Turkish Version of the Jefferson Scale of Empathy Psychometric Properties

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Abstract

Empathy is an important component of medical education and could be taught throughout the years of medical study. Empathy is a skill that allows establishing a communication by evaluating the views, experiences and worries of the patients' cognitively. Empathy can improve physician-patient communication, increase patient satisfaction, establish greater patient compliance, decrease litigation, improve physician's job satisfaction and prevent physician's burnout. Therefore measurement of this skill is important. Jefferson Scale of Empathy is an instrument for this purpose and has been translated into 45 languages and used in more than 70 countries. The objective of this study was to evaluate the reliability and construct validity of the Jefferson Scale of Empathy Turkish version. The scale was administered to 600 medical students in one medical school. Cronbach's alpha coefficient of the Jefferson Scale of Empathy was 0.85 which means a good reliability. Competing models of the latent structure of the Jefferson Scale of Empathy were derived from theoretical and empirical sources and evaluated using confirmatory factor analysis. The best fitting model of the latent structure of the Jefferson Scale of Empathy consisted of three correlated factors corresponding to the "perspective taking", "compassionate care" and "standing in patient's shoes" dimensions. The reliability coefficients of these dimensions were 0.84, 0.73 and 0.62 respectively. The Turkish version of the Jefferson Empathy Scale is a reliable and valid measure of the constructs it was intended to assess. This measure was found useful for evaluating empathy among medical students.

Keywords: Jefferson Scale of Empathy, Medical Students, Turkey

Introduction

Empathy is important in physician/patient interactions. The core components of empathy could be taught and enhanced during the medical education (Hojat et al., 2009a; Hojat et al 2009b). According to the American Association of Medical Colleges empathy is an essential skill for medical professionalism and this skill must be acquired through medical education (AAMC, 1998).

Jefferson Scale of Empathy was developed by Jefferson Medical College (now Sidney Kimmel Medical College) of Thomas Jefferson University Center for Research in Medical Education and Health Care (Hojat et al. 2009a). There are several versions of the Jefferson Scale of Empathy. We used the student version of this scale in our study.

Jefferson Scale of Empathy Student Version (JSE-S) has 20 items scored on the 7 point Likert type scale. Ten of these items with positive factor structure and correlations are scored on "Strongly Disagree=1……..Strongly Agree=7" whereas other ten items with negative factor structure and correlations are scored reversely (e.g., Strongly Disagree=7, Strongly Agree=1). Exploratory factor analytic studies of the scale have often resulted in three factors: "perspective-taking", "compassionate care" and "standing (walking) in patient's shoes" (Hojat et al. 2009a; Hojat & LaNoue 2014). The three factors have also been shown in studies with the translated versions of the scale (Roh et al. 2010; Paro et al. 2012; Wen et al. 2013; Khademalhosseini et al 2014; Leombruni et al. 2014; Mostafa et al. 2014).

The first factor of the scale is the "perspective taking" with a score range of 10-70 and items 2,4,5,9,10,13,15,16,17 and 20. The second factor of the scale is "compassionate care" with a score range of 8-56 and items 1, 7,8,11,12,14,18 and 19. The third factor is "standing in patient's shoes" and this factor has a score range of 2-14 and two items (item 3 and 6). The total score range of the scale is 20-140 and higher scores mean higher levels of empathy.

The Jefferson Scale of Empathy has been translated into 45 languages and used in more than 70 countries (Hojat & LaNoue, 2014). Almost all of the studies reported Cronbach's alpha coefficients of the scale ranging from 0.70 to 0.80 which is indicating a good reliability (Hojat & LaNoue, 2014). JSE-S was translated into Turkish by Gonullu & Oztuna (2012) and their validation studies confirmed the three factor structure of the Turkish translation of the Jefferson Empathy Scale.

Methods

Study participants were 600 medical students from one public medical school in Turkey. Approval for the study was given by the

institutional review committee. The permission to use the Jefferson Scale of Empathy Turkish version was given by the Center for Research in Medical Education and Health Care Thomas Jefferson University Jefferson Medical College. Participation was voluntarily and written consent for study participation was collected from those who agreed to participate. Printed Jefferson Scale of Empathy (in Turkish) and a questionnaire to collect the demographic data (gender, age, and year in school) were distributed to the participants. All of the printed materials were filled out by the participants anonymously.

Internal reliability of the Jefferson Empathy Scale Turkish version was assessed by means of Cronbach's α scores and item-total score correlations. The factorial validity was examined by implementation of exploratory and confirmatory factor analysis and structural equation modelling (SEM). For exploratory factor analysis, a principal component analysis (varimax with Kaiser normalization) was performed to test the validity of the original subscales. Evaluation of model fit was done by using confirmatory factor analysis (CFA). To perform the CFA, AMOS 16.0 was used, and the model parameters were estimated by using maximum likelihood (Joreskog & Sorbom, 2001). In this study, adequacy of the model was assessed by: (a) root mean square error of approximation (RMSEA), which should be below 0.05 for a good fit; (b) the absolute fit, $\chi 2/df$ measure that $\chi 2$ minimum fit function test depends on sample size (Bollen, 1989; Hair, Anderson,Tahtam et al., 1998) was used and should be between 2 and 5 for a good fit; (c) Goodness-of-fit index (GFI), which shows the amount of variances and covariance explained by the model and should be greater than 0.90 for an adequate fit of the model; and (d) comparative fit index (CFI), which should also be greater than 0.90 for adequate fit.

Results

Cronbach's alpha coefficient of the Jefferson Scale of Empathy was 0.85 in general and 0.84, 0.73 and 0.62 for the three dimensions "perspective taking", "compassionate care" and "standing in patient's shoes" respectively. These values are in acceptable range which indicates that the Turkish version of Jefferson Scale of Empathy was internally consistent for psychological measures. Item- total score correlations for the Turkish version of Jefferson Scale of Empathy are shown in Table 1. Except JSE item 18 all correlations were significant at the 0.01 level.

Table 1. Item total score correlations for the Turkish version of Jefferson Scale of Empathy

Item	Item total score correlation	Item	Item- total score correlation
JSE1	0.53	JSE11	0.71
JSE2	0.47	JSE12	0.59
JSE3	0.23	JSE13	0.53

JSE4	0.58	JSE14	0.62
JSE5	0.40	JSE15	0.59
JSE6	0.15	JSE16	0.71
JSE7	0.57	JSE17	0.64
JSE8	0.51	JSE18	0.07
JSE9	0.58	JSE19	0.48
JSE10	0.62	JSE20	0.65

Except JSE18 all correlations were significant at the 0.01 level

The Kaiser-Meyer-Olkin analysis showed an index of 0.89 and the result of Bartlett's test of sphericity was 3564.78 ($p<0.001$). These results indicated the appropriateness of principal component analysis. Principal component factor extraction with varimax rotation of data for 20 items of the Turkish version of JSE-S showed a 3 factor structure. Item 18 of the Jefferson Empathy Scale was excluded because of the low factor loading (< 0.40). The three factors explained 47.46 % of the variance. Items and factor loadings are given in Table 2.

Table 2. Principal Component Factor Analysis of the JSE-S Turkish Version

Items	Perspective taking (1)	Compassionate care (2)	Standing in patient's shoes (3)
Patients feel better when their physicians understand their feelings (2)	0.446		
Understanding body language is as important as verbal communication in physician–patient relationships (4)	0.502		
A physician's sense of humor contributes to a better clinical outcome (5)	0.459		
Physicians should try to stand in their patients' shoes when providing care to them (9)	0.640		
Patients value a physician's understanding of their feelings which is therapeutic in its own right (10)	0.603		
Physicians should try to understand what is going on in their patients' minds by paying attention to their nonverbal cues and body language (13)	0.517		
Empathy is a therapeutic skill without which the physician's success is limited (15)	0.646		
Physicians' understanding of the emotional status of their patients, as well as that of their families, is one important component of the physician–patient relationship (16)	0.746		
Physicians should try to think like their patients in order to render better care (17)	0.777		
I believe that empathy is an important therapeutic factor in medical treatment (20)	0.716		

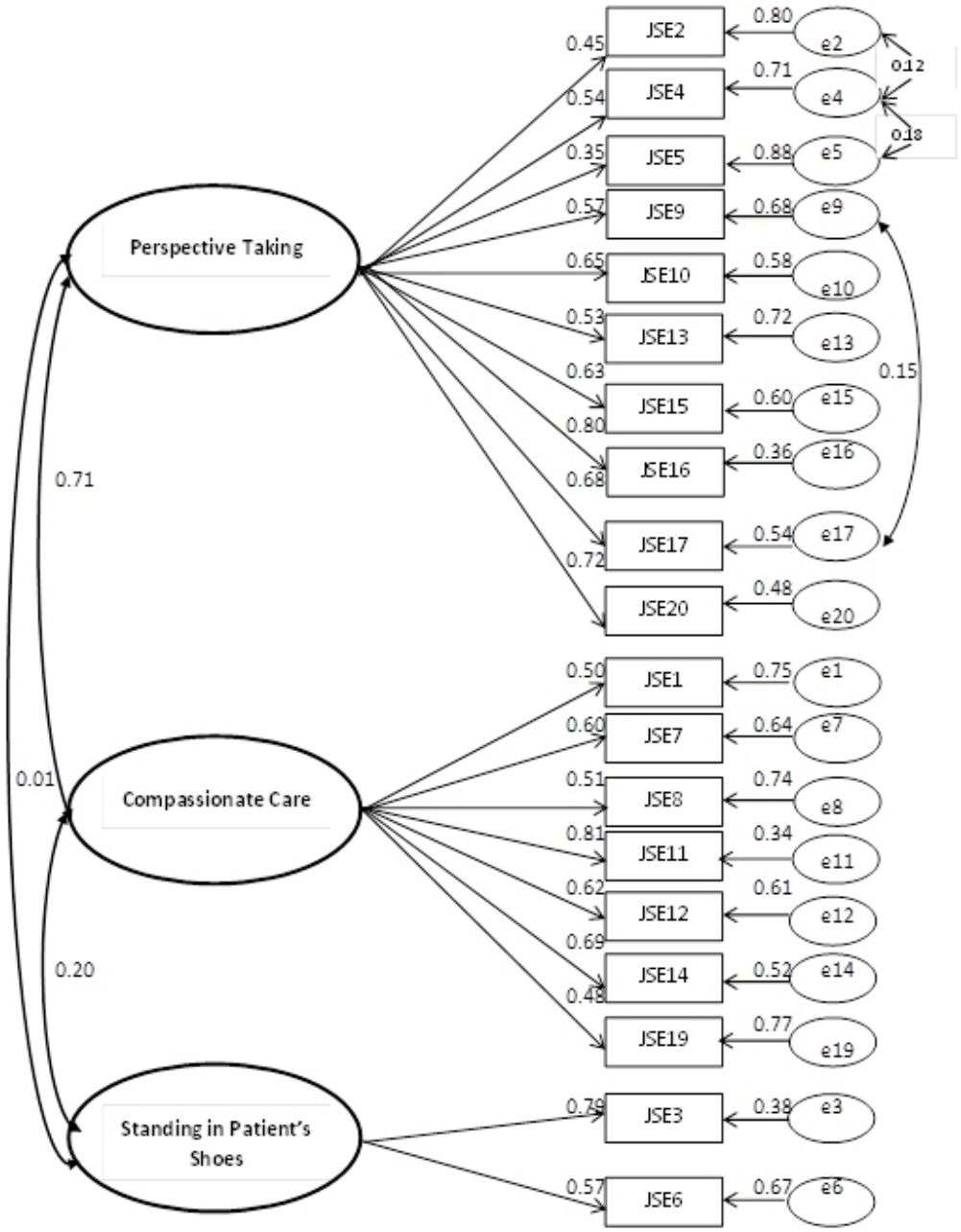
Physicians' understanding of their patients' and their families' feelings does not influence medical or surgical treatment (1)	0.486	
Attention to patients' emotions is not important in history taking (7)	0.688	
Attentiveness to patients' personal experiences does not influence treatment outcomes (8)	0.588	
Patients' illnesses can be cured only by medical or surgical treatment; therefore, physicians' emotional ties with their patients do not have a significant influence in medical or surgical treatment (11)	0.736	
Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints (12)	0.672	
I believe that emotion has no place in the treatment of medical illness (14)	0.652	
I do not enjoy reading nonmedical literature or the arts (19)	0.599	
Physicians should not allow themselves to be influenced by strong personal bonds between their patients and patients' family members (18)		0.281
It is difficult for a physician to view things from patients' perspectives (3)		0.766
Because people are different, it is difficult to see things from patients' perspectives (6)		0.811

In order to test this three factor structure, confirmatory factor analysis was performed by Maximum Likelihood Estimation method. The fit indices of the model showed a good fit.

Table 3. Fit Indices of the Model

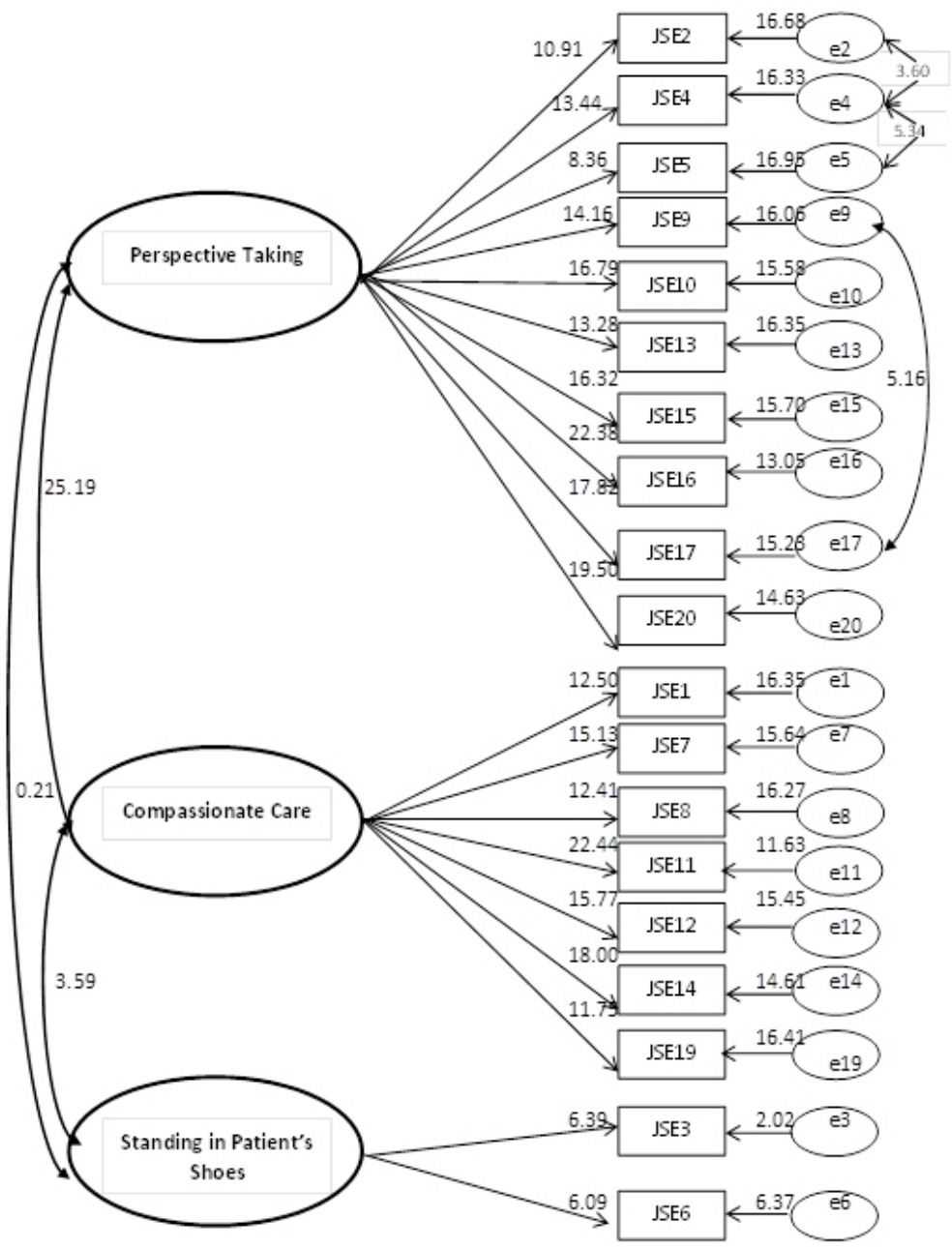
Fit indices	Value
χ^2	341.94
p	<0.001
df	144
χ^2 / df	2.375
Root Mean Square Error of Approximation (RMSEA)	0.048
Standardized Root Mean Residual (SRMR)	0.040
Comparative Fit Index (CFI)	0.980
Normed Fit Index (NFI)	0.960
Goodness-of Fit Index (GFI)	0.940
Adjusted Goodness-of-Fit Index (AGFI)	0.930

The standardized solution and path coefficients of the model are shown in Figure 1 and the t values of the model in Figure 2.



χ^2 = 341.94 df=144 p=0.000 RMSEA=0.048

Figure 1. Standardized solution and path coefficients of the model



χ^2 = 341.94 df=144 p=0.000 RMSEA=0.048

Figure 2. The t values of the model

All items were positively and strongly correlated with their corresponding factors (perspective taking, compassionate care, and standing in patient's shoes) of the Jefferson Scale of Empathy. "Compassionate care" has strong and significant correlations with "perspective taking" (r=0.71, t-value=25.19>1.96) and "standing in patient's shoes"(r=0.20, t-value=3.59>1.96). Correlations between "perspective taking" and "standing in patient's shoes" were not significant.

Conclusion

In this study the reliability of the Turkish version of the Jefferson Scale of Empathy was found as 0.85 in general and 0.84, 0.73 and 0.62 for the three dimensions "perspective taking", "compassionate care" and "standing in patient's shoes" respectively. A previous study from Turkey found the internal consistencies in terms of the three dimensions of the scale as 0.83, 0.70 and 0.60 respectively (Gonullu & Oztuna, 2012). Hojat & LaNoue (2014) found the Cronbach's alpha coefficients for the corresponding three dimensions as 0.79, 0.69 and 0.68 and for the entire scale as 0.80. Reliability coefficients of these magnitudes are considered acceptable by professional organizations (AERA, 1999).

Factor analytic studies of the original Jefferson Scale of Empathy have often resulted in the three factors. These factors are "perspective taking", "compassionate care" and "standing in patient's shoes" (Hojat & LaNoue, 2014; Ward et al., 2009). However some studies with the original scale revealed two or four factors (Fjortoft et al. 2011; Sherman & Cramer, 2005). Studies with the translated versions of the scale have mostly resulted in three factor structure as like as in this study. Some examples of these studies are: In Mexico with 1,022 medical students (Alcorta-Garza et al., 2005) ; in Japan with 400 medical students (Kataoka et al., 2009) ; in Korea with 493 medical students (Roh et al., 2010); in South Africa with 164 medical students (Vallabh, 2011), in Turkey with 752 medical students (Gonullu & Oztuna, 2012) and in Spain with 1104 medical students (Ferreira-Valente et al., 2016) Both in this and in a previous study (Gonullu & Oztuna, 2012) among Turkish medical students item 18 of the scale revealed a factor loading of <0.40 furthermore the item total score correlation found not statistically significant. Similar results for Item 18 were found in studies with Brazilian (Paro et al., 2012) Japanese (Kataoka et al., 2009) Chinese (Wen et al., 2013) and Italian (Leombruni et al., 2014) versions of the Jefferson Scale of Empathy. Item 18 of the Turkish version of the Jefferson Scale of Empathy should be re-arranged. The negative wording (…*should not allow*…) and the reverse scoring for this item could be the cause of the low factor loading and insignificant item total score correlation. Changing this item as: "Physicians should allow themselves to be influenced

by strong personal bonds between their patients and their family members" with a scoring on 1=Strongly disagree to 7=Strongly agree may have yield different results. However this issue needs further assessment and evaluation including cultural variations.

There are only a few confirmatory factor analytic studies of the Jefferson Scale of Empathy. A study among 853 British medical students found the three factor model with a good fit (Tavakol et al., 2011). Another study on a sample of 1,187 Iranian medical students showed the three factor model with a moderate fit (Shariat & Habibi, 2013).

Our study supported the previously reported findings on the reliability (Cronbach's α), underlying constructs, and confirmation of the latent variable structure of the Jefferson Scale of Empathy. Similarities in factor pattern in different samples and countries indicate that the underlying components of the scale are relatively stable, regardless of cultural variation. In conclusion, this study has shown that the Jefferson Scale of Empathy can be used for measuring empathy among Turkish medical students with the exception of Item 18, "Physicians should not allow themselves to be influenced by strong personal bonds between their patients and their family members" in the original scale. The underlying reason for the unfitness of this item needs further evaluation.

Acknowledgements

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