ADAPTATION OF THE QUALITY OF SIBLING EXPERIENCE SCALE FOR INDIVIDUALS WITH SPECIAL NEEDS SIBLINGS INTO TURKISH: A METHODOLOGICAL STUDY

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ABSTRACT

Purpose: The relationship between siblings, which is a lifelong bond, affects both the individual with special needs and their healthy sibling in many ways. This study was conducted to do the Turkish validity and reliability study of the Siblings' Experience Quality Scale (SEQS).
Material and Methods: The study was carried out with individuals who were aged over 18 and had a sibling enrolled in the Guidance and Research Center of a province. Shapiro-Wilk normality test, Pearson correlation analysis, content validity index, Cronbach's Alpha coefficient, McDonald's omega test, confirmatory factor analysis, and t-test were used in data analysis.
Results: The healthy siblings of 171 students with special needs voluntarily participated in the study. The scale explained 54.8% of the total variance. The omega reliability coefficient value for the overall scale was determined as 0.81. As a result of CFA, the fit indices were found as X2=247.893, df=128, X2/df=1.93, RMSEA=0.074, GFI=0.86, IFI=0.85, NFI=0.73, TLI=0.81, CFI=0.84, and AGFI=0.819.
Conclusion: The SEQS was proven to be a valid and reliable measurement tool in the Turkish population.

Keywords: children, special needs, sibling, relationships, validity, reliability

INTRODUCTION

The relationship between siblings during childhood, adolescence, and adulthood is affected by love-closeness, hostility-conflict, and rivalry-parental favoritism (1,2). In the literature, it has been reported that both emotional and instrumental support (material support and time allocation) is higher in the relationships of adults with their siblings. The bond between sibling relationships directly affects the family structure and the relationship level of the adult sibling in cases where one of the siblings has special needs (3).

As a result of the extension of life expectancy at birth, increase in chronic diseases, or habits acquired throughout life, the level of disability is growing globally. Disability affects not only the individual, but also their family, close environment, and society in which they live. According to the report of the World Health Organization, more than one billion people have some type of disability (approximately 15% of the world population) and almost everyone is likely to have some type of disability at some point in their life (4). In Turkey, the rate of the population with at least one disability is 6.9% according to 2011 data (5).

Some studies have shown that sibling relationships with warm and supportive bonds create a buffer against low self-esteem, depression, and loneliness against low parent or peer support and that individuals with such relationships tend to establish close relationships during adolescence and adulthood (6,7). According to the results of a study, it was reported that the mental health of the healthy sibling directly affected the health of the sibling with special needs (8). The presence of a child with a disability in the family affects relationships within the family and causes changes in the family balance. Although all family members are affected by each other, it is an undeniable reality that siblings are also exposed to these influences. The expectation that siblings should first accept the child with a disability can lead to feelings of guilt in siblings, feeling ashamed of the unhealthy sibling's behavior or appearance and avoiding communication with him/her, fear of having the same disorder, jealousy or anger due to receiving less attention, or pressure to be very successful to compensate for what the unhealthy sibling cannot do (9,10). The relationship between siblings is very important, especially in terms of the health of the sibling with special needs, and the social relationships he/she will establish in the future. Knowledge of how having a sibling with special needs affects the other healthy sibling is important for nurses to carry out planned nursing interventions while maintaining holistic care. In the Turkish literature, there are a limited number of measurement tools that measure the sibling relationships of individuals with special needs (11). There is a need for an up-to-date, valid, and reliable measurement tool in this regard. Therefore, this study aims to adapt the Siblings' Experience Quality Scale (SEQS) into Turkish and conduct its validity and reliability analyses.

MATERIAL AND METHODS
Research Type
This is a methodological, descriptive, and cross-sectional study that was conducted to perform the Turkish validity and reliability study of the SEQS, which measures the sibling relationships of healthy individuals who are aged over 18 and have a sibling with special needs.

Ethical Considerations
For study, Maltepe University Scientific Research Ethics Committee permission was obtained (Date:

13.11.2020, Decision No: 2020/14-01). The institutional permission of the Kocaeli Provincial Directorate of National Education (Issue: 99332089/605.01/17684827). The present study followed the principles outlined in the Declaration of Helsinki for Human Studies.

Population and Sample
In this study, data were collected from healthy individuals who were aged over 18 and had a sibling who had special needs and were enrolled in the Guidance and Research Center in a province between December 2020 and May 2021. The informed consent of the participants were obtained verbally. The scale used in the study consisted of 23 questions. The permission of the author who developed the scale was obtained via e-mail. To collect healthy data in the study, the sample size was determined based on the rule that a sample size of about 5-10 times the number of items on the scale should be reached, which is recommended in validity and reliability studies (12). In the literature, it has been reported that a sample size of up to 100 is insufficient in scale development studies, moderate up to 200, good up to 300, very good up to 500, and excellent up to 1000 individuals (13). A total of 171 healthy siblings who agreed to participate in the study were included in the sample. According to this result, it can be said that the sample size is medium. The sample size was taken as 7.4 times the average number of items.

Inclusion criteria: 1) Having a sibling with special needs enrolled in the Guidance and Research Center, 2) Being aged over 18-64, 3) Voluntary participation in the study and submitting consent for participation.

Exclusion criteria: 1) Disagreeing to participate in the study, 2) Not knowing Turkish.

Data Collection Tools and Characteristics
The study data were collected by using a socio-demographic characteristics form, the Siblings' Experience Quality Scale (SEQS), and the Attitude Scale for Disabled Sibling (ASDS).

The Socio-demographic Characteristics Form: This form, which was created by the researchers following a review of the literature, consists of questions, such as gender, age, and special needs, about children with special needs and their healthy siblings (14,15).
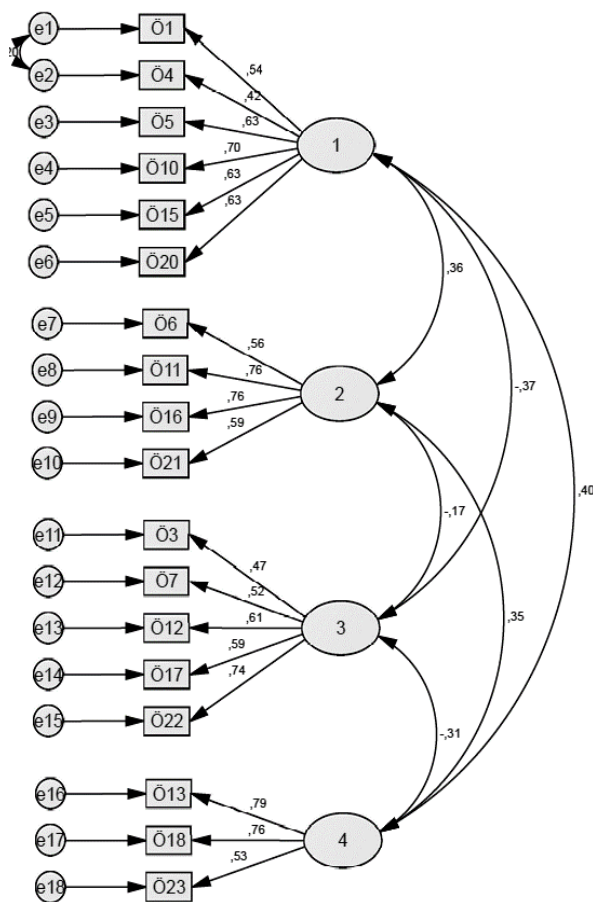
Figure 1. Confirmatory factor analysis of the Siblings' Experience Quality Scale-Adult Form for individuals with siblings with special needs

The Siblings' Experience Quality Scale (SEQS):
This scale was developed by Sommantico et al. (2020) to measure sibling relationships of healthy children with siblings with disabilities and chronic and mental illnesses. It consists of 23 items evaluated on a 7-point Likert-type scale with options ranging from 1 (strongly disagree) to 7 (strongly agree). The scale has five subscales, namely, closeness (items 3,7,12,17 and 22); conflict (items 1,5,10,15 and 20); jealousy (items 4,8,13,18 and 23); self-marginalization (items 9,14 and 19); worry (items 2,6,11,16 and 21). The closeness subscale involves sibling relationships based on friendship, love, knowledge, and sincerity; the conflict subscale refers to feelings such as fight, enmity, or envy towards the sibling; the jealousy subscale is about the presence of feelings such as jealousy and rivalry between siblings and the perception of biased love towards siblings by the parents; the self-marginalization

subscale is about the difficulty in expressing needs and wishes and making parents exhausted; the worry subscale is about worrying about the health and future life of the sibling with special needs. In the evaluation of the scale, the total mean score of each subscale is calculated. A high score obtained from a subscale of the scale indicates that the related relationship is at a higher level. The reliability coefficients (α) of the original scale were found as .78 for closeness, .88 for conflict, .87 for jealousy, .74 for self-marginalization, and .88 for worry. According to confirmatory factor analysis, the goodness of fit indices were found as χ^2/df= 1.98; RMSEA (Root Mean Square Error of approximation) = 0.047 [.033–.061]; CFI (Comparative Fit Index) = 0.92; TLI = 0.91; SRMR = 0.063. The original scale is suitable for siblings aged 18-69 (15).

Attitude towards Sibling with Disability Scale (ASDS):
This scale was developed by Küçüker (1997). It has a 4-point Likert-type structure and consists of 28 questions and 4 subscales. The subscales are feelings and thoughts about living with a disabled sibling (1,4,6,8,9,10,11,12,14,17,18,19,20,21,24,27), feeling sad and worried regarding the (current and future) situation of the disabled sibling (2,3,13,16,25,26), and thoughts about the characteristics of the disabled sibling (5,7,15,22,23,28). The items expressing a positive attitude on the scale are evaluated from 4 to 1 with options varying between "totally agree" to "totally disagree", and the items expressing a negative attitude are evaluated from 1 to 4 with options varying from "totally agree" to "totally disagree". The minimum and maximum scores that can be obtained from the scale vary between 28 and 112, respectively, and high scores indicate positive attitudes and low scores indicate negative ones. Cronbach's alpha coefficient values of the subscales were found as .84 for the attitude towards the disabled sibling subscale, .81 for the living with the disabled sibling subscale, .70 for the status of the disabled sibling subscale, and .73 for the characteristics of the disabled sibling subscale (11).

Steps of the Study
Expert opinion stage: The adaptation study was initiated by obtaining the permission of the author, Sommantico, who developed the scale, via e-mail. The English form of the scale was translated into

Table 1. Explanatory Factor Analysis (EFA) (n=171)

Items	Subscales			
	Closeness	**Conflict**	**Jealousy**	**Worry**
m3	.53			
m7	.72			
m12	.73			
m17	.60			
m22	.74			
m1		.74		
m4		.46		
m5		.68		
m10		.73		
m15		.63		
m20		.66		
m13			.84	
m18			81	
m23			.64	
m6				.69
m11				.74
m16				.81
m21				.72

Turkish by two academics who are expert linguists and fluent in English and Turkish, and the two translations were integrated into a single form by the researchers. The Turkish form was translated back into English by two experts with good command of the two languages. After back translation, the Turkish version of the scale was found to be close to the original form of the scale. Then, the translations were prepared for expert opinion. According to the literature, at least three experts should be consulted to determine the content validity of a scale (16–18). A total of 10 experts, including four faculty members working in the field of public health nursing, five faculty members working in the field of child health and diseases nursing, and one faculty member working in the field of internal medicine nursing, were consulted. The experts were given the draft form of the scale, and they were asked to rate each item by using a score between 1 and 4 (1=not appropriate at all, 4=completely appropriate) to evaluate their suitability. Scores were evaluated by using the content validity index. After expert opinions were obtained, the Turkish form of the scale was finalized by making necessary changes.

Pilot application: The form was piloted to 20 siblings (17,18). After the application, it was found that the items did not need any change, and the siblings involved in the pilot application.

Reliability calculations: Pearson correlation analysis was used for the item-total score analysis of the scale and its subscales. Cronbach's alpha coefficient was calculated to determine the internal consistency of the scale and the subscales (16–18). Reliability was calculated by using McDonald's Omega coefficient for the total scale and the subscales (19).

Validity calculations: Explanatory factor analysis was employed to determine the item-factor relationship, and confirmatory factor analysis was used to determine whether the items and subscales explained the original structure of the scale (16–18).

Data Analysis
In the analysis of the data, percentages and mean scores were employed for descriptive statistics. The statistical analyses also included the Shapiro-Wilk test for testing the normality of the data, content validity index for the analysis of the inter-rater reliability, Pearson correlation analysis for the item-

Table 2. Reliability analysis of the scale and sub-scale scores (n=171)

Subscale	Cronbach α	M ± SD	Min-Max	McDonald's ω
Closeness	.72	30.24±5.59	11-35	.77
Conflict	.76	15.50±7.44	6-42	.73
Jealousy	.71	7.18±4.94	3-21	.74
Worry	.76	14.61±6.76	4-28	.77
Total Scale	.80	67.55±13.58	41-121	.81

Table 3. Item-total score correlations of the subscales (n=171)

Subscales	Items	Corrected Item-subscale score correlations (r)*
Closeness	3	.38
	7	.46
	12	.50
	17	.45
	22	.58
Conflict	1	.50
	4	.37
	5	.53
	10	.58
	15	.53
	20	.53
Jealousy	13	.59
	18	.53
	23	.50
Worry	6	.49
	11	.59
	16	.62
	21	.51

*p<0.001

total score analysis of the scale and subscales, Cronbach's Alpha coefficient for determining the internal consistency of the scale and subscales, Davis technique for content validity, explanatory factor analysis for determining item-factor correlation, omega coefficient for the total scale and subscale reliability, confirmatory factor analysis for determining whether items and subscales explained the original structure of the scale, the ASDS for determining the relationships between the factors of the scale and parallel forms reliability, Pearson correlation analysis for the correlation between the factors of the scale, and t-test for known group comparisons. The margin of error was set at p=0.05. The analyses were conducted on SPSS 24.0, AMOS 24.0, and Jamovi 2.2.2 software packages.

RESULTS

Of the participants in the study, 62% were female (n=106), 50.9% had a university level education (n=87), 33.3% had high school education (n=57), and 15.8% (n=27) had secondary school education. The mean age of the siblings was determined to be 23.94±5.01 (min: 19-, max: 43). Of the siblings with special needs, 54.4% (n=93) were male, 64.3% had a mental disability (n=110), 18.1% had an emotional disability (n=31), and 17.5 had a physical disability (n=30).

Content Validity
The item-based content validity index was found to be between 0.99 and 1.00, and the scale-based content validity index was determined as 0.99.

Construct Validity of the Scale
Explanatory Factor Analysis (EFA)
As a result of the explanatory factor analysis (EFA), the Kaiser-Meyer-Olkin (KMO) coefficient was determined as .759, and the Bartlett test as $X2=906.695$. The original version of the scale consists of five subscales. As a result of EFA, the Turkish form of the scale was determined to consist of four subscales. The scale explained 54.8% of the total variance. The rate of the total variance explained by the subscales was as follows: closeness, 10.3%; conflict, 24.03%; jealousy, 8.6%; worry, 11.7%. Five items (2, 8, 9, 14, and 19) on the original scale were removed from the Turkish form of the scale with the approval of the author who developed the scale due to their low factor loads.

The factor loads of the items of the subscales were found to range between .53 and .74 for closeness, .46 and .74 for conflict, .64 and .84 for jealousy, and .69 and .81 for worry.

Confirmatory Factor Analysis (CFA)
As a result of CFA, the fit indices were found as $X2=247.893$, $df=128$, $X2/df=1.93$, $RMSEA=0.074$, $GFI=0.86$, $IFI=0.85$, $NFI=0.73$, $TLI=0.81$, $CFI=0.84$, and $AGFI=0.819$. It was determined that the factor loads of the items of the subscales varied between .47 and .74 for closeness, .42 and .70 for conflict, .53 and .79 for jealousy, and .56 and .76 for worry. Item 4 was on the jealousy subscale in the original form of the scale, but it was determined to be on the conflict subscale in the Turkish version of the scale (Figure 1).

Reliability Analysis
Cronbach's alpha values of the subscales of the scale were found to be 0.76 for conflict, 0.76 for worry, 0.71

Table 4. Correlations between the total score of ASDS and the subscales of the SEQS

Subscales	ASDS total score (*r*)*
Closeness	0.315*
Conflict	-0.234*
Jealousy	-0.143
Worry	-0.117

*p<0.001

for closeness, and 0.71 for jealousy. As a result of the split-half analysis of the scale, Cronbach's alpha values of the first and second halves were determined as .50 and .51, respectively. Spearman-Brown and Guttman Split-Half coefficients were both found to be .71. McDonald's omega coefficient was calculated as 0.77 for worry, 0.77 for closeness, 0.74 for jealousy, and 0.73 for conflict. The total alpha value of the scale was calculated as 0.80 and the omega value as 0.81. It was determined that the item-total score correlations of the subscales ranged between .37 and .62 (Table 3).

It was found that there was a significant correlation between the closeness and conflict subscales of the SEQS and the total score of the ASDS (p<0.001) (Table 4).

DISCUSSION
Content Validity of the Scale
It is stated in the literature that an item-and scale-based content validity index of greater than 0.80 shows a high level of agreement between experts (20,21). In the analysis, the content validity index was found above 0.80. As a result, it was determined that the items on the Turkish form of the scale adequately represented the desired area.

Construct Validity of the Scale
In the literature, it has been stated that the Barlett Sphericity test value should be statistically significant and the KMO value should be at least 0.60 to perform factor analysis (20,21). As a result of the analysis, it was found that the KMO value was greater than 0.60 and p<0.05 according to the Barlett Sphericity test result. According to this result, factor analysis could be performed (20–23). In exploratory factor analysis, the eigenvalue is accepted as 1 and above in determining the number of factors (22,24). The Turkish version of the scale consisted of four subscales, and these four subscales explained 54.8% of the total variance. In the original form of the scale, the subscales explained 66.3% of the total variance (15). The total explained variance in our study was greater than 50%, and it was close to the explained variance in the original form of the scale, both of which indicated that the scale was a valid measurement tool. This result also supported the construct validity of the scale. In the literature, it is emphasized that the minimum factor load should be 0.30 and above, and the items below this value should be removed from the scale when determining

which factor the items should belong to (20–23). While the original scale had 5 factors, our study revealed a 4-factor structure. The five items (2, 8, 9, 14, and 19) on the original form of the scale were found to have low factor loadings and were found not to be compatible with the factor in the original scale sub-dimension in our study. In studies conducted on cross-cultural validity and reliability in the literature, it has been reported that these items can be removed by informing the author(s) of the original scale. After the Turkish translation, it is thought that these items do not culturally explain the original sub-dimension, so these items were removed from the Turkish form of the scale with the approval of the author who developed the scale (Sample item-I usually feel that I shouldn't worry my parents.). In our study, factor loads of the items on the four subscales were found to be greater than 0.46. This finding was similar to the findings of the original form of the scale (15). All these results showed that the scale had a strong factor structure.

According to the confirmatory factor analysis, factor loads of the four subscales ranged from .42 to .79 (Figure 1). All factor loads were greater than 0.30, most of the fit indices were greater than 0.80 (GFI=0.86, IFI=0.85, NFI=0.73, CFI=0.84), RMSEA was less than 0.080 (RMSEA=0.074), and X2/df was less than five (X2/df=1.93), all of which indicated that the items on each subscale adequately defined their own factor. The findings obtained were consistent with the findings of the original form of the scale (15). These results supported the construct validity of the scale and showed that an efficient evaluation could be made. It was seen that item 4 was on the jealousy subscale in the original scale. In the Turkish population, on the other hand, this item was under the conflict subscale, which is about hostility towards the sibling and jealousy between siblings. The explanatory and confirmatory factor analysis results of our study supported the construct validity of the scale and revealed that the scale was a valid tool.

Reliability Analysis of the Scale
Internal consistency analysis of the scale and its subscales
A Cronbach's alpha coefficient of between 0.60 and 0.80 indicates that the scale is quite reliable, and a value between 0.80 and 1.00 indicates high reliability (16,25,26). The results of this study showed that the omega reliability coefficient for the overall scale was 0.81, Cronbach's alpha was 0.80, and that

Cronbach's alpha values of the subscales ranged between .71 and .76. These results were similar to those of the original form of the scale (15). The presence of moderate and low-level significant correlations between the measurement tool (ASDS), which was used in parallel forms reliability, and the closeness and conflict subscales indicated that Cronbach's alpha values of both halves obtained in the split-half method were greater than 0.50 and that there was a weak and significant correlation between the two halves. According to the results of this study, the scale can be used safely as a measurement tool.

Item-total score analysis of the scale and the subscales
Item-total score correlations should be greater than 0.20, as close to 1 as possible, and positive (17). According to the analyses, the item-subscale total correlations were found to be greater than 0.37. According to these results, it was found that the subscale total scores were highly correlated with each item, the subscales adequately represented the area to be measured, and that the subscale item reliability was high.

According to the results of our study, the highest relationship between siblings included closeness and the lowest level of relationship involved jealousy. This finding was consistent with the results of the original form of the scale (15).

Limitations
It can be said that the limitation of the study is the fact that the data collection process took place during the pandemic period, there was difficulty in reaching healthy siblings due to the absence of children with special needs in school, and therefore, no method was used in the selection of the sample. Since the study was conducted during the pandemic period, it may be useful to repeat this study and compare the results.

CONCLUSION
The original scale consisted of 5 subscales and 23 items, but some items (2, 8, 9, 14, and 19) in our study were removed in line with the permission of the author, who developed the scale since their factor loads were low although the factor structure of the scale had been controlled previously. In our study, the scale consisted of four subscales and 18 items. The results of the study indicated that the scale had validity and reliability in measuring sibling

relationships of individuals with siblings with special needs. The scale analyzed in this study can be used to measure the level of sibling relationships of individuals who have siblings with special needs in Turkey. It can also contribute to the development of future sibling relationships. At the end of this adaptation study, a scale development study suitable for Turkish culture can be conducted.

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