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Adaptation of Intercultural Sensitivity Scale for Turkish medical students

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ABSTRACT

Health care professions, especially physicians and physician candidates should be more competent in culture-specific approach. This study aims to verify the validity and reliability of the "Intercultural Sensitivity Scale" developed by Chen and Starosta (which is the most frequentlyused tool while conducting the intercultural sensitivity research) among Turkish medical students. In order to demonstrate the construct validity of the scale, exploratory factor analysis based on polychoric correlation was applied together with the oblique rotation method, and first and second order confirmatory factor analysis based on polychoric correlations was applied to confirm the factor structure of the scale. Cronbach's alpha and Spearman-Brown coefficients, were calculated to assess the reliability of the scale. Of the participants (n = 667), 52.6% were female and mean age was 24.2 \pm 1.4. Cronbach's alpha coefficient for the whole scale was 0.906. The Spearman-Brown coefficients for the whole scale and its sub-dimensions show that reliability values were also sufficient. According to the results of first and second order confirmatory factor analysis, fit indices demonstrated a very good model fit. These results confirmed that the scale consisting of 23-items and 5-dimensions is a valid and reliable tool and can be used for Grade V and VI Turkish medical students. It is considered that integrating intercultural sensitivity training in undergraduate education of physicians would help to increase the number of physicians who are sensitive to different cultures and thus contribute to reducing disparities in healthcare provision.

Introduction

One of the most important political, economic and social changes brought along by globalization has been migration across

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national boundaries. Turkey is located between Asia and Europe continents like a bridge, and a transit country for migration movements between countries on these two continents. Depending on this situation, throughout history, many people living in the countries located in the east and south of Turkey have emigrated to the country or accommodated for a while to migrate to the countries in the west of Turkey. In 2011, there began a conflict in Syria and a great amount of people had moved to Turkey. As of January 2022, the number of immigrants reached approximately 5 million (3.7 million are registered Syrian refugees) (Ministry of Interior Directorate General of Migration Management, 2022). At the beginning of the big migration wave from Syria, the population of the provinces of Eastern and South-eastern region of Turkey had affected. Then, with the movement of migrants to the other regions and provinces, almost all Turkish population living together with the people who have different cultural characteristics. The continuing growth, of migrants entering and exiting, and residing in Turkey further exacerbates the harmony problems. The health personnel consider the migrant patients as additional workload (Arslan & Çakı, 2017). In some studies, performed on 2016 among health personnel and Syrian refugees, lack of communication, increased workload, problems in obtaining informed consent, invasion of privacy, could not establishing empathy, insufficient management of diagnosis and treatment process were determined as the problems faced while serving the refugees (Alkan et al., 2016; Demir et al., 2016). On the other hand, the migrants stated the problems they had faced while obtaining health service as lack of trust, fear from health personnel, have no health security, lack of communication and relatedly not being able to give informed consent, and not being able to control privacy (Alkan et al., 2016; Demir et al., 2016; Kocan et al., 2017). In another study, the main problem that refugees had related to access the health services was stated as the negative attitude of health personnel (Önal & Keklik, 2016). Different languages and low levels of intercultural sensitivity among healthcare providers might hinder migrants benefiting from these services, resulting in lack of trust in service providers and often non-adherence to the treatment (Betancourt, 2003; Perng & Watson, 2012).

Recent studies suggest that migrants receive lower-quality service compared with the general population (Asgary & Segar, 2011; Derose et al., 2007). Studies also show that the quality of health worker-migrant relationship varies depending on the own beliefs and perceptions of health worker and his/her feelings and attitudes towards migrants (Fernandez et al., 2004). Healthcare workers who could understand the dynamics of other cultures are capable of evaluating the behavioral patterns of people they serve in connection with their cultural background; these behaviors affect the health status of individuals. On the other hand, the failure to develop cultural sensitivity may create barriers between healthcare workers and the people they serve (Cruz et al., 2017; Meydanlioglu et al., 2015).

As was defined by Chen (1997), "intercultural sensitivity can be conceptualized as an individual's ability to develop a positive emotion towards understanding and appreciating cultural differences that promote an appropriate and effective behavior in intercultural communication". This definition shows that intercultural sensitivity is a dynamic concept. It reveals that interculturally sensitive persons must have a desire to motivate themselves to understand, appreciate, and accept differences among cultures, and to produce a positive outcome from intercultural interactions" (Section "A Definition of Intercultural Sensitivity", paragraph 6).

In order to be able to meet the healthcare needs of mix-communities with different cultures sourced from migration, medical schools need to raise students sensitive to, and familiar with, a broad range of cultural issues. Due to the intensive movements of migration among countries in our region in recent years, medical students are expected to learn about different cultures, as they more commonly encounter patients from different cultures than ever during their clinical practices. Thus, they need be more competent in demonstrating a culture-sensitive approach compared with other disciplines (Betancourt, 2003; Cruz et al., 2017).

The education programs of medical schools should include specific learning and teaching activities for students to develop the skills required to provide non-judgmental and non-discriminatory health services to all. It is important to identify the current state of intercultural sensitivity and observe the development of students in this regard. Thus, the level of intercultural sensitivity must be identified as the first step towards creating greater awareness. Some studies shed light on how to shape undergraduate education of medical students to equip them with the intercultural sensitivity skills (Green et al., 2017; Lanting et al., 2019; Sherrill et al., 2016).

Chen and Starosta had developed a well-established scale that is *"integrating the features of both cross-cultural attitude and behavioral skills models*" for measuring intercultural sensitivity for communication students (Fritz et al., 2002, Section "Chen and Starosta's Model", paragraph 2). This scale was chosen for adaptation for Turkish medical students because it measures all the dimensions of intercultural communication competence. Lots of researchers prefer to validate/use this scale in various countries including Turkey and found the scale valid and reliable for their samples (Bulduk et al., 2011; Fritz et al., 2002; Guangcun, 2018; Karras, 2017; Kül-lü-Sülü, 2014; Liu & Ren, 2019; Üstün, 2011).

From this point, the study aims verifying the validity and reliability of "Intercultural Sensitivity Scale" developed by Chen and Starosta (2000) among Turkish medical students.

Methods

Language validity was evaluated for the first step of this adaptation study. Then, the finalized Turkish version of the draft scale was applied to the target group of the study. After data collection was completed, the validity and reliability analysis were performed. Following the adaptation process, the scores calculated from the final Turkish version of the scale were examined by some characteristics of the participants.

Language validity

At the first stage of the language validity, 44-item original scale were translated into Turkish by the researchers. At the second stage, a Turkish Language and Literature expert evaluated the draft translation with regard to ambiguity. As the third step, the items optimized in Turkish language were translated into English by a native English speaker professor at the American Culture and

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Literature Department at Hacettepe University. At the last step, the items translated back to English were compared with the original items of the scale before finalizing the Turkish version.

Participants and procedure

Data were collected at the Faculty of Medicine of Hacettepe University, Turkey in the year 2018. Permission from the Dean's Office of the Faculty of Medicine of Hacettepe University, and Hacettepe University Non-Interventional Clinical Researches Ethics Board's approval were obtained as well as participants' informed consents. This study has been conducted with the guidance of ethical approval. Data were collected anonymously under volunteer principle. There were 487 fifth grade and 469 sixth grade students (a total of 956 students) registered at the faculty at the time of the study. Data were gathered from the fifth grades at the end of class lectures by two investigators via a self-administered questionnaire under supervision. At the data collection time, there were 478 fifth grade students at the classes, and 404 were participated in the study (7 rejection; 83.0% participation rate). Since sixth grade students were in their internship period, they were distributed in various clinics of the university hospital. For this reason, it was very hard to reach them resulted a low participation (282 had been reached and 263 participated; 56.1%). At the end, a total of 667 students out of 956 (69.8%) were participated to the study, and all responses were valid. More than half of the participants (52.6%) were female, and the mean age was 24.2 ± 1.4 . Some socio-demographical and educational characteristics, engagement with other cultures were questioned via a pre-tested questionnaire, also.

Instrument

The "Intercultural Sensitivity Scale" developed by Chen and Starosta (2000) was used in this adaptation procedure. The original scale was first tested with 72 items, then reduced to 44 items at the second stage and was finalized with 24 items. It was decided to use the second draft with nearly twofold number of items (44 items), which is provided in the referred article (Chen & Starosta, 2000), and given in Appendix A. Considering the cultural differences between Turkey and the country where the scale was developed, increasing the number of items was meaningful to be validated. The scale consists of statements scored through a 5-point Likert method: 1 =strongly disagree, 2 =disagree, 3 =uncertain, 4 =agree and 5 =strongly agree. Items 2, 6, 8, 10, 12, 14, 17, 20 and 43 of the scale are reverse scored. The scale score does not have a cut-off point. High scores reflect high intercultural sensitivity (Chen & Starosta, 2000).

Statistical analysis

Data entry and evaluation were conducted through statistical package program IBM SPSS 23.0. The descriptive statistics used in the research were expressed as numbers and percentages; mean, standard deviation, median, 1st–3rd quartile, minimum-maximum values. The correlations between categorical variables were evaluated through chi-square test, and level of significance was adopted as p < 0.05. In order to demonstrate the construct validity of the scale, the data were randomly divided into two parts using the functions in the SPSS package program. For the first half of the data ($n_1 = 337$), *exploratory factor analysis (EFA)* based on polychoric correlations was applied together with the oblique rotation method. For the second half of the data ($n_2 = 330$), first and second order *confirmatory factor analysis (CFA)* based on polychoric correlations was applied to confirm the factor structure of the scale. EFA was conducted using FACTOR 10.8.02 program, while first and second order CFA was conducted using LISREL 8.80 program. In order to

Table 1

Some characteristics of participants (Hacettepe Univ.-Turkey, 2018).

Characteristics	n	% ^a
Neighbor from different cultures ($n = 658^{b}$)		
Yes	433	65.8
No	159	24.2
Don't know	66	10.0
Interaction with people from different cultures ($n = 667$)		
Yes	585	87.7
No	82	12.3
Heard the term 'intercultural sensitivity' ($n = 649^{b}$)		
Yes	200	30.8
No	449	69.2
Source of knowledge ^c		
Media	153	22.9
Family/friends	112	16.8
University lectures	55	8.2
Others ^d	16	2.1

^a Column percentages

^b Various number of non-responses for each variable.

² Multiple-choice answers; percentages were calculated separately from total (n = 667).

^d Secondary education, foreign language course, TURKMSIC, IFMSA, social media, AFS Volunteers Association

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demonstrate the reliability of the scale, the *Cronbach's alpha reliability coefficient*, which shows internal consistency, and *Spearman-Brown coefficients*, which shows the two-half reliability, were calculated. The difficulty and discrimination coefficients and Cronbach's alpha if item deleted statistics calculated when the item was deleted.

Results

Of the final group of 667 medical students Only 1% of the participants' parents was not Turkish. Two-third of respondents have neighbors from different cultures, and 87.7% stated that they interacted with people from different cultures (Table 1). Of the participants, 79.3% reported that they spoke at least one foreign language other than Turkish. Within the last year, 64.8% of students examined patients from different cultures during their clinical practices. Only one-third of the students stated that they had heard the term 'intercultural sensitivity'; 22.9% had learned from media, 16.8% from friends/family, and only 8.2% from university lectures (Table 1).

Adaptation process of the scale

Language validity

Table 2

For the first stage of the study, activities related to language validity performed. Detailed information had given in Methods section.

Exploratory factor analysis

For the factor analysis, exploratory and confirmatory analyses were conducted by randomly dividing the dataset into two approximately equal parts. In order to determine whether the items are compatible with the factor structure, exploratory factor analysis (EFA) based on polychoric correlations was applied for the first half of the scale, and oblique rotation method was used. The factor analysis was repeated by excluding 21 items with factor load smaller than 0.30 which were loaded to multiple dimensions. In the end, final version of the scale consisting of 23 items and 5 dimensions was obtained. In order to determine whether the data and sample are suitable for factor analysis, Kaiser-Meyer-Olkin (KMO) test, which shows sampling adequacy, and Bartlett test, which shows sphericity were conducted. KMO value (0.874) shows that the sample size was sufficient for factor analysis (Kaiser, 1974). The result of Bartlett test has been found to be statistically significant, which supports the hypothesis that the correlations between items are different from zero.

The factor loads obtained from EFA, the eigenvalues and the variances explained by eigenvalues are shown in Table 2. As a result of

Items Interaction Respect of Cultural Difficulty in Interaction Confidence Awareness Difference Interaction En	teraction njoyment
Confidence Awareness Difference Interaction En	njoyment
	5 5
Item 1 0.658	
Item 2 0.499	
Item 3 0.742	
Item 4 0.838	
Item 24 0.631	
Item 11 0.872	
Item 13 0.796	
Item 15 0.599	
Item 17 0.571	
Item 18 0.888	
Item 19 0.924	
Item 20 0.749	
Item 22 0.547	
Item 23 0.641	
Item 25 0.582	
Item 30 0.610	
Item 36 0.599	
Item 38 0.602	
Item 26 0.6	662
Item 33 0.5	537
Item 40 0.7	728
Item 41 0.7	771
Item 42 0.8	861
Eigenvalues Total variance explained (%) Cumulative variance explai	ined (%)
Interaction Awareness 8.448 36.7 36.7	
Difficulty in Interaction 3.045 13.2 49.9	
Respect of Cultural 1.759 7.7 57.6	
Difference	
Interaction Enjoyment 1.736 7.6 65.2	
Interaction Confidence 1.197 5.2 70.4	

Factor loadings, eigenvalues and the variance explained by eigen values (Hacettepe Univ.-Turkey, 2018)

 $\mbox{KMO}=0.874;$ Bartlett statistics = 3515.9 (p < 0.00001).

the analysis, a *five-dimensional* structure with eigenvalues greater than 1 has been obtained; these eigenvalues explain 70.4% of the total variance. These five dimensions were as follows: *Interaction Confidence, Interaction Awareness, Respect of Cultural Difference, Difficulty in Interaction and Interaction Enjoyment.*

As a result of EFA, the items of 'Interaction Confidence' dimension of the original scale (Chen & Starosta, 2000) were loaded to the same dimension in our study except Item 34 which replaced with Item 24. Similarly, 'Respect of Cultural Difference' dimension loaded with the same items as in the original one except items 6 and 14 (Appendix A). Original 'Interaction Enjoyment' dimension was totally differed from the original scale and five different items were loaded to this dimension (items 26, 33, 40, 41, 42) (Appendix A). The items loaded 'Interaction Engagement' and 'Interaction Attentiveness' dimensions of the original scale were totally changed related to the analysis, and two new dimensions were defined namely 'Interaction Awareness' and 'Difficulty in Interaction' considering the content of the items (Fig. 1) (Appendix B).



Fig. 1. Changes in item loadings on dimensions before and after factor analysis (Hacettepe Univ.-Turkey, 2018).

Confirmatory factor analysis

In order to confirm the factor structure of the scale (23 items and 5 dimensions), first and second order confirmatory factor analysis (CFA) based on polychoric correlations was applied to the second half of the data, which was randomly divided into two parts. According to the first order CFA results, factor loadings were found between 0.53 and 0.83. In Fig. 2, the path diagram shows the path coefficients obtained from first order CFA analysis. In the first order confirmatory factor analysis, the fit indices were obtained to assess the fitness of the model constructed in the analysis. The χ^2/sd (chi-square/degree of freedom) value was found as 2.96, which demonstrated a good model fit (i.e. χ^2/sd between 1 and 3). The RMSEA (Root Mean Square of Error Approximation) fit index value



Chi-Square=649.27, df=219, P-value=0.00000, RMSEA=0.077



was 0.077, reflecting a good fitness (< 0.08). The Goodness of Fit Index (GFI) was found as 0.98, which shows that the model has a very good degree of fitness (> 0.95 = very good). Other fit index values were as follows: NFI (Normed Fit Index) = 1.00 (> 0.95 very good), CFI (Comparative Fit Index) = 1.00 (> 0.95 very good) and RMR (Root Mean Square Residual) = 0.048 (< 0.05 very good). According to these results, the model demonstrated a very good fitness and the construct validity of the 5-dimensions with 23-items scale was proven.

In addition to first order CFA, a second order confirmatory factor analysis based on polychoric correlations was performed to the second half of the data to validate whether "Interaction Confidence", "Interaction Awareness", "Respect of Cultural Differences", "Difficulty in Interaction", and "Interaction Enjoyment" sub-dimensions join together to form the "Intercultural Sensitivity Scale" concept. According to the second order CFA, the χ^2/sd (chi-square/degree of freedom) value was found as 2.96, which demonstrated a good model fit (i.e. χ^2/sd between 1 and 3). The RMSEA (Root Mean Square of Error Approximation) fit index value was 0.077, reflecting a good fitness (< 0.08). The Goodness of Fit Index (GFI) was found as 0.97, which shows that the model has a very good degree of fitness (> 0.95 = very good). Other fit index values were as follows: NFI (Normed Fit Index) = 1.00 (> 0.95 very good), CFI (Comparative Fit Index) = 1.00 (> 0.95 very good) and RMR (Root Mean Square Residual) = 0.050 (< 0.05 very good). According to these results, the model demonstrated a very good fitness. Path diagram which was obtained from second order CFA was given in Fig. 3.

The correlation between the sub-dimensions score and overall score was also performed by using Spearman's rank correlation coefficient. All sub-dimensions positively and significantly correlated with the overall scale score. "Respect of Cultural Difference" and "Interaction Awareness" sub-dimensions scores had a moderate correlation while "Difficulty in Interaction" sub-dimension had very strong correlation, and "Interaction Confidence" and "Interaction Enjoyment" sub-dimensions had strong correlation for the first and second halves as well as the full data. However, "Interaction Enjoyment" sub-dimension had moderate correlation for the first half. These results had supported the validity of the adapted scale (Table 3).



Chi-Square=655.06, df=221, P-value=0.00000, RMSEA=0.077 Fig. 3. Path diagram obtained from second order CFA (Hacettepe Univ.-Turkey, 2018).

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Item statistics and reliability values

The level of difficulty of items ranged between 3.10 and 3.69 for the dimension '*Interaction Confidence*'; 3.57 and 3.69 for '*Interaction Awareness*'; 4.24 and 4.32 for '*Respect of Cultural Difference*'; 3.42 and 3.78 for '*Difficulty in Interaction*' and 3.85 and 4.02 for '*Interaction Enjoyment*' (Table 4). According to the discrimination values, the total value of items in each dimension were positive and above 0.40, which suggests that the items have a good degree of discrimination (Büyüköztürk, 2011). The items exemplify similar behaviors and have high levels of internal consistency. (The items of the adapted Scale were given in Appendix B).

Cronbach's alpha values were 0.851 for 'Interaction Confidence', 0.772 for 'Interaction Awareness', 0.848 for 'Respect of Cultural Difference', 0.826 for 'Difficulty in Interaction' and 0.817 for 'Interaction Enjoyment', and 0.906 for the total score. These values suggested that the scale has a high level of reliability (Tavşancıl, 2014). The Spearman-Brown coefficients for the whole scale and the dimensions show that the scale's split-half reliability values were also sufficient.

Intercultural Sensitivity Status of the medical students

The mean total score of students was 85.84 ± 11.44 , which shows a good level of intercultural sensitivity (Table 5). However, there are some outliers (1% got 23 points).

The scores of female students were significantly higher than males on '*Respect of Cultural Differences*' and '*Interaction Enjoyment*' dimensions (Mann-Whitney U test; p = 0.002 and p = 0.001, respectively).

Students who have neighbors from different cultures have significantly higher scores on the sub-dimensions of '*Interaction Confidence*', '*Difficulty in Interaction*' and '*Interaction Enjoyment*' (Mann-Whitney U test; p = 0.003, p = 0.036, respectively, p < 0.001). Students who have the chance to interact with people from different cultures had higher scores on the sub-dimensions of '*Interaction Confidence*', '*Interaction Awareness*' '*Difficulty in Interaction*' and '*Interaction*' and '*Interaction Enjoyment*' (Mann-Whitney U test; p < 0.001, p = 0.001, respectively). The students who examine patients from different cultures had significantly higher scores on the sub-dimensions of '*Interaction Confidence*' (p < 0.001), '*Interaction Awareness*' (p = 0.004) and '*Difficulty in Interaction*' (p = 0.046) (Mann-Whitney U test) (Table 6).

Discussion

The Turkish adaptation of "Intercultural Sensitivity Scale" (ISS) on medical students have shown high validity and reliability. The Cronbach's alpha value of the scale was found as 0.906, which was higher than Chen and Starosta's value (0.86) for communication students (Chen & Starosta, 2000). In the other studies from Turkey, Bulduk et al. found as 0.72 (Bulduk et al., 2011) among nursing students, Küllü-Sülü-found 0.76 among English preparatory university students (Küllü-Sülü, 2014), Korkmaz Aslan et al. found as 0.85 (Korkmaz Aslan et al., 2019) in students studying different health related faculties, and Üstün found 0.90 (Üstün, 2011) among teacher candidates similar to other studies in the literature (Fritz et al., 2002; Liu & Ren, 2019; Karras, 2017).

In this adaptation study, it was deemed appropriate to use the remaining 44 items in the second step of validity and reliability study of Chen and Starosta (2000). The reason for this attempt was to try to find more suitable items for Turkish culture by evaluating the nearly twofold number of items in the second-step draft pool instead of 24 items suitable for western culture. As a matter of fact, at the end of the explanatory factor analysis, it was observed that some items were loaded on different dimensions from the dimensions they were loaded in the original scale. The items of *'Interaction Confidence'* dimension of the original scale (Chen & Starosta, 2000) were loaded to the same dimension in our study except Item 34 which replaced with Item 24 (Appendix A). Similarly, *'Respect of Cultural Difference'* dimension loaded with the same items as in the original one except items 6 and 14 (Appendix A). Original *'Interaction Enjoyment'* dimension was totally differed from the original scale and five different items were loaded to this dimension (items 26, 33, 40, 41, 42) (Appendix A). The items loaded *'Interaction Engagement'* and *'Interaction Attentiveness'* dimensions of the original scale were totally changed related to the analysis, and two new dimensions were defined namely *'Interaction Awareness'* and *'Difficulty in Interaction'* considering the content of the items (Appendix B). Similarly, a Malaysian a Taiwanian and a Turkish study have not had a good fit on Chen and Starosta's five-dimension model (Bekiroğlu & Balcı, 2014; Tamam, 2010; Wu, 2015). In Malaysian study, three-dimensions namely "interaction attentiveness and respect", "interaction openness", and "interaction confidence" were devised

Table 3

The correlation between overall and sub-dimensions scores for first and second halves and full data (Hacettepe Univ.-Turkey, 2018).

(n = 337)		Interaction Confidence	Interaction Awareness	Respect of Cultural Difference	Difficulty in Interaction	Interaction Enjoyment	
First half of data	Corr. Coef.ª	0.740	0.544	0.625	0.845	0.684	
	p	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Second half of	Corr.	0.794	0.565	0.497	0.848	0.746	
data	Coef. ^a						
	р	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Full Data	Corr.	0.767	0.554	0.561	0.847	0.714	
	Coef. ^a						
	р	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	

^a Spearman rho correlation coefficient.

Table 4

Item statistics and reliability values (Hacettepe Univ.-Turkey, 2018).

	Difficulty	Discrimination values (Point Biserial Cronbach's Alpha (when item Correlation) deleted		Cronbach's	Spearman-Brown
		Correlation)	deleted)	Афпи	Coefficient
Interaction Confidence					
Item 1	3.69	0.671	0.819	0.851	0.869
Item 2	3.59	0.609	0.837		
Item 3	3.10	0.654	0.824		
Item 4	3.27	0.714	0.807		
Item 24	3.45	0.676	0.817		
Interaction Awareness					
Item 11	3.57	0.645	0.650	0.772	0.706
Item 13	3.69	0.657	0.637		
Item 15	3.59	0.524	0.780		
Respect of Cultural Diffe	erence				
Item 17	4.24	0.613	0.840	0.848	0.802
Item 18	4.32	0.752	0.779		
Item 19	4.25	0.723	0.791		
Item 20	4.31	0.663	0.816		
Difficulty in Interaction					
Item 22	3.50	0.617	0.793	0.826	0.819
Item 23	3.78	0.636	0.789		
Item 25	3.42	0.520	0.813		
Item 30	3.52	0.656	0.785		
Item 36	3.45	0.559	0.805		
Item 38	3.54	0.578	0.802		
Interaction Enjoyment					
Item 26	3.86	0.561	0.797	0.817	0.801
Item 33	3.85	0.530	0.803		
Item 40	4.02	0.647	0.772		
Item 41	3.86	0.621	0.778		
Item 42	3.96	0.693	0.755		
For all items of the sca	le				
Cronbach's Alpha	0.906				
Spearman-Brown	0.779				
Coefficient					

Table 5

Dispersion statistics of total and sub-dimension scores of the students (Hacettepe Univ.-Ankara, 2018).

Scale and Sub-dimensions	$\overline{X} + SD$	Median	1st-3rd quarter	Min–Max
Interaction Confidence	17.10 ± 3.67	17.00	15.00-20.00	5.00-25.00
Interaction Awareness	10.86 ± 1.94	11.00	9.00-12.00	3.00-15.00
Respect of Cultural Differences	17.12 ± 2.70	18.00	16.00-20.00	4.00-20.00
Difficulty in Interaction	21.21 ± 4.22	21.00	18.00-24.00	6.00-30.00
Interaction Enjoyment	19.55 ± 3.00	20.00	18.00-21.00	5.00-25.00
TOTAL	$\textbf{85.84} \pm \textbf{11.44}$	86.00	79.00–93.00	23.00-115.00

from Chen and Starosta's instrument with 21 items (overall coefficient was 0.91) (Tamam, 2010). In Taiwanian study, a four-factor structure model with 13-items ISS was found valid with a high reliability coefficient of 0.80 (Wu, 2015). In the Turkish study conducted among Communication Faculty students by using the original scale of Chen and Starosta (2000), five dimensions did not repeat completely, and four dimensions could be handled similar to the current study (Bekiroğlu & Balcı, 2014). The authors thought that different cultures and languages in the surveyed communities might cause this variation. Since the attitudes of the western society against the individuals from other cultures, where the original scale was developed differ from Turkish youth (and medical students in particular), it is an expectable result. These findings also point out that direct application of the scales which evaluate the social characteristics of the societies is not appropriate without conducting the proper adaption studies.

In Bulduk's study that evaluates the validity of the scale on nursing students, the mean total intercultural sensitivity score value was found as 77.58 \pm 9.44 (Bulduk et al., 2011), and in the current study, the score of the medical students could be evaluated as "higher than moderate" (85.84 \pm 11.44). However, this level was not considered as sufficient since more than 5% of the people currently living in Turkey was not native Turkish citizens.

In the present study, no statistically significant difference was observed in total ISS scores related to sex and the term of the participants. However, females had higher scores in "*Respect of Cultural Differences*" (p = 0.002) and "*Interaction Enjoyment*" dimensions than males (p = 0.001). In a study conducted by Meydanlıoğlu et al. among medical and nursery students, male students had significantly higher scores than female students for '*Interaction Enjoyment*' and '*Interaction Confidence*' dimensions (Meydanlioglu et al., 2015). Also, Korkmaz-Aslan et al., found significant difference in "*Interaction Engagement*", "*Respect For Cultural Differences*" and

(continued on next page)

Table 6

Total and sub-dimension scores of respondents by some of their characteristics (Hacettepe University - Ankara, 2018).

Characteristics		Sub-dimensions of inter-cultural sensitivity scale					
		Interaction confidence	Interaction awareness	Respect of cultural differences	Difficulty in interaction	Interaction enjoyment	Total
Term							
Term V (n = 404)	$\begin{array}{l} \text{Mean} \pm \text{SD} \\ \text{Median} \ (Q_1 \!\!-\!\! Q_3) \end{array}$	17.26 ± 3.82 17.00 (15.00, 20.00)	$10.91 \pm 2.02 \\ 11.00 \\ (9.00, 12.00)$	17.18 ± 2.72 18.00 (16.00, 20.00)	21.26 ± 4.37 21.00 (18.00, 24.00)	19.55 ± 3.2 20.00	$\begin{array}{ccc} 14 & 86.17 \pm 11.90 \\ & 86.00 \ (79.00 - 94.00) \end{array}$
Term VI (n = 263)	Min-Max Mean \pm SD Median (Q ₁ –Q ₃)	(13.00-20.00) 5.00-25.00 16.85 \pm 3.42 17.00	(9.00-12.00) 3.00-15.00 10.78 ± 1.80 11.00	$\begin{array}{c} (10.00-20.00) \\ 4.00-20.00 \\ 17.03 \pm 2.68 \\ 17.00 \end{array}$	$\begin{array}{c} (18.00-24.00)\\ 6.00-30.00\\ 21.13\pm3.98\\ 21.00\end{array}$	$\begin{array}{c} (18.00-21.)\\ 5.00-25.00\\ 19.55\pm2.7\\ 20.00\end{array}$	23.00–115.00 77 85.34 ± 10.70 86.00 (79.00–92.00)
n value ^a	Min-Max	(15.00–19.00) 9.00–25.00 0.151	(10.00–12.00) 4.00–15.00 0.294	(16.00–20.00) 5.00–20.00 0.350	(19.00–24.00) 9.00–30.00 0.754	(18.00–21. 6.00–25.00 0.750	00) 47.00–115.00 0.368
Sex		0.101	0.251	0.000	0.701	0.750	0.000
Female (n = 351)	$\begin{array}{l} \text{Mean} \pm \text{SD} \\ \text{Median} \ (\text{Q}_1\text{-}\text{Q}_3) \end{array}$	$\begin{array}{c} 17.06 \pm 3.69 \\ 17.00 \\ (15.00 - 20.00) \end{array}$	$\begin{array}{c} 10.93 \pm 1.85 \\ 11.00 \\ (10.00 12.00) \end{array}$	$\begin{array}{c} 17.45 \pm 2.47 \\ 18.00 \\ (16.00 – 20.00) \end{array}$	$\begin{array}{c} 21.26 \pm 4.26 \\ 21.00 \\ (18.00 - 24.00) \end{array}$	19.95 ± 2.8 20.00 (19.00–21.4	87 86.65 ± 11.16 86.00 (80.00–94.00) 00)
	Min-Max	6.00 - 25.00	3.00 - 15.00	6.00 - 20.00	9.00-30.00	6.00-25.00	47.00-115.00
Male (n = 316)	Mean \pm SD	17.15 ± 3.65	10.78 ± 2.04	16.76 ± 2.90	21.16 ± 4.18	19.11 ± 3.0	84.95 ± 11.70
	Median ($Q_1 - Q_3$)	17.00	11.00	17.00	21.50	20.00	86.00 (78.00–92.00)
p value ^a	Min-Max	(13.00–20.00) 5.00–25.00 0.592	(9.00–12.00) 3.00–15.00 0.344	4.00–20.00 0.002	(18.00–24.00) 6.00–30.00 0.812	5.00–25.00 0.001	23.00–115.00 0.127
Friend from differe	nt culture						
Yes (n = 13)	$\text{Mean} \pm \text{SD}$	17.85 ± 3.67	10.69 ± 2.06	$\textbf{16.62} \pm \textbf{3.28}$	21.69 ± 3.90	20.54 ± 3.02	$\textbf{87.38} \pm \textbf{12.69}$
	Median (Q ₁ –Q ₃)	17.00	10.00	18.00	21.00	21.00	88.00 (82.00–95.00)
	Min Mov	(16.00-20.00)	(9.00-12.00)	(16.00 - 18.00)	(19.00-23.00)	(19.00-23.00)	67.00 111.00
No $(n - 278)$	Mean \pm SD	11.00-23.00 16 70 ± 3 75	10.76 ± 1.79	10.00-20.00 17.08 ± 2.84	20.58 ± 4.13	13.00-23.00 19.25 ± 3.16	84.37 ± 11.72
110 (li 2, 0)	Median $(Q_1 - Q_3)$	17.00	11.00	17.50	21.00	20.00	84.50 (77.00–93.00)
		(14.00-20.00)	(10.00-12.00)	(16.00-20.00)	(18.00-23.00)	(18.00-21.00)	
	Min-Max	5.00 - 25.00	3.00 - 15.00	4.00-20.00	6.00-30.00	5.00-25.00	23.00-115.00
p value ^a		0.367	0.818	0.794	0.459	0.151	0.337
Neighbor from diffe	erent cultures						
Yes (n = 433)	Mean \pm SD	17.43 ± 3.63	10.99 ± 1.85	17.32 ± 2.54	21.54 ± 4.14	19.94 ± 2.84	87.21 ± 11.17
	Median $(Q_1 - Q_3)$	(15.00 - 20.00)	(10.00 - 12.00)	(16.00 - 20.00)	(19.00-24.00)	(18.00-22.00)	87.00 (80.00-94.00)
	Min-Max	6.00-25.00	3.00-15.00	5.00-20.00	10.00-30.00	6.00-25.00	47.00-115.00
No (n = 159)	$\text{Mean} \pm \text{SD}$	16.50 ± 3.62	10.67 ± 1.97	$\textbf{16.85} \pm \textbf{2.86}$	20.63 ± 4.15	19.01 ± 2.92	83.66 ± 10.86
	Median (Q ₁ –Q ₃)	16.00	11.00	17.00	21.00	20.00	84.00 (77.00–90.00)
		(14.00–19.00)	(9.00–12.00)	(16.00-20.00)	(18.00–23.00)	(17.00-20.00)	
	Min-Max	5.00-25.00	3.00-15.00	4.00-20.00	7.00–30.00	8.00-25.00	52.00-115.00
p value"	forent cultures	0.003	0.092	0.092	0.036	< 0.001	< 0.001
Yes $(n = 585)$	Mean $+$ SD	17.35 ± 3.62	10.96 ± 1.91	17.16 ± 2.66	21.43 ± 4.15	19.72 ± 2.93	86.62 ± 11.29
	Median (Q ₁ –Q ₃)	17.00	11.00	18.00	22.00	20.00	86.00 (80.00–94.00)
		(15.00-21.00)	(10.00–12.00)	(16.00-20.00)	(19.00-24.00)	(18.00 - 21.00)	
	Min-Max	5.00 - 25.00	3.00 - 15.00	4.00-20.00	6.00-30.00	5.00 - 25.00	23.00-115.00
No (n = 82)	Mean \pm SD	15.35 ± 3.63	10.16 ± 2.03	16.84 ± 2.98	19.62 ± 4.39	18.33 ± 3.19	80.30 ± 11.05
	Median $(Q_1 - Q_3)$	(14.00, 17.00)	(0.00, 12.00)	17.50	19.50	(16.00.20.00)	80.00 (72.00-88.00)
	Min-Max	5.00-24.00	(9.00-12.00)	(10.00-19.00) 5.00-20.00	8.00-30.00	8.00-25.00	53.00-110.00
p value ^a		< 0.001	0.001	0.505	< 0.001	< 0.001	< 0.001
Examining patients	from different cul	tures					
Yes (n = 431)	$\text{Mean} \pm \text{SD}$	17.42 ± 3.68	11.00 ± 1.86	17.05 ± 2.73	21.44 ± 4.31	19.76 ± 2.89	86.66 ± 11.69
	Median (Q ₁ –Q ₃)	18.00 (15.00–20.00)	11.00 (10.00–12.00)	17.00 (16.00–20.00)	22.00 (18.00–24.00)	20.00 (18.00–21.00)	86.00 (80.00–94.00)
No. (c. 00.1)	Min-Max	5.00-25.00	3.00-15.00	4.00-20.00	6.00-30.00	5.00-25.00	23.00-115.00
NO $(n = 234)$	Median $(0, 0)$	16.49 ± 3.60	10.60 ± 2.05	17.24 ± 2.65	20.76 ± 4.03	19.16 ± 3.17	84.25 ± 10.81
	we utan $(Q_1 - Q_3)$	10.00 (14 00_10 00)	(9.00_12.00)	16.00	21.00 (18.00_23.00)	∠0.00 (18.00_21.00)	07.00 (70.00-92.00)
	Min-Max	5.00-25.00	3.00-12.00	5.00-20.00	9.00-30.00	(10.00-21.00) 6.00-25.00	50.00-115.00
p value ^a		< 0.001	0.004	0.358	0.046	0.128	0.004
Heard the term 'int	ercultural sensitivi	ity'					
Yes (n = 200)	$\text{Mean}\pm\text{SD}$	$\textbf{18.77} \pm \textbf{3.58}$	11.20 ± 1.99	$\textbf{17.27} \pm \textbf{2.86}$	$\textbf{22.82} \pm \textbf{4.08}$	20.39 ± 3.20	$\textbf{90.45} \pm \textbf{12.10}$
	Median (Q_1-Q_3)	19.00	12.00	18.00	23.00	20.00	91.00 (85.00–98.00)
		(16.00-21.00)	(10.00–12.00)	(16.00-20.00)	(20.00-26.00)	(19.00-23.00)	
	Min-Max	9.00-25.00	4.00-15.00	4.00-20.00	12.00-30.00	0.00-25.00	47.00-115.00

Table 6 (continued)

Characteristics		Sub-dimensions of inter-cultural sensitivity scale					
		Interaction confidence	Interaction awareness	Respect of cultural differences	Difficulty in interaction	Interaction enjoyment	Total
No (n = 449)	Mean \pm SD Median (Q ₁ –Q ₃) Min-Max	$\begin{array}{c} 16.37 \pm 3.49 \\ 16.00 \\ (14.00 - 19.00) \\ 5.00 - 25.00 \end{array}$	$10.72 \pm 1.90 \\ 11.00 \\ (9.00-12.00) \\ 3.00-15.00$	$17.05 \pm 2.65 \\ 17.00 \\ (16.00 - 19.00) \\ 4.00 - 20.00$	$\begin{array}{c} 20.55 \pm 4.10 \\ 21.00 \\ (18.00 - 23.00) \\ 6.00 - 30.00 \end{array}$	$19.21 \pm 2.86 \\ 20.00 \\ (18.00-21.00) \\ 5.00-25.00 \\ $	83.89 ± 10.61 84.00 (77.00–91.00) 23.00–115.00
p value ^a	will-wax	< 0.001	0.001	0.125	< 0.00 -30.00	< 0.001	< 0.001

^a Mann-Whitney U test.

"Interaction Attentiveness" dimensions' scores higher in favor of females (Korkmaz Aslan et al., 2019). However, no significant difference was found in Bekiroğlu and Balcı's and Üstün's studies related to intercultural sensitivity scores by sex (Bekiroğlu & Balcı, 2014; Üstün, 2011).

The study of Bekiroğlu and Balcı also suggests that the levels of intercultural sensitivity increases as the frequency of interacting with people from different cultures (Bekiroğlu & Balcı, 2014) as well as the current study. The study of Üstün also suggests that the respondents with friends from different cultures have significantly higher intercultural sensitivity scores (Üstün, 2011).

Different than the other Turkish studies targeted on the students studying in the health- related faculties, the present study was investigated the relation of some other characteristics like 'hearing the term intercultural sensitivity', 'examining patients from different cultures', and 'interaction with different cultures' with ISS scores. For almost all dimensions, the difference between the scores of participants responded 'yes' for these questions was found statistically significant.

Culturally competent and sensitive healthcare improve the trust, satisfaction and adherence of beneficiaries and play a key role in raising the heath literacy of patients (Horky et al., 2017). There is no specific lecture, sessions, practices, etc. related to intercultural sensitivity and cultural competency in the surveyed faculty's curriculum as well as other medical faculties in Turkey. Betancourt et al.'s study supports cultural competence training at all levels of education including before and during Faculty of Medicine education as well as continuous medical education. Graduate Medical Education Accreditation Committee has emphasized the important role played by Faculties of Medicine in addressing inequalities in the field of health, and underscored the need for medical teachers to evaluate the cultural competences and sensitivity of students (Betancourt et al., 2016). Some studies evaluating the effectiveness of cultural competence training on physicians and medical students have demonstrated that such training had positive results in increasing intercultural sensitivity (Palmer et al., 2011; Staton et al., 2013).

There were some limitations in this study. Since this study had been performed in a single and specific faculty and limited with only fifth and sixth grades, the results could not be generalized. Another point is that participants may have responded to the scale items in line with social and professional norms. For this reason, it may be appropriate to conduct qualitative studies on IS in relevant groups and evaluate it together with ISS scores.

Conclusion

In conclusion, in this study, in which the scale developed by Chen and Starosta was adapted for Turkish medical students, a fivedimensional, 23-item, high reliability scale was obtained. The difference of this scale from the original scale is that two new dimensions have been defined instead of the previous two dimensions. It is thought that this new form of the adapted ISS would be more appropriate to evaluate the "Intercultural Sensitivity" of Turkish medical students. However, it is recommended to test the validity and reliability of this scale on other medical faculty students as well as health related schools' students.

Ethics declarations

Ethics approval and consent to participate

Permission from the Dean's Office of the Faculty of Medicine of Hacettepe University, and Hacettepe University Non-Interventional Clinical Researches Ethics Board's approval were obtained as well as participants' informed consents. This study has been conducted with the guidance of ethical approval. Participation of the study was voluntary basis; participants remained anonymous. The permission was taken to perform this adaptation study from Prof. Guo-Ming Chen.

Consent for publication

Consent was given by all authors.

CRediT authorship contribution statement

Planning and design of the study and interpretation of the results: Sevkat Bahar-Özvarış, Bahar Güçiz-Doğan.

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Competing interests

The authors report no conflict of interest.

Availability of data and materials

The data sets generated and/or analyzed during the current study are not publicly available for now since this study comprises one part of a comprehensive project and other stages are not yet completed, but are available from the corresponding author on reasonable request.

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Appendix A. 44-items for Intercultural Sensitivity Scale

- 4. I can be as sociable as I want to be when interacting with people from different cultures.
- 5. I often feel happy about interacting with people from different cultures.
- 6. I don't like to be with people from different cultures.
- 7. I feel shy when being with people from different cultures.
- 8. I get upset easily when interacting with people from different cultures.

- 10. I often get discouraged when I am with people from different cultures.
- 11. I am aware of when I have hurt my culturally-distinct counterpart's feelings during our interaction.
- 12. I often feel useless when interacting with people from different cultures.
- 13. I can tell when I have upset my culturally-distinct counterpart during our interaction.
- 14. I think my culture is better than other cultures.

16. I feel discouraged when people from different cultures disagree with me.

29. I am very observant when interacting with people from different cultures.

(continued on next page)

^{1.} I am pretty sure of myself in interacting with people from different cultures.

^{2.} I find it very hard to talk in front of people from different cultures.

^{3.} I always know what to say when interacting with people from different cultures.

^{9.} I know my culturally-distinct counterpart is interested in my point of view during our interaction.

^{15.} I can tell when my culturally-distinct counterpart is paying attention to what I am saying.

^{17.} I think people from other cultures are narrow-minded.

^{18.} I respect the values of people from different cultures.

^{19.} I respect the ways people from different cultures behave.

^{20.} I would not accept the opinions of people from different cultures. 21. I act naturally in a culturally different group.

^{22.} I find it is difficult to disclose myself to people from different cultures.

^{23.} I get embarrassed easily when interacting with people from different cultures.

^{24.} I find it is easy to talk to people front different cultures.

^{25.} I have a problem knowing my culturally-distinct counterpart's motives during our interaction.

^{26.} I try to obtain as much information as I can when interacting with people from different cultures.

^{27.} I often deny the existence of cultural differences among people.

^{28.} I am sensitive to my culturally-distinct counterpart's subtle meanings during our interaction.

^{30.} I find it is not easy for me to make friends with people from different cultures.

^{31.} I am keenly aware of how my culturally-distinct counterpart perceives me during our interaction.

^{32.} I am not willing to join a group discussion with people from different cultures.

^{33.} I often give positive responses to my culturally-distinct counterpart during our interaction.

^{34.} I feel confident when interacting with people from different cultures.

^{35.} I am open-minded to people from different cultures.

^{36.} I have a problem sensing what is inside my culturally-distinct counterpart's mind during our interaction.

(continued)

- 37. I often appreciate different views raised by people from different cultures.
- 38. I find it is difficult to reach mutual understanding with people from different cultures.
- 39. I often show my culturally-distinct counterpart my understanding through verbal or nonverbal cues.
- 40. I often sincerely listen to my culturally-distinct counterpart during our interaction.
- I have a feeling of enjoyment towards differences between my culturally-distinct counterpart and me.
- 42. I enjoy interacting with people from different cultures.
- 43. I avoid those situations where I will have to deal with culturally-distinct persons.
- 44. I tend to wait before forming an impression of culturally-distinct counterparts.

Appendix B. 23-items Intercultural Sensitivity Scale after validity-reliability study of Turkish Language

Interaction Confidence

- 1. I am pretty sure of myself in interacting with people from different cultures.
- 2. I find it very hard to talk in front of people from different cultures.
- 3. I always know what to say when interacting with people from different cultures.
- 4. I can be as sociable as I want to be when interacting with people from different cultures.

24. I find it is easy to talk to people from different cultures.

- Interaction awareness
- 11. I am aware of when I have hurt my culturally-distinct counterpart's feelings during our interaction.
- 13. I can tell when I have upset my culturally-distinct counterpart during our interaction.

15. I can tell when my culturally-distinct counterpart is paying attention to what I am saying.

- Respect of Cultural Difference
- 17. I think people from other cultures are narrow-minded.
- 18. I respect the values of people from different cultures.
- 19. I respect the ways people from different cultures behave.
- 20. I would not accept the opinions of people from different cultures.

Difficulty in interaction

- 22. I find it is difficult to disclose myself to people from different cultures.
- 23. I get embarrassed easily when interacting with people from different cultures.
- 25. I have a problem knowing my culturally-distinct counterpart's motives during our interaction.
- 30. I find it is not easy for me to make friends with people from different cultures.
- I have a problem sensing what is inside my culturally-distinct counterpart's mind during our interaction.

38. I find it is difficult to reach mutual understanding with people from different cultures. Interaction enjoyment

- 26. I try to obtain as much information as I can when interacting with people from different cultures.
- 33. I often give positive responses to my culturally-distinct counterpart during our interaction.
- 40. I often sincerely listen to my culturally-distinct counterpart during our interaction.
- I have a feeling of enjoyment towards differences between my culturally-distinct counterpart and me.

42. I enjoy interacting with people from different cultures.

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