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Personality traits in relation to mindful eating among university students in Türkiye

Gökçe Ünal^{1*} and Özge Esgin²

Abstract

Background Personality traits influence eating behaviors and dietary quality, and given the high prevalence of unhealthy eating habits among university students and the benefits of mindful eating, the relationship between personality dimensions and mindful eating in this population represents an area requiring further research. The aim of this study was to investigate the associations between personality traits and mindful eating behaviors in university students.

Methods This cross-sectional study conducted in Türkiye via an online survey from October to November 2025 involved 875 university students (80.1% women). Participants completed the Big Five Inventory-10 and the Mindful Eating Questionnaire (MEQ) to enable the assessment of personality characteristics and mindful eating behaviors, respectively.

Results Hierarchical multiple linear regression analysis showed that, after adjusting for age, sex, BMI, and income/expenditure status, the Big Five personality traits were significantly associated with both total and subscale mindful eating scores, explaining an additional 2.4%–10.5% of the variance beyond the covariates (all $\Delta R^2 p < 0.001$). For the total MEQ score, the final model explained 14.8% of the variance. Higher agreeableness ($\beta = 0.125, p < 0.001$), conscientiousness ($\beta = 0.129, p < 0.001$), and openness to experience ($\beta = 0.106, p = 0.002$) were significantly associated with higher total MEQ scores, whereas higher neuroticism was associated with lower total MEQ scores ($\beta = -0.177, p < 0.001$). Extraversion was not significantly associated with the total MEQ score.

Conclusions These findings suggest that mindful eating tendencies in university students may be associated with specific personality profiles, with greater agreeableness, conscientiousness, and openness to experience being associated with more mindful eating behaviors, while neuroticism may be associated with less adaptive patterns. Future longitudinal and intervention studies are needed to evaluate the effectiveness of personality-tailored mindful eating interventions.

Keywords Eating behaviors, Health, Mindfulness, Nutrition, Personality traits

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Introduction

The Five-Factor Personality Model is the most prominent paradigm among measurement tools used to assess personality. This model refers to the organization of personality traits across five fundamental dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience [1]. Personality traits can influence dietary choices and overall diet, including preferences for healthy or unhealthy foods, and maladaptive personality traits such as neuroticism and alexithymia (the inability to identify and describe emotions) have been associated with lower diet quality, unhealthy eating habits, such as low fruit and vegetable intake, and increased intake of sugar and saturated fats [2, 3]. Different disordered eating behaviors are associated with personality dimensions, with high levels of neuroticism being linked to increased disordered eating behaviors, while agreeableness, conscientiousness, and extraversion may serve as protective factors [4, 5].

University life is a critical period for developing healthy eating habits and attitudes; however, students are at risk of developing unhealthy eating habits, and they often consume large amounts of energy-dense, junk, and convenience foods and skip meals. Such eating habits can lead to a poor-quality diet, inadequate nutrition, or overeating, thereby increasing the risk of preventable diseases [6]. Studies conducted on university students indicate that personality traits are associated with eating behaviors. One study conducted among female university students found that openness to experience showed a weaker association with emotional eating than conscientiousness, extraversion, and agreeableness [7], while another study, conducted on male students, demonstrated that personality traits are associated with the risk of developing eating disorders, with the strongest correlation observed for neuroticism, while extraversion and openness to experience were inversely related to that risk [8].

Mindful eating helps gradually change eating behavior from the outside in, making external factors, such as a pleasant smell, less of a trigger for eating in the absence of physical hunger signals [9]. The literature suggests that such applications encourage healthier eating behaviors, such as reduced sugar consumption and increased fruit and vegetable intake [10–13]. Studies have found a negative relationship between mindful eating and both motivation to eat tasty foods and weight gain; accordingly, mindful eating is associated with a lower body mass index (BMI) and reduced fat and sugar consumption [14–16]. Mindful eating has been associated with healthier eating [17] and has been found to lower fasting glucose levels, reduce sweet consumption [13], and aid weight loss through mindfulness-based interventions [18]. At the same time, studies have shown that mindful

eating reduces various negative eating-related behaviors, such as excessive craving for certain foods [19], overeating [13], and consumption of energy-dense foods [20]. Lower levels of mindful eating among university students have been associated with a higher BMI and body fat percentage, and a larger waist circumference. Low levels of mindful eating have been associated with the consumption of fried foods, sweets, and fast food [21].

Previous research has demonstrated a relationship between mindfulness and the Big Five personality traits. According to research findings, mindfulness is consistently negatively correlated with neuroticism, while small-to-moderate positive correlations have been reported between mindfulness and conscientiousness, agreeableness, openness to experience, and extraversion [22]. From a theoretical perspective, personality traits may influence mindful eating through differences in self-regulation, emotional functioning, social behaviors, and food choice tendencies. For example, conscientiousness may facilitate greater awareness of internal hunger and satiety cues through enhanced self-regulation [23, 24], whereas neuroticism may predispose individuals to maladaptive eating behaviors through heightened emotional instability and stress reactivity, with psychological distress partially mediating this relationship [25]. Likewise, agreeableness may promote more adaptive eating behaviors through stronger interpersonal functioning and social norm orientation, consistent with evidence showing that higher agreeableness is associated with fewer abnormal eating behaviors [26, 27], while openness to experience may encourage greater receptiveness to diverse and healthier food choices, including fruit- and vegetable-rich and sustainable dietary patterns, which have been positively associated with mindful eating [28–31]. Extraversion may contribute to less mindful eating through greater engagement in social eating situations and a higher tendency toward external eating [28].

Although personality has been associated with eating behaviors and mindfulness separately, studies specifically examining the association between the Big Five personality traits and mindful eating remain limited. To our knowledge, only one previous study conducted in Türkiye has examined the association between the Big Five personality traits and mindful eating, and this study was conducted in a general adult population rather than among university students [32]. Moreover, university students are particularly vulnerable to unhealthy dietary behaviors due to academic stress, time constraints, economic conditions, inadequate nutrition knowledge, and campus food environments that promote unhealthy food choices [6]. Understanding how personality traits are associated with mindful eating in this population may therefore contribute to the development of more tailored nutrition and behavioral interventions. As the study was

administered online and included a relatively lengthy 30-item Mindful Eating Questionnaire (MEQ), the Big Five Inventory-10 (BFI-10) was used to minimize respondent burden and reduce the risk of survey fatigue while maintaining assessment of the five major personality dimensions. Therefore, this study aims to investigate the associations between personality traits and mindful eating behaviors in university students.

Materials and methods

Study design and participants

Ethical approval for this cross-sectional study was obtained from the Ondokuz Mayıs University Ethics Committee (Decision No: 2025/507, 15 October 2025), and the research was conducted between October and November 2025 in accordance with the Declaration of Helsinki. Data were collected via an online survey completed by participants. The study population comprised university students aged 19 and older residing in Türkiye and included those who were proficient in Turkish and had access to the online survey through social media and messaging applications. A combination of convenience and snowball sampling methods was employed. Participants who provided informed consent following the survey announcement were included in the study. The following individuals were excluded from the study: those with diagnosed chronic health conditions that may affect their eating habits, such as diabetes or eating disorders; individuals actively undergoing psychiatric treatment, or diagnosed with a serious mental disorder (e.g. severe depression, anxiety disorder, or substance use disorder); those with special educational needs or cognitive or physical disabilities that prevent them from responding to research materials; individuals who have to follow a special diet or nutrition program due to their health condition (e.g. gluten or lactose intolerance); and pregnant or breastfeeding women.

The required sample size was determined using G*Power 3.1.9.7, assuming an alpha level of 0.05 and a statistical power ($1-\beta$) of 0.95. The calculation was based on a planned hierarchical multiple linear regression

analysis (F-test, fixed model, R^2 increase). Because no previous studies reported an effect size suitable for this analysis, a medium effect size ($f^2 = 0.15$), as recommended by Cohen, was assumed. With five tested predictors and nine total predictors, the minimum required sample size was estimated to be 138 participants. To maximize statistical precision and representativeness, all eligible participants who completed the online survey during the predefined data collection period were included in the analyses. Consequently, the final sample comprised 875 participants, substantially exceeding the minimum required sample size.

Participant eligibility and enrolment are summarized in Fig. 1. A total of 1,008 individuals were initially assessed for eligibility, of whom 133 were excluded: 13 were pregnant or breastfeeding; 68 did not meet the age and/or educational requirements; and 18 had a psychiatric disorder, a diet-related chronic disease, or were following a diet because of such a condition. Additionally, 32 participants were excluded due to incomplete survey data, and two because of low-reliability responses. Consequently, 875 participants were included in the study and available for analysis.

Measures

In addition to the demographic questionnaire, the study employed the BFI-10 and the MEQ to assess personality and mindful eating behaviors, respectively.

A questionnaire was developed to collect participants' demographic characteristics, including age, sex, marital status, and income-to-expenditure balance. Participants also self-reported their body weight and height, which were used to calculate BMI as weight in kilograms divided by height in meters squared (kg/m^2). BMI was categorized according to the World Health Organization criteria [33]: underweight ($< 18.50 \text{ kg/m}^2$), normal weight ($18.50\text{--}24.99 \text{ kg/m}^2$), overweight ($25.00\text{--}29.99 \text{ kg/m}^2$), and obese ($\geq 30.00 \text{ kg/m}^2$).

The BFI-10, originally developed by Rammstedt and John [34] to assess the five major personality traits, was adapted into Turkish by Horzum, Ayas [35]. Each item is rated on a five-point Likert scale, ranging from 1 to 5, with the scale consisting of five subscales corresponding to these personality dimensions. Each personality trait on the scale is measured by two items. The five traits assessed are personality dimensions reflecting extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Extraversion reflects individual differences in sociability, assertiveness, positive emotionality, proactive decision-making, and the tendency to seek social engagement [36]. Agreeableness refers to individual differences in the tendency to be compassionate, cooperative, and motivated to maintain positive interpersonal relationships [37]. Conscientiousness

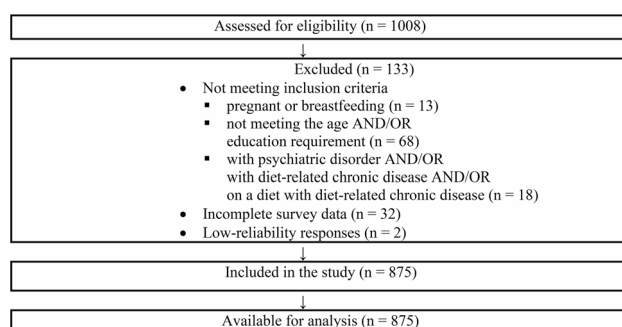


Fig. 1 Participant flow diagram

encompasses individual differences in self-control, responsibility, diligence, organization, and adherence to rules [38]. Neuroticism relates to individual differences in emotional instability and the tendency to experience negative emotions, such as anxiety, sadness, and anger [39]. Openness to experience is characterized by cognitive flexibility, curiosity, and a broad range of interests, and individuals high in openness to experience tend to seek out new experiences, engage with novel ideas, and approach situations with a willingness to explore and reflect [40]. Although the Turkish adaptation of the BFI-10 was originally validated in a high-school student sample [35], subsequent research has also supported its use in adult populations. For example, a study conducted among adults aged 18–59 years confirmed the original five-factor structure of the Turkish BFI-10, demonstrating good model fit indices. In the same study, all inter-item correlations within the five personality dimensions were statistically significant, supporting the construct validity of the instrument in an adult sample [41]. In the present study, the reliability of the BFI-10 was evaluated using inter-item correlations and Spearman–Brown coefficients, as recommended for brief two-item measures [42]. Inter-item correlations ranged from 0.004 to 0.360. The corresponding Spearman–Brown coefficients were 0.529, 0.008, 0.236, 0.049, and 0.193 for Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience, respectively. Although the reliability estimates for some dimensions were low, similarly low estimates have been reported in previous studies using the BFI-10. For example, a previous study reported a near-zero inter-item correlation ($r = -0.04$) and a negative Spearman–Brown coefficient (-0.07) for the Agreeableness subscale, indicating very low internal consistency for this two-item BFI-10 dimension [43]. Because each BFI-10 personality dimension is represented by only two items, lower internal consistency may occur, and the scale prioritizes broad coverage of personality dimensions over high item homogeneity [44]. A previous study has shown that inter-item correlations for the BFI-10 can vary substantially across countries and personality dimensions, with low and, in some contexts, negative correlations reported for certain dimensions [45]. Therefore, the relatively low internal consistency observed for some subscales in the present study was acknowledged as a limitation when interpreting the findings. In particular, measurement unreliability may have attenuated the observed associations between personality traits and mindful eating, resulting in conservative estimates of the underlying relationships.

The MEQ, originally developed by Framson, Kristal [46], was adapted into Turkish by Köse, Tayfur [47] and comprises 30 items organized into seven subscales that assess various dimensions of mindful eating. The

disinhibition subscale captures tendencies to eat beyond satiety, particularly in response to palatable foods, large portions, or abundant food environments. Emotional eating is defined as the use of food to cope with negative emotions, including stress, sadness, and tension. Control of eating refers to individuals' ability to regulate the pace and intentionality of their eating. Awareness reflects the degree of attention to the sensory and emotional aspects of eating, including flavor, aroma, texture, and emotional responses to food. Eating discipline reflects individuals' capacity to structure and regulate their dietary habits through planned and intentional behaviors. Conscious eating refers to individuals' awareness of their eating habits and the nutritional qualities of the foods they choose. The interference subscale evaluates sensitivity to environmental triggers – such as food advertisements, social settings, and the availability of food – that may prompt eating without hunger [47]. When scoring the questionnaire, arithmetic mean scores are calculated for each subscale and for the overall scale. In addition to subscale scores, the instrument yields a total mindful eating score that reflects overall eating awareness. The Cronbach's alpha coefficient for the scale was 0.771.

Data analysis

Data analysis was performed using IBM SPSS Statistics version 21. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize the characteristics of the study variables. Pearson correlation analysis was conducted to examine the relationships between personality traits (measured using the BFI-10) and mindful eating (measured using the MEQ), and Pearson correlation coefficients (r) were reported. The association between personality trait scores (independent variables) and total and subscale mindful eating scores (dependent variables) was evaluated using a hierarchical multiple linear regression model. In Step 1, age, sex, BMI, and income/expenditure status were entered as covariates to control for their potential confounding effects. Categorical variables were dummy-coded before being entered into the regression models. Sex was coded as 0 = men and 1 = women, with men serving as the reference category. Income/expenditure status was coded as 0 = income equal to or greater than expenditure and 1 = income lower than expenditure, with income equal to or greater than expenditure serving as the reference category. In Step 2, the five personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) were entered simultaneously to evaluate their additional contribution beyond the covariates. Statistical significance was set at $p < 0.05$, with a 95% confidence interval (CI).

Before interpreting the regression models, the assumptions of multiple linear regression were evaluated.

Multicollinearity was assessed using tolerance and variance inflation factor (VIF) statistics, while independence of residuals was evaluated using the Durbin–Watson statistic. The assumptions of normality and homoscedasticity were examined through normal probability plots and standardized residual-versus-predicted value plots. No substantial violations of these assumptions were detected. Because the regression analyses were conducted to test prespecified hypotheses for distinct mindful eating dimensions, no adjustment for multiple testing (e.g., Bonferroni correction) was applied.

Results

The study included 875 participants with a mean age of 22.5 ± 2.6 years. Most participants were women ($n = 701$, 80.1%) and single (97.8%). In terms of income and expenditure, 32.6% reported income less than their expenditure, while 67.4% reported income equal to or greater than their expenditure. The mean BMI was 22.8 ± 3.9 kg/m², with the majority classified as normal weight (66.2%), followed by overweight (17.0%), underweight (10.9%), and obese (5.9%). Mindful eating characteristics were assessed using the MEQ. The total MEQ score was 3.3 ± 0.4 . On the BFI-10, measured on a scale of 2–10, the mean scores from highest to lowest were: agreeableness, 7.8 ± 1.5 ; conscientiousness, 7.3 ± 1.6 ; extraversion, 6.9 ± 1.8 ; openness to experience, 6.7 ± 1.6 ; and neuroticism, 6.1 ± 1.7 (Table 1).

Pearson correlation analyses were conducted to examine the relationships between the Big Five personality traits and mindful eating scores, as depicted in Table 2. The overall MEQ score showed positive correlations with conscientiousness ($r = 0.242$, $p < 0.001$), agreeableness ($r = 0.200$, $p < 0.001$), openness to experience ($r = 0.181$, $p < 0.001$), and extraversion ($r = 0.081$, $p < 0.05$); however, neuroticism was negatively correlated with the overall MEQ score ($r = -0.234$, $p < 0.001$).

Hierarchical multiple linear regression analyses were performed to examine the associations between personality traits and total and subscale mindful eating scores after adjusting for age, sex, BMI, and income/expenditure

Table 1 General characteristics of the participants

Characteristics	n : 875
Age (years), M $\pm$ SD	22.5 $\pm$ 2.6
Sex, n (%)	Women 701 (80.1)
	Men 174 (19.9)
Marital status, n (%)	Single 856 (97.8)
	Married 19 (2.2)
Income/expenditure, n (%)	Less 285 (32.6)
	Equal or more 590 (67.4)
BMI (kg/m ²), M $\pm$ SD	22.8 $\pm$ 3.9
BMI classification, n (%)	Underweight 95 (10.9)
	Normal 579 (66.2)
	Overweight 149 (17.0)
	Obesity 52 (5.9)
Disinhibition, M $\pm$ SD (SR: 1–5)	2.6 $\pm$ 0.8
Emotional Eating, M $\pm$ SD (SR: 1–5)	2.6 $\pm$ 1.0
Control of Eating, M $\pm$ SD (SR: 1–5)	3.7 $\pm$ 0.8
Awareness, M $\pm$ SD (SR: 1–5)	3.1 $\pm$ 0.4
Eating Discipline, M $\pm$ SD (SR: 1–5)	2.8 $\pm$ 0.8
Conscientious Eating, M $\pm$ SD (SR: 1–5)	3.1 $\pm$ 0.5
Interference, M $\pm$ SD (SR: 1–5)	2.3 $\pm$ 0.8
MEQ score (total), M $\pm$ SD (SR: 1–5)	3.3 $\pm$ 0.4
Extraversion, M $\pm$ SD (SR: 2–10)	6.9 $\pm$ 1.8
Agreeableness, M $\pm$ SD (SR: 2–10)	7.8 $\pm$ 1.5
Conscientiousness, M $\pm$ SD (SR: 2–10)	7.3 $\pm$ 1.6
Neuroticism, M $\pm$ SD (SR: 2–10)	6.1 $\pm$ 1.7
Openness to experience, M $\pm$ SD (SR: 2–10)	6.7 $\pm$ 1.6

M Mean, SD Standard Deviation, n number, % Percent, BMI Body Mass Index, MEQ Mindful Eating Questionnaire, SR Score Range

status (Table 3). In Step 1, the covariates explained between 0.5% and 7.4% of the variance in mindful eating outcomes. The addition of the Big Five personality traits in Step 2 significantly improved all regression models ($\Delta R^2 = 0.024$ – 0.105 , all $p < 0.001$). Overall, the final model explained 14.8% of the variance in the total MEQ score (adjusted $R^2 = 0.148$). After controlling for the covariates, higher agreeableness ($\beta = 0.125$, $p < 0.001$), conscientiousness ($\beta = 0.129$, $p < 0.001$), and openness to experience ($\beta = 0.106$, $p = 0.002$) were significantly associated with higher total MEQ scores, whereas higher neuroticism was associated with lower total MEQ scores ($\beta = -0.177$,

Table 2 Correlation analysis for Big Five personality traits and mindful eating scores

Variables	Disinhibition	Emotional Eating	Control of Eating	Awareness	Eating Discipline	Conscientious Eating	Interference	MEQ (total)
Extraversion	0.036	−0.040	0.037	0.104**	0.127***	0.036	−0.088**	0.081*
Agreeableness	−0.138***	−0.091**	0.211***	0.103**	0.060	0.082*	−0.151***	0.200***
Conscientiousness	−0.122***	−0.152***	0.173***	0.126***	0.114**	0.116**	−0.218***	0.242***
Neuroticism	0.153***	0.147***	−0.123***	−0.048	−0.200***	−0.087*	0.157***	−0.234***
Openness to experience	−0.065	−0.077*	0.103**	0.162***	0.160***	0.120***	−0.108**	0.181***

Pearson correlation coefficients (r) are reported in the table

MEQ Mindful Eating Questionnaire

* $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$

Table 3 Hierarchical multiple linear regression analysis of the associations between personality traits and total and subscale mindful eating scores

Step	Predictors	Unstd. Coeff.		Std. Coeff.		Tolerance	VIF	Model <i>p</i>	Δ <i>R</i> ²	Adj. <i>R</i> ²
		B	SEs	95% CI	β					
Outcome: Disinhibition										
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	0.001	0.022	0.018
2	Extraversion	0.050	0.017	0.018, 0.083	0.107	0.861	1.161	<0.001	0.048	0.061
	Agreeableness	-0.057	0.019	-0.095, -0.019	-0.101	0.921	1.085	0.003		
	Conscientiousness	-0.037	0.019	-0.074, -0.001	-0.073	0.810	1.235	0.045		
	Neuroticism	0.070	0.017	0.037, 0.104	0.141	0.915	1.093	<0.001		
	Openness to experience	-0.019	0.018	-0.055, 0.017	-0.036	0.860	1.163	0.311		
Outcome: Emotional Eating										
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	<0.001	0.032	0.028
2	Extraversion	0.020	0.019	-0.018, 0.057	0.036	0.861	1.161	<0.001	0.031	0.054
	Agreeableness	-0.035	0.022	-0.079, 0.009	-0.054	0.921	1.085	0.309		
	Conscientiousness	-0.060	0.022	-0.102, -0.017	-0.101	0.810	1.235	0.006		
	Neuroticism	0.057	0.020	0.019, 0.096	0.100	0.915	1.093	0.004		
	Openness to experience	-0.018	0.021	-0.060, 0.023	-0.031	0.860	1.163	0.383		
Outcome: Control of Eating										
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	<0.001	0.074	0.070
2	Extraversion	-0.017	0.016	-0.047, 0.014	-0.037	0.861	1.161	<0.001	0.058	0.123
	Agreeableness	0.086	0.018	0.051, 0.122	0.158	0.921	1.085	<0.001		
	Conscientiousness	0.042	0.017	0.008, 0.076	0.085	0.810	1.235	0.015		
	Neuroticism	-0.046	0.016	-0.077, -0.015	-0.096	0.915	1.093	0.004		
	Openness to experience	0.026	0.017	-0.008, 0.059	0.051	0.860	1.163	0.132		
Outcome: Awareness										
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	0.406	0.005	0.000
2	Extraversion	0.011	0.008	-0.005, 0.027	0.047	0.861	1.161	<0.001	0.038	0.033
	Agreeableness	0.017	0.009	-0.001, 0.036	0.063	0.921	1.085	0.194		
	Conscientiousness	0.014	0.009	-0.004, 0.032	0.056	0.810	1.235	0.068		
	Neuroticism	-0.001	0.008	-0.018, 0.015	-0.006	0.915	1.093	0.129		
	Openness to experience	0.031	0.009	0.013, 0.049	0.124	0.860	1.163	0.001		
Outcome: Eating Discipline										
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	<0.001	0.023	0.019
2	Extraversion	0.024	0.016	-0.008, 0.057	0.052	0.861	1.161	<0.001	0.054	0.068
	Agreeableness	0.005	0.019	-0.033, 0.042	0.008	0.921	1.085	0.138		
	Conscientiousness	0.009	0.018	-0.027, 0.045	0.017	0.810	1.235	0.804		
	Neuroticism	-0.077	0.017	-0.110, -0.044	-0.156	0.915	1.093	<0.001		
	Openness to experience	0.058	0.018	0.022, 0.093	0.112	0.860	1.163	0.001		
Outcome: Conscious Eating										
	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	<0.001	0.035	0.031

Table 3 (continued)

Step	Predictors	Unstd. Coeff.		Std. Coeff.		Tolerance	VIF	Model <i>p</i>	ΔR^2	Adj. R^2
		B	SEs	95% CI	β					
2	Extraversion	−0.005	0.010	−0.024, 0.014	−0.017	0.861	1.161	<0.001	0.024	0.049
	Agreeableness	0.014	0.011	−0.008, 0.036	0.043	0.921	1.085			
	Conscientiousness	0.018	0.011	−0.003, 0.039	0.060	0.810	1.235			
	Neuroticism	−0.018	0.010	−0.037, 0.002	−0.062	0.915	1.093			
	Openness to experience	0.026	0.011	0.005, 0.047	0.088	0.860	1.163			
	Outcome: Interference									
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	0.061	0.010	0.006
2	Extraversion	−0.003	0.016	−0.035, 0.029	−0.006	0.861	1.161	<0.001	0.066	0.067
	Agreeableness	−0.048	0.019	−0.086, −0.011	−0.086	0.921	1.085			
	Conscientiousness	−0.080	0.018	−0.116, −0.044	−0.157	0.810	1.235			
	Neuroticism	0.057	0.017	0.024, 0.090	0.115	0.915	1.093			
	Openness to experience	−0.016	0.018	−0.052, 0.019	−0.031	0.860	1.163			
	Outcome: MEQ (total)									
1	Covariates (age, sex, BMI, inc./exp.)	—	—	—	—	—	—	<0.001	0.052	0.048
2	Extraversion	−0.009	0.008	−0.025, 0.006	−0.040	0.861	1.161	<0.001	0.105	0.148
	Agreeableness	0.036	0.009	0.018, 0.054	0.125	0.921	1.085			
	Conscientiousness	0.034	0.009	0.016, 0.051	0.129	0.810	1.235			
	Neuroticism	−0.045	0.008	−0.061, −0.029	−0.177	0.915	1.093			
	Openness to experience	0.028	0.009	0.011, 0.045	0.106	0.860	1.163			

MEQ Mindful Eating Questionnaire. Covariates: age, sex, BMI, income/expenditure status. Step 1 included age, sex, BMI, and income/expenditure status as covariates. Reference categories: men for sex; income equal to or greater than expenditure for income/expenditure status. Step 2 additionally included Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience. Tolerance values ranged from 0.810 to 0.987 and VIF values ranged from 1.013 to 1.235, indicating no evidence of multicollinearity. Durbin–Watson values were approximately 2.0 across all models, indicating independence of residuals

Values in bold are significant at $p < 0.05$

$p < 0.001$). Extraversion was not significantly associated with the total MEQ score.

Associations between personality traits and the mindful eating subscales have also been reported. In regard to disinhibition, higher extraversion ($\beta = 0.107$, $p = 0.003$) and neuroticism ($\beta = 0.141$, $p < 0.001$) were associated with higher scores, whereas agreeableness ($\beta = -0.101$, $p = 0.003$) and conscientiousness ($\beta = -0.073$, $p = 0.045$) were associated with lower scores. Emotional eating was negatively associated with conscientiousness ($\beta = -0.101$, $p = 0.006$) and positively associated with neuroticism ($\beta = 0.100$, $p = 0.004$). Control of eating was positively associated with agreeableness ($\beta = 0.158$, $p < 0.001$) and conscientiousness ($\beta = 0.085$, $p = 0.015$), and negatively with neuroticism ($\beta = -0.096$, $p = 0.004$). Awareness was positively associated only with openness to experience ($\beta = 0.112$, $p = 0.001$). With respect to eating discipline, neuroticism was negatively associated ($\beta = -0.156$, $p < 0.001$), whereas openness to experience was positively associated ($\beta = 0.112$, $p = 0.001$). Conscious eating was positively associated with openness to experience ($\beta = 0.088$, $p = 0.013$), while interference was negatively associated with agreeableness ($\beta = -0.086$, $p = 0.012$) and conscientiousness ($\beta = -0.157$, $p < 0.001$), and positively with neuroticism ($\beta = 0.115$, $p = 0.001$).

Discussion

This study, which examined the relationship between university students' personality traits and mindful eating in Türkiye, demonstrated differential associations between personality traits and various dimensions of mindful eating. After adjustment for age, sex, BMI, and income/expenditure status, agreeableness, conscientiousness, and openness to experience were generally associated with more adaptive mindful eating behaviors, whereas neuroticism was consistently associated with less adaptive patterns, while extraversion showed limited associations across the mindful eating dimensions. These findings suggest that stable personality characteristics may be associated with individual differences in mindful eating tendencies, although the observed effect sizes were modest.

Mindfulness is conceptualized as a present-centered awareness that involves sustained attention to bodily sensations, emotional states, cognitive processes, and the surrounding environment, and is cultivated with an attitude of non-judgment, openness, and emotional balance [48]. Mindfulness has been shown to be negatively related to neuroticism, while it is positively associated with agreeableness, conscientiousness, openness to experience, and extraversion [22]. Complementing mindfulness, mindful eating facilitates a gradual shift in eating behavior away from external influences, reducing the impact of external stimuli, such as appealing aromas, as

triggers for consumption when physiological hunger cues are absent [9]. Consistent with these findings, the present study found that higher mindful eating scores were generally associated with higher levels of agreeableness, conscientiousness, and openness to experience, whereas neuroticism was associated with lower mindful eating scores. These associations may reflect differences in emotional regulation, self-control, and responsiveness to internal versus external eating cues across personality dimensions.

Individuals high in neuroticism tend to experience greater stress, and higher levels of depressive and anxiety symptoms [49–51], which are frequently linked to disordered eating behaviors [52, 53]. Neuroticism is consistently associated with maladaptive eating patterns [2, 4, 8], and the present findings are consistent with this literature. Higher neuroticism was associated with lower overall mindful eating scores and with higher scores on subdimensions reflecting less adaptive eating patterns (i.e. disinhibition, emotional eating, and interference), whereas it was associated with lower scores on positive mindful eating dimensions, including control of eating and eating discipline. These associations may reflect the tendency of individuals with higher neuroticism to rely on eating as a coping strategy during periods of emotional distress, making it more difficult to attend to internal hunger and satiety cues. Given that neuroticism is linked to elevated stress reactivity and emotion regulation difficulties among young people [54, 55], university counseling and nutrition services may benefit from integrating stress-management and emotion-regulation strategies, such as mindfulness-based stress reduction and cognitive-behavioral techniques, into mindful eating interventions for students with higher levels of neuroticism.

Agreeableness was the highest-rated personality trait in the present study. The comprehensive meta-analytic evidence indicates that agreeableness is consistently associated with positive outcomes across interpersonal, well-being, and work-related domains, reflecting a characteristic pattern of prosociality, cooperation, and adherence to social norms [26]. Individuals with this personality trait can be expected to exhibit socially acceptable healthy eating behaviors [56]. Consistent with this perspective, higher agreeableness was associated with lower disinhibition and interference scores and higher control of eating scores in the present study. Consequently, the current findings extend previous research by illustrating that the advantages of agreeableness also include adaptive behaviors related to mindful eating. One possible explanation is that individuals high in agreeableness may be more receptive to social norms promoting healthy eating, more cooperative with health recommendations, and less likely to engage in impulsive

or emotionally driven eating behaviors. These findings suggest that agreeableness may represent an individual characteristic associated with more adaptive mindful eating behaviors, although the observed associations were modest and should be interpreted in light of the cross-sectional design.

Conscientiousness reflects a pattern of organized, reliable, and self-disciplined behavior, characterized by attentiveness, persistence, and a strong commitment to goal attainment. Individuals high in conscientiousness tend to display orderly, disciplined, and health-conscious behaviors, and are more likely to adopt and maintain healthy lifestyle habits, exhibit stronger self-regulation, and respond better to interventions aimed at improving diet and weight management [57]. In the present study, conscientiousness was negatively associated with the maladaptive subscales of mindful eating – disinhibition, emotional eating, and interference – and positively with control of eating after adjustment for demographic and anthropometric covariates. These findings are consistent with the theoretical role of conscientiousness in promoting self-regulation and goal-directed behavior, which may facilitate greater awareness of internal hunger and satiety cues while reducing impulsive or emotionally driven eating. Individuals with higher conscientiousness may therefore be better able to regulate eating behavior in accordance with long-term health goals rather than immediate external or emotional cues.

Recent evidence suggests that individuals high in openness to experience tend to embrace variety, experimentation, and flexibility in lifestyle choices [58, 59], and show greater willingness to try novel foods, adopt diverse dietary patterns (e.g. plant-based diets), and maintain physically active lifestyles [60–62]. In the current study, openness to experience was associated with the awareness, eating discipline, and conscious eating subscales of mindful eating. These associations may reflect a greater willingness among individuals high in openness to attend to internal experiences, engage with novel dietary practices, and adopt a more reflective and flexible approach to eating. Accordingly, mindful eating programs that incorporate experiential learning, sensory awareness exercises, and exposure to diverse healthy foods may be particularly engaging for individuals with higher levels of openness to experience.

Recent research indicates that individuals high in extraversion are more likely to engage in diverse, physically active, and socially engaged lifestyles, and show greater adherence to regular exercise and a greater diversity of activities than their less extraverted peers [57, 63, 64]. On the other hand, individuals exhibiting high levels of extraversion often make harmful dietary decisions due to their perception of being in optimal health [57]. In a study conducted among female university students,

extraversion was positively correlated with a preference for fast foods, ice cream, chocolate, and cocoa, and negatively with a preference for meat [65]. In line with the literature, the present study found that higher extraversion was associated with higher disinhibition scores, a mindful eating dimension that refers to the tendency to eat beyond satiety, especially when appealing foods or large portions are available. One possible explanation is that highly extraverted individuals may be more frequently exposed to social eating situations and external food cues, which could reduce attention to internal hunger and satiety signals. Although the direction of the standardized regression coefficients for extraversion differed from the corresponding zero-order correlations for some mindful eating outcomes, these regression coefficients were not statistically significant. Such differences likely reflect the estimation of the unique contribution of extraversion after accounting for shared variance with the other personality traits and demographic covariates, rather than problematic multicollinearity, as indicated by the low VIF and high tolerance values observed across all regression models. Given these associations, future studies could further investigate the mechanisms underlying the link between extraversion and maladaptive eating patterns, particularly the role of social eating contexts, reward sensitivity, and perceived health status. Prospective studies may also help determine whether these associations remain stable over time or vary according to factors such as dietary self-regulation, nutritional knowledge, and cultural eating norms.

The present findings may also have broader implications for healthy eating behaviors. A recent study among university students reported that mindful eating was positively associated with sustainable and healthy eating behaviors and represented one of their strongest correlates [31]. Together with our findings, this evidence suggests that personality traits may be indirectly related to healthier eating behaviors through their associations with mindful eating. Future longitudinal studies are needed to clarify these potential pathways and to determine whether enhancing mindful eating may contribute to healthier and more sustainable dietary behaviors among young adults.

Limitations

This study is subject to a number of limitations. First, the study sample consisted only of individuals who could access and complete the online survey, which may limit the generalizability of the findings to the wider population. Second, the cross-sectional nature of the data precludes causal inferences, highlighting the need for future studies that employ longitudinal designs and recruit more representative samples. Third, because participants were recruited through snowball and convenience sampling

and participation was voluntary, the sample may reflect self-selection bias, with those more engaged or interested in the subject matter being over-represented. In addition, women constituted the majority of the sample (80.1%). Although sex was included as a covariate in the hierarchical regression analyses to account for its potential confounding effect, the predominance of female participants may have influenced the observed associations and limits the generalizability of the findings to the broader university student population. Future studies with more balanced sex distributions are needed to determine whether these associations differ between male and female students. Fourth, personality traits were assessed using the ultra-brief BFI-10, which measures each personality dimension with only two items. Although the BFI-10 has demonstrated acceptable construct validity in previous Turkish validation studies and subsequent research in adults, some personality dimensions showed relatively low internal consistency in the present sample, a limitation commonly associated with very brief personality measures. Therefore, the observed associations may have been attenuated because of measurement error. Despite these limitations, this study provides additional evidence regarding the associations between personality traits and mindful eating among university students and may contribute to the development of future longitudinal and intervention studies.

Conclusions

In conclusion, our study highlights the fact that personality traits are differentially associated with mindful eating among university students. Agreeableness, conscientiousness, and openness to experience were associated with healthier mindful eating tendencies, whereas neuroticism was associated with less adaptive patterns, while extraversion showed only limited associations. Although these associations should not be interpreted as causal, they indicate that individual differences in personality may be relevant when designing strategies to promote mindful eating.

The university period constitutes a developmental stage during which eating behaviors are still evolving and may be influenced by social and environmental factors. From a public health perspective, university settings may therefore provide an appropriate environment for implementing preventive and health-promoting interventions. In practice, brief personality assessments could be used by university counseling or nutrition services to help identify students who may benefit from different intervention approaches. For example, students with higher neuroticism may benefit from interventions that integrate mindful eating with stress-management and emotion-regulation strategies, whereas students with higher extraversion may benefit from approaches

that address social eating situations and external eating cues. Likewise, students with lower conscientiousness may benefit from structured behavioral strategies, such as meal planning, self-monitoring, and goal setting to support healthier eating habits. Future longitudinal and intervention studies are warranted to determine whether tailoring mindful eating interventions according to personality characteristics improves their effectiveness and contributes to healthier eating behaviors among university students.

Abbreviations

BMI	Body mass index
MEQ	Mindful Eating Questionnaire
BFI-10	Big Five Inventory-10
r	Pearson correlation coefficients
CI	Confidence interval
VIF	Variance inflation factor
M	Mean
n	Number
SD	Standard Deviation
SE	Standard Error
SR	Score Range
B	Unstandardized regression coefficient
β	Standardized regression coefficient
ΔR^2	Change in R^2
Adj. R^2	Adjusted R^2
Unstd. Coeff.	Unstandardized coefficients
Std. Coeff.	Standardized coefficients
Inc./exp.	Income/expenditure

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Authors' contributions

G.Ü. was responsible for conceptualization, formal analysis, investigation, methodology, and writing of the original draft, as well as review and editing. Ö.E. contributed to conceptualization, data curation, investigation, methodology, visualization, and manuscript review and editing. All authors reviewed the manuscript.

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Data availability

The datasets are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki, and ethical approval was granted by the Ondokuz Mayıs University Ethics Committee (Date: 15.10.2025, Decision No: 2025/507).

All participants provided written informed consent before participation.

Competing interests

The authors declare no competing interests.

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