

## Original Article

## The Psychometric Properties of the Turkish Version of the Caregiver's Feeding Styles Questionnaire

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### Abstract

**Background:** Caregiver or mother feeding styles are one mechanism through which children's preferences and food consumption patterns may be shaped. Caregiver or mother feeding styles have important implications for the development of children's eating patterns, particularly those styles that facilitate intake of healthy foods such as dairy, fruit, and vegetables.

**Objective:** The aim of this research was to evaluate the reliability and validity of the Turkish version of Caregiver's Feeding Styles Questionnaire.

**Methods:** This study was conducted with 183 mothers in Erzurum, which is a city located in eastern Turkey. The Turkish version of the CFSQ, which was originally prepared by Hughs et al., and a sociodemographic information form were used. The data were evaluated by using exploratory and confirmatory factor analyses and fit indices.

**Results:** The factors revealed by factor analysis accounted for 41.31% of the total variance and had a two-factor structure. The Cronbach's  $\alpha$  coefficients were 0.84 for demandingness, 0.60 for responsiveness, and 0.86 in total.

**Conclusion:** The Turkish version of the CFSQ is a valid and reliable tool that can be used to evaluate the feeding styles of caregivers.

**Keywords:** CFSQ, caregiver, mother, food style, validation

### Introduction

The importance of adequate and balanced nutrition is considerable for the healthy growth and development of children (Ozçetin, Yılmaz, Erkorkmaz, Esmeray, 2010; Ritchie, Welk, Styne, Gerstein, Crawford, 2005). In addition, it is crucial to cultivate well-developed feeding habits in childhood. The preschool period is an important time when numerous habits providing a basis for adulthood develop. The growth and development of a child progress at desired levels if good feeding habits are obtained.

The family is the most effective environment for a child when developing eating habits (Derin, 2013), and the child is influenced by the eating styles and habits of their parents. Children learn first by mimicking those individuals in their

immediate surroundings (Ozçetin, Yılmaz, Erkorkmaz, Esmeray, 2010), and begin progressing beyond depending on these eating patterns when they reach 3 years of age (Boucher, 2016; Patrick, Nicklas, Hughes, Morales, 2005). At this stage, their eating patterns are considerably dependent on their socialization manner and mealtime environments, which are frequently affected by the maternal child feeding styles during these early and formative years (Patrick, Nicklas, Hughes, Morales, 2005). The feeding styles of the parents (particularly mothers) are very effective in influencing these habits (Derin, 2013). The growth of infants and young children is positively affected by appropriate child feeding practices and the behaviors of their parents (Calkins, Johnson, 1998; Hughes et al., 2011). However,

there are some feeding styles (practices and behaviors) that can reverse this condition (Ozcetin, Yilmaz, Erkorkmaz, Esmeray, 2010).

Personal differences in feeding styles are associated with both slimness and overweight conditions (Ozcetin, Yilmaz, Erkorkmaz, Esmeray, 2010; Ritchie, Welk, Styne, Gerstein, Crawford, 2005). Several studies conducted on low-income minority families have revealed that the highest risk for childhood obesity is observed in the children of parents with an indulgent parenting or feeding style. Moreover, the maternal attitudes were determined to be most significant for obese children. (Erkorkmaz et al., 2013; Hennessy, Hughes, Goldberg, Hyatt, Economos, 2010; Olvera, Power, 2009). Therefore, it is critical to determine the feeding styles of the parents.

### Parenting Style

The most seminal study on parenting was developed by Baumrind (1971, 1989) (Baumrind, 1971) and extended by Maccoby and Martin (1983) (Maccoby, Martin, 1983; Patrick, Nicklas, Hughes, Morales, 2005). The term “parenting style” has a broader meaning in the developmental literature and refers to the emotional climate in which the parenting practices are applied (Blissett, 2011; Darling, Steinberg, 1993). The patterns of parental behavior (i.e. parenting styles) have been conceptualized in terms of the amount and quality of two underlying dimensions: demandingness and responsiveness (Patrick, Nicklas, Hughes, Morales, 2005). The responsiveness/nurturance signifies “the extent to which parents develop individuality and self-assertion by adapting, being supportive, and accommodating to children’s requests.” The demandingness/control signifies the “claims made by parents on their children to become integrated into society through behavior regulation, direct confrontation, maturity demands, and supervision of children’s activities” (Hennessy, Hughes, Goldberg, Hyatt, Economos, 2010). The combination of these two dimensions results in four parenting style typologies:

1. *Authoritative style* (high demandingness/high responsiveness), which is associated with parental involvement, nurturance, reasoning, and structure;
2. *Authoritarian style* (high demandingness/low responsiveness), which is

associated with restrictive, punitive, rejecting, and power-assertive behaviors;

3. *Indulgent style* (low demandingness/high responsiveness), which is associated with warmth and acceptance in conjunction with a lack of monitoring the child’s behavior;

4. *Uninvolved style* (low demandingness/low responsiveness), which is associated with little control and involvement with the child ((Hennessy, Hughes, Goldberg, Hyatt, Economos, 2010; Hughes et al., 2011; Olvera, Power, 2009; Patrick, Nicklas, Hughes, Morales, 2005).

### Methods

#### Design and setting

This methodological study was conducted in Erzurum, which is a city in eastern Turkey. The data were collected using a self-reporting method from the mothers of 3 to 5-year-old children who applied to a family health center. The study group was estimated according to a 5–10 participant criterion for each item to perform an exploratory factor analysis of the tool (Polit & Beck, 2004). Because the Caregiver’s Feeding Styles Questionnaire (CFSQ) consists of 19 items, 95–190 participants were needed for this study. This research was completed with 183 mothers who agreed to participate.

#### Instruments

The CFSQ was developed by Hughes et al. (Patrick et al., 2005), and has 19 questions measuring parental feeding styles as a reflection of overall parenting styles. The CFSQ was designed to assess two dimensions (demandingness and responsiveness) of parenting styles in a feeding context. While the demandingness signifies the extent to which a parent encourages a child to eat, the responsiveness signifies how the parent gets the child to eat (Hughes, Shewchuk, Baskin, Nicklas, Qu, 2008). Each of the questions is scored using a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = most of the time, and 5 = always). The participants answer both parent and child-centered feeding questions. Seven of the questions are about child-centered feeding, reflecting how much a child’s eating patterns are related to the internal cues of hunger and fullness. Twelve of the questions are about parent-centered feeding, reflecting how much a child’s eating is based on the external cues of hunger and fullness. Each CFSQ was scored according to a

scoring mechanism developed by Hughes et al. for research studies.

The mothers were then categorized into four child feeding styles based on their scores: authoritative (high demandingness/high responsiveness), authoritarian (high demandingness/low responsiveness), indulgent (low demandingness/high responsiveness), and uninvolved (low demandingness/low responsiveness) (Maccoby, Martin, 1983; Patrick, Nicklas, Hughes, Morales, 2005).

### **Translation and Adaptation Scale**

Before the implementation, the scale was translated from English to Turkish and from Turkish to English. It was then compared with the original version of the scale. In order to select the translations that were considered to best express each item and to prepare the Turkish version of the scale, the opinions of experts from different fields (public health nursing, pediatric nursing, nutrition and dietetics, and internal medicine nursing), whose second language was English, were consulted for the resulting scale form. The content validity index (CVI) was used to evaluate the expert opinions. It was asked that each item be scored between 1 and 4 points. The points given by the experts were expected to be 3 or higher.

### **Data Collection**

The Turkish version of the CFSQ and a demographic form were filled out by the mothers included in this study.

### **Data Evaluation**

The data were evaluated using the SPSS and AMOS 21 software programs. The sociodemographic characteristics were analyzed using descriptive statistics. The CVI was calculated, and an exploratory factor analysis was performed to determine the construct validity of the scale. Cronbach's alpha reliability coefficients were calculated to evaluate the reliability. The Kaiser-Mayer-Olkin index (KMO) and Bartlett's test were applied in order to determine whether or not the scale was convenient for factor analysis.

After the exploratory factor analysis was performed, a confirmatory factor analysis (CFA) was used. Numerous fit indices can be used to determine the adequacy of the model evaluated in the CFA for testing the construct validity of the model. Because fit indices have both weak and

strong aspects when evaluating the compliance between the theoretical model and the real data, the chi-squared goodness test, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), root mean square (RMR or RMS), and root mean square error of approximation (RMSEA) were used to reveal the compliance of the model.

### **Ethical Approval**

Written permission was obtained from Hughes via e-mail, and a permission letter (no: 2017-01.01) was received from the Ethics Committee of the Ataturk University Faculty of Health Sciences. Verbal consent was obtained from the mothers participating in the study.

### **Results**

#### **Participants**

The mean age of the mothers who participated in this research was  $31.93 \pm 5.17$  years old, and 55% of the mothers had bachelor's degrees. All of the mothers were married, and 58.3% were employed.

#### **Validity**

##### **Content Validity Index**

The rating was performed in measurements in order to prove both linguistic and cultural equivalence and the internal validity of the items using numeric values, as well as to evaluate the expert opinions. The experts rated each item of the scale by providing points from 1 to 4. In the evaluation, 80% of the scale items were scored as 3 or 4 points. Those items scoring less than 3 were reviewed. The CVI value was 0.90.

##### **Construct Validity of the Scale (Exploratory Factor Analysis)**

A normal distribution of the population was also expected in the factor analysis, which was examined using Bartlett's test. Within this context, the results of the KMO should be 0.50 or higher, and the results of the Bartlett's test for sphericity should be statistically significant.

Table 1 shows the results of the KMO and Bartlett's test, which were performed to determine the convenience of the scales using a factor analysis. According to the analysis of the results, the KMO values were greater than 0.500, and the Bartlett's and chi-squared tests were significant. Accordingly, the scales were convenient for the factor analysis. (Table1)

The total variance chart in Table 2 shows under how many factors the items of the scale were weighed and how much of the total variance of the scale was explained by these factors. Because the number of factors with eigenvalues greater than 1 was 2, it was possible to assert that the scale consisting of 19 items was weighed under 2 dimensions. The first factor alone explained 29.63% of the total variance, the second factor alone explained 11.69% of the total variance, and 41.3% of the total variance was explained by the two factors together. (Table 2)

The factor loading matrix indicated which items were weighed under which factor. Accordingly, items 1, 2, 5, 7, 10, 11, 12, 13, 16, 18, and 19 were involved under the first factor, and items 3, 4, 6, 8, 9, 15, and 17 were involved under the second factor. The factor loading of the items was between 0.445 and 0.818 (Table 3).

#### Confirmatory Factor Analysis of the Scale

The CFA is used for evaluating to what extent the factors (latent variables), consisting of numerous variables depending on a theoretical base, fit into the actual data. In other words, the CFA aims to

examine to what extent a previously identified or built structure is confirmed by the obtained data. While an exploratory factor analysis determines the factor structure of the data on the basis of factor loading without any certain preliminary expectation or hypothesis, the CFA is based on testing forecasting, which indicates that certain variables will mainly take place on factors previously identified based on a theory (Blisset, 2011; Hughes, Shewchuk, Baskin, Nicklas, Qu 2008). In the present study, the CFA was conducted using the AMOS 21.0 program, and the factor structures were examined. According to the CFA, the CFSQ fit completely into the indices of the  $\chi^2$ /standard deviation, GFI, AGFI, CFI, RMSEA, and RMR (Table 4).

#### Reliability Analyses

The Cronbach's alpha coefficients were calculated in order to determine the reliability levels of the scale and its subscales (Table 5). The reliability level of the 1<sup>st</sup> factor was 0.84, and the reliability level of the 2<sup>nd</sup> factor was 0.60. The reliability level of the overall scale was determined to be 0.86 (Table 5).

**Table 1. Bartlett's test and the KMO coefficient**

KMO Coefficient		0.81
	Chi-squared	1183.61
Bartlett's Test for Sphericity	df	171.00
	p	<.000

**Table 2. Factor values for the Turkish version of the caregiver's feeding styles questionnaire and variance table.**

Component	Initial Eigenvalues			Sum of Converted Squares		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	5.62	29.6	29.6	3.94	20.7	20.7
2	2.22	11.6	41.3	3.90	20.5	41.3
3	1.39	7.3	48.6			
4	1.10	5.8	54.5			
5	1.03	5.4	59.9			
6	0.95	4.9	64.9			
7	0.87	4.5	69.5			
8	0.79	4.1	73.7			
9	0.72	3.8	77.5			
10	0.64	3.4	80.9			
11	0.60	3.1	84.1			
12	0.57	3.0	87.1			
13	0.46	2.4	89.6			
14	0.43	2.2	91.9			
15	0.42	2.2	94.1			
16	0.35	1.8	96.0			
17	0.30	1.5	97.6			
18	0.23	1.2	98.8			
19	0.21	1.1	100.0			

**Table 3. Factor loading matrix of the items**

Items	Factors	
	1 (Demandingness)	2 (Responsiveness)
Item 5	0.81	
Item 7	0.80	
Item 2	0.70	
Item 1	0.62	
Item 13	0.58	
Item 14	0.49	
Item 10	0.47	
Item 12	0.44	
Item 11	0.49	
Item 19	0.45	
Item 18	0.53	
Item 16	0.64	
Item 3		0.73
Item 6		0.71
Item 4		0.68
Item 15		0.61
Item 8		0.57
Item 9		0.57
Item 17		0.54

**Table 4. Fit indices for the Turkish version of the caregiver's feeding styles questionnaire**

Acceptable Fit Indices	Calculated Fit Indices
$\chi^2$ /Standard Deviation <5	2.71
Goodness of Fit Index >.90	0.95
Adjusted Goodness of Fit Index > .90	0.91
Comparative Fit Index > .90	0.94
Root Mean Square Error of Approximation < .08	0.07
Root Mean Square < .08	0.02

**Table 5. Cronbach's alpha coefficients**

Factor	Number of Items	Cronbach's Alpha
<b>Factor 1: Demandingness</b>	12	.84
<b>Factor 2: Responsiveness</b>	7	.60
<b>CFSQ Total</b>	19	.86

## Discussion

The current study was conducted to test the validity and reliability of the Turkish CFSQ, which was developed to evaluate the feeding styles of Turkish parents for their children. Turkey is in a position to host different cultures due to migration, and it presents the nutritional characteristics of both Asia and Europe because it is located on both continents. In addition to the Turkish CFSQ, a shorter scale to be used in parallel is needed.

In the construct validity of the Turkish version of the CFSQ, the KMO coefficient was 0.81 and the Bartlett's test value was 1183.61 (df = 171.00,  $p < 0.001$ ). The KMO coefficient was calculated to test the sample size. Kaiser previously indicated that the value calculated is more perfect as it approximates 1, and that it is unacceptable if it is below 0.50 (Polit, Beck, 2004). The results showed that the sample size was adequate for the CFA.

In the CFA, the Turkish version of the CFSQ was observed to have a two-factor structure consisting of responsiveness and demandingness, as in the original scale (Patrick, Nicklas, Hughes, Morales, 2005). The CFA is used for evaluating to what extent the factors (latent variables), consisting of numerous variables depending on a theoretical base, fit into the actual data (Polit, Beck, 2004). We believe that this result suggests that the Turkish CFSQ is similar to the original version of the scale. In the Turkish CFSQ, the

factor loading of the items was determined to be higher than 0.30, which is an acceptable value, and the factor loading was similar in both subscales. This may have resulted from the fact that Turkish parents have similar characteristics in terms of both encouraging their children and responding to the eating desires of their children.

When the fit index analysis of the scale was reviewed, the chi-squared value was identified to be lower than 3, which indicated that the model had a considerably good fit (Byrne, 2013). The GFI is a measure of the amount of variance and covariance explained by the model. As the GFI value approximates 1, the goodness of the fit to the data increases. If the GFI value ranges from 0.90–0.95, it is an indicator of an acceptable fit, while a value higher than 0.95 shows that it is highly fit (Byrne, 2013; Grove, Burns, Gray, 2014). A GFI equal to or greater than 0.90, which is extracted at the end of the CFA, indicates the existence of fit. The results of this study showed an adequate fit based on the GFI value. Moreover, an RMSA value equal to or lower than 0.08 and a  $p$  value of less than 0.05 indicate a good fit, while a value equal to or lower than 0.10 indicates a poor fit. The RMSA value obtained in the present research was adequate for the fit. Furthermore, the AGFI and RMR values also presented good fits for the scale.

The Cronbach's alpha coefficients of the scale were 0.84 for demandingness and 0.60 for responsiveness, with a coefficient of 0.86 overall.

These results revealed that the reliability of the scale was very good for the demandingness and acceptable for the responsiveness. These results were similar to the Cronbach's alpha coefficients of the scale in the study by Hughes et al. (Hughes, Shewchuk, Baskin, Nicklas, Qu, 2008).

### Conclusion

Based on the results of this research, the Turkish version of the CFSQ is a valid and reliable assessment tool.

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