Validation of a Turkish version of the interpersonal outcome expectancies for thinness (IOET) scale in university students

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Summary. *Aim:* The aim of this study was to determine the validity and reliability of IOET in Turkish university students. *Methods:* First, the IOET scale was translated by using the translation-back translation method for cultural equivalence. Then, IOET was carried out on 513 university students explanatory and confirmatory factor analyzes. The body shape questionnaire and the Nutritional Changes Processes Scale were used for convergent validity. Test-retest validity was performed with 117 university students 4 weeks after the scale was given. *Results and Discussion:* The IOET scale showed a one-factor structure. The one-factor structure of the scale demonstrated a good agreement with the fix index values. In addition, the internal and test-retest validity reliability of the scale was found to be good (Cronbach α= 0.933). Positive, statistically significant correlations were found between IOET, the body shape questionnaire, and the Nutritional Changes Processes Scale (p < 0.05). This study has shown that the Turkish version of the IOET scale is a valid and reliable instrument for assessing the extent to which thinness can affect interpersonal relationships and/or our expectations from the other people. It is thought that IOET-TR can contribute to other studies on thinness expectations by providing a different perspective.

Keywords: Body image, eating disorders, thinness expectancies, IOET, validity, reliability

Introduction

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Obesity is defined as a health problem in terms of physiological, biochemical, and psychological aspects (1). In addition, it is an important health problem that needs to be addressed socially because of the prejudiced, discriminatory, and stigmatizing behaviors of other individuals in the society towards obese / overweight individuals (2).

Time at university is a period during which individuals develop into young adults (3). The individual undergoes not only physical but also psychosocial changes during this period, which has been shown to pose risks for individuals as they are prone to have both poor and unbalanced diets (4). Individuals remain away from a family setting during university education, with their free will becoming more exposed and thus they may break their habits of having a healthy and balanced diet for a variety of reasons such as peer pressure (5). It is especially during this period that individuals consume food outside home, skip their meals, ingest too much fast food that is high in carbohydrates and fat, opt for wrong diets, and eat unhealthy snacks between meals (4, 6, 7). University students have been shown to be discontent with their body image, shape, and weight, which may bring about problems in eating behavior and the emergence of eating disorder symptoms (8, 9).

Eating disorders are characterized by behaviors aimed at gaining or maintaining a slim body shape (9).

Because of the belief that " thin is beautiful" especially in the societies of Western Europe, the United States, and Asia, changes in beauty criteria and the notion of size zero in the media put pressure on adolescents and young adults, encouraging them to diet unconsciously and thus causing eating disorders (10-12). Indeed, studies have indicated that there is a positive correlation between influence of the media and body dissatisfaction, thin-ideal internalization, and eating disorder behaviors (11-14). The desire to be accepted and appreciated in social relations and the fear of exclusion and ridicule prepare the basis for starting diet and restrictive eating behaviors at an early age (15). In addition, adolescents and young women experience social pressure as a result of psychological conflicts during their life stages (identity crises, psychological separation, and a strong need for social acceptance and self-confidence), which can lead to body dissatisfaction and unhealthy eating behaviors (12, 16). There are no studies evaluating the relationship between body dissatisfaction and eating disorders and the expectations of thinness in interpersonal relations in Turkish society. Accordingly, the aim of the present study was to adapt the Interpersonal Outcome Expectations for Thinness Scale (IOET) developed by Li et al. (17) into Turkish and to perform the validity and reliability analysis of the scale.

Materials and Methods

Sample

The study was conducted with 513 students (381 females and 132 males) aged between 18–43 years (mean = 20.5 years, SD = 2.1) who were studying at Ankara Yıldırım Beyazıt University and volunteered to participate in the study. Ethics committee was granted from Ankara Yıldırım Beyazıt University Ethics Committee with research code 2019-204 (19/04/19).

Instruments

The data for the research was collected through a survey made up of three sections. Those sections are:

Interpersonal Outcome Expectancies for Thinness (IOET) Scale: Li et al. devised an 8-item scale to determine whether being thin plays a role in future rela-

tionships with others. This section explores the likely effects of being thin on interpersonal relationships. Individuals are required to provide responses to the 7-point Likert scale, like "definitely agree" and "definitely disagree". Those who "definitely disagree" receive 1 point while those who "definitely agree" receive 7 points. One can get at least 8 and at most 56 from this scale. Respondents who get a high score are of the opinion that being thin is of greater significance in interpersonal relationships (17).

Nutritional Changes Processes Scale: Prochaska et al. devised a 48-item scale with a view to determining the effect of experiences on people's eating habits and behaviors (18). This scale is made up of 12 subscales, having been prepared in the form of 5-point Likert scale. Respondents are asked to choose from the list of 5 options as "never", "rarely", "sometimes", "often", and "very often". Those who tick the "never" box receive 1 point while those who tick the "very often" box receive 5 points. Respondents receive scores ranging from 48 to 240. For all the subscales, the highest score is 20 and the lowest is 4. The assessment of the scale is by having the total score divided by the item numbers. The evaluation of reliability and validity of these scales was performed by Menekli and Fadıloglu for the Turkish population (19). The subscales of the scale are as follows:

1. *Consciousness raising:* Individuals possess awareness on the reasons and consequences of events (items 1, 13, 25, 37).
2. *Dramatic help / Emotional triggers:* Negative messages regarding unhealthy living cause individuals to act (items 3, 15, 27, 39).
3. *Re-evaluating the environment:* Individuals' assessment of the level of being affected by the social environment (items 4, 16, 28, 40).
4. *Re-evaluating own self:* Individuals' persistence in their bad habit and their assessment of themselves in the absence of this habit (items 9, 21, 33, 45).
5. *Social liberty / freedom:* A phenomenon regarding the rise of opportunities and possibilities in the immediate environment (items 10, 22, 34, 46).
6. *Compensation:* Individuals' learning a healthy behavior that can fix a bad one (items 2, 14, 26, 38).
7. *Auxiliary relationships:* Trust, openness, admission, and support that contribute to behavior change (items 5, 17, 29, 41).

8. *Fortification method:* Individuals' rewarding their positive behaviors regarding diet (items 7, 19, 31, 43).

9. *Freeing own self:* Individuals' being open to behavior change and acting toward their beliefs, purposes and decisions regarding these behaviors (items 8, 20, 32, 44).

10. *Stimulus control:* The removal of factors that lead to unhealthy behaviors by individuals and the addition of factors that help to form healthy behaviors (items 11, 23, 35, 47).

11. *Interpersonal system control:* Individuals' ability to exert control over their interpersonal relationships during the process of establishing healthy living behaviors (items 6, 18, 30, 42).

12. *Use of medicine:* Explores whether individuals resort to medicine or not to have a balanced diet (items 12, 24, 36, 48).

Body Shape Questionnaire: This questionnaire was developed by Copper et al. in order to establish individuals' opinions and concerns about their appearances in the past 4 weeks (20). This scale makes up of 34 questions. Each item was drawn up in the form of 6-point Likert scale. Respondents are asked to choose from the list of 6 options as "never", "rarely", "sometimes", "often", "very often", and "always". Those who tick the "never" box receive 1 point while those who tick the "always" box receive 5 points. The maximum score is 204 and high scores are indicative of dissatisfaction with body shape. The Turkish version of the body shape questionnaire was conducted by Akdemir et al. (21).

Translation and Linguistic Equivalence Study

Interpersonal Outcome Expectancies for Thinness scale was translated according to Brislin method (22). Scale was initially translated from English to Turkish by 3 experts who were bilingual, and the most suitable one for each item in terms of meaning and language structure was selected. The Turkish translation of the scale was re-translated into English (back translation) by two experts who were graduates of English department and the original text of the scale and the intelligibility of the translated text were checked. The Turkish form of the scale was given to 30 university students independent of the study sample and arrangements were made in line with their suggestions. After the ar-

rangements, the items in the scale were translated back to English with the help of at least 2 different experts and the same experts finalized the scale by looking at its compatibility with the original scale. In order to determine the linguistic equivalence of the scale, after the corrections, 33 university students (who knew Turkish and English) from the Preparatory Department of Ankara Yıldırım Beyazıt University were first administered the English scale and the Turkish scale forms were applied 4 weeks later (23). Spearman correlation analysis between the mean scores of the scale obtained from the English and Turkish forms of the scale were used. According to this there was a significant positive correlation between the scores obtained from the scales in both languages ($r = 0.88$; $p < 0.01$).

Data analysis
Exploratory Factor Analysis

Factor analysis was performed for the structural validity of the scale. Exploratory factor analysis was conducted via SPSS 22.0. Before the implementation of exploratory factor analysis, the Bartlett's Test of Sphericity and the KMO Test for Sampling Adequacy were conducted in order to establish whether the data were suited to factor analysis or not. In order for the data to be suitable for factor analysis, the KMO Test for Sampling Adequacy must be over 0.60 and the significance level of the Bartlett's Test of Sphericity must be less than 0.05 (24, 25). Subsequently, the factor number of the scale was established, and the factor loadings of the items were calculated through the method of varimax rotation.

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted via AMOS 22.0. The maximum likelihood estimation method was used for this analysis. In order to evaluate the validity of the factorial structure of the scale, a large number of fit indices are used in CFA. In this study, relative chi square ($\chi 2/df$), the Comparative Fit Index (CFI), the Normed Fit Index (NFI), the Root Mean Square Residuals (RMR), the Root Mean Square Error of Approximation(RMSEA), the Standardized Root Mean Square Residual (SRMR), the Adjusted Goodness of Fit Index (AGFI), and the Goodness of Fit Index (GFI) values were used. Val-

ues with a χ2 / df ratio <5 were considered acceptable. AGFI, NFI, CFI, GFI values ≥0.90 were evaluated good fit. RMSEA and SRMR values <0.08 were considered acceptable and good fit respectively (26-28).

Reliability of the Scale

In order to determine the invariance of the scale over time, the scale was reapplied to 117 students randomly selected among 513 university students 4 weeks later. Mean, standard deviation, and intraclass reliability coefficient were used for measurement invariance testing (29).

Cronbach's alpha coefficients were used for the consistency of the scale. A Cronbach's alpha value of 0.70 was established to be acceptable and the lowest level (30).

Convergent Validity

The Nutritional Changes Processes Scale and the Body Shape Questionnaire were conducted for convergent validity. The total scores from this scale and the subscales of scales as well as the correlations between the total scores obtained from IOET were assessed. Spearman correlation analysis was performed for correlation analysis.

Results

Validity of the Scale
Exploratory Factor Analysis

When the prerequisites for the explanatory factor analysis were examined according to the Bart-lett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy, it was seen that the KMO was sufficient (0.923) and the sphericity assumption was provided (χ^2 = 3176,639; p < 0.001). When the factor analysis was applied, it was observed that the one factor of IOET-TR was the expectation of thinness and that each item had a high factor load on the thinness factor (more than 0.70) (Table 1).

Confirmatory Factor Analysis

Confirmatory factor analysis was performed for the accuracy of the one-factor structure of the scale. Standardized factor loadings and corrected correlation structures are shown in Figure 1. Items 4, 3, 6, and 2, in decreasing order of strength, have been shown to have the most significant effect on thinness expectancy. It was also found that the single-factor structure was acceptable or good fit model [(χ^2/ sd = 3.568, p < 0.000), RMSEA = 0.071, SRMR = 0.019, AGFI = 0.941, GFI = 0.976, RMR = 0.052, CFI = 0.988, NFI = 0.983].

According to these figures, conformity values with respect to the model were found to be within the acceptable range, with the validity of the established model confirmed.

Reliability of the Scale

The Cronbach's alpha of the IOET scale was 0.933. Furthermore, in the case that any one item is removed from the scale, Cronbach's alpha either decreases or remains the same (data not shown). Therefore the items provide scale reliability and the total Cronbach alpha value is quite high (30).

Table 1. Factor loadings, eigenvalues, and variance percentage of Interpersonal Outcome Expectancies for Thinness (IOET)

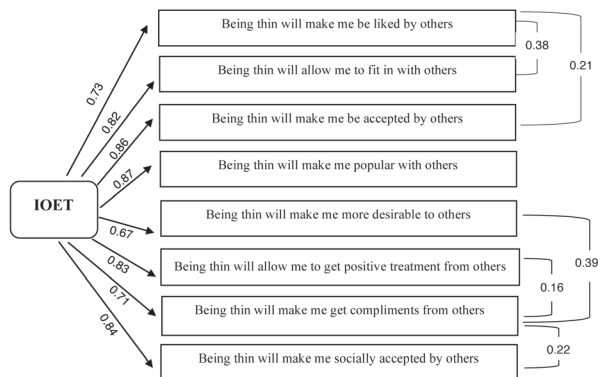| IOET items		Factor 1
1	Being thin will make me be liked by others	0.795
2	Being thin will allow me to fit in with others	0.860
3	Being thin will make me be accepted by others	0.867
4	Being thin will make me popular with others	0.871
5	Being thin will make me more desirable to others	0.744
6	Being thin will allow me to get positive treatment from others	0.848
7	Being thin will make me get compliments from others	0.793
8	Being thin will make me socially accepted by others	0.864
	Eigenvalue	5.532
	Factor's percentage for explaining the variance (%)	69.146

Figure 1. Standardized factor loadings of Interpersonal Outcome Expectancies for Thinness (IOET)

In order to determine the invariance of the scale over time, 2 applications were performed on 117 students with 4-week intervals. In test-retest reliability, the mean and standard deviation values of 2 applications, pre and post, were 2.53 ± 1.34 and 2.47 ± 1.46, respectively. There was no statistically significant difference between the two measurements (t = 0.576; p = 0.566). Intraclass Correlation Coefficient (ICC) values of 0.90 and above are considered excellent in the literature (30). In this study, ICC values were found to be quite high (pre = 0.926, post = 0.939).

Convergent validity

Positive and statistically significant correlations were obtained between the total scores of the Interpersonal Outcome Expectancies for Thinness and the Nutritional Changes Processes Scale and the Body Shape Questionnaire (r = 0.410, p < 0.01; r = 0.433, p < 0.05, respectively). The subscale scores of the Nutrition Change Process Questionnaire were found to vary between r = 0.221–0.396 (p < 0.01). This shows that the IOET scale has convergent validity between the IOET scale and the subscale and total scores of the scale.

Discussion

The purpose of this study was to assess the factorial structure and construct validity of the IOET questionnaire in a sample of Turkish students. The adaptation of the scale started with the translation from the source language to the target language and continued with the determination of linguistic and idiomatic equivalents and the pilot study. Finally, the Turkish form of the scale (IOET-TR) was applied to a sample group of 513 participants and analyzes were made on the data obtained. The results showed that IOET has adequate psychometric characteristics in all cases. In other words, this questionnaire can be used to determine the effectiveness of the expectations of being thin in interpersonal relationships.

The Cronbach's alpha value of the IOET scale was found to be 0.93 and it was found to be a one-factor structure. Also, Li et al. (17) found that the Cronbach's alpha value of IOET was 0.96 and that it had a one-factor structure as in our study. Item correlations ranged from 0.78 to 0.90 in the original study and between 0.74 and 0.87 in our study. In both studies, there were no items with low item correlation (r) values. Therefore, no item was removed from the scale.

In the second part of the study, the Turkish version of the scale was re-applied to test subjects after 4 weeks of the first application and the test-retest was found to be stable and did not change over time (t = 0.57; p = 0.56). In the original study of the IOET scale, IOET was found to have 0.74 test-retest reliability (6 weeks) in a subset of US female participants (n = 184) (17). These results are important in that they show the test-retest reliability of our study is good and students' opinions do not change with time between the applications. IOET scores were found to be positively correlated with the scores of the sub-scales of consciousness, dramatic help, re-evaluation of the environment and self, freedom, contradictions, auxiliary relations, empowerment, self-liberation, stimulus, interpersonal system control, and drug use in the Nutrition Change Process Questionnaire with 12 sub-scales. Similarly, a significant positive correlation was found between IOET and the total scores obtained from the Body Shape Questionnaire. Li et al. (17) showed that for construct validity, IOET scores were positively correlated with scores related to eating disorders and negative affective measures.

Therefore, it is possible to say that IOET can be used to identify individuals who are experiencing changes in their nutritional processes and who are disturbed by their body shape and make it a social pho-

bia. This issue has not been studied sufficiently since there is no valid and safe measurement tool in Turkey to measure the extent to which thinness can affect interpersonal relationships and/or our expectations from the other people. In this study, the Turkish version of the International Outcomes Expectations of Thinness Scale was found to be a valid and reliable instrument for the Turkish culture. It is thought that IOET-TR can contribute to other studies on thinness expectations by providing a different perspective.

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