effect was examined.

3.3. Findings on the Mediating Effect of Mindful Eating

According to Baron and Kenny (49), three conditions should be met for mediating effect analysis. First, the independent variable (emotion dysregulation difficulty) should predict the mediating variable (mindful eating). Second, the independent variable should predict the dependent variable (emotional eating). Last, when the dependent variable is predicted by the independent variable and the mediating variable together, the mediating variable should predict the dependent variable, and the effect of the independent variable should disappear (full mediation) or decrease (partial mediation). Looking at the hierarchical regression results, the second and third conditions are already met. Regarding the first condition, a linear regression analysis was conducted. According to these results, difficulty in emotion regulation significantly and positively predicted emotional eating, $F(1,678)=145.782$, $p<0.000$; $\beta=0.42$, $p<0.000$.

Table 2. Hierarchical regression analysis results for the prediction of emotional eating

Variables	R^2	ΔR^2	B	Standard Error	B	t	p	F
Step 1	0.12							93.316***
Emotion Dysregulation			0.475	0.049	0.34	9.663	0.000	
Step 2	0.44	0.44***						267.221***
Emotion Dysregulation			0.233	0.041	0.17	5.634	0.000	
Mindful Eating			-1.034	0.052	-0.59	-19.695	0.000	

p < 0.01, *p < 0.001

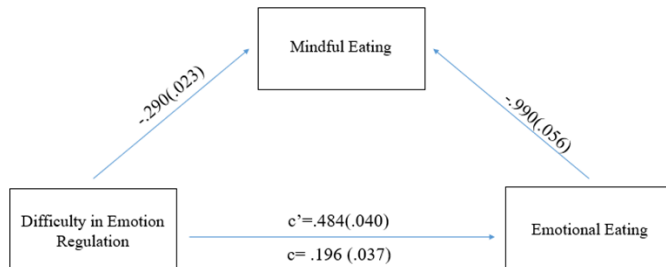


Figure 3. The mediating role of mindful eating in the relationship between difficulty in emotion regulation and emotional eating. (prepared by the authors using microsoft word)

All effect values are unstandardized values, and standard errors are shown in parentheses. c' value indicates the direct effect moving from Difficulty with Emotion Regulation to Emotional Eating; c value indicates the total effect from Difficulty with Emotion Regulation to Emotional Eating. Examining the values obtained in Figure 3, direct and total effects from emotion dysregulation to mindful eating, from mindful eating to emotional eating, and from emotion dysregulation to emotional eating can be seen.

While emotional eating was predicted, it was observed that the 95% confidence interval did not include the zero value [-0.02 and -0.01 interval]. This result shows that mindful eating has a significant mediating effect. Moreover, since the direct effect of emotion dysregulation on emotional eating was also significant, mindful eating played a partial mediating role between emotion dysregulation and emotional eating.

4. Discussion

This study aimed to examine the relationship between mindful eating, emotional eating, and difficulties in emotion regulation in terms of various variables. The findings related to these concepts are discussed below under subheadings (demographic findings, correlation findings, and mediation effect findings).

4.1. Demographic Results

When emotional eating was evaluated according to gender factors, it was found that women had more emotional eating behavior than men. In the literature, there are studies parallel to the findings (50, 51), as well as a study with results against men (52). The higher emotional eating behavior of women compared to men can be interpreted from biological and psychological perspectives. Biologically, women are more prone to emotional eating as a function of hormonal ups and downs during menstruation (53). The emotional fluctuations associated with these hormonal states in women may make them more vulnerable to emotional eating. From a psychological perspective, women are more prone to depression and anxiety and resort to emotional eating more frequently to cope with these emotions (54).

Looking at the differentiation of smokers and non-smokers in terms of emotional eating, it was found that the emotional eating behaviors of smokers were higher than non-smokers. Examining the literature, some studies overlap with the findings of the study

(51, 55). According to the emotion regulation model, smokers having more emotional eating behavior suggests that smoking sometimes functions as food and is used as a means of emotion regulation (55). From a psychoanalytic perspective, smoking evokes oral eroticism. For infants who use their mother's breast as a means of emotion regulation in the 0-1 age period, cigarettes replace the breast in later ages and people use cigarettes as a means of emotion regulation (56).

In the findings regarding the differentiation of marital status in terms of emotional eating, it was found that the emotional eating behavior of single individuals was higher than married and divorced individuals. In another study, it was found that the emotional eating behavior of married individuals was lower than single and divorced individuals (57). Married and divorced individuals may have a stronger social support network such as family or ex-spouse. This may mean more resources to cope with emotional difficulties. The higher emotional eating scores of single individuals may be explained by the smaller social environment. Some studies indicate a positive relationship between loneliness and emotional eating (58, 59).

It was found that there was no significant difference between the last demographic variable, education level, and emotional eating. However, there are studies in the literature that support the findings of the study (60) as well as a significant difference (61). These contradictory findings in the literature may be due to different research designs, sample characteristics, and differences in measurement tools. These findings can be re-evaluated and the reasons for these differences can be examined.

4.2. Correlation Results

When the relationships between the variables were examined, it was found that there was a significant positive relationship between emotional eating and difficulties in emotion regulation. Concerning the literature, there are studies parallel to the findings of the study (62, 63). Considering the definition of emotional eating (affect-related eating), it can be said that these individuals have difficulty in emotion regulation and use food to cope with this situation. On the other hand, from a biological perspective, fMRI studies on people suffering from emotional eating have shown that their prefrontal cortex does not function effectively (64). This part of the brain organizes and combines information from sensory and motor sources and is responsible for deciding the behavior to be elicited. It also plays an active role in the regulation of emotions (35). Therefore, it is supported by biological findings that people with emotional eating behavior have difficulty in emotion regulation. On the other hand, it is not known which of these two concepts is the cause and which is the effect. It is thought that longitudinal and long-term studies are needed for this.

The relationship between emotional eating and mindful eating was found to be negatively significant. In other words, as mindful eating increases, emotional eating decreases. When the literature is examined, research parallel to the finding was found (65). It is known that regular practice of mindfulness practices facilitate the acceptance and tolerance of negative emotions (66). The widening of the tolerance window for these emotions

may provide emotion regulation control and prevent people who are emotionally dependent from turning to food. On the other hand, mindful eating serves as a key adjunct that reduces the response to emotionally rewarding stimuli (smell, taste, color, etc.) (67). Therefore, it can be predicted that a person who seeks any affective reward may attenuate the emotional eating response.

The last finding is the significant negative relationship between mindful eating and emotion dysregulation. In other words, as mindful eating increases, difficulty in emotion regulation decreases. The effect of the concept of mindful eating on emotion regulation skills has not yet been directly tested. However, mindfulness-based programs are being tested to improve emotion regulation skills (68). It is known that the quality of mindfulness (curious, compassionate, and non-judgmental) helps regulate the way individuals relate to their internal experiences (thoughts, feelings, sensations, memories) (69). Mindfulness is said to help acceptance (70), reduce the intensity of direct emotional reactions (71), increase emotional tolerance (39), and reduce the negative evaluation of emotional reactions (71). Considering the direct and indirect effects of mindfulness, experimental studies can be designed and tested to observe the effects that occur when the concept of mindful eating is developed in the individual.

4.3. Mediation Effect

The last finding of the study is that mindful eating plays a partial mediating role between emotional eating and emotion dysregulation. Accordingly, when a person with emotion dysregulation integrates mindful eating into his/her life, a decrease in emotional eating behavior can be predicted. The mediating role of mindful eating in the relationship between emotional eating and emotion dysregulation can be explained by the effects of mindfulness, a cognitive-based strategy, on emotion regulation. The importance that mindfulness attaches to the sense of curiosity and the fact that it has a perspective free from judgments allows everything to be experienced as if it were experienced for the first time. This situation allows the individual to more consciously choose the thoughts, feelings, and sensations that they identify with instead of reacting habitually (72). Mindfulness argues that all cognitive and emotional events are only mental events and therefore do not need to be acted upon. From this perspective, mindfulness practices rather systematically develop the capacity to let these mental events come and go (73). When this situation is evaluated in terms of emotional eating; thanks to mindfulness, which is activated after an eating desire that occurs after any emotion, the person can say, "Now this eating desire has arisen because of my emotion x.", "This feeling is temporary, but I will let it come and go.", or "Is my current desire to eat caused by physical hunger or emotional hunger?" (See Figure 2). Based on all of these, it can be said that mindful eating provides a space between emotions and food and thus allows people to reorganize their relationship with food. Accordingly, it makes people more adaptable to the effects of external and internal triggers for eating and makes them aware of these triggers. Therefore, people become less reactive to the emotions that drive them to eat and have more control over their impulses. This explanation is supported by reviewed evidence on the positive effects of mindful eating on various measures of emotional eating (74-77).

As a result, the inclusion of mindful eating in the relationship between emotion dysregulation and emotional eating weakens the relationship between these two strong concepts that are directly related to each other. Alternatively, decreasing emotion dysregulation increases mindful eating, and mindful eating decreases emotional eating. In this context, mindful eating can be considered an important variable that makes a difference in

the known relationship between emotional eating and emotion dysregulation.

4.4. Limitation

This study has several limitations. Firstly, there is a gender imbalance in the sample, with 83.5% of participants being female. This limits the generalizability of the findings, particularly to males and populations with a more balanced gender distribution. Additionally, the cross-sectional and self-report nature of the study prevents causal interpretations and may lead to social desirability or reporting bias. Finally, as the research was conducted within a specific cultural context, the results may not be directly generalizable to other cultures or age groups.

5. Conclusion and Recommendations

The findings of this study have revealed that the relationship between difficulties in emotion regulation and emotional eating is partially mediated by the practice of mindful eating. The results indicate that women, smokers, and single individuals tend to exhibit higher levels of emotional eating; moreover, a significant positive relationship was found between emotional eating and difficulties in emotion regulation, while a significant negative relationship was observed between mindful eating and emotional eating. This suggests that adopting mindful eating strategies in response to emotional fluctuations may be effective in reducing overeating behaviors. In this context, it is recommended to develop mindfulness-based interventions for emotional eating and to implement programs aimed at enhancing emotion regulation skills. In the future, conducting longitudinal studies to clarify causal relationships more clearly and examining demographic differences in greater detail will be beneficial for personalizing intervention strategies.

6. Contribution to the Field

This study makes a significant contribution to the literature by demonstrating the partial mediating role of mindful eating in the relationship between difficulties in emotion regulation and emotional eating. The research sheds light on the psychological and biological mechanisms underlying emotional eating behavior while emphasizing the potential effectiveness of mindfulness-based interventions. Additionally, by highlighting the impact of demographic factors such as gender, smoking status, and marital status on eating behaviors, the study provides new data that align with existing knowledge in the field. These findings lay the groundwork for both clinical practices and future research aimed at developing strategies to combat emotional eating and enhance emotion regulation.

Conflict of Interest

There is no conflict of interest with any person and/or institution.

Authorship Contribution

Concept: ABS Design: ABS, TSÇT; Funding: ABS; Materials: ABS, TSÇT; Data Collection/Processing: ABS; Analysis/Interpretation: ABS, TSÇT; Literature Review: ABS; Manuscript Writing: ABS; Critical Review: ABS, TSÇT

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