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ORIGINAL

Validation of the Jefferson Scale of Physician Empathy in Health Science Students at Universidad Andrés Bello, Concepción-Talcahuano

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Abstract: Prior to the development of the Jefferson Scale of Physician Empathy (JSPE), no psychometric instrument had been specifically designed to assess empathy within the context of patient care. Although some tools existed to measure empathy in the general population, they lacked content specificity and contextual relevance for the healthcare framework. Despite being previously applied in Chile, the JSPE has not been validated for use among non-medical healthcare students, rendering the results obtained through such applications potentially unreliable. **Objectives:** To validate the Jefferson Scale of Physician Empathy (Health Professions Student version, HPS) among non-medical health science students at Universidad Andrés Bello. **Materials and Methods:** A cross-sectional study was conducted, using a stratified random sample of 212 students. Factorial analyses and statistical tests were applied, including the Kaiser-Meyer-Olkin (KMO) measure, Bartlett's test of sphericity, ordinal alpha coefficient, and non-parametric tests (Wilcoxon-Mann-Whitney and Kruskal-Wallis). **Results:** The results demonstrated strong validity and internal consistency of the JSPE-HPS. Exploratory factor analysis identified three principal components. A general trend of declining empathy levels was observed as students progressed through their academic programs. No statistically significant differences in overall empathy scores were found between male and female students. **Conclusions:** The JSPE-HPS is a valid and reliable instrument for measuring empathy among non-medical health science students in Chile. Its validation constitutes a significant contribution, as it enables the targeted assessment of a core competency in the clinical-patient relationship, thereby supporting improvements in higher education training within the health sector.

Summary Box

- *This study validates the Jefferson Scale of Physician Empathy (Health Professions Student version, HPS) among non-medical health science students in Chile, confirming its reliability and contextual relevance. Three core dimensions of empathy were identified: perspective-taking, compassionate care, and the ability to step into the patient's shoes.*
- *Validating this scale enables accurate assessment of empathy, supporting the development of targeted educational strategies for enhancing this particular competency. Given the observed decline in empathy throughout academic training, its integration into curricula is essential. Strengthening empathy in health education may positively influence the quality of care and the clinician-patient relationship.*

Keywords: empathy, medical education, validity, reliability, clinician-patient relationship.

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Introduction

Empathy is commonly defined as the ability to understand another individual's experiences by seeing the world from their perspective[1]—whether expressed verbally (e.g., "I can see you're feeling unwell") or non-verbally (e.g., through facial expressions that match the patient's condition). Empathy is a critical component of the relationship between healthcare professionals and patients. Despite widespread acknowledgement of its importance, empathy remains an underexplored area in health education.[2]

From a practical perspective, empathy warrants greater emphasis on job performance, interpersonal communication, and teamwork. This is especially relevant in the context of health professionals who, in addition to acquiring theoretical knowledge and technical skills within their discipline, must also demonstrate a sufficient degree of empathy to understand their patients. Consequently, health science students should develop this cognitive and emotional competence as part of both theoretical and practical training.[3] The cultivation of empathy should therefore be recognized as an essential element within the curriculum for healthcare providers.

Research in this field has shown that the presence of empathy in healthcare professionals improves patient satisfaction[4], enhances diagnostic and treatment capabilities[5], and even reduces patient stress levels.[6] The clinical-patient interaction involves a complex set of skills; it is common for health science students to observe their instructors and gather around the patient's examination table to learn practical techniques such as patient interviewing, physical examination, and case analysis.[7]

This highlights the importance of investigating empathy further-- examining how it evolves throughout professional training, and how it may relate to other health disciplines. Such inquiry can help to identify the factors that foster empathy and guide the creation of strategies to promote its development. Various experts have argued that technological advancements in patient care have shifted focus away from the individual experiencing illness, reducing them to a pathology or damaged organ or system. On this note, empathy—along with active listening and meaningful dialogue—has been marginalized.[8] A vital element of humanitarian healthcare is the process of subjective interconnection between patient and physician, in which empathy serves as the essential facilitator.[9] According to Oseguera Rodríguez[10], the most significant qualities that promote humanism in patient care are affection, support, respect, and solidarity.

Perales[11] argues that the global call to emphasize ethical and humanistic dimensions in 21st-century medical education is based not only on repeated observations of inappropriate professional behaviors among practicing clinicians but also on persistent inequities within healthcare systems, where patients' rights are frequently violated. Consequently, medical education aspires to achieve three core outcomes: a) cognitive development —transmitting the knowledge of how, when, and why to perform medical procedures; b) technical skills—teaching students how to perform them correctly; and c) professional attitudes and behaviors—fostering appropriate contact in clinical practice. However, when it comes to attitudes and professional behaviors, more than instructor modeling is required: time, space, and suitable conditions are essential for forming a specific emotional connection between teacher and student.[12] Without this foundational condition, the potential for instructors to model professional behavior becomes uncertain.

Empathy is an essential competency expected from the earliest stages of healthcare professional training. These individuals play a crucial role in the health–illness process, affecting not only patient and family outcomes but also the overall cost-efficiency of healthcare systems. However, the teaching-learning process continues to be inconsistent from a humanistic standpoint, with the biomedical model still prioritized over integrated humanistic approaches in professional practice.[13]

Several studies conducted in Chile have explored empathetic behavior using the Jefferson Scale among physical therapy students: at the University of Chile in Santiago[14]; Universidad de las Americas in Concepción[15] and Santiago[16]; Universidad Mayor in Temuco[17]; Universidad de Magallanes in Punta Arenas[18]; among physical therapy faculty at the University of Chile[19]; and throughout medical students at Universidad del Desarrollo in Santiago[20], fifth-year medical students at the University of Chile in Santiago[21]; dental students at Universidad de Concepción in Concepción[22-23]; Universidad San Sebastián in Concepción[24]; Universidad Finis Terrae in Santiago[25]; Universidad Andrés Bello[26]; and nursing students at Universidad Mayor in Temuco.[27]

Although some linguistic adaptations of the empathy scale have been proposed at a national level, these have not been applied to sufficiently representative samples to permit rigorous psychometric analysis. Furthermore, the scale has not yet been validated for non-medical health science students, making existing results less reliable or valid for proper interpretation. In response to this gap and given the lack of a culturally adapted and validated instrument to measure empathy in non-medical health science students,

this study undertook the cultural adaptation and psychometric validation of the Jefferson Scale of Physician Empathy (HPS version) in a sample of health science students at Universidad Andrés Bello, Concepción-Talcahuano campus, Chile.

Materials and Methods

Study Type and Design:

This study employed a cross-sectional, observational design with an exploratory-descriptive scope, aiming to identify and analyze characteristics of the participants through various variables.

Population and Sampling:

The target population comprised students from non-medical health science programs at Universidad Andrés Bello, Concepción-Talcahuano campus, Chile. Based on methodological guidelines, a minimum sample size of 200 participants was required to ensure a maximum allowable error margin of 7% in proportion estimates.[28] A stratified proportional probability sampling method was used, based on eligibility criteria, with a 95% confidence level and a 6% margin of error. The final sample consisted of at least 209 students across the first to five years of the Kinesiology, Speech Therapy, Occupational Therapy, and Nutrition and Dietetics programs, who met the inclusion criteria.

Inclusion Criteria:

- Enrollment at Universidad Andrés Bello, Concepción campus
- Affiliation with one of the following programs: Kinesiology, Speech Therapy, Occupational Therapy, or Nutrition and Dietetics
- Informed consent to participate in the study (see Appendix)
- Ability to comprehend the survey instructions

Procedure:

Several preparatory steps were conducted before scale validation. First, a back-translation of the instrument was carried out by a native English-speaking translator, following the guidelines for adapting psychological assessment instruments.[29] This ensured conceptual and linguistic equivalence between the original version and the Spanish translation.[30-31] Second, for cultural adaptation, a panel of eight expert judges[32] reviewed

the translated items as well as the operational definition of the construct, assessing the relevance and coherence of each item. Third, a pilot test of the instrument was conducted with second- and fourth-year Kinesiology students at Universidad Andrés Bello[33], to evaluate item comprehension.[28]

Following this initial process, the Jefferson Scale of Physician Empathy (HPS version) was distributed to students in the Kinesiology, Speech Therapy, Occupational Therapy, and Nutrition and Dietetics programs at Universidad Andrés Bello, Concepción-Talcahuano campus.

Instrument:

The scale consists of twenty items rated on a seven-point Likert scale. Half of them are positively worded, while the other 10 are negatively worded (items 1, 3, 6, 7, 8, 11, 12, 14, 18, and 19). For analytical clarity, negatively worded items were reverse-scored using the formula 8-x, where "x" represents the score given by the respondent. This transformation ensures all item responses reflect a positive empathy score, allowing the final mean score to directly reflect the participant's level of empathy.

Ethical Considerations:

All participants took part voluntarily, without coercion or incentives, and signed an informed consent form (Appendix). Respondents were required to answer at least sixteen out of the twenty items; otherwise, their answers were excluded from data analysis. If four or fewer items were missing, those values were replaced with the respondent's average score from completed items. Participants were anonymized using sequential numeric codes instead of personal identifiers. They were assured that their responses were confidential, individual, and used exclusively for research purposes. Participants were informed that all answers were acceptable and that there were no right or wrong responses—only different response styles, as stated in the general instructions.

Results

Descriptive Analysis:

A total of 212 students responded to the scale, representing four programs—Kinesiology, Speech Therapy, Nutrition and Dietetics, and Occupational Therapy. Of the respondents, 175 were female and 37 were male. Scores on the Jefferson Scale of Physician Empathy (JSPE) ranged from a minimum of 79 points to a maximum of 135, with a mean score of 114.55 points (Table 1).

Table 1. Descriptive results for the gender variable

Academic Year	Gender	Mean	Standard Deviation	N
1st Year	Female	115.896	11.973	58
	Male	117.153	12.422	13
	Total	**116.126**	**11.976**	**71**
2nd Year	Female	111.965	13.728	29
	Male	115.000	11.832	06
	Total	**112.485**	**13.309**	**35**
3rd Year	Female	111.400	15.316	40
	Male	114.555	10.596	09
	Total	**111.979**	**14.520**	**49**
4th Year	Female	115.031	12.688	32
	Male	118.833	12.890	06
	Total	**115.631**	**12.622**	**38**
5th Year	Female	116.500	11.905	16
	Male	119.666	13.317	3
	Total	**117.000**	**11.799**	**19**

Reliability Analysis:

Initially, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were performed using the FACTOR ANALYSIS software to assess the adequacy of the data for factor analysis. As shown in Table 2, the determinant of the correlation matrix was 0,00002, indicating a high level of intercorrelation among variables. This was further confirmed by the significance level of Bartlett's Test of Sphericity, which was 0,0001. The KMO value exceeded 0,70, suggesting that the data matrix was suitable for factor extraction.

Table 2. KMO And Bartlett's Test Results

Determinant of the polychoric correlation matrix		.000028
Kaiser-Meyer- Olkin sample adequacy measure.		,757
Bartlett's test for sphericity	gl	190
	Sig.	.000010

Dimensionality of the 20 items was evaluated using principal component extraction with orthogonal rotation. Exploratory factor analysis identified three distinct factors, described as follows. All positively worded items with factor loadings above 0.40 loaded onto Factor 1, labeled "Perspective-Taking" (items 2, 4, 5, 9, 10, 13, 15, 16, 17, and 20). Meanwhile, seven of the ten negatively worded items (1, 7, 8, 11, 12, 14, 19) loaded onto Factor 2, labeled "Compassionate Care," with high factor loadings. Finally, Factor 3 consisted of the remaining items (3, 6, 18), corresponding to the domain "Ability to Step into the Patient's Shoes."

Although Cronbach's alpha is widely used for estimating internal consistency, it may not be appropriate when the response scale is ordinal in nature. This is the case with the JSPE, for which the appropriate correlation matrix is the polychoric correlation matrix. Therefore, reliability was assessed using ordinal alpha, following estimation of the polychoric correlation matrix. An exploratory factor analysis (EFA) was conducted on this matrix to confirm the factorial structure of the instrument, using FACTOR ANALYSIS software (Table 3).

To evaluate differences in empathy scores on the JSPE-HPS based on gender, the Wilcoxon-Mann-Whitney non-parametric test was conducted using SPSS version 20. In addition, to analyze differences across academic programs, the Kruskal-Wallis non-parametric test was applied.

Table 3. Factor Weightings for factor analysis exploratory of the Jefferson Medical Empathy Scale (HPS Version)

	Perspective taking	Compassionate care	Putting yourself in the patient's shoes
Range	1-7	1-7	1-7
Media	68,87	34,45	11,23
Standard deviation	8,19	6,08	3,58
Bias	-1,35	-1,14	0,16
Ordinal alpha	0.926	0.899	0.975
Reactive	**Factorial loading**		
1. Health care professionals' understanding of their patients' feelings and the feelings of their families do not influence treatment outcomes.	0.039	**0.364**	-0.023
2. Patients feel better when the health professional understands their feelings.	**0.783**	0.236	0.013
3. It is complex for the health professional to see things from the patients' perspective.	-0.026	0.179	**0.511**
4. Understanding body language is as important as verbal communication in the relationship between the healthcare professional and the patient.	**0.503**	0.403	0.020
5. A healthcare professional's sense of humor contributes to better clinical outcomes.	**0.734**	0.025	-0.004
6. Because people are different, it is difficult to see things from the patients' perspective.	0.073	0.019	**0.G72**
7. Paying attention to the patient's emotions is not important during the anamnesis.	0.246	**0.558**	0.008
8. Considering patients' personal experiences does not influence treatment outcomes.	0.093	**0.701**	-0.010
9. Health professionals should try to put themselves in their patients' shoes when caring for them.	**0.608**	0.172	0.055
10. Patients value the understanding of their feelings on the part of the healthcare professional, which is therapeutic in itself.	**0.621**	0.319	0.153
11. Patients' illnesses can only be cured by specific treatment; therefore, the emotional ties between healthcare professionals and their patients have no influence on treatment outcomes.	**0.288**	**0.520**	**-0.112**

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12. Asking patients about what is going on in their personal lives does not help in understanding their physical problems.	**0.295**	**0.708**	**0.030**
13. Health professionals should try to understand what is going on in their patients' minds by paying attention to nonverbal aspects and body language.	**0.576**	**0.375**	**0.140**
14. I believe that emotions have no relevance in the treatment of diseases.	**0.332**	**0.742**	**0.065**
15. Empathy is a therapeutic skill; without it, the success of the health professional is limited.	**0.586**	**0.131**	**-0.149**
16. The health professional's understanding of the emotional state of his or her patients, as well as that of their families, is an important component of the healthcare professional-patient relationship.	**0.5G8**	**0.427**	**0.131**
17. Healthcare professionals should try to think like their patients in order to provide better care.	**0.580**	**0.089**	**0.134**
18. Healthcare professionals should not allow themselves to be influenced by personal ties to their patients or their patients' families.	**0.021**	**-0.055**	**0.20G**
19. I do not enjoy reading non-medical literature or the arts.	**0.103**	**0.2G3**	**0.135**
20. I believe that empathy is an important factor in the treatment of patients.	**0.713**	**0.376**	**-0.114**

Note. Figures in bold indicate the highest factor loadings.

Discussion

The results of this study confirmed the presence of three underlying components. The first factor can be considered the primary dimension of the scale, as indicated by the highest mean score (68.87). This factor, “Perspective-Taking,” has been widely described in the literature as the core cognitive component of empathy and the “springboard” for deeper empathic engagement with others.[34] It included 10 items with factor loadings equal to or greater than 0.50. The ordinal alpha for this factor was 0.92. The second factor, “Compassionate Care,” comprised six items with loadings equal to or greater than 0.36, yielding an ordinal

alpha of 0.89. The final factor, "Ability to Step into the Patient's Shoes," included two items with loadings of 0.51 and 0.972, and demonstrated an ordinal alpha of 0.97.

These findings align with those of Hojat[35], who identified a primary factor (with loadings above 0.35) composed of ten positively worded items (Cronbach's alpha = 0.80); a second factor (loadings above 0.52) composed of six negatively worded items (Cronbach's alpha = 0.71); and a third factor (loadings of 0.77 and 0.72) made up of two items (Cronbach's alpha = 0.71). Similarly, Alcorta-Garza[2] reported a first factor with loadings above 0.30 composed of ten positively worded items, a second factor (loadings above 0.40) consisting of seven negatively worded items, and a third factor with high loadings composed of two negatively worded items.

Regarding reliability, internal consistency was assessed using ordinal alpha, which is appropriate given the ordinal nature of the scale responses.[36] Therefore, a polychoric correlation matrix was used[37], yielding an overall ordinal alpha of 0.907. Additionally, Cronbach's alpha was calculated at 0.77, falling within the acceptable range for personality measures. This value is consistent with those reported by Alcorta-Garza[2] (Cronbach's alpha = 0.74) and Hojat[34] (Cronbach's alpha = 0.80).

In terms of gender, male students had a slightly higher mean score (117.04) than female students (114.15), though the difference was not statistically significant ($p = 0.053$). This result contrasts with previous findings in which female students typically score higher than their male counterparts on empathy measures.[9–38] Some researchers suggest that women generally exhibit a more "empathic" behavioral style than men. When analyzing specific programs individually, male students in the Nutrition and Dietetics program scored significantly higher than their female peers ($p = 0.005$). However, further investigation is needed to explore the relationship between empathy and gender, taking into account both intrinsic and extrinsic factors. One possible explanation, as noted by Alcorta-Garza[2], is that educators often assume empathy can be developed solely through theoretical or cultural references, which may be insufficient.

Concerning academic progression, results showed that empathy levels tend to be higher at the beginning of the program and lower empathy levels towards the end of it, a trend also reported by Hojat[39]. However, rather than a consistent linear decline, the data revealed fluctuations, with increases and decreases throughout the years. In the case of the Kinesiology program, empathy levels were higher in the final year than in the first, although the difference was not statistically significant ($p = 0.210$). As Abarca[20] suggests,

these fluctuations in empathic orientation may be related to the complexity of clinical treatments and high technical demands, which could cause students to focus more on their performance than on patient needs. Carrasco, Bustos, and Díaz[23] argue that this decline in empathy may reflect the development of a professional identity as part of the learning process. Additionally, this decrease may result from a defensive response driven by fear or insecurity as students begin their first direct interactions with patients.[40] Future research could explore whether specific courses or curricular components are associated with increases or decreases in empathy across academic levels.

The results provide evidence of the reliability and validity of the Jefferson Scale of Physician Empathy (HPS version) in its Spanish adaptation, consistent with findings reported by Sergio Serrada.[41] These outcomes support the initial hypothesis: the JSPE-HPS, when applied to students in non-medical health programs, meets the psychometric criteria necessary to be considered a valid and reliable instrument.

Conclusions and Limitations

This study represents a foundational step toward the development of effective training processes, as understanding students' empathic orientation enables educators to implement targeted strategies to enhance this critical skill. It also provides a foundation for curricular modifications aimed at fostering increased empathy levels throughout students' academic programs. This is particularly relevant given that awareness of social and emotional factors significantly influences therapeutic outcomes and contributes positively to patient rehabilitation.

The limitations of this study are primarily related to the sampling methodology. As a cross-sectional investigation, it captures the empathic profile of a single cohort without tracking individual changes over time. Additionally, sociodemographic, attitudinal, and religious variables, as well as the students' emotional state at the time of completing the JSPE-HPS, were not considered. Therefore, it is recommended that future research adopt a longitudinal design, allowing for tracking changes and acquiring a better understanding of empathy throughout students' academic training. Additionally, the inclusion of complementary instruments could help assess the influence of other variables, thereby enabling the exploration of factors that promote empathy. These enhancements may help to answer questions such as: What is the relationship between the achievement of graduate profile outcomes and the development of empathy?

Finally, it is important to note that this study aimed to establish associations rather than causal relationships. Nor did it seek to identify which components of empathy are modifiable—an objective that would require a different research design and a more detailed analytical approach.

Informed Consent and Ethical Considerations

This study adhered to established ethical principles in research, as no personal identifying data—such as student names—were collected, thereby ensuring complete privacy and confidentiality. The database was treated as a set of numerical records corresponding to the empathy levels of non-medical health science students from the Faculty of Rehabilitation Sciences at Universidad Andrés Bello.

All participants voluntarily signed an informed consent form, which was based on the four fundamental bioethical principles proposed by Childress and Beauchamp.[42] The study complied fully with Chilean Law No. 20.120 and its corresponding Regulation No. 114, officially enacted on September 22, 2010.[43]

Equity, Diversity, and Inclusion Statement

This study was conducted under the principles of equity, diversity, and inclusion, ensuring fair and balanced representation throughout all stages of the research. An inclusive approach was adopted in selecting the study population by involving students from various non-medical health science programs, without discrimination based on gender, age, or socioeconomic background. A stratified probabilistic sampling method was used to ensure equitable representation across different academic levels and disciplines, allowing the results to broadly reflect the reality of non-medical health science students.

The methodology employed incorporated a research design that upheld principles of equity in both data collection and analysis, avoiding biases related to gender, field of study, or academic standing. Statistical tools were used to facilitate objective, evidence-based analysis, ensuring that the interpretation of results accurately reflected the experiences and perceptions of all participants.

Finally, the interpretation of findings was guided by an equity-focused perspective, recognizing the diversity of factors that influence empathy and avoiding generalizations that could obscure important group-level distinctions.

Conflict of Interest

The authors declare that there are no conflicts of interest.

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APPENDIX

Supplementary Material:

The supplementary material associated with this article will be available here.

- Appendix – Informed consent form