

Original Research

Effect of Emotion Regulation Difficulty on Eating Attitudes and Body Mass Index in University Students: A Cross-Sectional Study

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Abstract

Background: Emotion regulation challenges may be a general risk factor for disordered eating habits, and particularly during the university period, which entails processes such as young people moving away from their families and adjusting to new environments. This study examined the effect of difficulty in emotion regulation on eating attitudes and body mass index (BMI) in university students. **Methods:** A questionnaire form including questions about sociodemographic characteristics, questions about eating habits, the Difficulty in Emotion Regulation Scale (DERS-16), and the Eating Attitudes Test-40 (EAT-40) was administered to 750 undergraduate students at Üsküdar University. Data were analyzed with IBM SPSS Statistics 26. **Results:** Of the 750 students participating in this study, 47% were male and 53% were female. The average BMI of the students was 22.43 (20.44–24.80) kg/m². There was a statistically significant positive and very weak correlation ($s = 0.179$; $p < 0.001$) between DERS-16 scores and BMI values, and an increase of 18% was found in DERS-16 scores as BMI values increased. There was also a statistically significant and very weak correlation ($s = 0.174$; $p < 0.001$) between the students' EAT-40 scores and BMI values, and an increase of 17% was found in EAT-40 scores as students' BMI values increased. Students' BMI values were significantly correlated with DERS-16 scores ($R^2 = 0.033$; $F = 25.324$; $p < 0.001$) and a one-point increase in the DERS-16 score resulted in a 4% increase in BMI. It was found that as the DERS-16 total score increased, there was a decrease in obesity anxiety, preoccupation with thinness and EAT-40 Total score (respectively 10.9%, 14.4%, 7.3%). **Conclusions:** Difficulties in emotion regulation may be correlated with BMI and eating attitude.

Keywords: eating attitudes; body mass index; emotion regulation; emotions; obesity

1. Introduction

The university period entails processes such as young people moving away from their families and adjusting to new environments, and it is also a time when new eating habits and eating attitudes can be acquired in parallel with new lifestyle changes, under the influence of friends and environmental factors [1]. Many factors can influence eating attitudes, such as genetics, environment, body image, and religious beliefs, but among the most important influences are an individual's emotional state and the processes of controlling/coping with situations [2].

In cases where emotions are regulated in an inappropriate way, emotion regulation difficulties occur. As the person may not have awareness of emotions, the inability to understand and accept emotions, the use of emotion regulation strategies that are incompatible with the situation, the inability to control impulses while experiencing negative emotions, and the inability to perform goal-oriented behaviors may all occur [3]. Emotion regulation is a set of processes that determine the emotions we have and how we experience and express those emotions [4]. In addition, emotion management can also help people cope with their emotions through emotion regulation [5]. In cases where emotion regulation skills are not sufficient, problems related to depression, anxiety, and eating behavior may arise.

Individuals with diagnosed eating disorders generally apply dysfunctional emotion regulation methods and may use "eating" as an emotion regulation tool. The eating attitudes of individuals can be affected by the emotions they experience, and impaired eating attitudes can also affect emotion regulation difficulties [6]. According to a study on the association between eating disorders and emotion regulation difficulties, difficulties in emotion regulation may be a general risk factor or a sustaining factor of disordered eating habits rather than being particular to any specific eating disorder diagnosis [7]. Overall emotion regulation problems are more common than problems with specific emotion regulation subdimensions, especially among women with binge eating disorders [8]. Another study conducted by Williams in 2017 found that obese individuals had difficulty regulating their emotions [9]. Similarly, another study conducted in 2019 found that people who were obese according to body mass index (BMI) had difficulty regulating their emotions [10].

In this context, the goal of this study is to examine the relationship between university students' emotional regulation difficulties, eating attitudes and BMI.



2. Method

The population of this cross-sectional and descriptive study consisted of 5064 undergraduate university students enrolled in Üsküdar University in the 2021–2022 academic year. The sample of the study was obtained by choosing a simple random sample, the sample size was calculated using the sample formula for a certain universe, and it was calculated that 357 university students would be sufficient for the study to be carried out based on a sample size calculation made with sampling error of 0.05 and 95% confidence. The convenience sampling method, as an inexpensive and easily applied approach, was used in the selection of the sample [11]. The study was begun after the necessary permission was received from the Üsküdar University Non-Interventional Research Ethics Committee (numbered 61351342/January 2022-49). A questionnaire consisting of questions about demographic characteristics, the Difficulty in Emotion Regulation Short Form (DERS-16), and the Eating Attitudes Test-40 (EAT-40) was administered face-to-face to 750 voluntary participants after consent forms were signed. The height and body weight of the participants were measured by the researchers.

Sample size was calculated with the following formula:

$$n = \frac{N \times t^2 \times p \times q}{d^2 \times (N - 1) + t^2 \times p \times q}$$

Based on that formula:

$$n = \frac{5064 \times 1.96^2 \times 0.5 \times 0.5}{0.05^2 \times (5064 - 1) + 1.96^2 \times 0.5 \times 0.5} \cong 357$$

2.1 Calculating Body Mass Index

BMI is used in the obesity classification of the World Health Organization (WHO) for the evaluation of obesity in adults. BMI values are obtained by dividing the individual's body weight (kg) by the square of the height (m²). According to the WHO, a BMI value below 18.5 kg/m² signifies that the individual is underweight while a BMI between 18.5 and 24.99 kg/m² is defined as normal weight, between 25.0 and 29.9 kg/m² as overweight, and over 30 kg/m² as obesity [12].

2.2 Difficulty in Emotion Regulation Scale-Short Form (DERS-16)

The Difficulty in Emotion Regulation Scale-Short Form (DERS-16) was used in this study to determine the participants' levels of difficulty in emotion regulation. The short form of the Difficulty in Emotion Regulation scale was developed by Gratz and Roemer and used by Bjureberg *et al.* [3,13]. The DERS-16 consists of five subscales: "Clarity", "Goals", "Impulse", "Strategies", and "Non-acceptance". There are no reverse-coded items in this scale. Items 1 and 2 address clarity (e.g., "I have difficulty

making sense out of my feelings"). Items 3, 7, and 15 address goals (e.g., "When I am upset, I have difficulty getting work done"). Items 4, 8, and 11 address impulse (e.g., "When I am upset, I feel out of control"). Items 5, 6, 12, 14, and 16 address strategies (e.g., "When I am upset, I believe that I'll end up feeling very depressed"). Finally, items 9, 10, and 13 address non-acceptance (e.g., "When I am upset, I feel like I am weak") [14]. This Likert-type scale is scored from 1 = "almost never" to 5 = "almost always" [3,13]. Higher scores indicate more difficulties in emotion regulation. The Turkish adaptation and validity and reliability studies of the scale were carried out by Yiğit and Güzey Yiğit. The reliability was reported as 0.87 using the Guttman halving technique [14].

2.3 Eating Attitudes Test-40 (EAT-40)

The EAT-40 was developed by Garner and Garfinkel to determine the presence of eating disorder attitudes in individuals, and this scale was subsequently adapted into Turkish by Savaşır and Erol [15,16]. It is a 6-point ("always, very often, often, sometimes, rarely, never") Likert-type self-report scale consisting of 40 items. The final score is determined by summing the scores given by the respondent to each question [15,16]. Among the scale items, numbers 4, 14, 15, and 25 address "Obesity anxiety" (e.g., "I avoid eating when I am hungry", "I feel extremely guilty after eating"). Numbers 9, 10, 22, 29, 30, 36, and 37 address "Dieting behavior" (e.g., "I am aware of the calorie content of foods that I eat", "I eat diet foods"). Numbers 12, 24, and 33 address "Social pressure" (e.g., "I feel that others would prefer if I ate more", "I feel that others pressure me to eat") [16]. Numbers 16, 34, and 38 address "Preoccupation with thinness" (e.g., "I exercise strenuously to burn off calories", "I give too much time and thought to food"). Numbers 1, 18, 19, 23, 27, and 39 are scored as "sometimes" for 1 point, "rarely" for 2 points, and "never" for 3 points, while the other options are scored with 0 points. The other items of the scale are scored as "very frequently" for 1 point and "always" as 3 points, while the other options are scored with 0 points. The total score of the scale is obtained by calculating the sum of the scores for all items in the scale [17]. The cutoff point of the Turkish version of the scale was found as 30. While the EAT-40 can be used to identify individuals who may be considered "ill" on a clinical level, it can also be used to assess how prone a person is to disordered eating. EAT scores are used as continuous variables, and possible eating disorders are analyzed by grouping scores in terms of their presence as "yes" or "no." Those with a total EAT score of 30 or higher are accepted as having "disrupted eating," while those with scores of under 30 are considered to practice "normal eating" [18]. The Cronbach alpha internal consistency coefficient of the scale was 0.826.

Table 1. Descriptive statistics for demographic characteristics of the participating university students.

	Male		Female		Total	
	n	%	n	%	n	%
Age group						
<20 years	39	11.2	72	18.0	111	14.8
20–22 years	229	65.4	252	63.0	481	64.1
≥3 years	82	23.4	76	19.0	158	21.1
BMI (kg/m ²), Median (Q1–Q3)	23.26 (21.83–25.77)		21.09 (19.81–23.79)		22.43 (20.44–24.80)	
Department						
Health sciences	175	50.0	276	69.0	451	60.1
Other sciences	175	50.0	124	31.0	299	39.9

2.4 Statistical Analysis

Descriptive statistics for categorical variables (demographic characteristics) are presented as frequency and percentage. First of all, it was determined whether the data had a normal distribution. Tabachnick and Fidell [19] emphasized that distribution is normal when skewness and kurtosis values are between -1.50 and $+1.50$. Since the skewness and kurtosis values of the DERS-16 and EAT-40 scores were not within that range.

Median (min–max) values are given for data where the descriptive statistics of numerical variables do not show normal distribution. The Mann-Whitney U test was used in the comparison of two independent groups that did not show normal distribution and the Kruskal-Wallis H test was used in the comparison of more than two groups. The results of multiple comparison tests are expressed in tables as letters next to medians. Relationships between the scales were determined by Spearman rank-differences correlation coefficients. The values used in the interpretation of the correlation coefficients were <0.2 , $0.2-0.4$, $0.4-0.6$, $0.6-0.8$, and >0.8 corresponding to very weak, weak, moderate, high, and very high correlations, respectively. Regression analysis was used to test effects between variables. Regression analysis provides an explanation of the relationship between two related variables, namely a dependent variable and an independent variable, with mathematical equivalence [20]. In all calculations and interpretations, statistical significance was considered at $p < 0.05$, and bidirectional hypotheses were established. Statistical analysis of the data was performed with IBM SPSS Statistics 26 (IBM Corp., Armonk, NY, USA).

3. Results

Of the 750 university students who participated in this study, 46.7% were male and 53.3% were female, and 64.1% of the students were in the age group of 20–22 years. The mean BMI was 22.43 (20.44–24.80) kg/m² for all participants, 23.26 (21.83–25.77) kg/m² for male participants, and 21.09 (19.81–23.79) kg/m² for female participants. A majority of students (60.1%) were enrolled in health science programs. It was found that 90.4% of the participants did not have any chronic diseases (Table 1).

The median DERS-16 score of the participants study-

ing in other science programs [42 (16–80)] was higher than that of the health sciences students [35 (16–80)] ($U = 60067.5$; $p < 0.05$). There was a statistically significant positive and very weak correlation ($s = 0.179$; $p < 0.05$) between the DERS-16 scores of university students and their BMI values, and a 17.9% increase was found in DERS-16 scores as BMI increased. The median EAT-40 score was higher for male students [205 (41–239)] than female students [174 (40–234)] ($U = 37673.5$; $p < 0.05$), for students aged ≥ 23 years [190.5 (41–239)] compared to students under 20 years of age [180 (40–227)] ($H = 13.608$; $p < 0.01$), and for students studying in other departments [202 (40–233)] compared to students in health science departments [177 (40–239)] ($U = 44670$; $p < 0.05$). There was a statistically significant positive and very weak correlation ($s = 0.174$; $p < 0.001$) between the students' EAT-40 scores and BMI values, and an increase of 17.4% was found in the EAT-40 scores as the BMI values of the students increased (Table 2).

The median score of male students [7 (3–15)] for the DERS-16 “Impulse” subscale was found to be statistically higher than that of female students [6 (3–15)] ($U = 62044.5$; $p < 0.05$). For the “Obesity anxiety” subscale of the EAT-40 scale, the median score of male students [23 (4–24)] was higher than that of female students [18 (4–24)] ($U = 40228.5$; $p < 0.05$); for the “Dieting behavior” subscale, the median score of male students [37 (7–42)] was higher than that of female students [30 (7–42)] ($U = 43069.5$; $p < 0.05$); for the “Social pressure” subscale, the median score of male students [16 (3–18)] was higher than that of female students [13 (3–18)] ($U = 37275.5$; $p < 0.05$); and, finally, for the “Preoccupation with thinness” subscale, the median score of male students [16 (3–18)] was higher than that of female students [13 (3–18)] ($U = 44691.5$; $p < 0.05$) (Table 3).

It was found that there was a significant positive very weak ($s = 0.179$; $p < 0.05$) correlation between the “DERS-16 Total” score and BMI values, a significant negative very weak ($s = -0.109$; $p < 0.05$) correlation between the “Obesity Anxiety” sub-factor score of EAT-40 ($s = -0.109$; $p < 0.05$), a significant negative very weak correlation between the “Preoccupation with thinness” sub-factor score ($s = -0.144$; $p < 0.05$) and a significant negative very weak ($s =$

Table 2. Comparison of DERS-16 and EAT-40 scores of participating university students according to demographic and nutritional findings.

	Difficulty in Emotion Regulation Scale (DERS-16)	Eating Attitudes Test-40 (EAT-40)
Sex	Median (min–max)	Median (min–max)
Male	40 (16–72)	205 (41–239)
Female	35 (16–80)	174 (40–234)
U	66580.5	37673.5
<i>p</i>	0.247	0.001
Age group		
<20 years	34 (16–80)	180 ^a (40–227)
20–22 years	40 (16–72)	188 ^{ab} (40–235)
≥23 years	33.5 (16–68)	190.5 ^b (41–239)
H	4.931	13.608
<i>p</i>	0.085	0.001
BMI		
<i>s</i>	0.179	0.174
<i>p</i>	0.001	0.001
Department		
Health sciences	35 (16–80)	177 (40–239)
Other fields	42 (16–80)	202 (40–233)
U	60067.5	44670
<i>p</i>	0.011	0.001

DERS-16, Difficulty in Emotion Regulation Scale; EAT-40, Eating Attitudes Test-40.

U, Mann-Whitney U test; H, Kruskal-Wallis H test; *s*, Spearman rank-difference correlation coefficient; a, b: the difference between medians that do not have common letters is significant ($p < 0.05$).

Table 3. Comparison of DERS-16 and EAT-40 subscale scores of university students by sex.

DERS-16	Sex	Median (min–max)	U	<i>p</i>
Clarity	Male	5 (2–10)	68770	0.673
	Female	5 (2–10)		
Goals	Male	8 (3–15)	68225.5	0.546
	Female	8 (3–15)		
Impulse	Male	7 (3–15)	62044.5	0.007
	Female	6 (3–15)		
Strategies	Male	12 (5–25)	67982	0.494
	Female	10 (5–25)		
Non-acceptance	Male	7 (3–15)	67101	0.325
	Female	6.5 (3–15)		
EAT-40				
Obesity anxiety	Male	23 (4–24)	40228.5	0.001
	Female	18 (4–24)		
Dieting behavior	Male	37 (7–42)	43069.5	0.001
	Female	30 (7–42)		
Social pressure	Male	16 (3–18)	37275.5	0.001
	Female	13 (3–18)		
Preoccupation with thinness	Male	16 (3–18)	44691.5	0.001
	Female	13 (3–18)		

DERS-16, Difficulty in Emotion Regulation Scale; EAT-40, Eating Attitudes Test-40.

U, Mann-Whitney U test.

–0.073; $p < 0.05$) between the “EAT-40 Total” score. When the results were examined, it was found that as the “DERS-16 Total” score of DERS-16 increased, there was a 17.9% increase in BMI values, a 10.9% decrease in the “Obesity Anxiety” subfactor score of EAT-40, a 14.4% decrease in

the “preoccupation with thinness” sub-factor score and a 7.3% decrease in the “EAT-40 Total” score (Table 4).

It was found that there was a significant positive and very weak ($s = 0.174$; $p < 0.05$) correlation between BMI values and the “Social Pressure” sub-factor score of EAT-

Table 4. The relationship between the total and sub-factor scores of the students and the BMI values and the total and sub-factor scores of EAT-40.

		BMI	Obesity anxiety	Dieting behavior	Social pressure	Preoccupation with thinness	EAT-40
Clarity	s	0.149	-0.020	0.005	0.108	-0.094	0.012
	p	0.000	0.592	0.883	0.003	0.010	0.737
Goals	s	0.057	-0.088	0.032	-0.009	-0.086	-0.053
	p	0.120	0.016	0.375	0.816	0.018	0.149
Impulse	s	0.218	-0.088	-0.088	0.077	-0.130	-0.067
	p	0.000	0.016	0.015	0.035	0.000	0.065
Strategies	s	0.195	-0.123	-0.065	0.001	-0.143	-0.071
	p	0.000	0.001	0.073	0.987	0.000	0.054
Non-acceptance	s	0.216	-0.138	-0.131	0.036	-0.183	-0.094
	p	0.000	0.000	0.000	0.328	0.000	0.010
DERS-16 Total	s	0.179	-0.109	-0.063	0.038	-0.144	-0.073
	p	0.000	0.003	0.086	0.302	0.000	0.044
BMI	s	-	0.022	0.066	0.277	0.011	0.174
	p	-	0.549	0.072	0.000	0.760	0.000

s: Spearman's rank-differences correlation coefficient.

Table 5. Effect of students' DERS-16 scores and ages on BMI values and EAT-40 scores.

	Model	β	Std. error	t	p	F	p
BMI	(Constant)	18.977	0.837	22.680	0.000		
	DERS-16	0.047	0.009	5.522	0.000	21.373	0.000
	Age	0.138	0.034	4.109	0.000		
	R = 0.233; R ² = 5.4%; corrected R ² = 5.2%						
EAT-40	(Constant)	154.901	11.316	13.689	0.000		
	DERS-16	-0.040	0.116	-0.346	0.729	2.890	0.056
	Age	1.057	0.455	2.324	0.020		
	R = 0.088; R ² = 0.8%; corrected R ² = 0.5%						

BMI, Body Mass Index; EAT-40, Eating Attitudes Test-40; DERS-16, Difficulty in Emotion Regulation Scale.

40 and "EAT-40 Total" score ($s = 0.174$; $p < 0.05$). When the results were examined, it was found that as the BMI values increased, there was a 27.7% increase in the "Social Pressure" sub-factor score of EAT-40 and a 17.4% increase in the "EAT-40 Total" score (Table 4).

"Regression Analysis" was performed to determine the effect of DERS-16 scores and ages on BMI values of individuals and the results are given in Table 5. When the indication coefficient is examined, approximately 5.4% of the change in the BMI values of the students is explained by their DERS-16 scores and ages. When the analysis findings were examined, the effect of the students' DERS-16 scores and ages on BMI values was found to be statistically significant ($F = 21.373$; $p < 0.05$). It was found that a one-unit increase in DERS-16 scores and in students' age caused an increase of 4.7% and 13.8% in BMI respectively.

4. Discussion

Emotion regulation problems may be a general risk factor for maintaining healthy eating habits, especially during the university period, which entails processes such as

young people moving away from their families and adjusting to new environments. This present study was designed to evaluate the relationship between university students' emotional regulation difficulties and their eating attitudes and BMI values. Among the total 750 students who participated in this study, 46.7% were male and 53.3% were female. In addition to students from health sciences programs, where the numbers of female students are higher, the inclusion of students from other science and social science departments in this study ensured a more homogeneous sex distribution. In this study, no significant difference was found between the medians of the emotion regulation scores of the male and female respondents as measured by the DERS-16. Similarly, in a cross-sectional study conducted by Şahan and Şahin [21] with university students, it was observed that emotion regulation did not differ according to sex. Hallion *et al.* [22] found that there was no significant difference between the emotion regulation scores of women and men. In the study conducted by Gouveia *et al.* [20], it was found that emotion regulation difficulties were not statistically significantly different between men

and women. Neumann *et al.* [23] reported that adolescent girls had more emotion dysregulation than boys, but in another study, it was observed that this sex-related emotion dysregulation difference disappeared with age [24]. As can be understood from the previous studies supporting our results, sex-related emotion regulation difficulties may disappear during the university period, which is the end of adolescence and represents a transition to adulthood. The median score of male students was found to be statistically higher for the “Impulse” subscale of the DERS-16 compared to female students. This subscale explains difficulty in controlling impulses while experiencing negative emotions [3]. In another cross-sectional study, in contrast to our study, the “Impulse” subscale score was found to be higher for women than men [22]. On the other hand, some cross-sectional studies found no significant relationship between sex and impulsive behaviors [3,25,26]. This result can be explained as a limitation of our study because the number of women was higher than the number of men. Although current studies in the literature have shown mixed results in investigating sex differences in impulsivity, some studies found that men were more prone to impulsive actions than women [27]. This would explain the high median “Impulse” score for the male participants in our study.

When the disruption of eating attitudes as measured by the EAT-40 was evaluated, it was found that the median EAT-40 score of male students was statistically significantly higher compared to female students. Contrarily, in a study conducted with adolescents, girls were more likely to display disturbed eating attitudes than boys [28]. In another study conducted with university students in health science programs, it was observed that tendencies toward eating disorders were more common in girls than boys [29]. In the present study, the EAT-40 subscale scores for “Dieting behavior”, “Preoccupation with thinness”, and “Obesity anxiety” were also found to be statistically significantly higher among males than females. In contrast to our study, in a cross-sectional study conducted with university students, although there was no significant sex-related difference in disturbed eating attitudes, it was found that women had higher levels of physical anxiety [30]. Similarly, another study by Ambwani *et al.* [31] found that the fear of being overweight was more prevalent among women than men. Our study showed that men were more concerned about thinness and obesity than women, while other studies primarily focused on muscular appearance among men [32–34]. This result reveals the strength of our work.

In this study, “Social pressure” subscale scores, which reflect the attitudes of individuals toward the thoughts of others about eating, bodily appearance, and difficulties eating in the presence of others, were found to be higher among male students. A recent study by Chen *et al.* [33] found that pressure from friends to control one’s weight was significantly associated with disordered eating, especially among adolescent girls. Our study focused on general en-

vironmental social pressure, not simply peer or friend pressure. This reveals another strength of our work.

In this study, it was found that the emotion regulation scores of students studying in other departments were significantly higher compared to the median score of students studying health sciences. In another cross-sectional study, it was observed that students studying in the field of health had difficulty in emotion regulation and tended to suppress their emotions more than those enrolled in social science programs [35]. Montes-Berges and Augusto [36] stated that undergraduate nursing students who recognized emotions and regulated them moderately well coped with stress better. Individuals working and/or studying in the field of health need a more positive perspective in regulating their emotions to be successful professionally and to cope with stressful situations that may arise during clinical applications [37]. Our findings support that conclusion, and it was observed that the emotion regulation difficulty scores of the students studying in the field of health were better. This finding may be explained as a result of the education received.

In addition, disturbed eating attitudes among students studying in other departments were found to be statistically significantly more common compared to students studying in health science departments. Contrary to our research, in another cross-sectional study conducted with university students, disturbed eating attitudes were found to be significantly more common among education faculty students than those studying in the field of health [38]. In another study, it was determined that students studying in the field of health had a higher risk of eating disorders than those studying fine arts [39]. This situation can be expected to improve with the continuation of the education processes of students in the field of health.

The mean BMI of the university students participating in this study was within the normal range, and it was found to be higher for male students. Similarly, Öcalan *et al.* [40] recently found that most university students had normal BMI values. In another cross-sectional study conducted by McCarthy *et al.* [41], BMI values were found to be higher among male university students. As explained before, this finding is consistent with the higher risk of disturbed eating attitudes among male students participating in the present study.

In this study, there was a statistically significant but very weak correlation between the emotion regulation difficulties of university students and their BMI values. Emotion regulation difficulties were found to be more prevalent as BMI increased. On the other hand, there was a significant but very weak correlation between BMI and the “Clarity” and “Strategies” subscale scores, and weak correlations between BMI and the “Impulse” and “Non-acceptance” scores were also found.

One of the subscales of the DERS-16 is “Clarity,” which can be defined as the ability or inability to identify

types of emotions. In this study, higher “Clarity” subscale scores were related to increased BMI values. A recent study conducted by Kass *et al.* [42] aimed to find a relationship between BMI and emotional intelligence. However, they found no relationship between BMI and clarity of emotions. On the other hand, several studies have shown that eating disorders, and particularly binge eating, are related to a lack of emotional clarity [43,44]. This result is not surprising since it is known that eating disorders like binge eating and bulimia nervosa are associated with BMI [45].

“Impulse” is another DERS-16 subscale that reflects difficulties in controlling impulsive behaviors when distressed. In the present study, increased BMI values were found to be related to higher “Impulse” scores. Studies evaluating the relationship between impulsive behaviors and BMI have produced contradictory results [46–48]. In the study conducted by Meule and Platte [47], for example, attentional and motor impulsivity were found to be positively associated with overeating and therefore with BMI in women, but non-planning impulsivity was not. Another study found that impulsivity scores were more likely to be higher among people who were obese in terms of BMI [48]. These results are to be expected assuming that impulsive behaviors affect individuals’ thinking processes regarding healthy food selection and trigger increased interest in delicious food [49].

In this study, it was found that there is a relationship between limited access to emotion regulation strategies and BMI, and an elevation in BMI resulted in an increase in the “Strategies” subscale score. Similarly, in a study conducted by Willem *et al.* [10], severely and moderately obese students reported a lack of planning strategies and emotional awareness compared to normal-weight participants. Evidence in the literature has highlighted the inability to control one’s motivation and the inability to perform targeted behaviors in cases of binge eating or purging eating disorders [50–52]. Our study is different as it reveals the effect of difficulty in emotion regulation on overall eating behavior and BMI rather than a specific eating disorder.

The DERS-16 subscale of “Non-acceptance” evaluates the unwillingness to accept certain emotional responses [22]. In this study, an increase in BMI resulted in higher “Non-acceptance” scores. Merwin *et al.* [53] reported that dietary restrictions were significantly observed in individuals with a sense of non-acceptance regardless of body weight. In another study, a greater negative impact of emotional experiences was shown among individuals with disordered eating behaviors [3]. For this reason, individuals may exhibit behaviors such as disordered eating patterns, impaired eating attitudes, or the avoidance or rejection of unwanted emotions.

In this study, there was a statistically significant but very weak correlation between the EAT-40 scores of the participating university students and their BMI values, meaning that as BMI increased, the risk of disturbed eating atti-

tudes was found to be higher. The elevated BMI in university students can be associated with increased social pressure. This result is consistent with the finding of higher BMI values among male students participating in this study and can be explained by the effect of the new social environment and peer pressure, as explained before.

As obesity anxiety, preoccupation with thinness and impaired eating attitude decreased, difficulty in emotion regulation increases. Contrary to our results, a study in adolescents revealed that binge eating disorders are associated with greater difficulties in various dimensions of emotion regulation, such as impulse control, goal-directed behavior, and access to effective emotion regulation strategies [52]. Another study conducted found that difficulties in emotion regulation, comprising rejection of emotions, mediated the correlation between their psychopathology in people with an eating disorder diagnosis [54]. Acceptance of emotions appears to play a significant role in the development of eating disorders. On the other hand, the person might spend a great effort to stay away from circumstances that brought on undesired emotions or, if such emotions are already present, they might make an effort to suppress those emotions in order to handle them [55]. These results can be explained by the fact that increased emotional dysregulation may result as a result of efforts to improve impaired eating attitudes such as obesity anxiety and thinness preoccupation.

There are some limitations of this study to take into consideration. First, although the EAT-40 scale was developed based on attitudes, feelings, and behaviors related to eating, it is mostly used to define the risk of eating disorders and it may not be sufficient for the accurate evaluation of general eating attitudes [14]. Second, the use of BMI in the prediction of malnutrition or obesity is another point that should be taken into consideration because, although the heights and weights of the participants were measured by the researchers and not self-reported by the participants, misclassification problems and the inability to determine body fat distribution may result in important bias in estimating effects related to malnutrition or obesity [56].

5. Conclusions

Our findings suggest that difficulties in emotion regulation may not be related to the risk of eating disorders; rather, they may be correlated with the body weights of university students in parallel with changes in their eating attitudes and increases in their BMI values. Especially in the nutritional treatment of young people who exhibit disturbed eating attitudes such as unhealthy eating behaviors or dietary restrictions, it is necessary to determine their emotion regulation difficulties accurately and intervene accordingly. In this context, more studies are needed to examine the direct effects of emotion regulation difficulties on nutritional habits and health conditions such as malnutrition or obesity in university students.

Author Contributions

MA, NYA, EÇ, ETS and HÇ—extraction and drafting of the manuscript; MA, NYA, EÇ, ETS and HÇ—analysis of data, manuscript revision; MA, NYA, EÇ, ETS and HÇ—design and revision, statistical analysis.

Ethics Approval and Consent to Participate

We obtained informed consent from all. Ethical approval for our study was obtained from the Üsküdar University Non-Interventional Research Ethics Committee (numbered) (approval number: 61351342/January 2022-49), and all study procedures were in accordance with relevant guidelines.

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Conflict of Interest

The authors declare no conflict of interest.

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