Turkish Journal of Psychiatry 2020;31(2):122-30

Validity and Reliability of the Turkish Version of the Emotional Eater Questionnaire (EEQ-TR)

Hülya ARSLANTAŞ[1], Ferhan DEREBOY[2], Rüveyda YÜKSEL[3], Seher İNALKAÇ[4]

SUMMARY

Objective: In this study, we aimed to translate the Emotional Eater Questionnaire (EEQ) to Turkish and investigate the reliability and validity of the Turkish version.

Method: The participants, consisting of 749 undergraduate students majoring at nursing or midwifery, completed on the EEQ and the Oxford Happiness Scale (OHS), the Beck Depression Inventory (BDI), the Orthorexia Nervosa-11 Scale (ORTO-11), the Zarit Caregiver Burden Scale (ZCBS) and the Eating Attitude Test (EAT).

Results: An internal consistency coefficient of 0.84 was computed for the entire scale which, similarly to the original scale, demonstrated a three-factor structure, namely, "Disinhibition", "Type of food" and "Guilt". All corrected item-total correlations were above 0.34. The EEQ score showed negative correlations with the OHS score at a low level ($r=-0.15$, $p<0.001$), and the EAT score at a moderate level($r=-0.33$, $p<0.001$); and positive correlations with the BDI score ($r=0.16$, $p<0.001$) at a low level and the ZCBS score at a moderate level ($r=0.36$, $p<0.01$). The variance analysis demonstrated significant differences in the EEQ scores of the normal-weight, overweight and obese students ($F(2.712) =11.17$, $p<0.001$, $\eta^2 = 0.03$).

Conclusion: EEQ Turkish version seems to have sufficient internal consistency which supported its reliability as well as the construct validity. Our data provided additional support for the validity of the EEQ for assessing the emotional overeating tendency among the Turkish university students.

Keywords: Emotional Eater Questionnaire, validity, reliability

INTRODUCTION

The World Health Organization (2006) has defined health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. A well-balanced and sufficient diet is imperative for sustaining a healthy life. Nutrition is the enablement of the intake and usage of the foods essential for growth, development, healthiness, productivity and longevity. The relative quantities of nutrition to be taken daily has been ascertained; such that imbalanced nutrition results in impaired health. Therefore, eating wittingly is vital for protecting and promoting health and enhancing the quality of life (Baysal 2007).

Meeting the need for nutrition, next to its biological necessity, has psychological significance. Individuals, when angered or perceiving to be under pressure, may consume more food than they need. Not consuming any food under conditions of excitement or extreme stress are also explained as the effect of emotional states on eating behaviour (Konttinen 2012).

Emotional eating is a term denoting the tendency to overeat in reaction to negative emotions. Emotional eating was initially cited within the context of bulimia as a factor inducing binging episodes. Later research has indicated the possible relationship between binging and emotional eating. The presence of this tendency to overeat, regarded as a reaction to negative feelings, has been reported in obese individuals, those who diet despite normal body weight and females with

Received: 19.07.2018, **Accepted:** 27.03.2019, **Available Online Date**: 09.08.2019

[1]Nurse, Prof ., [3]Nurse, Research Assistant., Aydın Adnan Menderes University, Nursing Faculty, Nursing Dep., Department of Mental Health Nursing., [2]Prof., Faculy of Medicine, Adnan Menderes University, Department of Psychiatry, [4]Nurse, Aydın Adnan Menderes University., Institute of Health Sciences, Department of Mental Health Nursing, Master of Science Student, Aydın, Turkey.

e-posta: *hulyaars@yahoo.com*

https://doi.org/10.5080/u23520

eating disorder. The significance of emotional eating is being increasingly recognised in the interventions for weight loss and regulating eating behaviour (Sevinçer 2013).

Emotional eating has also been defined as a psychological type of food ingestion in excess of the needed resulting from mood changes in states of loneliness, anxiety and depression.

(De Lauzon-Guillain et al. 2006). Although emotions have been reported to increase or decrease human appetite and food intake by 30 to 48 percent, determining the underlying mechanisms is quite challenging. Research on the effects of differing moods on eating behaviour has shown that, despite differences between individual, stress, anxiety, depression and anger generally disrupt the feeding habits and cause increased food consumption (Macht, 2008). In contrast, happiness and other positive emotions can enhance choosing and consuming healthy foods and increase the enjoyment of eating (Macht 1999, Macht 2002).

Continuing research supports the hypothesis that emotional states result in ineffective weight control (Blair et al. 1990), binge eating (Waters et al. 2001) and bulimia (Waller and Osman 1998).

Among the psychometric scales developed to determine emotional eating behaviours, the most widely known are the Restriction Scale, the Dutch Eating Behavior Questionnaire, and the Three-Factor Eating Questionnaire (Herman 1975, Karlson et al. 2000, Baş et al. 2008). There are, also, the Emotional Appetite Questionnaire, developed by Nolan et al. (2010) and validated in the Turkish language by Demirel and colleagues (2014), the Eating Awareness Scale developed by Framso et al. (2009) and validated in the Turkish language by Köse et al. (2016), and the Emotional Eating Scale for children and adolescents (EES-C) developed by Tanofsky-Kraff et al. (2007) and validated in the Turkish language by Bektaş et al. (2016).

Apart from the psychometric tools cited above, the Emotional Eater Questionnaire (EEQ), a brief and practical instrument for assessing emotional eating, developed initially on obese individuals and subsequently tested for validity and reliability on 354 individuals with BMI ≥ 25 kg/m^2 and undergoing the Mediterranean Diet and Cognitive Behavioral Therapy for weight loss (Garaulet et al. 2012). Obtaining test-retest reliability coefficients of 0.70 for the entire scale, 0.77 for the *Disinhibition*, 0.66 for the *Type of Food* and 0.61 for the *Guilt* dimensions has supported the reliability of the EEQ. Contributing an easily comprehended scale with a limited number of questions to our language that can be used in planning health education interventions for the prevention of obesity and determination of the predictors of emotional eating is important (Hawks and Gast 1998). In this study it was aimed to test the validity and reliability of the EEQ in the Turkish language (EEQ-TR) on healthy university students after translating it to the Turkish language. The goal was specifically, to collect different types of evidence related to the validity and reliability of the scoring on the by testing the following hypotheses:

1. For construct validity: The internal reliability of the entire EEQ-TR and of the subdimensions will be acceptable (Cronbach's α = 0.70–0.79) or adequate ($\alpha \geq 0.80$ for research; or $\alpha \geq 0.90$ for clinical individual evaluation) (Nunnally and Bernstein 1994).
2. For factorial validity: The factor structure of the EEQ-TR is to resemble that of the original scale as reported by Garaulet et al. (2012).
3. For convergent and discriminant validity: The scores of the participant on the EEQ-TR are to correlate positively with their scores on the Beck Depression Inventory (BDI), the Eating Attitude Test (EAT) and the Zarit Caregiver Burden Scale (ZCBS); and negatively with the scores on the Oxford Happiness Scale (OHS) and insignificantly with the scores on the Orthorexia Nervosa-11 Scale (ORTO-11).
4. For concurrent validity: Given that emotional eating is one of the factors causing obesity (Cannetti et al. 2002, Evers et al. 2010, Garaulet et al. 2012), the normal-weight, overweight and obese participant groups are to differ significantly in terms of the EEQ-TR score.

METHOD

Translation Study

With the authorization granted by the first author of the original EEQ development study (Garaulet et al. 2012), the scale was translated to the Turkish language independently by a psychiatrist, two psychiatry nurses and an internal medical nurse who were blind to one another's work. These translations were compiled into a single text by the research team and translated back to English by a clinical psychologist and a consultant psychiatrist who had not partaken in the first translation stage. As the author of the original text requested changes, the text was translated to Turkish and back to English for a second and third time as directed by the author to achieve its final approved format. Hence, the third translation to the Turkish language was taken as the final form of the EEQ-TR to be used for validation in this study.

Participants

The study was carried out between October 12, 2017 and December 19, 2017, with 749 undergraduate students majoring in nursing or midwifery at Aydın Adnan Menderes University. In accordance with the ethical approval obtained from "Interventional Research Evaluation Committee" of the same university (No: 53043469-050.04.04), all participants provided informed written consent. Only the consenting students who reported not to have been diagnosed with an eating disorder in their lifetime were included in the study. The participants completed during school hours the battery of psychometric tools including the EEQ-TR and additional self-report instruments. The participants consisted of 605 (80.8%) females and 144 (19.2%) males with a mean age of 20.64 (±1.73). Of the participants, 542 (72.4%) majored in nursing, 207 (27.6%) in midwifery; and 537 (71.7%) of these declared to have an income sufficient to cover their expenses. With regard to their year of training, 166 (22.2%) were first-year, 251 (33.5%) second year, 154 (20.6%) third year, and 178 (23.8%) were fourth year students.

Psychometric Tools

Apart from the EEQ-TR, translated to the Turkish language to be tested for validation, the test battery completed by each participant included the Oxford Happiness Scale, the Beck Depression Inventory, the Orthorexia Nervosa-11 Scale, the Zarit Caregiver Burden Scale and the Eating Attitude Test.

The Emotional Eater Questionnaire (EEQ): The EEQ, comprising 10 items and the three subdimensions *Disinhibition*, *Type of Food* and *Guilt*, was designed to evaluate the emotional eating behavior of obese and overweight people (Garaulet et al. 2012). All items are positively keyed and each is answered on a 4-point Likert's scale (0 = never, 1 = sometimes, 2= usually, and 3 = always). The total score of the instrument varies between 0 and 30, and the higher scores indicate more pronounced emotional eating behavior. In the exploratory factor analysis on the construct validity of the original EEQ, three factors accounting for 60.4% of total variance had emerged. The internal consistency coefficients of the subdimensions derived from these factors were reported as 0.77 for *Disinhibition*, 0.66 for *Type of Food,* and 0.61 for *Guilt*. For the original EEQ, the scores ranging from 0 to 5 were proposed to indicate the *non-emotional eater*; from 6 to 10 the *low emotional eater*; from 11 to 20 the *emotional eater*; and from 21 to 30 the *very emotional eater* (Garaulet et al. 2012).

The Oxford Happiness Scale (OHS): Developed by Hills and Argyle (2002) to measure happiness, the OHS consists of 29 items each answered on a 6-point scale (1: strongly disagree - 6: fully agree). The factor analysis to obtain the construct validity of the original scale yielded eight factors with an eigen value above 1. Due to the difficulties of interpreting and naming these factors, however, the authors concluded that it would be appropriate to use the scale as a single-factor instrument. Hills and Argyle (2002) reported an internal consistency coefficient of 0.91 for the entire scale and considered the total score to be a reliable measure of the level of happiness. The Cronbach's α coefficient of the OHS in the Turkish language was previously reported as 0.91 by Dogan and Sapmaz (2012) and was computed to be 0.89 in our participant population.

The Beck Depression Inventory (BDI): The BDI was developed by Beck (1961) as an instrument to assess the risk of depression and to follow-up the severity of depressive symptoms in adults. It consists of 21 questions, each self-rated on a 4-point scale ranging from 0 to 3. Accordingly, absence of depression is suggested by total scores of 1-10, presence of moderate mood disorder by 11-16 scores, clinical depression by 17-20 scores, moderate depression by 21-30 scores, severe depression by 31-40 scores, and extreme depression by 41-63 scores. Hisli (1989) validated the Turkish language version of the BDI and recommended a cut-off score of 17 to be used to identify depressed subjects. We computed the Cronbach's α internal consistency coefficient of the BDI as 0.93 in the sample population of the present study.

The Orthorexia Nervosa-11 Scale (ORTO-11): Donini et al. (2004) constructed the original version of this self-report scale with 15 items in Italy to assess obsessive preoccupation with healthful eating. The items of this version were derived from the expressions of the short orthorexia questionnaire previously developed by Bratman and Knight (2000). In adapting the scale for use in Turkey, Arusoğlu et al. (2008) selected 11 items on the basis of factor loadings exceeding the 0.50 level. The items of the scale are rated on a 4-point Likert's scale and lower total scores suggest the presence of a marked orthorexic tendency. The Cronbach's α coefficient of the scale reported by Arusoğlu (2006) was 0.62, and we computed exactly the same figure in our study which implied a rather low internal consistency.

The Zarit Caregiver Burden Scale (ZCBS): Developed by Zarit et al. (1980) to evaluate the stress experienced by caregivers, this scale consists of 22 statements which may be rated either by the caregivers themselves or by health care professionals. The items included in the scale are related to mental and physical health, social and emotional experiences, economic situation, and interpersonal relations. Each item is answered on a 5-point Likert's scale (1=never, 2=rarely, 3=sometimes, 4=frequently, 5=almost always) totaling a score ranging

between 22 and 110, with higher scores indicating severer caregiver burden. The score benchmarks are 22-46 for 'light load', 47-55 for 'moderate load' and 56-110 for 'severe load'. The ZCBS in the Turkish language was validated by Özlü et al. (2009). In our study, Cronbach's α internal consistency coefficient of the scale was calculated as 0.93.

The Eating Attitude Test-40 (EAT-40): This test was developed by Garner and Garfinkel (1979) to assess the anorectic behaviors and attitudes of normal individuals and of those with eating-disorders. The test, consisting of 40 items rated on a 6-point Likert's scale, was validated after translation to the Turkish language by Savaşır and Erol (1989). The total score is directly related to the level of psychopathological eating behavior and attitudes in clinically significant eating disorder. Total scores above the cut-off score of 30 points suggest an increased likelihood of disordered eating behavior. Although Savaşır and Erol (1989) had reported the scale's Cronbach's α internal consistency coefficient as 0.70, we computed a higher α of 0.94 in the present study.

Statistical Analysis

The preliminary analysis of the data revealed that sample distributions of all the scale scores were normal. The internal Cronbach's α coefficient and corrected item-total correlations were computed to examine the internal consistency of the EEQ-TR. We employed principal components analysis to investigate the factorial structure of the EEQ-TR items, and Pearson's correlation analysis to determine the association of the EEQ-TR scores with the other scale scores. We adopted the benchmarks proposed by Cohen (1988) when defining the observed correlations as small (r = 0.10 - 0.29), medium (r = 0.30 - 0.49) or large (r = or > 0.50). Also, we employed variance analysis to compare EEQ-TR scores of three student groups with normal-weight (BMI < 25), overweight (BMI = 25-30) and obese (BMI > 30). All statistical analyses were performed with the SPSS-21.0 software.

RESULTS

Reliability Analysis on the EEQ-TR

The Cronbach's α internal consistency coefficient of the EEQ-TR was estimated to be 0.84 (95% CI: 0.82 - 0.86). The corrected item-total correlations calculated to evaluate the psychometric property of each item and the variation of the α coefficient estimations following the deletion of any scale item are summarized in Table 1, where it can be seen that all items contributed with adequate correlations to the total score at levels above 0.34. Studies have indicated that in group based measurements Cronbach's α coefficients are taken as acceptable reliability at the level of 0.70, and at 0.80 or above, they demonstrate adequate reliability (Nunnally and Bernstein 1994, Erdoğan et al. 2015).

Table 1. Internal Consistency of the Emotional Eater Questionnaire-TR (N=749)

	Items of the Emotional Eater Questionnaire-TR	Corrected item-total correlations	Cronbach's alpha when an item is omitted
1.	Do the weight scales have a great power over you? Can they change your mood?	0.49	0.83
2.	Do you crave specific foods?	0.34	0.84
3.	Is it difficult for you to stop eating sweet things, especially chocolate?	0.56	0.82
4.	Do you have problems controlling the amount of certain types of food you eat?	0.66	0.81
5.	Do you eat when you are stressed, angry or bored?	0.61	0.82
6.	Do you eat more of your favourite food and with less control when you are alone?	0.49	0.83
7.	Do you feel guilty when eat "forbidden" foods, like sweets or snacks?	0.51	0.83
8.	Do you feel less control over your diet when you are tired after work at night?	0.50	0.83
9.	When you overeat while on a diet, do you give up and start eating without control, particularly food that you think is fattening?	0.57	0.82
10.	How often do you feel that food controls you, rather than you controlling food?	0.62	0.82

Factorial Structure of the EEQ-TR

Table 2 shows the item contents of the three factors yielded by the factor analysis of the EEQ-TR. These factors were named similarly to the factors of the original EEQ, since the item contents of each factor matched exactly those of the EEQ-TR. These factors corresponding to the three the EEQ-TR dimensions on emotional eating, namely, *Disinhibition* (F1), *Type of food* (F2), and *Guilt* (F3), explained collectively 61.94% of the total variance. The internal consistency coefficients for the entire scale was 0.84, and for the first, second and third factors, these were 0.81, 0.57, and 0.64, respectively.

Table 2. Factorial Structure of the Emotional Eater Questionnaire-TR (N=749)

Items	Factor loadings		
	Disinhibition	Type of Food	Guilt
S9. When you overeat while on a diet, do you give up and start eating without control, particularly food that you think is fattening?	0.78		
S10. How often do you feel that food controls you, rather than you controlling food?	0.75		
S4. Do you have problems controlling the amount of certain types of food you eat?	0.67		
S8. Do you feel less control over your diet when you are tired after work at night?	0.64		
S5. Do you eat when you are stressed, angry or bored?	0.58		
S6. Do you eat more of your favourite food and with less control when you are alone?	0.49		
S2. Do you crave specific foods?		0.86	
S3. Is it difficult for you to stop eating sweet things, especially chocolate?		0.62	
S1. Do the weight scales have a great power over you? Can they change your mood?			0.83
S7. Do you feel guilty when eat "forbidden" foods, like sweets or snacks?			0.74
Explained Variance	28.20%	17.03%	16.71%

Convergence between the EEQ-TR Total Scores and the Scores on the Other Scales

Convergence and divergence between the EEQ-TR total scores and other scale scores were investigated by means of the Pearson's correlation analysis. As presented in Table 3, the EEQ-TR correlation was negative and moderate with the EAT-40 ($r = -0.33$, $p < 0.001$) and negative and low with the OHS ($r = -0.15$, $p < 0.001$); whereas it was positive and moderate with the ZCBS ($r = 0.36$, $p < 0.01$) and positive and low with the BDI ($r = 0.16$, $p < 0.001$). A statistically significant correlation between the total scores of the EEQ-TR and the ORTO-11 was not detected ($r = 0.15$, $p > 0.240$).

The Relationship between the EEQ-TR Total Score and the Body Mass Index (BMI)

The EEQ-TR total scores of the students were compared after distribution into 3 groups with normal BMI (≤ 25), overweight BMI (25-30) and obese BMI (≥ 30). The ANOVA results in Table 4 show that the differences were small but statistically significant ($F_{(2.712)}=11.17$, $p<0.001$, $\eta^2=0.03$).

Table 4. The Emotional Eater Questionnaire-TR Scores of the Student Groups Formed on the Basis of Body Mass Index

Scale	n	Min.	Max.	Mean	SD
Normal Weight	652	0.00	30.00	12.12	5.99
Overweight	76	4.00	29.00	14.26	5.31
Obese	21	3.00	29.00	17.19	6.32
Total	749	0.00	30.00	12.50	6.01

The Cut-off Score for the EEQ-TR

Post-hoc Bonferroni test revealed that although the difference between the scores of the overweight and obese groups did not significantly, scores of both groups were significantly above the scores of the normal BMI group ($p < 0.01$). The confidence intervals of the group means in Figure 1 suggest that the mean EEQ-TR score of the normal-weight students will be lower than 13 with 95% probability, whereas that of

Table 3. Scores on the Scales Completed by the Students and Their Correlations with the Emotional Eater Questionnaire-TR Scores

Scale	N	Min.	Max.	Mean	SD	Correlation with the EEQ	
						r	Significance
Oxford Happiness Scale	749	3.00	161.00	108.02	20.50	-0.15	p<0.01
Beck Depression Inventory	749	0.00	63.00	9.67	10.05	0.16	p<0.01
Orthorexia Nervosa-11 Scale	65	14.00	37.00	26.57	4.55	0.15	Null
Zarit Caregiver Burden Scale	67	18.00	84.00	49.36	14.98	0.36	p<0.01
Eating Attitude Test-40	94	51.00	197.00	147.13	30.40	-0.33	p<0.01

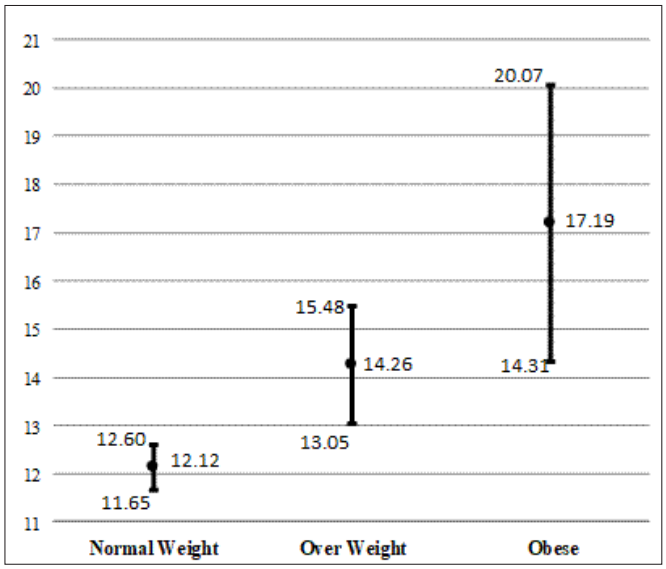

Figure 1. The Emotional Eater Questionnaire-TR Scores of the Student Groups Formed on the Basis of Body Mass Index (Mean and 95% CI)

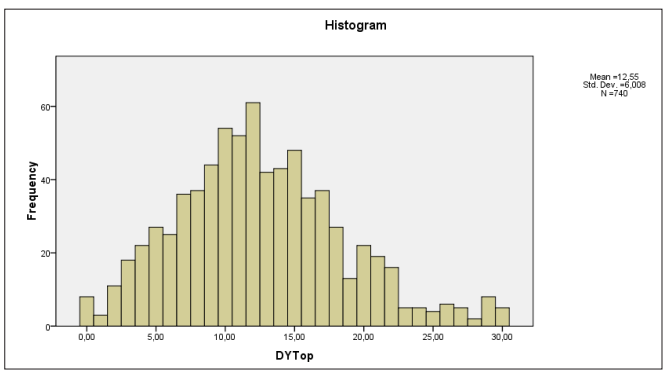

Figure 2. Histogram-Distribution of Student Numbers (Y-axis-%) with Respect to EEQ-TR Score (X-axis-Score)

the overweight students will be higher than 13 in 95% of the time. Since nearly half of the subjects of this study received scores between 13 and 30, it would be appropriate to adopt a cut-off point higher than 13 in order to identify the students with the most prominent emotional eating tendencies.

DISCUSSION

Emotional eating is a term denoting the tendency to overeat in response to negative feelings. Human inclination to cope with both negative and positive emotions by modified eating habits necessitates the evaluation and monitoring of emotional eating to facilitate deciding whether or not the risky episodes of obesity, depression and anxiety have started. Early detection of emotional eating is important for weight control and the prevention and treatment of eating disorders. Determination of emotional eating and loss of control during meals could enable the preparation of new interventions to teach the patients appropriate and effective coping strategies for the treatment of emotional eating (Goosens et al. 2009).

In this study data have been acquired supporting the reliability and the validity of the EEQ-TR for fast and sensitive determination of eating problems associated with the emotions of individuals.

The Cronbach's α internal consistency coefficient of the scale (0.84, 95% CI = 0.82 - 0.86) and the item-total correlations coefficients (r > 0.34) were quite high in our study.

The correlation between the total score and the item scores of the original EEQ were not reported. The confirmatory factor analysis carried out by Akın et al. (2016) on the same scale showed that the item-total correlations were all at the satisfactory level (r>0.38). Taken together, the available data permit us to claim that the EEQ-TR is a valid and reliable tool to assess emotional eating in undergraduate students majoring in health sciences.

Factor Structure of the EEQ-TR

The three factors and their item contents demonstrated by the exploratory factor analysis used in the present study replicated the findings on the original EEQ development study (Garaulet et al. 2012), thereby providing evidence for the construct validity of the EEQ-TR. The alpha coefficients computed for each dimension separately were 0.81 for *Disinhibition* (Factor 1 loading the items 9, 10, 4, S8, 5 and 6), 0.57 for *Type of Food* (Factor 2 loading the items 2 and 3), and 0.64 for *Guilt* (Factor 3 loading the items 1 and 7). The total score of the scale is taken into consideration and the factor scores are not calculated separately for item evaluation. Therefore, the low internal consistency levels for Factors 2 and 3 were not considered as problems. In the study with the original format of the EEQ the intraclass correlation coefficients for the subdimensions reported to be in the 0.61- 0.77, but these coefficients for assessment of the time consistency of the factor scores were not given (Garaulet et al. 2012). Similarity of these results with those obtained in our study on internal consistency support the reliability of the EEQ-TR. The confirmatory factor analysis made by Akın et al. (2016) using the original EEQ, the α coefficients were 0.88 for the entire scale, 0.87 for factor 1, 0.67 for factor 2 and 0.59 for factor 3, which are also in agreement with our results and point to the necessity of using the total score of EEQ and not the scores of the individual subdimensions.

Convergence and Divergence between the Scores of the EEQ-TR and the Other Psychometric Scales Used

Correlation analyses were made to assess the convergence validity of the EEQ-TR score with the scores of other scales designed for similar or different psychometric purposes. Accordingly, the EEQ-TR score correlation was negative and moderate with the EAT-40 score ($r = -0.33$, $p < 0.001$) and negative and low with the OHS score ($r = -0.15$, $p < 0.001$); whereas it was positive and moderate with the ZCBS score ($r = 0.36$, $p < 0.01$) and positive and low with the BDI score ($r = 0.16$, $p < 0.001$). A statistically significant correlation between the total scores of the EEQ-TR and the ORTO-11 was not detected ($r = 0.15$, $p > 0.240$).

These findings imply that those students with higher depression and lower happiness scores report more pronounced emotional eating behaviors. The EEQ-TR scores share 2.5% of their variance with depression scores and 2.25% of their variance with the happiness/unhappiness scores. Emotional eating and caregiver burden scores tend to increase together since about 10% of the emotional eating variance concerns care giver burden. A moderate negative correlation was found between eating attitude and emotional eating, 10% of its variance being on eating attitude. High EAT-40 scores indicate an anorectic tendency. This finding implies that emotional eaters are less likely to be preoccupied with their caloric intake. Perhaps, the need to relieve oneself by eating in distressed moments might be outweighing the concern of gaining weight. Finally, the emotional eaters in our sample might slightly be more likely to be concerned with consuming healthy foods as suggested by small the correlation between the EEQ and Orthorexia Nervosa-11 score. The results suggest that those with emotional eating disorder are not necessarily prone to anorexia. There may be a relationship between emotional eating and not worrying about weight gain such that the attempt for self comforting by eating under stress overcomes the worry of weight gain. Correlation was not found between emotional eating and healthy eating obsession. This may have been due to the presence of fewer students interested in healthy eating, which can be regarded as one of the limitations of this study. Variability of the participant traits may result in the variation of the correlation coefficients on similar areas. In the original validation study of the EEQ, its convergence with the Mindful Eater Questionnaire (MEQ) was interpreted as a piece of supportive evidence. Other studies have shown relationships between emotional eating and happiness/unhappiness (Turner et al. 2010), depression (Ouwens et al. 2009, Konttinen et al. 2010), stress (Levitan and Davis 2010, Nguyen-Rodriguez et al. 2009, Zellner et al. 2006, Wallis and Hetherington 2009).

Association of the EEQ-TR Total Score with the Body Mass Index (BMI)

According to the ANOVA results the differences in the total EEQ-TR scores of the students with normal BMI (≤ 25), overweight BMI (25-30) and obese BMI (≥ 30) were small but statistically significant ($F_{(2.712)}=11.17$, $p<0.001$, $\eta^2=0.03$). Taking the groups with different BMI values as external criteria, these results can be accepted as the criterion validity of the EEQ-TR. Previous studies reported higher emotional eating tendency in obese individuals (Cannetti et al. 2002, Evers et al. 2010, Garaulet et al. 2012). The point that emotional eating promotes obesity is related to the fourth hypothesis of this study, such that a higher tendency for emotional eating is expected among overweight and obese student groups as compared to those with normal BMI. Demonstration of this expected difference here is an evidence for appropriate assessment of emotional eating by the EEQ-TR.

The Optimal Cut-off Score of the EEQ-TR

The EEQ scores of about 10% of our participants were ≥ 21. In the original format of the EEQ scores in the 11-20 range indicate emotional eating and scores ≥ 21 indicate very emotional eating. On the basis of a cut off score of 11, about 62% of the students are identified as emotional eaters and very emotional eaters. It is not possible to plan an intervention by interpreting this high prevalence as a problem, unless a cut of point of ≥ 21 is assigned when only 10% of the participants would be classified as very emotional eaters. Therefore we recommend a cut off score of 21 for the EEQ-TR. In the original study on the EEQ, the basis of assigning cut off scores and the percentage of the emotional eaters identified by these cut off scores had not been explained.

Limitations of the Study

This study has its limitations headed by the restriction of the participants to the students of the same university. Students of schools giving healthcare education sensitive to the topics of emotions, eating and nutrition. Therefore, students not adequately informed on nutrition and not sensitive on these topics may not have been represented in the sample population of this study. Another limitation is having accepted the statement by the participants on not having been previously

diagnosed with any eating disorder, and not having verified these claims by psychiatric interviews. Also, the relationship between the EEQ-TR scores and scores on anxiety and the coping strategies could have been investigated. Restricting the experiment to university students within a narrow age limit and representing a relatively higher educated subpopulation, thereby excluding others such as adults, uneducated individuals, clinical groups, prevents the generalization of the results to the general population.

Conclusion and Recommendations

The validity and reliability of the EEQ-TR was supported by the data of the present study on the determination of an appropriate contribution of all items of the scale to the total score; indication of adequate internal consistency by the Cronbach's α coefficient of 0.84 despite the low numbers of the questions, the equality of the factorial structure with the original EEQ and the parallel elevation of the score with the increased tendency for emotional eating. On the basis of these properties the EEQ-TR is suitable for use in research. The EEQ-TR is also indicated for testing under special conditions of obesity, depression, anxiety and stress.

REFERENCES

Akın A, Yıldız B, Özçelik B (2016) The validity and reliability of Turkish version of the Emotional Eater Scale. Uluslararası Sosyal Araştırmalar Dergisi 9: 776-81.

Arusoğlu G (2006) The investigation of healthy eating fixation (Orthorexia) and the adaptation of the ORTO-15 scale. Dissertation, Graduate Program in Dietetics, Institute of Health Sciences, Hacettepe University, Ankara.

Arusoğlu G, Kabakçı E, Köksal G et al (2008) Orthorexia nervosa and adaptation of ORTO-11 into Turkish. Turk Psikiyatri Derg 19: 283-91.

Baş M, Bozan N, Ciğerim N (2008) Dieting, dietary restraint, and binge eating disorder among overweight adolescents in Turkey. Adolescence 43: 635-48.

Baysal A (2007) Beslenme. 11. Baskı, Ankara, Hatiboğlu Basım ve Yayınevi.

Beck AT (1961) An inventory for measuring depression. Arch Gen Psychiatry 4: 561-71.

Bektas M, Bektas I, Selekoğlu Y et al (2016) Psychometric properties of the Turkish version of the Emotional Eating Scale for children and adolescents. Eat Behav 3: 217-21.

Blair A, Lewis V, Booth D (1990) Does emotional eating interfere with success in attempts at weight control? Appetite 15: 151-57.

Bratman S, Knight D (2000) Health food junkies: overcoming the obsession with healthful eating. New York, Broadway Books.

Cannetti L, Bachar E, Berry EM (2002) Food and emotion. Behav Processes 60: 157-64.

Cohen J (1988) Statistical Power Analysis for the Behavioral Sciences. (2nd ed.). Hillsdale, New Jersey: Lawrence Erlbaum.

De Lauzon-Guillain B, Basdevant A, Romon M et al (2006) Is restrained eating a risk factor for weight gain in a general population? Am J Clin Nutr 83: 132-38.

Demirel B, Yavuz F, Karadere ME et al (2014) The Emotional Appetite Questionnaire (EMAQ)'s reliability and validity and relationship with Body Mass Index and Emotional Schemas. Bilişsel Davranışçı Psikoterapi ve Araştırmalar Dergisi 3: 171-81.

Doğan T, Sapmaz F (2012) Examination of psychometric properties of the Turkish version form of the Oxford Happiness Questionnaire in university students. Düşünen Adam Psikiyatri ve Nörolojik Bilimler Dergisi 25: 297-304.

Donini LM, Marsili D, Graziani MP et al (2004) Orthorexia nervosa: a preliminary study with a proposal for diagnosis and an attempt to measure the dimension of the phenomenon. Eat Weight Disord 9: 151-57.

Erdoğan S, Nahcivan N, Esin N (2015) Hemşirelikte araştırma süreç, uygulama ve kritik. İstanbul, Nobel Basımevi.

Evers C, Stok FM, Ridder DTD (2010) Feeding your feelings: Emotion regulation strategies and emotional eating. Pers Soc Psychol Bull 36: 792-804.

Framson C, Kristal AR, Schenk JM et al (2009) Development and validation of the Mindful Eating Questionnaire. J Am Diet Assoc 109:1439-44.

Garaulet M, Canteras M, Morales E et al (2012) Validation of a questionnaire on emotional eating for use in cases of obesity; the Emotional Eater Questionnaire (EEQ). Nutr Hosp 27: 645-51.

Garner DM, Garfinkel PE (1979) The Eating Attitudes Test: an index of the symptoms of anorexia nervosa. Psychol Med 9: 273–79.

Goosens L, Braet C, Vlierberghe LV et al (2009) Loss of control over eating in overweight youngsters: The role of anxiety, depression and emotional eating. Eur Eat Disord Rev 17: 68-78.

Hawks SR, Gast JA (1998) Weight loss education: a path lit darkly. Health Educ Behav 25: 371-82.

Herman CP, Mack D (1975) Restrained and unrestrained eating. J Pers 43: 647-60.

Hills P, Argyle M (2002) The Oxford happiness questionnaire: a compact scale for the measurement of psychological well-being. Pers Individ Diff 33: 1073-82.

Hisli N (1989) Validation and reliability of Beck Depression Inventory for university students. Türk Psikoloji Dergisi 7: 3-13.

Kaplan HI, Kaplan HS (1957) The psychosomatic concept of obesity. Journal of Nervous and Mental Disease 125: 181-201.

Karlsson J, Persson LO, Sjöström L et al (2000) Psychometric properties and factor structure of the Three-Factor Eating Questionnaire (TFEQ) in obese men and women. Results from the Swedish Obese Subjects (SOS) study. Int J Obes Relat Metab Disord 24: 1715-25.

Konttinen H, Mannisto S, Sarlio-Lahteenlorva S et al (2010) Emotional eating and physical activity self-efficacy as pathways in the association between depressive symptoms and adiposity indicators. Am J Clin Nutr 92: 1031-39.

Konttinen H (2012) Dietary habits and obesity: The role of emotional and cognitive factors. (Academic Dissertation, Helsinki University of Social Research Department), Finland, 2012.

Köse G, Tayfur M, Birincioğlu İ et al (2016) Adaptation study of the Mindful Eating Questionnaire (MEQ) into Turkish. Bilişsel Davranışçı Psikoterapi ve Araştırmalar Dergisi 125-34.

Levitan RD, Davis C (2010) Emotions and eating behavior: Implications for the current obesity epidemic. University of Toronto Quarterly 79: 783-99.

Macht M (1999) Characteristics of eating in anger, fear, sadness, and joy. Appetite 33: 129-39.

Macht M, Roth S, Ellgring H (2002) Chocolate eating in healthymen during experimentally induced sadness and joy. Appetite 39: 147-58.

Macht M (2008) How emotions affect eating: A five-way model. Appetite 50: 1-11.

Nguyen-Rodriguez ST, Unger JB, Spruift-Metz D (2009) Psychological determinants of emotional eating in adolescence. Eating Disorders 17: 211-24.

Nolan LJ, Halperin LB, Geliebter A (2010) Emotional Appetite Questionnaire.

Construct validity and relationship with BMI. Appetite 54: 314-19.

Nunnally JC, Bernstein IH (1994) Psychometric Theory. McGraw Hill Series in Psychology, 3rd ed., New York.

Ouwens MA, Van Strien T, Van Leeuwe JFJ et al (2009) The dual pathway model of overeating. Replication and extension with actual food consumption. Appetite 52: 234-37.

Özlü A, Yıldız M, Aker T (2009) A reliability and validity study on the Zarit Caregiver Burden Scale. Arch Neuropsychiatry 46 (Özel Sayı): 38-42.

Savasir I, Erol N (1989) Eating Attitude Test: Anorexia Nervosa Symptoms Index. Türk Psikoloji Dergisi 7: 19–25.

Sevinçer GM, Konuk N (2013) Emotional eating. Journal of Mood Disorders 3: 171-78.

Tanofsky-Kraff M, Theim KR, Yanovski SZ et al (2007) Validation of the Emotional Eating Scale adapted for use in children and adolescents (EES-C). Int J Eat Disord 40: 232–40.

Turner SA, Luszczynska A, Warner L et al (2010) Emotional and uncontrolled eating styles and chocolate chip cookie consumption. A controlled trial of the effects of positive mood enhancement. Appetite 54: 143-49.

Waller G, Osman S (1998) Emotional eating and eating psychopathology among non-eating-disordered women. Int J Eat Disord 23: 419-24.

Wallis DJ, Hetherington MM (2009) Emotions and eating. Self-reported and experimentally induced changes in food intake under stress. Appetite 52: 355-62.

Waters A, Hill A, Waller G (2001) Bulimic's responses to food cravings: Is bingeeating a product of hunger or emotional state? Behav Res Ther 39: 877-86.

World Health Organization (WHO) Erişim tarihi: 1 Ocak 2017. Available from: http://www.who.int. 2006.

Zarit S, Reever K, Bach-Peterson J (1980) Relatives of the impaired elderly: Correlates of feeling of burden. Gerontologist 20: 649-55.

Zellner DA, Loaiza S, Gonzalez Z et al (2006) Food selection changes under stress. Physiol Behav 87: 789-93.

**This study was presented at the 1st International Congress of Health Sciences and Life held in Burdur at May 2-5, 2018 and the full text was published in the congress proceedings.*