

Turkish Version of the Dutch Eating Behaviour Questionnaire: In Evaluation of Eating Behaviour among a Group of Turkish University Student

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Abstract: Objective: This study aims at examining eating behaviours according to the Dutch Eating Behaviour Questionnaire (DEBQ), among a population of normal-weight university students. **Methods:** The study was conducted among Ankara University students. The questionnaire was administered to 500 subjects. The participants were given a questionnaire form. A reliability test was performed to determine the extent the 33-item questionnaire can measure eating behaviors of individuals. Items 31, “Can you resist eating delicious food?”, and 32, “Do you eat more than usual when you see others eating (do you eat even if it is not meal time)?” were removed from the questionnaire since their factor loading values were below 0.30. “Varimax Factor Analysis” was performed to determine if the survey questions used in this research have the same structure. **Results:** The analysis resulted in three factors. This study demonstrated the factorial validity and reliability of its Dutch version.

Key words: Dutch Eating Behavior Questionnaire (DEBQ), external eating, emotional eating, restrained eating.

1. Introduction

Research studies on eating behaviour are necessary to increase our understanding of the aetiology of obesity and contribute to improve therapeutic programs. These investigations require valid and reliable scales to assess and quantify factors associated with eating behaviour. The development of questionnaires usually relies on underlying theories of eating. The Dutch Eating Behaviour Questionnaire (DEBQ) [1–3] was originally elaborated in order to test the relevance of such theories in understanding the development and maintenance of human obesity. The first one, the so called “psychosomatic theory” [3] emphasizes the role of “emotional eating” in the aetiology of obesity. The second one, the “external theory” developed by Schachter and colleagues (1968), refers to eating in response to food-related stimuli, regardless of the internal state of hunger or satiety [4]. The third one, the

theory of “restrained eating” [5], reflects the degree of conscious food restriction, carrying the imminent risk of disinhibition. During youth, feeding needs are adequate and appropriate for the requirements of the body. However, studies conducted in our country reveal that university students have eating disorders, not being able to eat an adequate and balanced diet. That university students have right eating habits is of social importance on accounts of their own health and this group being a role model [6, 7]. During this period, eating behaviors of the young changed [8, 9]. This study aims at examining eating behaviours according to the Dutch Eating Behavior Questionnaire (DEBQ), among a population of normal-weight university students.

2. Material and Methods

This study was designed to determine eating behaviors of university students with normal body weight (those with BMI values of 18.5–24.9 kg/m² were included in the study). The research subjects consisted of 500 volunteer students who study at

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various universities in Ankara. The Dutch Eating Behaviour Questionnaire (DEBQ) was used to determine eating behaviors of the students [1, 2, 10].

2.1 The Dutch Eating Behavior Questionnaire (DEBQ)

In its original version, the DEBQ is a 33-item self-rating questionnaire. All items have the same response format: never (1), seldom (2), sometimes (3), often (4) and very often (5). Restrained and external eatings are both assessed with a 10-item scale; emotional eating may either be assessed with a 9-item scale and a 4-item scale, referring to clearly defined and diffuse emotions, respectively, or with a combined 13-item scale. The questionnaire was collected by interview. An average of ten minutes was necessary to fill in the form.

2.2 Reliability

As the questionnaire was completed once, reliability was assessed by internal consistency. Coefficients used were Cronbach's alpha coefficients, calculated separately for each sub-scale. Mean alpha was calculated to be 81.98 ± 16.71 .

2.3 Statistical Analysis

Numerical and percentage tables were constructed for general information. Varimax Factor Analysis and reliability tests were performed.

3. Results

3.1 Characteristics of the Sample

The study included a total of 500 subjects (260 female, 240 male). Mean age was 20.34 ± 2.01 years for females and 21.50 ± 1.87 years for males. Mean body mass index was found to be 23.02 ± 2.05 kg/m² for females and 24.08 ± 2.91 kg/m² for males. Age and BMI (means and standard deviations, SD) are presented in Table 1. 16.2% of the female students included in the research eat 2 times a day, 35.0% 3 times, 37.7% 4 times, and 11.2% 5 times or more. For male students, it is 10.0%, 30.4%, 45.8%, and 13.8% (for 2, 3, 4, and 5 or more meals per day, respectively). The meal that is skipped most is breakfast, at a rate of 29.2% for females and 25.0% for males. It is followed by lunch (Females: 12.3%, Males: 7.1%) and dinner (Females: 7.7%, Males: 5.4%). Students skip breakfast because they don't have time (Females: 44.2%, Males: 43.8%). Females said they skip lunch to stay thin (to avoid a big belly) (20.4%) and males because they don't have appetite (17.9%). Since most of the students don't skip dinner, the rate of students who skip it because they don't have appetite is the highest (F: 11.2%, M: 7.9%).

3.2 Varimax Rotated Factor Matrix

After the factor analysis was applied to the data (5-, 4-, and 3-factor solutions), it was found that the best interpretable matrix is the three-factor solution. The factor loadings found in this analysis are presented in Table II. The three factors account for 40.6%, 47.3%, and 43.5% of the variance, respectively. Factor 1 corresponds to all items in the emotional eating scale (loadings above 0.36). Factor 2 is based on all items in the restrained eating scale. And factor 3 corresponds to all items in the eating scale (except for items 31 and 32) (Table 2).

Table 1 Means and standard deviations for students' weight, height, and body mass index.

Gender	n	Weight (kg)		Height (cm)		BMI (kg/m ²)	
		\bar{X}	S	\bar{X}	S	\bar{X}	S
Female	260	56,9846	1,13274	163,8038	3,30956	23,0294	2,05924
Male	240	75,1583	2,77732	176,5250	4,01279	24,0853	2,91656
Total	500	65,7080	3,23249	169,9100	2,44088	23,5362	2,62628

Table 2 Varimax Rotated Factor Matrix (three-factor solution) on the 33 items, in the Turkish version of the DEBQ for the total sample.

	Factor I	Factor 2	Factor 3
Eigenvalue	4.06	6.15	3.48
Percent of variance	40.6%	47.3%	43.5%
Restrained eating			
1. If you have put on weight, do you eat less than you usually do?	,757	,064	-,193
2. Do you try to eat less at mealtimes than you would like to eat?	,361	,057	,004
3. How often do you refuse food or drink offered because you are concerned about your weight?	,642	,066	-,169
4. Do you watch exactly what you eat?	,537	,019	-,071
5. Do you deliberately eat foods that are slimming?	,659	,200	-,134
6. When you have eaten too much, do you eat less than usual the following days?	,733	,101	-,106
7. Do you deliberately eat less in order not to become heavier?	,773	,026	-,132
8. How often do you try not to eat between meals because you are watching your weight?	,537	,044	-,006
9. How often in the evening do you try not to eat because you are watching your weight?	,510	,048	,001
10. Do you take into account your weight with what you eat?	,615	,152	,028
Emotional eating			
11. Do you have the desire to eat when you are irritated?	,177	,649	,083
12. Do you have a desire to eat when you have nothing to do?	,176	,417	,263
13. Do you have a desire to eat when you are depressed or discouraged?	-,009	,455	-,002
14. Do you have a desire to eat when you are feeling lonely?	,074	,705	,199
15. Do you have a desire to eat when somebody lets you down?	,167	,777	,103
16. Do you have a desire to eat when you are cross?	,074	,751	,079
17. Do you have a desire to eat when you are approaching something unpleasant to happen?	,119	,752	-,018
18. Do you get the desire to eat when you are anxious, worried or tense?	,054	,713	,009
19. Do you have a desire to eat when things are going against you or when things have gone wrong?	,059	,793	,034
20. Do you have a desire to eat when you are frightened?	-,048	,561	-,018
21. Do you have a desire to eat when you are disappointed?	,172	,734	,047
22. Do you have a desire to eat when you are emotionally upset?	,117	,615	,176
23. Do you have a desire to eat when you are bored or restless?	,040	,739	,090
External eating			
24. If food tastes good to you, do you eat more than usual?	,014	-,063	,628
25. If food smells and looks good, do you eat more than usual?	-,091	,081	,745
26. If you see or smell something delicious, do you have a desire to eat it?	-,116	,000	,616
27. If you have something delicious to eat, do you eat it straight away?	-,095	,108	,661
28. If you walk past the baker, do you have the desire to buy something delicious?	-,106	,077	,717
29. If you walk past a snackbar or a cafe, do you have the desire to buy something delicious?	-,062	,112	,725
30. If you see others eating, do you also have the desire to eat?	-,041	,190	,549
33. When preparing a meal, are you inclined to eat something?	-,129	,083	,491

4. Discussion

Strong similarities were found between the Dutch and French versions of the DEBQ. The validity of the high acceptability and the general comprehension of the items were good. The presence of three factors (“emotional”, “restrained”, and “external eating”) indicates a good factorial validity. This analysis has shown similarities to our study as well. However, only normal-weight individuals were used in our study. The three factors individualized with the French version are close to the Dutch version. The same three factors were also found by the French version of the DEBQ presents a good reliability, which is equivalent to the original Dutch version of the questionnaire. There is a good reliability in our study too (except for items 31 and 32).

This study demonstrates the factorial validity and reliability in its French version, by replicating the factor structure of the DEBQ and founding a high internal consistency. Applied to larger groups in our country, the DEBQ should be a useful tool to identify personality factors related to individual eating patterns implicated in eating disorders.

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