

# The Reliability, Validity and Cross-Cultural Adaptation of Turkish Version of Jefferson Scale of Empathy for Health Professions Students

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## ABSTRACT

**Objective:** The study is aimed to study for the reliability, validity, and cross-cultural adaptation of the Turkish version of the Jefferson Scale of Empathy for undergraduate health profession students (JSE-HPS).

**Methods:** Cultural adaptation of JSE-HPS was carried out in 5 stages according to the protocol of Beaton et al. JSE-HPS was administered to students who educated in the departments of Physiotherapy and Rehabilitation, Nursing and Health Management. The reliability of JSE-HPS was evaluated by internal consistency and test-retest analysis using Cronbach's alpha and intraclass correlation coefficient (ICC), respectively. Criterion validity assessed by comparing the scores of JSE-HPS and Empathic Tendency Scale (ETS). An analysis of construct validity was carried out by exploratory and confirmatory factor analysis.

**Results:** The exploratory factor analysis revealed the presence of three factors that explain 44.68% of the total variance and that correspond to the dimensions of the original scale. Following factor structures were obtained as "Perspective taking", "Compassionate care" and "Standing in patient's shoes". Turkish version of JSE-HPS total score were significantly correlated with the ETS total score ( $r=0.187$ ,  $p=.005$ ). The Cronbach's Alpha internal consistency coefficient was found  $\alpha = .793$ . The test-retest reliability coefficient was 0.86. The confirmatory factor analysis verified a good fit of the model ( $\chi^2/df = 1.776$ ).

**Conclusion:** The Turkish version of JSE-HPS is a valid and reliable scale for evaluating empathy levels of undergraduate health professions students.

**Keywords:** Empathy, health professions students, Jefferson scale of empathy, empathic tendency scale

## 1. INTRODUCTION

Empathy, which can be briefly defined as understanding and feeling of one's thoughts upon experiences (1). It has been gaining importance in health care since Hojat et al., thoroughly described its core features such as cognitive part of empathy which is directly related to being able to understand experiences, concerns, and perspectives of the patient regarding patient care (2).

A great majority of the literature has been focusing on the aspect of physician and health care provider yet recently establishing or measuring empathy has been performed with the undergraduate students (3). There are a lot of studies showed that improved empathy levels in health professionals not only ensure patient compliance and satisfaction but also enhance the quality of the initial diagnosis (4, 5). Hojat et al. also contributed that increased empathy has been found to affect better clinical outcomes when compared to ones that have lower empathy (2). Gained efficient clinical outcomes with improved empathy have not been only shown for

physicians but also were shown in nurses who work with cancer patients (6).

Since empathy and its related dimensions are important to integrate a better skill to provide in health care, measuring empathy gained attention (7). Hogan's Empathy Scale (8), Empathic Tendency Scale (9), and Empathic Skill Scale (10) are tools that are often used to assess empathy yet these might have some lacks concerning measure specific subgroups. The Jefferson Scale of Empathy (JSE) was developed by Hojat et al., to measure empathy in physicians (2). JSE has three versions for Medical students (JSE-S), Health Professions (JSE-HP), Health Professions students (JSE-HPS) (2,11). Some studies used JSE in different profession cohorts such as nursing (7) and dentistry (12).

Due to the importance of empathy among health professionals has been understood, establishing the measure of empathy among undergraduate health profession students attract attention. JSE has 20 items that cover some parameters such

as physician's view from patient, understanding, feeling, and thinking experiences of patients (3). As a previously mentioned, other tools that assess empathy cannot be modifiable for some subgroups, thereby JSE-HPS seems to be convenient to adapt to empathetic studies involving healthcare students (3,11).

Since there might be lacking of some tools which assess empathy directly such as Empathic Tendency Scale and Empathic Skill Scale in Turkish language, yet these were discussed as cannot be quite modifiable to some specific subgroups such as health profession students (7). Although JSE-S and JSE-HP have Turkish versions, no instrument developed specifically health professions students such as JSE-HPS for evaluating empathy in Turkish language (13,14). As indicated before, JSE-HPS is a quite proper tool to adapt some specific subgroups due to items are easily modifiable. In addition, there is an emerging need for empathy assessment tool especially for undergraduate students in health sciences who are directly linked to patients one by one in Turkish language.

Thus, this study is aimed to study for the reliability, validity, and cross-cultural adaptation of the Turkish version of the Jefferson Scale of Empathy for undergraduate health profession students.

## 2. METHODS

### 2.1. Study Design

The research is a methodological study.

### 2.2. Study Setting and Sample

The study was conducted in a Faculty of Health Sciences in Izmir, Turkey between February 2020, and April 2020. All students who educated in the departments of Physiotherapy and Rehabilitation, Nursing and Health Management were asked to participate in this study (N=430). The students were informed about the research and their written informed consent was obtained. The research was started with 228 students who can be reached and agreed to participate in the research. This study was approved by local Ethics Committee (Reference number= 07/2020) and registered in the Clinical Trial Register (ref: NCT04422834). The inclusion criteria were set as being volunteer to participate and currently studying as a student in Faculty of Health Sciences.

### 2.3. Measurement

The data were gathered by using the sociodemographic form, JSE-HPS and Empathic Tendency Scale (ETS). Sociodemographic form consists of four questions about the age, gender, department and class of the students.

**Jefferson Scale of Empathy for Health Professions Students:** It was originally developed by Hojat et al. intended to measure empathy levels for health professional students. The JSE-HPS consists of a total 20-items each scored by seven-point Likert

Scale as 1: "Strongly disagree" through 7: "Strongly agree". Ten out of 20 items are scored directly according to the Likert weights while the other half are reversely scored. The minimum and maximum scores for JSE-HPS can be reached to 20 and 140, respectively. The higher scores indicate better empathic aspect or vice versa. The reliability coefficient of JSE-HPS was found to be 0.78 (2).

**Empathic Tendency Scale:** It was originally developed by Dokmen et al. specifically intends to measure the attitude of people's skill of empathy. Turkish validation and reliability study were also conducted in which internal reliability of the tool was found as 0.82 according to the Cronbach's alpha value. ETS has 20 items and each have 5-point Likert type feature where 1 through 5 equals to "Completely contradictory, Quite contradictory, Undecided, Quite proper, Completely proper", respectively. Each item of the tool consists of ideas regarding the behaviors which can be faced in daily life. One is required to fill each item by filling the one of the numbers from 1 through 5 by simply indicating how much they agree in the related idea. Since there are negative items in the scale, the relevant items were converted into positive items. Negative items are "3, 6, 7, 8, 11, 12, 13, 15". The minimum and maximum scores can be taken from the tool are 20 and 100, respectively. Higher scores indicate better empathic attitude or vice versa (9).

### 2.4. Translation and Cross-cultural Adaptation

Cultural adaptation of JSE-HPS was carried out in 5 stages according to the protocol of Beaton et al (15). At the first stage, original scale was translated separately into Turkish by a committee of three health professionals whose native language is Turkish. At the second stage, the same committee contributed to one integrated draft from three separately translated form of the tool to establish the most appropriate terms in the translated final version at the end of this stage. At the third stage, back translation in which two native English speakers who were out of the topic translated this scale back to English was perform. At the fourth stage, the expert committee studied the final draft to harmonize culturally to minimize differences between the original and translated version. At the fifth stage, a pilot study was carried out in 30 students by applying the Turkish version of the translated scale. After the pilot study, it was reported that the statement of "to stand in their patients' shoes" in the Item 9: "Health care providers should try to stand in their patients' shoes when providing care to them" was not understood by students. For this reason, this statement was changed to "to put themselves in their patients' place" for better understanding in Turkish culture. Since the whole scale was accepted as easily understandable and convenient with the Turkish language according to the pilot study results, the final version of the scale was established. The Turkish translation of the JSE-HPS was copyrighted by © Thomas Jefferson University, 2001. All rights reserved.

### 2.5. Reliability

The reliability of the JSE-HPS was evaluated by internal consistency and test-retest analysis. Cronbach’s alpha was computed to assess the internal consistency of scale. Cronbach’s Alpha coefficient ranges from “0” to “1” and approaching “1” shows that the scale items are consistent with each other (16). Test-retest reliability was done by re-applying the JSE-HPS after seven days. It was calculated by using the intraclass correlation coefficient (ICC) (17).

### 2.6. Validity

*Criterion validity* was assessed with by comparing JSE-HPS scores and ETS scores. Pearson’s correlation coefficient was used to quantify the magnitude of the correlation. It was categorized as poor (<0.40), fair to good (0.40–0.75), and excellent (>0.75).

*Construct validity* was evaluated by factorial analysis. Exploratory factor analysis was used to reduce data to a smaller set of summary variables. In confirmatory factor analysis, it was determined whether the factor structure assessed by exploratory factor analysis was confirmed for the Turkish sample (17).

### 2.7. Statistical Analysis

Statistical significance level was set as  $p \leq 0.05$  and all statistical analyses were performed using PASW software (SPSS, version 21). Demographic characteristics of students were shown according to variable types. Cronbach’s alpha coefficient was calculated to assess the internal consistency of the scale. The test-retest reliability of total score and each item was investigated via ICC and Kappa coefficient, respectively. Criterion validity was assessed by Pearson’s correlation coefficient. Keiser-Meyer-Olkin (KMO) and Bartlett’s sphericity test was conducted to investigate whether the scale was appropriate for factor analysis. Exploratory and confirmatory factor analysis were performed to assess the construct validity according to Eigen values.

## 3. RESULTS

430 students were informed about participating the study, however 228 students accepted to participate at baseline. 61 students did not attend test-retest analysis; therefore, this study was completed with 167 students. Students’ mean age was  $19.82 \pm 1.03$  year and 68.8% of the participants were females. According to departments, the distribution of the total sample was as follows: 39.5% nursing, 40.3% physiotherapy and rehabilitation, and 20.2% health management. A total of 53.9% of the students were in their first year of education while the rest of them were in the second grade.

## Validity

### Construct Validity

The KMO test which was performed to determine the compatibility of the data obtained with the 20 item – scale for factor analysis was found to be 0.78. Varimax rotation procedure was performed to analyze the principal components of the factors and factor loads were obtained. Three items (items 5, 12 and 18) in which factor loads below 0.30 were excluded from the scale. After elimination of items, KMO value was found as 0.82 and Bartlett’s test of sphericity resulted as  $\chi^2 = 917.382$ ,  $p < 0.001$ .

Explanatory factor analysis showed that JSE-HPS Turkish version includes three factors at which Eigenvalues of them were found to above one: Factor 1 (Items: 2,4,9,10,13,15,16,17,20), Factor 2 (Items: 1,7,8,11,14,19) and Factor 3 (Items: 3,6). These factors were identified as “Perspective taking” (PT), “Compassionate care” (CC) and “Standing in patient’s shoes” (SPS), respectively. Factors 1, 2 and 3 were found to be able to explain total variances as follows: 27.45%, 9.43% and 7.81%, respectively. These factors explain 44.68% of total variance. Factor loading are shown in Table 1.

Table 2 presents the goodness of fit indexes of the three factors model consisting of 17 items. Accordingly, the ratio of chi square degrees of freedom was  $\chi^2/df = 1.776$ ; Root Mean Square Error of Approximation (RMSEA) was 0.058 and Comparative Fit Index (CFI) was 0.889. Figure 1 presents the confirmatory factor analysis diagram of the model.

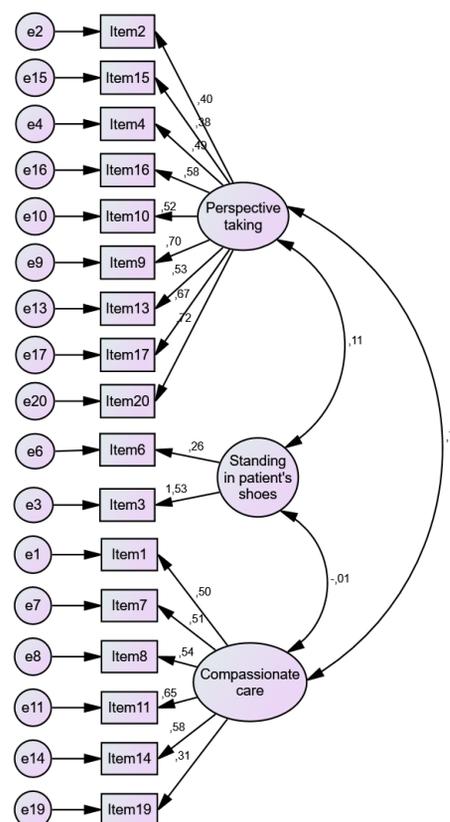


Figure 1. Confirmatory Factor Analysis Diagram of JSE-HPS.

**Table 1.** Factor loadings of items of the Turkish version of JSE-HPS

Items	Sub-dimensions		
	1. PT	2. CC	3. SPS
2. Patients feel better when their health care providers understand their feelings.	0.45		
4. Understanding body language is as important as verbal communication in health care provider – patient relationships.	0.51		
9. Health care providers should try to stand in their patients’ shoes when providing care to them.	0.64		
10. Patients value a health care provider’s understanding of their feelings; this has a therapeutic effect.	0.57		
13. Healthcare providers should try to understand what is in the minds of patients by paying attention to non-verbal cues and body language.	0.66		
15. Empathy is a therapeutic skill without which a health care provider’s success is limited	0.49		
16. Healthcare providers’ understanding of the emotional status of their patients and their families, is an important component of the healthcare provider – patient relationship.	0.57		
17. Healthcare providers should try to think like to care better for their patients.	0.76		
20. I believe that empathy is an important factor in patients’ treatment.	0.66		
1. Health care providers’ understanding of their patients’ and their families’ feelings does not influence medical or surgical treatment.		0.65	
7. Attention to patients’ emotions is not important in patient interview.		0.54	
8. Attentiveness to patients’ personal experiences does not influence treatment outcomes.		0.69	
11. Patients can be cured only by targeted treatment; therefore, health care providers’ emotional ties with their patients do not have a significant influence in treatment outcomes.		0.56	
14. I believe that emotion has no place in the treatment of medical illness.		0.69	
19. I do not enjoy reading non-medical literature or the arts.		0.4	
3. It is difficult for a health care provider to view things from patients’ perspectives.			0.76
6. Because each person is different, it is difficult to see events from the patients’ perspective.			0.8
<b>Eigenvalue variance</b>	1.6	4.67	1.33
<b>Explained variance</b>	9.43%	27.45%	7.806%
<b>Total variance</b>	44.68%		

PT= Perspective taking, CC= Compassionate care SPS= Standing in patient’s shoes

**Table 2.** Item-total correlation coefficient of the JSE-HPS

	Corrected Item-Total Correlation	Cronbach’s Alpha if Item Deleted
Item 20	0.603	0.771
Item 9	0.587	0.768
Item 11	0.54	0.773
Item 16	0.513	0.776
Item 17	0.508	0.773
Item 10	0.46	0.781
Item 13	0.448	0.778
Item 7	0.442	0.78
Item 14	0.417	0.78
Item 4	0.415	0.783
Item 8	0.406	0.781
Item 15	0.337	0.787
Item 1	0.336	0.79
Item 2	0.333	0.787
Item 19	0.237	0.792
Item 6	0.148	0.802
Item 3	0.143	0.803

**Criterion Validity**

Concurrent validity results showed that the Turkish version of JSE-HPS total score ( $r=.187, p=.005$ ) and CC ( $r=.151, p=.023$ ) and SPS ( $r=.158, p=.017$ ) subscale scores were significantly

correlated with the ETS total score except for PT subscale score.

**The Floor-Ceiling Effect**

The floor-ceiling effect was calculated for the first measurement of the items in JSE-HPS. The probability of students to answer as “Strongly agree = 7” for ceiling effect in “Item 13” and “Item 20” was higher compared to other items. The probability of answering “Strongly disagree = 1” for floor effect in “Item 2” and “Item 7” was much higher compared to other items.

**Reliability**

**Internal Consistency / Item-total Correlation**

The Cronbach’s Alpha internal consistency coefficient obtained from the JSE-HPS scoring system was found  $\alpha = .793$ . Cronbach’s alpha internal consistency coefficients were found for factors PT, CC and SPS as follows:  $\alpha = .78, \alpha = .67$  and  $\alpha = .58$ , respectively. Item-total correlation coefficients were ranged between  $r = .143$  (Item 6) and  $r = .603$  (Item 20) (Table 2). The total scale mean score was found as  $96.21 \pm 10.71$ , and the mean scores of the sub-factors PT, CC and

SPS were found as  $53.32 \pm 6.51$ ,  $35.23 \pm 5.14$  and  $7.68 \pm 2.63$ , respectively.

### Test-retest Analysis

The scale was implemented by 167 students after seven days to examine the consistency of the scale over time. The test-retest reliability coefficient was found to 0.86 for the whole scale and 0.81, 0.86 and 1 for the subscales, respectively ( $p < .001$ ) (Table 3). According to the Intraclass correlation coefficient (ICC) values, it was determined that the scale has "good to excellent" test-retest results.

**Table 3.** Reliability of Turkish version of JSE-HPS

JSE-HPS subdimensions	ICC (95% CI)	p
Perspective taking (PT)	0.86 (0.81-0.89)	<.001
Compassionate care (CC)	0.81 (0.74-0.86)	<.001
Standing in patient's shoes (SPS)	1	<.001
Total	0.86 (0.83-0.91)	<.001

JSE-HPS=Jefferson Scale of Empathy-HealthProfessionsStudents; ICC= Intraclass correlation coefficient

## 4. DISCUSSION

This is the first study of Turkish validation of the JSE-HPS with undergraduate health professions students educating departments of physiotherapy and rehabilitation, nursing, and health management. According to the results, Turkish version of the JSE-HPS is a reliable, valid, and appropriate scale to evaluate empathy among health professions students demonstrated satisfactory psychometric properties which was consistent with the original version (18).

Since the importance of empathy and its related aspects in terms of health care has been understood well, the need of measuring empathy not only objectively but also holistically arise (19). The "Jefferson Scale of Empathy", which was developed by Hojat et al, has been the most frequently used scale globally according to the numbers which show translated a total of 39 languages along with the confirmed psychometric properties in several languages in different World regions (2,11,19). When compared to the translated ones, the Turkish version is also compatible in terms of obtained factors, explained cumulative variance, and overall reliability and validity scores. "Perspective Taking", "Compassionate care" and "Standing in Patient's shoes" are factors that are the same with Brazilian, Japan, Iranian, and Mexican versions of JSE-HPS (20-22)

Considering the overall scores obtained from Brazilian, Iranian, and Japan versions, the overall score of the Turkish version of JSE-HPS was found to be relatively lower. The reason for lower scores of JSE-HPS might be multi-dimensional such as the difference in cultural characteristics and some intrinsic and extrinsic factors (20-22). On the other hand, relatively lower scores might be attributable to a few factors related to sample characteristics such as half of them were 1st grade of students and arbitrary filling of the questionnaire might also contribute.

The exploratory factor analysis of the Turkish version of JSE-HPS showed a moderate to good compatibility with the findings obtained JSE translation studies in the literature by expressing the main three factors such as "Perspective Taking", "Compassionate Care" and "Standing in the patient's shoes", respectively. The factor structure was same as the original JSE-HPS scale (11). As a result of the fit index values revealed in the confirmatory factor analysis of the scale, it was found that the three-factor model fit the data well. Similarly, a three-factor structure was found in the results of other studies published except for Williams et al. (7,13,23-27). A total of 45% cumulative variance was reported by Paro et al, likewise the same range was obtained in our study (20). "Compassionate Care" was found the main factor according to the contributed variance in the Brazilian version of JSE-HPS, however; "Perspective Taking" was found the main contributing factor not only in the Japan version but also in the Turkish version. This main difference can be attributed to the cultural diversities between Eastern and Western countries. However, Item 5 "A health care provider's sense of humor contributes to a better clinical outcome", in the PT factor; Item 12 "Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints" and Item 18 "Health care providers should not allow themselves to be influenced by strong personal bonds between their patients families" in the CC factor were extracted due to the lower factor loadings below 0.30. Similar results were produced in the literature. For example, Williams et al.<sup>3</sup> reported that three items (Item 2, Item 5 and Item 18) were removed from the scale. However, in some studies (25-27) it was concluded that the 20-item scale was valid and reliable similar to the original scale. The main reason for removing three items could be related to translation or cultural differences. Different sense of humor of health care providers, different requests of patients to describe their daily lives and strong personal bonds between Turkish population and Western cultures are very common. This situation could be the reason of lower factor loading for Item 5 "A health care provider's sense of humor contributes to a better clinical outcome". In eastern cultures asking one's situation not only in the clinical base but also personally is accepted as respectful and sincere behavior therefore Item 12 "Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints" might have created confusion. In addition, since the holistic approach to the patient is not in the foreground in the education of the students in health management department, they may have thought that the private lives of the patients are not related to their physical complaints.

Item 18 "Health care providers should not allow themselves to be influenced by strong personal bonds between their patients families" was removed from the scale in most validity and reliability studies (3, 7, 13, 20, 21, 23, 28). It may be related to translation or cultural differences. Participants' perception of the importance of strong personal ties between patients and families due to their different sociocultural structure may differ. Again, the meaning of these items may differ in

situations where the patients' family members should be included in making decisions about the patient. Especially strong personal ties between Turkish family members may have also led to this result.

The floor and ceiling effect, which can be analyzed by a cumulative rate of "Strongly agree" and "Strongly disagree" in item-based, Item 13 "Health care providers should try to understand what is in the minds of patients by paying attention to non-verbal cues and body language." and Item 20 "I believe that empathy is an important factor in patients' treatment." showed ceiling effect while Item 2 "Patients feel better when their health care providers understand their feelings." and Item 7 "Attention to patients' emotions is not important in patient interview." showed floor effect. In our opinion, the floor effect of item 2 in the Turkish version of JSE-HPS can be attributed to some cultural patient characteristics in Turkish people by thinking that the patients might exaggerate their condition. However, the floor effect in item 7 is a relatively expected result due to great majority of participants were nursing and physiotherapy students who may think that the anamnesis is very important in both patient care and rehabilitation.

The reliability of the Turkish version of JSE-HPS was found around 0.80 which is accepted as a good result and coherent with other JSE-HPS studies along with the factors' scores (20-22, 29) according to the Cronbach's alpha value. The Cronbach's alpha value in the Spanish, Korean, Italian Chinese and Australian versions of JSE-HPS was 0.83, 0.87, 0.78, 0.93 and 0.75, respectively (3, 23, 25, 27, 28). The test re-test analysis which focuses on consistency over time of the Turkish version of the JSE-HPS was found excellent according to the ICC value even it was completed with a 27% attrition rate. This value shows that the scale scores are constant with respect to time.

Turkish version of JSE-HPS is a valid tool for evaluating empathy since the correlations between the scales show moderate effect sizes. Although there is a relatively lacking in different JSE-HPS studies, we also analyzed the criterion-related validity by the Turkish version of the ETS (9), and found good to excellent correlations not only for the total score but also for each factor except for perspective taking.

Item total correlation is the correlation between a single item and the total of items. For internal consistency, the item-total score correlation of each item is expected to be at least  $r = 0.20$ . However, the decision to remove items below this value is made by evaluating the effect of the item on the Cronbach's alpha coefficient. In this study, it was decided to keep these items in the scale since there was no significant difference in the Cronbach's alpha value when Item 3 (0.143) and Item 6 (0.148) with low item-total correlations were excluded, and these items theoretically measure empathy. The item-total correlations range varies in different studies in literature as 0.11 to 0.46,<sup>7</sup> 0.34 to 0.64<sup>23</sup> and, 0.17 to 0.63<sup>25</sup>.

There are some strengths and limitations of this study. Analyzing criterion-related validity with ETS along with EFA

within construct validity might be accepted as a strength. Also, applying the Turkish version of JSE-HPS to different health professions students is another strength of our study. The following issues can be assigned as limitations: This study was performed in a certain socio-demographic region and only in one university. Also, it was conducted on undergraduate students studying in departments of physiotherapy and rehabilitation, nursing, and health management. JSE-HPS has been developed on all healthcare professions students. Therefore, it may be suggested to carry out validity and reliability studies with a sample different undergraduate (midwifery, nutrition and dietetics, language and speech therapist, paramedic, etc.) and graduate students. Another limitation is relatively higher attrition rate in test re-test period. However, our results are consistent and can be crosschecked with other JSE-HPS translation and validation studies.

## 5. CONCLUSION

Evaluating the empathy levels of health professions students during their education is important in terms of gaining empathy skills. JSE-HPS is a specific scale that evaluates the empathy level of health professions students. The results of the study determined that the Turkish version of JSE-HPS is a valid and reliable scale for evaluating undergraduate health professions students' empathy level. It was concluded that the Turkish version of JSE-HPS has satisfactory psychometric properties as a measure of empathy in Turkish health professions students and can be used to identify important factors in empathy education. Since JSE-HPS is about the empathy level, the relationship of the scale with variables such as communication, self-sensitivity, problem solving, and emotional intelligence related to the concept of empathy can be examined in further studies.

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**Conflicts of interest:** The authors declare that they have no conflict of interest.

### **Ethics Committee Approval:**

This study was approved by Ethics Committee of İzmir Bakircay University Non-invasive Clinical Research Ethics Committee (Approval date: 07/02/2020; protocol number: 07)

**Peer-review:** Externally peer-reviewed.

### **Author Contributions:**

Research idea: EGİ, KÖ, AT, YB

Design of the study: EGİ, KÖ, AT, YB

Acquisition of data for the study: EGİ, KÖ, AT

Analysis of data for the study: AT

Interpretation of data for the study: EGİ, KÖ, AT, YB

Drafting the manuscript: EGİ, KÖ, AT, YB

Revising it critically for important intellectual content: EGİ, KÖ, AT, YB

Final approval of the version to be published: EGİ, KÖ, AT, YB

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