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Evaluation of the Relationship Between Weight Bias, Intuitive Eating, and Physical Activity Among University Students

Evaluación de la relación entre el sesgo de peso, la alimentación intuitiva y la actividad física en estudiantes universitarios

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ABSTRACT

Objective: Intuitive eating has emerged as a health-promoting approach associated with improved eating behaviors and psychological well-being. Despite growing interest in intuitive eating, the interplay between intuitive eating, physical activity levels, and weight bias internalization (WBI) among university students has not been fully elucidated. This study aimed to examine the relationships between intuitive eating, physical activity levels, and WBI, as well as the associations between WBI and the subdimensions of intuitive eating among university students.

Methods: This descriptive cross-sectional study included 776 university students aged 19–31 years selected through stratified sampling at Mersin University. Data were collected using a Personal Information Form, the International Physical Activity Questionnaire–Short Form (IPAQ-SF), the Two-Factor Weight Bias Internalization Scale, and the Intuitive Eating Scale–2 (IES-2). Descriptive statistics, Mann–Whitney U tests, Kruskal–Wallis tests, and Spearman correlation analyses were performed. Statistical significance was set at $p < 0.05$.

Results: The study sample consisted predominantly of female students (81.3%). Total intuitive eating scores were significantly lower among overweight and obese participants than among underweight and normal-weight participants ($p < 0.001$), whereas WBI scores were significantly higher ($p < 0.001$). Total intuitive eating scores were significantly higher among men than women ($p < 0.001$), although no gender differences were observed for most intuitive eating subscales($p > 0.05$). Intuitive eating scores and subscale scores did not significantly differ according to physical activity level ($p > 0.05$). Body mass index was negatively correlated with total intuitive eating score ($r = −0.289$, $p < 0.001$) and positively correlated with WBI ($r = 0.300$, $p < 0.001$). WBI was negatively correlated with total intuitive eating ($r = −0.282$, $p < 0.001$), Eating for Physical Rather Than Emotional Reasons ($r = −0.284$, $p < 0.001$), and Reliance on Hunger and Satiety Cues ($r = −0.250$, $p < 0.001$).

Conclusion: Weight bias internalization was significantly associated with lower intuitive eating scores among university students. Higher levels of WBI were particularly related to reduced reliance on hunger and satiety cues and lower tendencies to eat for physical rather than emotional reasons. These findings underscore the importance of addressing body-related

attitudes and weight-related self-stigma when promoting intuitive eating behaviors among university students.

Keywords: Intuitive Eating; Weight Bias; Physical Activity; Eating Behaviour, Body Image

RESUMEN

Introducción: La alimentación intuitiva se ha consolidado como un enfoque que promueve la salud, asociado a mejores hábitos alimentarios y bienestar psicológico. A pesar del creciente interés en la alimentación intuitiva, la interacción entre esta, los niveles de actividad física y la internalización del sesgo de peso (WBI, por sus siglas en inglés) en estudiantes universitarios no se ha dilucidado por completo. Este estudio tuvo como objetivo examinar las relaciones entre la alimentación intuitiva, los niveles de actividad física y la WBI, así como las asociaciones entre la WBI y las subdimensiones de la alimentación intuitiva en estudiantes universitarios.

Metodología: Este estudio descriptivo transversal incluyó a 776 estudiantes universitarios de entre 19 y 31 años, seleccionados mediante muestreo estratificado en la Universidad de Mersin. Los datos se recopilaron utilizando un formulario de información personal, el Cuestionario Internacional de Actividad Física – Versión Corta (IPAQ-SF), la Escala de Internalización del Sesgo de Peso de Dos Factores y la Escala de Alimentación Intuitiva – 2 (IES-2). Se realizaron análisis de estadística descriptiva, pruebas U de Mann-Whitney, pruebas de Kruskal-Wallis y análisis de correlación de Spearman. La significación estadística se estableció en $p < 0.05$.

Resultados: La muestra del estudio consistió predominantemente en estudiantes mujeres (81.3%). Las puntuaciones totales de alimentación intuitiva fueron significativamente más bajas entre los participantes con sobrepeso y obesidad que entre los participantes con bajo peso y peso normal ($p < 0.001$), mientras que las puntuaciones del WBI fueron significativamente más altas ($p < 0.001$). Las puntuaciones totales de alimentación intuitiva fueron significativamente más altas entre los hombres que entre las mujeres ($p < 0.001$), aunque no se observaron diferencias de género en la mayoría de las subescalas de alimentación intuitiva ($p > 0.05$). Las puntuaciones de alimentación intuitiva y las puntuaciones de las subescalas no difirieron significativamente según el nivel de actividad física ($p > 0.05$). El índice de masa corporal se correlacionó

negativamente con la puntuación total de alimentación intuitiva (r = −0.289, p < 0.001) y positivamente con el WBI (r = 0.300, p < 0.001). El WBI se correlacionó negativamente con la alimentación intuitiva total (r = −0.282, p < 0.001), comer por razones físicas en lugar de emocionales (r = −0.284, p < 0.001) y la dependencia de las señales de hambre y saciedad (r = −0.250, p < 0.001).

Conclusiones: La internalización del sesgo de peso se asoció significativamente con puntuaciones más bajas en la alimentación intuitiva entre estudiantes universitarios. Niveles más altos de internalización del sesgo de peso se relacionaron particularmente con una menor dependencia de las señales de hambre y saciedad y una menor tendencia a comer por razones físicas en lugar de emocionales. Estos hallazgos subrayan la importancia de abordar las actitudes relacionadas con el cuerpo y el autoestigma relacionado con el peso al promover comportamientos de alimentación intuitiva entre los estudiantes universitarios.

Palabras clave: Alimentación intuitiva; Sesgo de peso; Actividad física; Conducta alimentaria, Imagen corporal

HIGHLIGHTS MESSAGES

- Internalized weight bias was associated with lower trust in internal hunger and satiety cues, a key component of intuitive eating.
- Psychological factors related to weight stigma appeared more strongly associated with intuitive eating behaviors than physical activity level.
- The findings highlight the potential importance of addressing weight-related self-stigma when promoting adaptive eating patterns in young adults.
- Integrating body acceptance and intuitive eating principles may support university health promotion strategies.

INTRODUCTION

Weight Bias Internalization (WBI) refers to the stigmatizing attitudes individuals hold toward themselves based on social stereotypes regarding their perceived body weight[1]. Weight stigma refers to negative attitudes toward individuals with overweight or obesity, who frequently experience weight-related stigma. However, individuals of any body size, including those without obesity, can also internalize weight bias[2]. Weight-based stigma has been associated with increased cortisol levels and psychological stress regardless of body weight. It has also been linked to reduced motivation to engage in healthy eating behaviors and to maladaptive eating behaviors, including overeating, emotional eating, and meal skipping[3]. Furthermore, WBI may increase the risk of obesity and chronic diseases by impairing responsiveness to internal hunger and satiety cues, thereby negatively affecting intuitive eating[3,4].

The role of mindful and intuitive eating in improving eating behavior, diet quality, and health is a growing area of interest[5]. Intuitive eating involves granting oneself unconditional permission to eat and relying on internal hunger and satiety cues. It has been associated with improved psychological well-being, positive body image, and healthier regulation of eating behaviors[6,7]. Individuals who engage in intuitive eating have been reported to experience more favorable health outcomes than those who do not. In a longitudinal study, individuals who demonstrated increases in intuitive eating from baseline to follow-up reported lower levels of depressive symptoms, body dissatisfaction, excessive weight-control behaviors, and binge eating, as well as higher levels of self-esteem8.

Research highlights that intuitive eating is positively associated with body image satisfaction and body appreciation, while being inversely related to body image disturbance and BMI[4,7]. Furthermore, positive body image has been shown to mediate the relationship between intuitive eating and eating-related outcomes, suggesting that reducing self-directed stigma may facilitate healthier eating behaviors[9,10].

University students constitute a high-risk group for eating disorders because the prevalence of eating disorders peaks between the ages of 20 and 24, and the transition to university life is often accompanied by increased stress, social pressure, and disruptions in daily routines[11,12]. These challenges may contribute to unhealthy eating behaviors, negative body image, and increased

vulnerability to weight-related stigma. In addition, WBI has been reported to decrease motivation for physical activity and may contribute to adverse long-term health outcomes. Although previous studies have separately examined intuitive eating, physical activity, and WBI, only a limited number of studies have investigated these constructs simultaneously among university students[4,13]. A better understanding of the relationships among these variables may provide valuable insights for the development of preventive strategies aimed at promoting healthy eating behaviors, positive body image, and long-term health in young adults. Therefore, this study aimed to examine the relationships among intuitive eating, WBI, and physical activity in university students.

METHODS

Study Design

This study employed a descriptive cross-sectional design.

Population and Sample

According to the sample size calculation, at least 865 participants were targeted. Students aged 19–31 years who were enrolled in the Faculty of Health Sciences or the Faculty of Nursing at Mersin University and voluntarily agreed to participate between March 17 and June 23, 2025, were eligible for the study. Pregnant or breastfeeding students, those diagnosed with eating disorders, or those with mental disorders were excluded.

The Faculty of Health Sciences comprised 725 students (Midwifery: n = 387; Health Management: n = 338), while the Faculty of Nursing included 969 students. To ensure departmental representation, sample sizes were determined with a 99% confidence level and a 5% margin of error, with planned sample sizes of 245 students for the Faculty of Midwifery, 225 for the Faculty of Health Management, and 395 for the Faculty of Nursing. Sample size was calculated using OpenEpi version. Stratified probability sampling was applied, and weighting coefficients based on class level were calculated for each department. These coefficients were used to derive the final required sample size of 865 students.

Of the 865 questionnaires distributed, 89 were subsequently excluded from analysis: 67 due to incomplete responses (≥20% missing items on any scale), 14 due to pre-specified exclusion

criteria identified after data collection (eating disorder diagnosis, mental health condition, or pregnancy/breastfeeding), and 8 due to missing or implausible anthropometric data precluding BMI classification. The final analytical sample therefore comprised 776 participants.

Data were collected by the researchers through face-to-face questionnaires administered during scheduled class sessions following instructor approval.

Data Collection Tools

Data were obtained using a four-part questionnaire comprising a Personal Information Form, the International Physical Activity Questionnaire–Short Form (IPAQ-SF), the WBI Scale, and the IES-2. Questions on sociodemographic variables such as sex, age, academic department, income, and health status were included in the Personal Information Form. Participants also self-reported their body weight and height, which were used to calculate body mass index (BMI, kg/m²). The form further included questions regarding dietary habits (e.g., meal patterns, meal skipping, eating out, water intake, night eating, and dieting).

The IPAQ-SF, developed by Craig et al.[14] and adapted to Turkish by Öztürk15, was employed to assess physical activity. It evaluates activity over the past seven days, covering walking, moderate and vigorous exercises, and sedentary behavior. Only activities of 10 minutes or longer were considered, and activity levels were expressed in MET-minutes/week. Participants were classified as inactive (<600 MET-min/week), minimally active (600–3000 MET-min/week), or sufficiently active (>3000 MET-min/week)[14, 15].

Weight bias internalization was measured using the WBI Scale developed by Pearl and Puhl[16] and validated in Turkish by Apay et al.[17]. The 11-item, 7-point Likert-type scale assesses self-directed weight stigma, with higher scores indicating greater internalization[17].

The IES-2, developed by Tylka6 and updated by Tylka and Kroon Van Diest18, was used to evaluate intuitive eating behaviors, with its Turkish adaptation validated by Baş et al.[19]. This scale consists of 23 items rated on a 5-point Likert scale and includes four subscales: Unconditional Permission to Eat, Eating for Physical Rather Than Emotional Reasons, Reliance on Hunger and Satiety Cues, and Body–Food Choice Congruence. After scoring reverse-coded items, total scores were derived by averaging all items, with elevated scores representing higher levels of intuitive eating[6,18,19].

Statistical Analysis

Data were analyzed using IBM SPSS Statistics 26. Descriptive statistics were reported as frequencies (n) and percentages (%), means, standard deviations, and minimum–maximum values. Data normality was evaluated using the Kolmogorov–Smirnov (with Lilliefors correction) and Shapiro–Wilk tests, and non-parametric tests were applied for non-normally distributed variables. Both tests yielded statistically significant results for most variables ($p < 0.05$); however, given that large sample sizes ($n = 776$) confer elevated statistical power to detect trivial deviations from normality, test results were interpreted alongside visual inspection of histograms and Q–Q plots and examination of skewness and kurtosis values. Skewness values ranged from −0.578 to 0.701 and kurtosis values from −0.451 to 0.395 across scale variables, and visual inspection confirmed meaningful non-normality. Accordingly, non-parametric tests were applied throughout all analyses. Group comparisons involving more than two categories were conducted using the Kruskal–Wallis test, followed by the Dunn post hoc test when significant differences were detected. The Mann–Whitney U test was used for two-group comparisons, and the Chi-square test was applied to categorical variables. Spearman correlation analysis was employed to examine associations among continuous variables. Effect sizes were reported for all group comparisons: rank-biserial correlation (r) for Mann–Whitney U tests and epsilon-squared (ε^2) for Kruskal–Wallis tests. Thresholds for interpretation were: r — negligible < 0.10, small ≥ 0.10, medium ≥ 0.30, large ≥ 0.50 (Cohen, 1988); ε^2 — negligible < 0.01, small ≥ 0.01, medium ≥ 0.06, large ≥ 0.14. Spearman's r coefficients served as effect size indicators for correlation analyses. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Approval for this research was granted by the Mersin University Clinical Research Ethics Committee (05.02.2025; No. 2025/0143), and all procedures adhered to the ethical standards set forth in the Declaration of Helsinki. Written informed consent was obtained from all participants before data collection. To ensure participant confidentiality, no personally identifiable information was collected, and all data were analyzed anonymously.

RESULTS

The descriptive characteristics of the participants are presented in Table 1. Most participants were female (81.3%), single (97.6%), and enrolled in the Nursing Department (61.7%). The majority reported income equal to expenses (64.9%), had no chronic disease (91.9%), did not smoke (80.9%), and did not consume alcohol (87.1%). More than half reported skipping main meals (57.1%), while 68.2% ate out 1–3 times per week and 68.7% reported night eating. Most participants were not following a diet (91.5%). Healthy eating behaviors were reported as rare by 45.8% of participants, while 38.1% reported practicing healthy eating frequently.

Table 1. Distribution of Participants' Descriptive Characteristics

Variable	Participants (n=776)	
	n	%
Gender		
Female	631	81.3
Male	145	18.7
Marital Status		
Single	757	97.6
Married	19	2.4
Department		
Midwifery	271	35.0
Health Management	26	3.3
Nursing	479	61.7
Class		
1st year	210	27.1
2nd year	332	42.8
3rd year	140	18.0
4th year	94	12.1
Income status		
Less than expenses	141	18.2
Equal	504	64.9
More than expenses	131	16.9
Chronic Disease		
Yes	63	8.1
No	713	91.9
Smoking status		
Yes	148	19.1
No	628	80.9
Alcohol use		
Yes	100	12.9
No	676	87.1
Main meal skipping frequency		
Yes	443	57.1

No	333	42.9
Frequency of eating out		
Every day	52	6.7
1–3 times per week	529	68.2
4–6 times per week	107	13.8
Never	88	11.3
Night eating		
Yes	243	31.3
No	533	68.7
Dieting Status		
Yes	66	8.5
No	710	91.5
Dietary behavior change		
Always	82	10.6
Often	296	38.1
Rarely	355	45.8
Never	43	5.5

Gender-based comparisons of scale mean scores are presented in Table 2. No significant gender differences were observed for Unconditional Permission to Eat, Reliance on Hunger and Satiety Cues, or Body–Food Choice Congruence ($p > 0.05$ for all). Men demonstrated significantly greater scores than women in the domain of Eating for Physical Rather Than Emotional Reasons (1.20 ± 0.26 vs. 1.05 ± 0.29, $p < 0.001$). Total intuitive eating scores were also significantly higher among men compared to women (3.33 ± 0.58 vs. 3.20 ± 0.53, $p = 0.014$). No significant gender difference was found in total WBI Scale scores ($p = 0.981$).

Table 2. Comparison of Scale Mean Scores According to Gender

Variable	Female (n=631)		Male (n=145)		p	r
	Min-Max	$\bar{X}$±SS	Min-Max	$\bar{X}$±SS		
Unconditional Permission to Eat	0.39-1.30	0.85±0.16	0.26-1.30	0.83±0.17	0.242	−0.062
Eating for Physical Rather Than Emotional Reasons	0.35-1.74	1.05±0.29	0.52-1.74	1.20±0.26	**<0.001**	0.313
Reliance on Hunger and Satiety Cues	0.26-1.30	0.86±0.24	0.26-1.30	0.86±0.28	0.957	0.003
Body-Food Choice Congruence	0.13-0.65	0.44±0.12	0.13-0.65	0.44±0.15	0.781	0.015
Intuitive Eating Total	1.39-4.83	3.20±0.53	2.00-4.83	3.33±0.58	**0.014**	0.131
WBI Total	11.00-77.00	31.22±17.65	11.00-77.00	30.58±15.62	0.981	−0.001

Mann–Whitney U test. r: rank-biserial correlation. p < 0.05 was considered statistically significant. WBI: Weight Bias Internalization.

Table 3 displays the mean scale scores by BMI classification. Statistically significant differences across BMI groups were detected for Unconditional Permission to Eat, Eating for Physical Rather Than Emotional Reasons, Reliance on Hunger and Satiety Cues, and overall intuitive eating scores (p < 0.001 for each comparison). In general, mean intuitive eating subscale and total scores decreased progressively with increasing BMI. No significant difference was found across BMI groups for Body–Food Choice Congruence (p = 0.145). Total WBI Scale scores varied significantly across BMI categories (p < 0.001), participants with overweight and obesity exhibited higher scores than those in the underweight and normal-weight groups.

Table 3. Comparison of Scale Mean Scores According to BMI Classification

Variable	Underweight (n=66)		Normal (n=529)		Overweight (n=132)		Obese (n=49)		p	ε^2
	Min-Max	$\bar{X}$±SS	Min-Max	$\bar{X}$±SS	Min-Max	$\bar{X}$±SS	Min-Max	$\bar{X}$±SS		
Unconditional Permission to Eat	0.48-1.30	0.92±0.16 b, c, d	0.26-1.30	0.85±0.17	0.35-1.30	0.82±0.17	0.48-1.22	0.84±0.13	**<0.001**	0.023
Eating for Physical Rather Than Emotional Reasons	0.74-1.74	1.20±0.29 c, d	0.35-1.74	1.10±0.28 c, d	0.35-1.74	1.01±0.31	0.35-1.65	0.93±0.30	**<0.001**	0.034
Reliance on Hunger and Satiety Cues	0.26-1.30	0.90±0.22	0.26-1.30	0.87±0.25	0.26-1.30	0.84±0.24	0.26-1.30	0.74±0.24 a, b	**<0.001**	0.019
Body-Food Choice Congruence	0.13-0.65	0.47±0.12	0.13-0.65	0.44±0.13	0.13-0.65	0.44±0.14	0.13-0.65	0.42±0.11	0.145	0.003
Intuitive Eating Total	2.22-4.70	3.49±0.45 b, c, d	1.70-4.83	3.25±0.53 c, d	1.39-4.83	3.11±0.54	1.61-4.39	2.93±0.51	**<0.001**	0.052
WBI Total	11.00-72.00	31.36±17.55 c, d	11.00-77.00	27.1±15.12 c, d	11.00-77.00	41.09±17.38	11.00-77.00	47.02±18.82	**<0.001**	0.127

Kruskal–Wallis test, ε^2: epsilon-squared. Superscripts p < 0.05. Statistically significant differences between BMI groups are indicated by superscripts a, b, c, and d (18.5: a; 18.5–24.9: b; 25–29.9: c; ≥ 30: d). WBI: Weight bias internalization BMI: Body mass index

Scale mean scores according to physical activity level are presented in Table 4. No statistically significant differences were observed across low, moderate, and high physical activity groups for any intuitive eating subscales, total intuitive eating scores, or total WBI Scale scores (p > 0.05 for all). Mean scores for Unconditional Permission to Eat, Eating for Physical Rather Than Emotional Reasons, Reliance on Hunger and Satiety Cues, Body–Food Choice Congruence, and total intuitive eating were comparable across physical activity levels.

Table 4. Comparison of Scale Mean Scores According to Physical Activity Level

	Inactive (n=128)		Minimally Active (n=405)		Active (n=229)			
Variable	**Min-Max**	**$\overline{X}$±SS**	**Min-Max**	**$\overline{X}$±SS**	**Min-Max**	**$\overline{X}$±SS**	**p**	**ε²**
Unconditional Permission to Eat	0.52-1.30	0.87±0.15	0.43-1.30	0.85±0.17	0.26-1.30	0.83±0.17	0.138	0.003
Eating for Physical Rather Than Emotional Reasons	0.39-1.74	1.07±0.29	0.35-1.74	1.07±0.29	0.43-1.74	1.11±0.29	0.427	<0.001
Reliance on Hunger and Satiety Cues	0.26-1.30	0.84±0.25	0.26-1.30	0.86±0.24	0.26-1.30	0.86±0.26	0.723	<0.001
Body-Food Choice Congruence	0.13-0.65	0.44±0.12	0.13-0.65	0.45±0.13	0.13-0.65	0.43±0.13	0.569	<0.001
Intuitive Eating Total	2.09-4.83	3.21±0.54	1.39-4.65	3.23±0.53	1.7-4.83	3.23±0.55	0.859	<0.001
WBI Total	11.00-74.00	30.89±17.45	11.00-77.00	31.53±17.48	11.00-77.00	30.49±16.83	0.824	<0.001

Kruskal Wallis test, ε²: epsilon-squared. p<0.05 WBI: Weight bias internalization

Correlations between BMI and scale scores are presented in Table 5. BMI showed significant negative correlations with Unconditional Permission to Eat (r = –0.149), Eating for Physical Rather Than Emotional Reasons (r = –0.233), Reliance on Hunger and Satiety Cues (r = –0.173), Body–Food Choice Congruence (r = –0.091), and total intuitive eating score (r = –0.289) (p < 0.05 for all). In contrast, BMI was positively correlated with total WBI Scale scores (r = 0.300, p < 0.001). Total scores on the WBI Scale showed no significant relationship with Unconditional Permission to Eat or Body–Food Choice Congruence (p > 0.05). However, significant negative correlations were observed with Eating for Physical Rather Than Emotional Reasons (r = –0.284), Reliance on Hunger and Satiety Cues (r = –0.250), and total intuitive eating scores (r = –0.282) (p < 0.001 for all).

Table 5. Correlations Between BMI and Scale Scores

Variables		**Unconditional Permission to Eat**	**Eating for Physical Rather Than Emotional Reasons**	**Reliance on Hunger and Satiety Cues**	**Body-Food Choice Congruence**	**Intuitive Eating Total**	**WBI Total**
BMI	r	-0.149**	-0.233**	-0.173**	-0.091*	-0.289**	0.300**
	p	**<0.001**	**<0.001**	**<0.001**	**0.011**	**<0.001**	**<0.001**
WBI Total	r	-0.023	-0.284**	-0.250**	-0.061	-0.282**	1.000
	p	0.515	**<0.001**	**<0.001**	0.088	**<0.001**	-

r: Spearman correlation coefficient, **p<0.01, *:p<0.05 BMI: Body mass index.
WBI: Weight bias internalization

DISCUSSION

The findings of this study demonstrate that intuitive eating behaviors are closely related to the internalization of weight bias. Individuals with overweight and obesity were found to have lower levels of intuitive eating behavior and higher levels of WBI. Furthermore, WBI was found to be negatively correlated with eating behavior based on physiological hunger signals, reliance on hunger-satiety signals, and overall intuitive eating behavior. Conversely, it is noteworthy that intuitive eating behaviors did not vary according to physical activity level. These findings suggest that weight bias internalization is associated with intuitive eating behaviours.

Men demonstrated significantly higher total intuitive eating scores than women, although no significant gender differences were observed for most intuitive eating subscales. Women scored significantly lower than men on the Eating for Physical Rather Than Emotional Reasons subscale (Table 2). In a previous study, higher intuitive eating scores in men were generally attributed to gender differences in body image perception[20]. Sociocultural factors such as diet culture, social media influence, and the greater prevalence of dieting behaviors among women may be associated with differences in food-related attitudes, body awareness, and intuitive eating behaviors.

Another important finding was that intuitive eating scores were significantly lower in individuals with overweight and obesity (Table 3), consistent with previous cross-sectional and meta-analytic evidence[7,21]. Similarly, Yılmaz and Zemzemoglu[22] reported higher intuitive eating scores in underweight individuals compared to those with higher BMI. Low intuitive eating levels are associated with processes such as increased emotional eating, decreased reliance on body signals, and triggering of restrictive eating behaviors. Therefore, increasing eating awareness may play a critical role in obesity prevention and weight management.

Consistent with the literature[3,23], WBI scores were significantly higher among overweight and obese participants in this study (Table 3). Despite the possibility of WBI varying in individuals with different body sizes, higher BMI has consistently been reported as a key predictor of WBI[24]. Greater WBI levels have been reported in connection with eating disorder-related symptoms, binge eating, dissatisfaction with body image, and, in some instances, restrictive or compensatory eating behaviors[25,26].

No significant difference was observed in intuitive eating scores among physical activity levels (Table 4), a finding consistent with some previous studies and pointing to a more complex relationship[27]. The evidence suggests that exercise motivation, rather than activity level alone, may be a more important factor. Specifically, extrinsically motivated, weight-focused exercise may inhibit intuitive eating, while intrinsically motivated physical activity aimed at health and well-being may support intuitive eating behaviors[28].

Furthermore, significant negative correlations were found between total WBI scores and physiological eating, sensitivity to hunger and satiety signals, and overall intuitive eating scores, while no correlation was observed with unconditional eating permission or body-food choice congruence (Table 5). These findings suggest that negative body beliefs primarily affect the biologically driven dimensions of intuitive eating behavior. Internalization of negative weight-related beliefs may be associated with lower body awareness and disrupt intrinsic regulatory processes. Evidence supporting this interpretation is that intuitive eating has been shown to improve diet quality and sensitivity to intrinsic signals and reduce the risk of being overweight among college students[5,29]. Taken together, these findings suggest that the body confidence component of intuitive eating is positively correlated with intuitive eating behaviors, whereas higher levels of negative body beliefs are associated with stress-related eating behaviors, lower self-esteem, and differences in physiological regulation.

Limitations

Several limitations should be considered. The cross-sectional design prevents causal inferences from being made between intuitive eating, WBI, physical activity and BMI. Reliance on self-reported data may have led to reporting bias, particularly for anthropometric and health-related variables. Specifically, anthropometric variables, including body weight and height, were self-reported; this may have led to information bias and affected the accuracy of BMI classification. The single-university sample limits the generalizability of the findings to larger populations. Furthermore, unmeasured factors such as psychological stress, nutritional history, and mental health status may have influenced eating behaviors and weight-related perceptions.

CONCLUSION

Eating behaviors can be related not only to physiological needs but also to body image, sociocultural norms, and psychological attitudes towards weight. In this context, the observed relationships between intuitive eating and the internalization of weight bias provide insight into the emotional and body-related dimensions of eating behavior. The gender differences identified in this study may also be related to culturally specific weight-related pressures in Türkiye. Furthermore, higher internalization of weight bias was associated with lower intuitive eating scores, highlighting the relationship between body attitudes and eating behaviors. Given the formative nature of the university period, body awareness, self-compassion, health-oriented physical activity, and efforts to reduce weight stigma may be relevant areas for future research and health promotion initiatives aimed at supporting positive eating behaviors.

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AUTHOR CONTRIBUTIONS

Conception: YV; AS - Design: YV; AS - Supervision: ÖE -Materials: YV; AS; NÖE - Data Collection and/or Processing: YV; AS;ÖE - Analysis and/or Interpretation: NÖE - Literature: YV; AS - Review: YV; AS - Writing: YV; AS - Critical Review: ÖE

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CONFLICT OF INTEREST

There is no conflict of interest between the authors.

DATA AVAILABILITY

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.

REFERENCES

1. Lee MS, Gonzalez BD, Small BJ, Thompson JK. Internalized Weight Bias and Psychological Wellbeing: An Exploratory Investigation of a Preliminary Model. PLoS One. 2019;14(5):e0216324. doi: 10.1371/journal.pone.0216324

2. Pearl RL, Puhl RM, Dovidio JF. Differential Effects of Weight Bias Experiences and Internalization on Exercise among Women with Overweight and Obesity. J Health Psychol. 2015;20(12):1626–1632. doi: 10.1177/1359105313520338

3. Pearl RL, Puhl RM. Weight Bias Internalization and Health: A Systematic Review. Obes Rev. 2018;19(8):1141–1163. doi: 10.1111/obr.12701

4. Mensinger JL, Calogero RM, Tylka TL. Internalized Weight Stigma Moderates Eating Behavior Outcomes in Women with High BMI Participating in a Healthy Living Program. Appetite. 2016;102:32–43. doi: 10.1016/j.appet.2016.01.033

5. Rezende F, Oliveira BM, Poinhos R. Assessment of Intuitive Eating and Mindful Eating among Higher Education Students: A Systematic Review. Healthcare (Basel). 2024;12(5):572. doi: 10.3390/healthcare12050572

6. Tylka TL. Development and Psychometric Evaluation of a Measure of Intuitive Eating. J Couns Psychol. 2006;53(2):226–240. doi: 10.1037/0022-0167.53.2.226

7. Linardon J, Tylka TL, Fuller-Tyszkiewicz M. Intuitive Eating and Its Psychological Correlates: A Meta-Analysis. Int J Eat Disord. 2021;54(7):1073–1098. doi: 10.1002/eat.23509

8. Hazzard VM, Telke SE, Simone M, Anderson LM, Larson NI, Neumark-Sztainer D. Intuitive Eating Longitudinally Predicts Better Psychological Health and Lower Use of Disordered Eating Behaviors. Eat Weight Disord. 2021;26(1):287–294. doi: 10.1002/eat.23224

9. Brochu PM, Mensinger JL, Moss LB, Rothenberg SL. Weight Bias Internalization

Statistically Mediates the Association between Positive Body Image and Intuitive Eating: A Cross-Sectional Study. J Acad Nutr Diet. 2025;125(12):1899-1906, doi: 10.1016/j.jand.2024.12.007.

10. Braun TD, Unick JL, Abrantes AM, Dalrymple K, Conboy LA, Schifano E, Lazar SW, et al. Intuitive Eating Buffers the Link between Internalized Weight Stigma and Body Mass Index in Stressed Adults. Appetite. 2022;169:105810. doi: 10.1016/j.appet.2021.105810

11. Potterton R, Richards K, Allen K, Schmidt U. Eating Disorders during Emerging Adulthood: A Systematic Scoping Review. Front Psychol. 2020;10:3062. doi: 10.3389/fpsyg.2019.03062

12. Lipson SK, Sonneville KR. Eating Disorder Symptoms among Undergraduate and Graduate Students at 12 US Colleges and Universities. Eat Behav. 2017;24:81–88. doi: 10.1016/j.eatbeh.2016.12.003

13. Biberoğlu FM, Güven S, Yenipınar ZG. Determining the Relationship between Physical Activity and Intuitive Eating and Mindful Eating in University Students. Int J Agric Environ Food Sci. 2024;8(2):301–314. doi: 10.31015/jaefs.2024.2.7

14. Craig CL, Marshall AL, Sjöström M, Bauman AE, Booth ML, Ainsworth BE, Pratt M, Ekelund U, Yngve A, Sallis JF, Oja P. International Physical Activity Questionnaire: 12-Country Reliability and Validity. Med Sci Sports Exerc. 2003;35(8):1381–1395. doi: 10.1249/01.MSS.0000078924.61453.FB

15. Öztürk M. Üniversitede eğitim-öğretim gören öğrencilerde uluslararası fiziksel aktivite anketinin geçerliliği ve güvenirliği ve fiziksel aktivite düzeylerinin belirlenmesi [master's thesis]. Ankara: Hacettepe University, Institute of Health Sciences; 2005.

16. Pearl RL, Puhl RM. Measuring Internalized Weight Attitudes across Body Weight Categories: Validation of the Modified Weight Bias Internalization Scale. Body Image. 2014;11(1):89–92. doi: 10.1016/j.bodyim.2013.09.005

17. Apay SE, Yılmaz E, Aksoy M, Akalın H. Validity and Reliability Study of Modified Weight Bias Internalization Scale in Turkish. Int J Caring Sci. 2017;10(3):1341–1347.

18. Tylka TL, Kroon Van Diest AM. The Intuitive Eating Scale–2: Item Refinement and Psychometric Evaluation with College Women and Men. J Couns Psychol. 2013;60(1):137–153. doi: 10.1037/a0030893

19. Bas M, Karaca KE, Saglam D, Arıtıcı G, Cengiz E, Köksal S, Buyukkaragoz AH. Turkish Version of the Intuitive Eating Scale-2: Validity and Reliability among University Students. Appetite. 2017;114:391–397. doi: 10.1016/j.appet.2017.04.017

20. Murray K, Rieger E, Brown PM, Brichacek A, Walker I. Body Image Explains Differences in Intuitive Eating between Men and Women: Examining Indirect Effects across Negative and Positive Body Image. Body Image. 2023;45:369–381. doi: 10.1016/j.bodyim.2023.03.018

21. Van Dyke N, Drinkwater EJ. Relationships between Intuitive Eating and Health Indicators: Literature Review. Public Health Nutr. 2014;17(8):1757–1766. doi: 10.1017/S1368980013002139

22. Yılmaz HÖ, Arpa Zemzemoglu TE. The Relationship between Body Mass Index and Eating Disorder Risk and Intuitive Eating among Young Adults. Int J Nutr Sci. 2021;6(4):180–188. doi: 10.30476/ijns.2021.91438.1138

23. Macho S, Andrés A, Saldaña C. Weight Discrimination, BMI, or Weight Bias Internalization? Testing the Best Predictor of Psychological Distress and Body Dissatisfaction. Obesity (Silver Spring). 2023;31(8):2178–2188. doi: 10.1002/oby.23802

24. Prunty A, Clark MK, Hahn A, Edmonds S, O'Shea A. Enacted Weight Stigma and Weight Self-Stigma Prevalence among Adults. Obes Res Clin Pract. 2020;14(5):421–427. doi: 10.1016/j.orcp.2020.09.003

25. Durso LE, Latner JD, Ciao AC. Weight Bias Internalization in Treatment-Seeking

Overweight Adults: Psychometric Validation and Associations with Self-Esteem, Body Image, and Mood Symptoms. Eat Behav. 2016;21:104–108. doi: 10.1016/j.eatbeh.2016.01.011

26. Schvey NA, White MA. The Internalization of Weight Bias Is Associated with Severe Eating Pathology among Lean Individuals. Eat Behav. 2015;17:1–5. doi: 10.1016/j.eatbeh.2014.11.001

27. Dinçer MG, Toktaş N, Bayhan B, Balcı C. The Effect of Physical Activity Level on Intuitive Eating and Mindful Eating. J Sport Sci Res. 2023;8(2):339–353. doi: 10.25307/jssr.1267065

28. Carraça EV, Leong SL, Horwath CC. Weight-Focused Physical Activity Is Associated with Poorer Eating Motivation Quality and Lower Intuitive Eating in Women. J Acad Nutr Diet. 2019;119(5):750–759. doi: 10.1016/j.jand.2018.09.011

29. Souto CR, Salaroli LB, da Silva GG, Cattafesta M, Silva YFR, Soares FLP. Intuitive Eating Has Reduced the Chances of Being Overweight in University Students during the COVID-19 Pandemic. Front Nutr. 2024;11:1329788. doi: 10.3389/fnut.2024.1329788