


RESEARCH

Open Access



Development of an empathy scale in nurses

Funda Karaman^{1*}, Buse Saygin Şahin², Ayşe Nur Yerebakan Şen², Mahruk Rashidi³, Melis Şen Yılmaz¹, Ayşegül Kocadereli⁴ and Aleyna Ustaoglu¹

Abstract

Objective To develop an empathy scale to measure the empathy in nurses.

Materials and methods The sample of the study were collected between March and May in 2023 from 720 nurses working in private and state hospitals in İstanbul. Both exploratory factor analysis and confirmatory factor analysis were carried out. IBM SPSS and AMOS were utilized for statistical analyses.

Results KMO and Bartlett's test values of scale showed that the dataset was convenient for factor analyses (KMO=0.94, Chi-Square=9683.89, df=595). In exploratory factor analysis, the 16 items comprising scale were distributed in three subscales. The confirmatory factor analysis revealed that the scale was in sufficient model fit. Cronbach's alpha of the total scale was 0.91.

Conclusion Empathy scale is a valid and reliable measurement tool to evaluate the empathy levels of nurses in three subscales: Emotional Empathy, Cognitive Empathy and Compassionate Empathy. The scale is a valuable tool for quality nursing care and contributes to the definition of strategies that advance the quality of nursing care.

Keywords Nurse, Empathy, Scale, Validity, Reliability

Introduction

In a general context, empathy is described as the ability to feel, share, understand and care about the emotions of other people. Empathy provides putting own feelings aside and focus on the other person [1–4]. Considering the concept of empathy, which is defined in different and various ways due to its multidimensional nature [5]; while some researchers consider empathy cognitively [6]; some researchers have focused on the affective function

of empathy [7, 8]; While other researchers consider empathy as a whole of cognitive and affective processes [9, 10]. Morse et al. (1992) described empathy as a whole of affective, cognitive, moral and behavioral processes [11].

Empathy is an essential component of the nurses–patient relationship in nursing care and focused on in the nursing literature [12]. Empathy enhances communication between nurses and patients, contributes building trust in patients and helps patients feel safe and understood. Nurses are a significant member of the health team who spend the most time with patients. So they need to understand patient's needs in order to provide a high quality patient care [13]. Nurses need to show the patient with an empathetic approach to understand the needs of the patients correctly and achieve more positive health outcomes [14]. Empathetic approach enhances patient satisfaction and leads to more positive health outcomes [15]. An empathetic nurse may listen to the perspectives

*Correspondence:

Funda Karaman
fundakaramannn@gmail.com

¹Department of Nursing, Faculty of Health Sciences, Biruni University, Merkezefendi, 75 St No:1-13 M. G, Zeytinburnu, İstanbul 34015, Turkey

²Department of Nursing (Eng.), Florence Nightingale Hospital School of Nursing, Demiroğlu Bilim University, İstanbul, Turkey

³Department of Nursing, Faculty of Health Sciences, İstanbul Gelişim University, İstanbul, Turkey

⁴Department of Dialysis, Vocational School, Biruni University, İstanbul, Turkey



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

of sick/healthy individuals, try to understand them, reflect their feelings and support them. In this process, it is important to consider the needs and expectations of individuals, to respect their culture, beliefs and values, to accept their differences and not to be biased to them [12].

Some studies have indicated that empathy in nursing could contribute to patient's positive health outcomes [16–25]. Therefore, it is necessary to determine the empathy skills of nurses and to develop the lack of points. While there are empathy scales designed for the general population or various professional groups in the literature [1, 26, 27], there is no scale specifically aimed at measuring the empathy levels of nurses. This study aims to develop an empathy scale that differs from existing scales by providing a more sensitive and detailed assessment of the empathy demonstrated by nurses during patient care. It is thought that the scale that will be developed as a result of the study will contribute to the determination of the empathy levels of the nurses and what needs to be done for the identified deficiencies.

Methods

Study design and setting

The study was a methodological research. The study was performed online (All responses were obtained via Google Forms) by the researchers between March and May in 2023 from 720 nurses working in state/private hospitals in İstanbul. Working for less than 1 year was determined as an exclusion criterion. The Checklist for Reporting Results of Internet E-Surveys (CHERRIES) was used to evaluate the quality of Web surveys [28].

Data collection forms

Data were collected by using the “*Information Form*” and “*Empathy Scale in Nurses*”.

Information form

In the form, there were 6 questions about sociodemographic characteristics (age, gender, marital status, education level, professional experience and unit of work).

Empathy scale in nurses

Empathy Scale was developed in five stages.

Phase I The relevant literature was reviewed by examining multiple literature databases. The selection of scale items and the literature review were conducted within the conceptual framework of Goleman's Theory of Emotional Intelligence. According to Goleman, empathy is a central component of emotional intelligence, categorized into three primary sub-dimensions: cognitive empathy, emotional empathy, and compassionate empathy [29, 30].

Phase II The item pool was composed by the researchers depend on a comprehensive literature review [1, 5, 13, 19, 20, 23]. The literature suggests that the initial item pool developed should be at least twice as long as the desired final scale [31, 32]. The item pool of the scale included 35 items in a 5-point likert type.

Phase III The draft scale items were examined by 5 lecturers who are experts in the field of nursing, 3 specialist nurses working in the clinical field, 1 clinical psychologist and a language specialist. Davis method was used in the examination of scale items [33]. The Content Validity Index (CVI) values of the scale were calculated and the results indicated no item had a content validity index less than 0.90. No changes were conducted based on the feedback and it was determined that the scale included 35 items.

Phase IV A pilot study was performed to 30 nurses. After the application, the draft scale form was observed to be understandable.

Phase V Exploratory Factor Analysis (EFA) and confirmatory factor analysis (CFA) was performed. Cronbach's alpha and test-retest method was used for the reliability of the scale.

Data analysis

The statistics of the data were evaluated by SPSS and AMOS. Exploratory Factor Analysis (EFA) was performed for the validity of the scale, and confirmatory factor analysis (CFA) was utilized to define the accuracy.

Ethical considerations

The study was approved by İstanbul Gelisim University Ethics Evaluation Board (no.2023/02/36-dated.01.18.2023). The study was applied via the Google Forms. The written consent was obtained from all the participants was informed.

Results

Demographic characteristics of the participants

The mean age of the nurses in the study was 34.39 ± 8.18 (20–52) years, 81.9% were female, 54.8% were married, and 59.9% were bachelor's degree. 61.2% of the nurses had 10 years of nursing experience. Units where participants work in were; Intensive Care Units (10.2%), Palliative Care Services (11.4%), Polyclinics (13.6%), Management and Quality Departments, Education Units (13.6%), Emergency Units (5.1%), Operation Rooms (6%), Surgical Units (8.1%), Internal Disease Units (13.6%), Neonatal-Pediatric Units (5.7%), Gynecology Units (7.5%), Cardiology-Cardiovascular Units (5.4%),

Table 1 KMO and Bartlett’s test values

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		
		0.94
Bartlett’s Test of Sphericity	Chi-Square Value	9683.89
	Df	595
	sig.	0.000

Table 2 Total variances explained

Factor	Eigenvalue	Cumulative %
1	28.430	28.430
2	23.407	51.836
3	14.554	66.390

Neurology-Neurosurgery Units (5.4%) and Mental Health Unites (7.8%).

Validity and reliability of research results

Construct Validity Analysis: EFA and CFA were performed to test the construct validity of the scale. The factor analyses of the scale was performed with Varimax Rotation Method and Principal Component Analysis. The KMO value of the scale was found 0.94 ($p=0.00$) and the anti-image r values=0.90–0.97 (Table 1). The item-total distribution value of all items in the scale was found between 0.41 and 0.70. The first factor analysis was made with 35 items, and the scale after the analysis consisted of 5 sub-scales. However, in the first factor analysis, it was decided to exclude 6 items (10,14,16,24,25,31) from the scale because they were included in more than one sub-scale. Then, a second factor analysis was performed with 29 items and 13 items (1,2,7,8,11,13,17,18,20,27,32, 34,35) were eliminated because they were found in more than one subscale. The final analysis was conducted with remained 16 items. After these analyses it was found that

the scale had 3 sub-scale. When the sub-scale were examined, it was seen that each item was grouped in a logical way for each subscale.

On the graph, the point where the curve falls rapidly was where the third factor was found (Fig. 1). After the third factor, the curve of the graph continued in the same path.

Table 2 showed eigenvalues and percentages of cumulative variance for the three factors.

According to EFA, the distribution of the items decided to be in the scale according to the factors and their factor loads are given in Table 3.

It was found that the items with an eigen value of 1 were collected in 3 sub-scales and that the scale items had acceptable load values (0.61–0.83) in the sub-factors.

According to CFA goodness of fit indices for the three subscale structure were $\chi^2:312.002$, $df:101$, $RMSEA=0.07$; $GFI=0.90$; It was calculated as $CFI=0.93$ (Table 4). It was stated that the factor loads of the scale items were above the previously determined limit of 0.30,

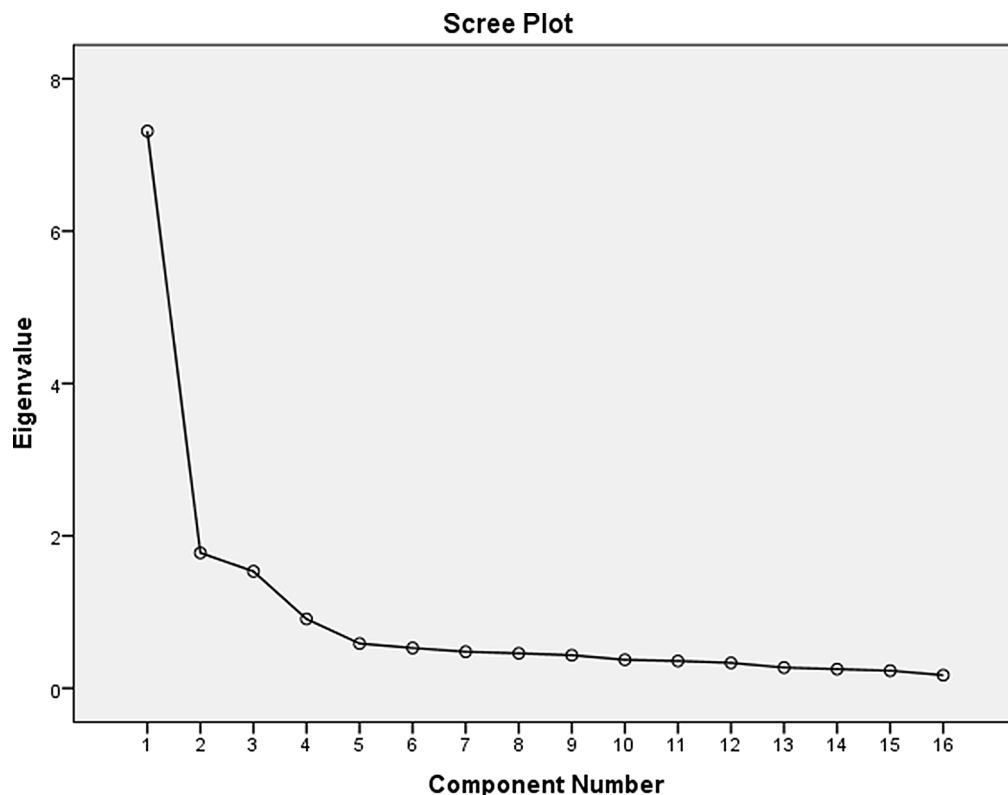


Fig. 1 Scree plot

Table 3 Transformed matrix components after factor analysis

	Factors		
	1	2	3
Item 9	0.723		
Item 15	0.687		
Item 19	0.681		
Item 21	0.762		
Item 26	0.625		
Item 28	0.610		
Item 29	0.752		
Item 33	0.678		
Item 3		0.772	
Item 4		0.829	
Item 5		0.829	
Item 6		0.830	
Item 12		0.767	
Item 22			0.788
Item 23			0.755
Item 30			0.807

Table 4 Fit indices

Indexes	Values of confirmatory factor analysis	Good fit	Acceptable
χ^2/df	3.08	≤ 3	≤ 5
RMSEA	0.07	≥ 0.05	≤ 0.08
GFI	0.90	≥ 0.90	≥ 0.85
CFI	0.93	≥ 0.95	≥ 0.90
		$\chi^2: 312.002, df:101, p:0.00$	

and the goodness of fit indexes were within normal values (Fig. 2).

The subscale were named taking into consideration the literature. In this context, subscales are named as emotional empathy (the ability to share the emotions of others and deeply understand their feelings), cognitive empathy (the ability to understand another person's perspective and comprehend what they are thinking), compassionate empathy (the desire to take action for the well-being of others after understanding their emotional states), respectively (Table 5).

Internal consistency analysis

Internal consistency of the scale was evaluated by using Cronbach's alpha analysis. The Cronbach's alpha value of the total scale was 0.91. Cronbach's Alpha values for the sub-scales of the scale were found to be 0.89 for Factor 1 (Emotional Empathy), 0.91 for Factor 2 (Cognitive Empathy) and 0.80 for Factor 3 (Compassionate Empathy) (Table 5).

Pearson Product Moment correlation analysis technique was performed for the relationship between the scale and its sub-scales, and there was statistically significant positive correlation between the scale total score

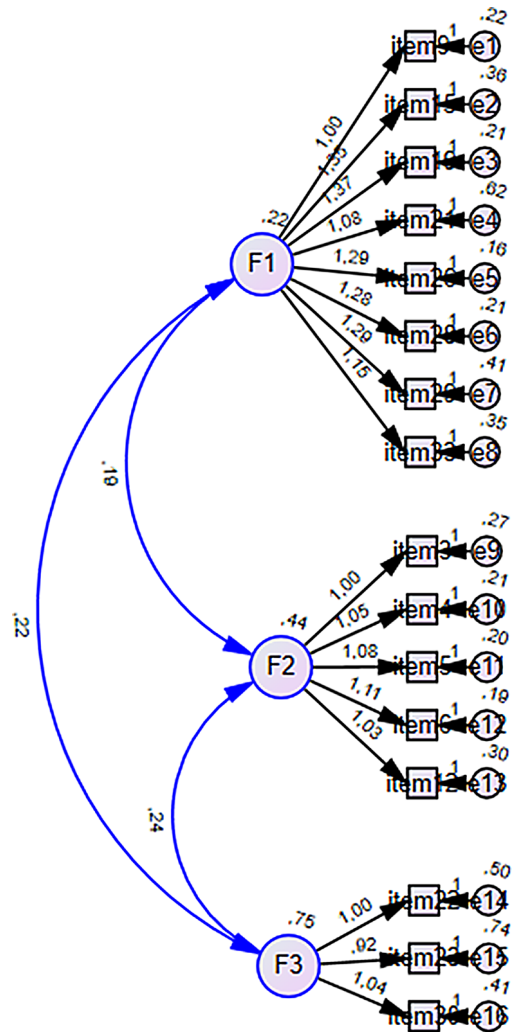


Fig. 2 Path diagram

and all sub-scale scores. These findings are accepted as a demonstration that the scale has a three-factor structure.

External consistency analysis

The external consistency of the scale was examined by using test-retest. Scale items were administered to 30 nurses from the population at intervals of 2 weeks. In case a high reliability coefficient is seen with this analyse, it shows that there is a stability between the results obtained from the two applications. The mean of the scale after the first application was 62.68 ± 9.32 , and 65.73 ± 10.52 at the second application. The paired group t-test and the Pearson correlation test were used for defining relationship between the two measures. Test-retest scores were compared with the t-test. There was no significant correlation between the mean scores of the two measurements ($p > 0.001$).

Table 5 Empathy scale in nurses and cronbach alpha values**Factor 1. Emotional Empathy ($\alpha=0.89$)**

- Item 9 (1) My Patient's feelings are important for me.
- Item 15 (2) I try to solve my patient's problem immediately as it's mine.
- Item 19 (3) When giving nursing care to my patient, I put myself in patient's shoes.
- Item 21 (4) I fear that the disease in my patient will one day occur in me or in my relatives.
- Item 26 (5) Since I understand my patient's sadness, I approach with sensitivity.
- Item 28 (6) My patient's happiness makes me happy too.
- Item 29 (7) I always put myself in the patient's shoes when faced with ethical dilemmas.
- Item 33 (8) I see empathizing with the patient as a requirement of my profession.

Factor 2. Cognitive Empathy ($\alpha=0.91$)

- Item 3 (9) I can understand what my patient is thinking.
- Item 4 (10) I know what my patient wants to tell me.
- Item 5 (11) I can understand why my patient is unhappy.
- Item 6 (12) I can understand why my patient is angry.
- Item 12 (13) I can understand from my patient's actions why my patient is unhappy

Factor 3. Compassionate Empathy ($\alpha=0.80$)

- Item 22 (14) Bad situation of the patient lowers my mood.
- Item 23 (15) I cry when my patient cries.
- Item 30 (16) My patient's mood changes also affect my mood.

Scoring and evaluation of the scale

Present scale is a 5 point Likert-scale and does not include any negative items or reverse item. The answers to the scale items were coded as "Strongly Agree: 5", "Agree: 4", "Undecided: 3", "Disagree: 2", "Strongly Disagree: 1". The minimum total score of the scale is 16 and the maximum total score is 80. As the score increases, the empathy levels of the nurses also increase.

Discussion

The present scale was developed as a self-report tool. The tool evaluates the empathy levels of nurses. The most significant contribution of the present scale is the introduction of a new academically valid and reliable measurement tool to the literature. The empathy scale for nurses consists of 16 items and a three-factor structure. The first sub-scale created with the items was named "Emotional Empathy", the second subscale created was named "Cognitive Empathy", and the third subscale created was named "Compassionate Empathy".

For the construct validity of the scale, first EFA and then CFA were performed. As a result of EFA, factor loads of the scale ranged between 0.61 and 0.83. In the literature, factor loads of 0.45 and above emphasize that it is an accepted value [34]. The 3-subscale structure represents 66.39% of the total variance. The higher the total variance value, the stronger the factor structure is accepted [34, 35].

CFA is a procedure, from model identification, conceptualization, and parameter estimation, to data-model fit assessment and potential model modification [34, 36]. It was found that the desired criteria values were met with the obtained CFA results. The structure of the present scale is generally acceptable. In terms of reliability, the Cronbach's Alpha reliability of the scale was calculated and the total scale Cronbach's Alpha reliability coefficient was found to be 0.91. As a result of the analysis, it was concluded that the scale is valid and reliable with its 3 subscale structure.

Acknowledgements

Not Applicable.

Author contributions

FK: Formal Analysis, Data Curation, Writing – review & editing, ANYS: Writing – original draft BSS: Data collection, Writing – original draft, Writing – review & editing, MR: Data collection, Writing – original draft, MSY: Writing–original draft, AK: Writing – original draft, AU: Writing – original draft.

Funding

None.

Data availability

The data that support the findings of this study are available from corresponding author on reasonable request.

Declarations**Ethics approval and consent to participate**

The study was approved by İstanbul Gelisim University Ethics Evaluation Board (no.2023/02/36- dated.01.18.2023). Researchers obtained written consent from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 24 June 2024 / Accepted: 19 November 2024

Published online: 03 December 2024

References

- Kiersma ME, Chen AM, Yehle KS, Plake KS. Validation of an empathy scale in pharmacy and nursing students. *Am J Pharm Educ.* 2013;77(5):94. <https://doi.org/10.5688/ajpe77594>.
- Klimecki OM. The role of empathy and compassion in conflict resolution. *Emot Rev.* 2019;11(4):310–25. <https://doi.org/10.1177/1754073919838609>.
- Rizzolatti G, Fogassi L, Gallese V. Mirrors of the mind. *Sci Am.* 2006;295(5):54–61. <https://doi.org/10.1038/scientificamerican1106-54>.
- Babaii A, Mohammadi E, Sadooghiasl A. The meaning of the empathetic nurse-patient communication: a qualitative study. *J Patient Exp.* 2021;8. <https://doi.org/10.1177/23743735211056432>.
- Lawrence EJ, Shaw P, Baker D, Baron-Cohen S, David AS. Measuring empathy: reliability and validity of the Empathy Quotient. *Psychol Med.* 2004;34(5):911–20.
- Barnett MA. Empathy and related responses in children. In: Eisenberg N, Strayer J, editors. *Empathy and its development.* Cambridge: Cambridge University Press; 1990. pp. 146–63.
- Bernadett-Shapiro S, Ehrensaft D, Shapiro JL. Father participation in childcare and the development of empathy in sons: an empirical study. *Family Therapy.* 1996;23(2):77–93.

8. Hoffman ML. Empathy and moral development: implications for caring and justice. Cambridge: Cambridge University Press; 2000.
9. Eisenberg N, Fabes RA. Empathy: Conceptualisation, measurement, and relation to prosocial behavior. *Motivation Emot.* 1990;21(2):65–86.
10. Davis MH. Empathy: a social psychological approach. Westview; 1994.
11. Morse JM, Anderson G, Bottorff JL, Yonge O, O'Brien B, Solberg SM, McIlveen KH. (1992). Exploring empathy: a conceptual fit for nursing practice? *Image: The journal of nursing scholarship*, 24(4), 273–280.
12. Ginger W, Evans Dorothy LW, Martha R, Alligood, Mike O'neil. (1998). Empathy: A Study of two types. *Issues in Mental Health Nursing*, 19(5), 453–461.
13. Fashami FM, Nili M, Mottaghi M, Farahani AV. (2023). Measuring Empathy in Iranian pharmacy students using the Jefferson Scale of Empathy-Health Profession Student Version. *Am J Pharm Educ*, 87 (2).
14. Özdemir C, Kaplan A. Examining nurses' humanistic behaviour ability and empathy levels in clinical practice: a descriptive and exploratory study. *J Clin Nurs.* 2024;00:1–13. <https://doi.org/10.1111/jocn.16992>.
15. Hurissa BF, Koricha ZB, Dadi LS. Effect of empathy training on the empathy level of healthcare providers in Ethiopia: a cluster randomized controlled trial. *Front Psychol.* 2023;14:1091605. <https://doi.org/10.3389/fpsyg.2023.1091605>.
16. Norman KD. The role of empathy in the care of dementia. *J Psychiatric Ment Health Nurs.* 1996;3:313–7.
17. Reynolds W, Scott B. Do nurses and other professional helpers normally display much empathy. *J Adv Nurs.* 2000;31:226–34.
18. Williams L. Empathic communication and its effect on client outcome. *Issues Ment Health Nurs.* 1979;2:15–26.
19. La, Monica EL, Wolf RM, Madea AR, et al. Empathy and nursing care outcomes. *Sch Inq Nurs Pract.* 1987;1:197–213.
20. Hojat M, DeSantis J, Shannon SC. The Jefferson Scale of Empathy: a nationwide study of measurement properties, underlying components, latent variable structure, and national norms in medical students. *Adv Health Sci Educ Theory Pract.* 2018;23:899–920. <https://doi.org/10.1007/s10459-018-9839-9>.
21. Kelley KJ, Kelley MF. Teaching empathy and other compassion-based communication skills. *J Nurses Prof Dev.* 2013;29(6):321–4.
22. Strekalova YA, Krieger JL, Kleinheksel AJ, Kotranza A. Empathic communication in virtual education for nursing students: i'm sorry to hear that. *Nurse Educ.* 2017;42(1):18–22.
23. Wu Y. Empathy in psychotherapy: using conversation analysis to explore the therapists' empathic interaction with clients. *South Afr Linguistics Appl Lang Stud.* 2019;37(3):232–46.
24. Tyner R. Elements of empathic care for dying patients and their families. *Nurs Clin North Am.* 1985;20(2):393–401.
25. Raudonis BM. The meaning and impact of empathic relationships in hospice nursing. *Cancer Nurs.* 1993;16(4):304–9.
26. Spreng* RN, McKinnon* MC, Mar RA, Levine B. The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *J Pers Assess.* 2009;91(1):62–71.
27. Hojat, M., Mangione, S., Nasca, T. J., Cohen, M. J., Gonnella, J. S., Erdmann, J.B., ... Magee, M. (2001). The Jefferson Scale of Physician Empathy: development and preliminary psychometric data. *Educational and psychological measurement*, 61(2), 349–365.
28. Eysenbach G. Improving the quality of web surveys: the Checklist for reporting results of internet E-Surveys (CHERRIES). *J Med Internet Res.* 2004;6(3):e34.
29. Goleman D, McKee A, Waytz A. Empathy (HBR emotional intelligence series). Harvard Business; 2017.
30. Cherniss C, Extein M, Goleman D, Weissberg RP. Emotional intelligence: what does the research really indicate? *Educational Psychol.* 2006;41(4):239–45.
31. Kline P. Handbook of psychological testing. Routledge; 2013.
32. Weiner IB, Nelson RJ, Mizumori S. Handbook of psychology, behavioral neuroscience. Volume 3. Wiley; 2012.
33. Davis LL. Instrument review: getting the most from a panel of experts. *Appl Nurs Res.* 1992;5(4):194–7. [https://doi.org/10.1016/S0897-1897\(05\)80008-4](https://doi.org/10.1016/S0897-1897(05)80008-4).
34. Bryant F, Yarnold PR. Principal-components analysis and exploratory and confirmatory factor analysis. In: Grimm LG, Yarnold PR, editors. Reading and understanding Multivariate statistics. Washington, DC: American Psychological Association; 1995. pp. 99–136.
35. Hair JF, Black WC, Babin BJ, Anderson RE. Multivariate Data Analysis. 7th ed. Edinburgh: Pearson Education Limited; 2013.
36. Mueller RO, Hancock GR. (2001). Factor analysis and latent structure: Confirmatory factor analysis. In: Smelser NJ, Baltes PB, eds. International Encyclopedia Of The Social & Behavioral Sciences. England: Oxford:5239–5244.

Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.