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# Adaptation and validation the Spanish version of the Communication Styles Inventory for nursing

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**Abstract:** (1) Background: Healthcare attention is sometimes considered purely technical, but communication has proven to be closely related to clinical results and patient satisfaction. Therefore, evaluation of communication in the scope of healthcare is a priority. The purpose of this study was to validate and adapt, if necessary, the Spanish version of the Communication Styles Inventory (CSI) in a sample of nursing professionals. (2) Methods: The sample was made up of 2313 nursing professionals selected at random from various medical centers in Spain, and is therefore a sample actively employed at the time data were acquired. We started out from the Communication Style Inventory, a questionnaire for evaluating the predominance of certain individual communication behaviors on six scales (expressiveness, preciseness, verbal aggressiveness, questioningness, emotionality and impression manipulateness). (3) Results: Confirmatory Factor Analysis of the model proposed showed good fit indices. The reliability of the model shown by the Cronbach's alpha of  $\alpha=0.81$  was adequate, and so was single-level and aggregate consistency. Finally, in the analysis of variance by type of contract, configural, metric and scalar invariance was acceptable, but not strict invariance. (4) Conclusions: This instrument progresses in measuring non-technical attributes, such as communication styles, in nursing personnel.

**Keywords:** Validation, communication, questionnaire, healthcare attention, patient satisfaction, nursing.

## 1. Introduction

Communication is a basic competence of vital personal and professional importance [1,2]. In recent decades, a great deal of research has been dedicated to communication styles in healthcare, as one of the basic pillars of wellbeing [3]. In this job context, where transfer of personal information, knowledge, ideas, opinions and feelings has a fundamental role [4] (p.507), communication between healthcare professionals and patients and their families is a tool which directly influences the quality of medical attention, the experience perceived by the patient and promotion of healthy living habits [5-7]. Particularly significant is the basic role of nursing professionals, who remain in continuous contact with both patients and their families, performing a wide range of tasks directed at the integral care of their patients, and spanning from health care attention, to follow-up and quality control of care, health promotion, and even prevention [8]. It is not surprising then that the quality of communication between nursing professionals and their patients has important implications in healthcare intervention, identified by the patients themselves as major elements in achieving fundamental dignity and respect in the care relationship [9].

The literature emphasizes that there are many benefits of effective communication, for example, adherence to treatment is stronger when the communication style of professionals promotes active

participation of the patients in clinical decision-making [10]. Satisfaction of patients and their families is greater when they feel well informed and understand the care plan presented to them [11]. Another example is the increase in expectancies, as well as subjective improvement of the patients when they are presented an affective, warm communication style [12]. And patient safety, satisfaction and self-management of healthcare needs are promoted when there is effective communication between the members of the healthcare team [13,14]. But effective communication also generates benefits for healthcare workers. It has been found that the use of motivating language by superiors increases job commitment of nursing professionals [15]. The incidence of violent situations toward healthcare professionals also decreases with the use of adequate communication techniques [16,17] by improving the confidence of professionals in fighting against aggression [18]. Furthermore, this patient-focused communication style favors creation of a climate of understanding and empathy, which assists in establishing healthy relationships and positively influences patient wellbeing, satisfaction and safety [19]. With regard to empathy, even though the cognitive dimension is usually high in the majority of these professionals [20], the importance for nursing staff to make empathetic communication focused on the patient more cognitive than affective has been emphasized [21]. Brown et al. [22] suggested that active listening is indispensable to achieve effective communication between nursing professionals and their patients. This type of listening also helps reduce the number of clinical malpractices claims as well as the possibility of incidents in patient treatment.

Along this line, communication between professionals in the healthcare team also has a decisive role in service quality and patient safety. And in turn, this positively influences the wellbeing and job satisfaction of workers, improving their self-concept of personal and professional worth [23]. Thus, the importance of interdisciplinary communication in adequate control of the patient's illness to avoid medical negligence related to erroneous diagnoses and treatment problems has been underlined [24].

Over time, different instruments have been developed to measure a person's general communication style, some of the most outstanding of which are the *Communicator Style Measure* (CSM) [25,26], the *Relational Communication Style* (RCS) [27] and the *Communication Style Scale* (CSS) by Gudykunst et al. [28]. Recently, De Vries, Bakker-Pieper, Konings, & Schouten [4] developed a new tool for measuring communication styles known as the *Communication Styles Inventory* (CSI). This instrument focuses exclusively on evaluating observable communicative behavior, and leaves aside cognitive aspects and thoughts derived from interpersonal communication [29]. These authors found that the CSI offers theoretical, empirical and practical advantages over previous measurement instruments. One of the strengths of the CSI is its applicability in settings where communication is the basis of interpersonal interactions, such as education, organizational or healthcare contexts [4]. With regard to the factors related to communication styles, one of the findings of De Vries et al. [4] shows the existence of a significant association between CSI communication styles and personality dimensions. Thus, it is understood that the communication style is determined, among other factors, by individual personality traits. This relationship has been confirmed by several empirical studies. For example, it has been demonstrated that high levels of "Neuroticism" in maladapted subjects with high negative affect [30] and high levels of burnout in healthcare personnel [31] predict the use of aggressive, hostile and authoritarian language [32-34], while the rest of personality traits are more associated with prosocial behavior [35,36].

Another factor which influences the communication pattern of healthcare professionals is the presence of negative emotions [37]. Falkenstein et al. [38] showed that healthcare professionals who communicate with their patients making scant use of words with a negative emotional load are more appreciated by their patients. In this line, Hermann, Long, & Trotta [39] point out the importance of nursing staff using positive verbal expressions, so patients perceive they are being treated with courtesy and respect.

In addition to the above, with regard to sex and its relationship with communication style in medical attention, Vogel, Meyer, & Harendza [40], showed that men have a more interrogative, less empathetic communication style than their female coworkers. Along this line, evaluation of communication styles of surgical trainees showed that women had a predominantly emotional communication style, while men had higher scores in impression manipulativeness and questioningness [41]. However, other authors have not found any differences in communication styles used in nursing students [42].

Although healthcare attention is sometimes considered purely technical, communication has been shown to be closely related to clinical results and patient satisfaction [43]. Evaluation of communication in healthcare is therefore fundamental [44]. However, communication in this context, and more specifically in nursing, has not received the necessary attention, and there are very few instruments that evaluate it [45]. On this basis, the purpose of our study was to validate and adapt, if necessary, the Spanish version of the *Communication Styles Inventory* (CSI) in a sample of nursing professionals.

## 2. Experimental Section

### *Participants*

The sample was made up of 2508 nurses selected at random from various medical centers in Spain, and therefore, is a sample in active employment at the time data were acquired. Forty-six subjects who did not complete the questionnaire and 149 subjects who had responded at random (detected by control questions) were eliminated. Thus, the final study sample was made up of 2313 subjects, of whom 68.1% ( $n=1575$ ) were working with temporary contracts and 31.9% ( $n=738$ ) had a permanent contract. Participants were aged 22 to 57 with a mean age of 32.7 years ( $SD=6.53$ ). Of the whole sample, 84.8% ( $n=1962$ ) were women and 15.2% ( $n=351$ ) men, with a mean age of 32.72 ( $SD=6.32$ ) and 32.69 years ( $SD=6.57$ ), respectively.

### *Instruments*

An ad hoc questionnaire was prepared to collect the sociodemographic data (age, sex, marital status and degree), as well as professional and job information: years of experience and employment situation (permanent or temporary).

The Communication Style Inventory (CSI) [4] is a questionnaire for evaluating the predominance of certain behaviors in individual communication. It consists of 96 items which are grouped in six scales (expressiveness, preciseness, verbal aggressiveness, questioningness, emotionality and impression manipulativeness). The items are answered on a Likert-type scale where one is equivalent to "strongly disagree" and five to "strongly agree". However, Items 9, 10, 15, 19, 21, 26, 27, 29, 31, 37, 40, 43, 45, 47, 49, 56, 58, 60, 62, 65, 68, 69, 72, 90, 91, 93, 96 must be inverted for proper correction and analysis. In the original version of the instrument, the authors reported reliability levels for the scales that varied from .82 to .88 in the general population and from .83 to .87 in a sample of students.

### *Procedure*

First, the participants were informed of the objectives of the research and guaranteed anonymity of their answers and compliance with the ethical standards of confidentiality in data processing. For data collection, an online Web platform enabled the questionnaires to be filled out online. A questionnaires survey approach was conducted in 2017. In order to avoid random or incongruent answers, control questions were inserted to enable any anomalies or biases in the answers to be identified. Subjects who had answered at random (detected by control questions) were eliminated. In addition to these cases, incomplete questionnaires were also discarded. The study was approved by the Bioethics Committee of the University of Almeria (Ref: UALBIO2017/011).

## Data Analyses

First the principles of normality and distribution of the continuous variables were tested. For this the criterion proposed by Finney and DiStefano [46], according to which  $\pm 2$  and  $\pm 7$  are the maximums acceptable in skewness and kurtosis for carrying out parametric analyses, was followed.

The descriptive and confirmatory data analyses were done in two stages by validation steps following Pérez-Fuentes, Molero, Martos, & Gázquez [47]. In the first stage, the CSI structure was studied. For this, the sample was first divided at random into two independent homogeneous subsamples. The first ( $n=1141$ ) was used as the calibration sample, and a Confirmatory Factor Analysis was performed for the original model taking as the measures the following fit indices:  $\chi^2/df$ , Comparative Fit Index (CFI), Tucker-Lewis index (TLI), Root Mean Square Error of Approximation (RMSEA) with a confidence interval (CI) at 90%. The  $\chi^2/df$  index was used considering below five acceptable [48], CFI and IFI over or near .95, and for the RMSEA below or very near .06 [49]. As a general norm, good model fit would be when  $\chi^2/df$  ratio  $\leq 3$ ; GFI, AGFI and TLI  $> .90$ ; CFI  $> .95$ ; RMSEA  $\leq .05$ . The appropriate respecifications considering theoretical and statistical criteria (modification indices, estimation errors, standardized errors of measurement) were made to the original model, which was subjected to the various adjustments until the model proposed, which showed good fit indices was arrived at. The Akaike Information Criterion [50] was used to select the models with the second subsample ( $n=1172$ ) as the validation sample to validate the respecified model. The Cronbach's alpha and parallel forms were used for reliability analysis of the new scale.

Finally, in the second stage, the invariant character of the factorial structure proposed was analyzed by type of contract (permanent/temporary) and gender (male/female). First, goodness of fit of these structures was tested separately in both subsamples (Models M0a-Permanent-Male and Model M0b-Temporary-Female). The four resulting nested models were evaluated: a) Model 1. Both samples were considered simultaneously with free estimation of parameters. b) Model 2. Metric invariance was shown. c) Model 3. Scalar invariance was shown. d) Model 4. Strict invariance, with no consensus criterion for determining the criteria to employ for evaluating the difference in fit between the different nested models [51], for evaluation of fit, this study focused on the  $\Delta CFI$  interpreting the model as completely invariant if the value found in the  $\Delta CFI$  was less than .01 [52].

Analyses were performed using the SPSS statistical package version 23.0 for Windows and the AMOS 22 program.

## 3. Results

### 3.1. Preliminary Analyses

First the data showed that the items in the CSI showed a distribution within the limits of normality for skewness and kurtosis, respectively. Only three items (39, 63 and 87) were found with skewness barely above 2 which were not taken into consideration in later analysis.

### 3.2. Confirmatory factor analysis of the CSI and CSI-B models.

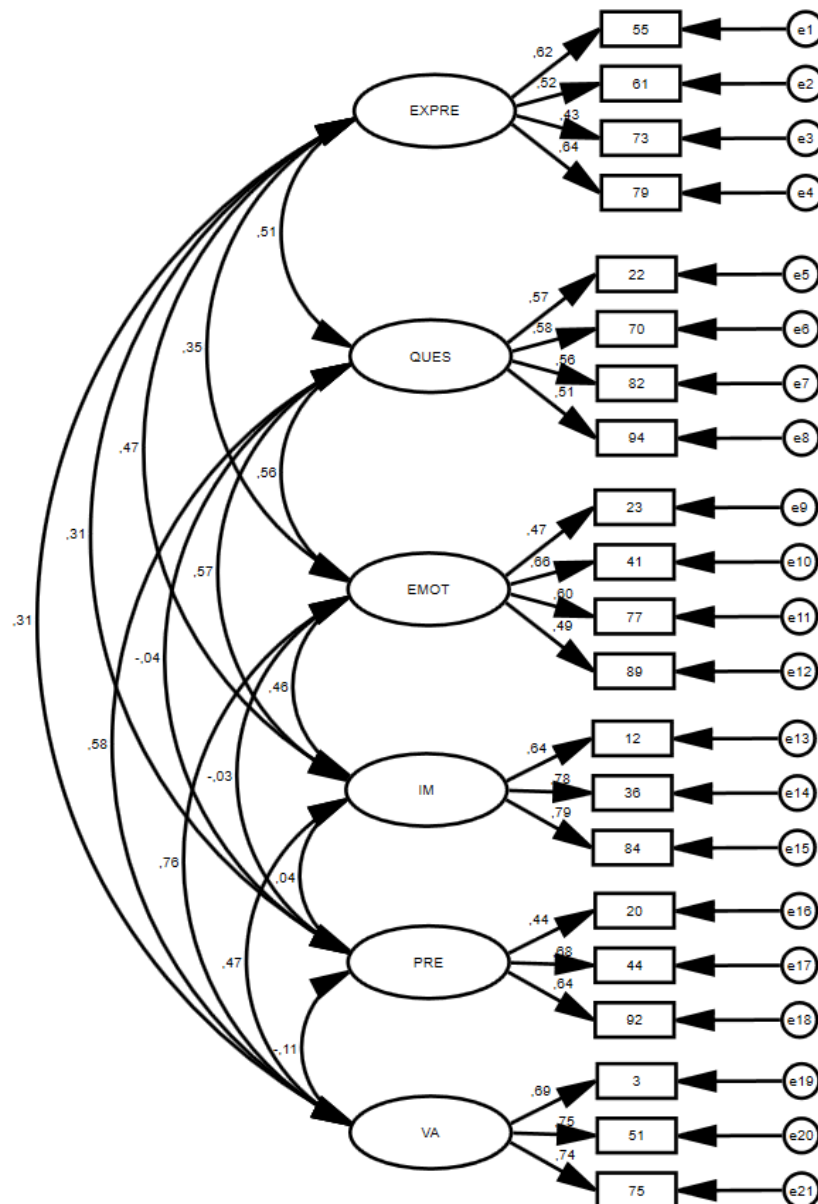
Table 1 shows the analysis of fit of the questionnaire according to the original CSI model and the revision of that original model proposed (CSI-B). It is observed that the original model and the brief model consist of six factors. The original model showed low fit indices, so the appropriate respecifications were made considering theoretical and statistical criteria (modification indices, estimation errors, standardized errors of measurement), which led to elimination of 75 items. The brief model shows a much better fit with the calibration sample. The difference between the AIC Default Model = 527.021 and the AIC Saturated Model = 462.000 is small compared to the original model (AIC Default model = 9768.139; AIC Saturated model = 4420.000), showing that this model is probably better according to the Akaike criteria for model selection.

**Table 1.** Fit indices for the models proposed (calibration sample;  $n=1141$ )

Model	$\chi^2 (gl)$	$\chi^2/df$	CFI	TLI	RMSEA		
					Est.	Below	Above
Original CSI model	9348.139 (2000)	4.674	.665	.652	.057	.056	.058
Proposed CSI-B Model	409.300 (174)	2.352	.956	.947	.034	.030	.038

*Nota.* CFI = Comparative fit index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation; IC = Confidence Interval; *df* = Degrees of freedom; Est. = Estimation.

**Figure 1.** Proposed model CSI-B (validation sample  $n=1172$ )



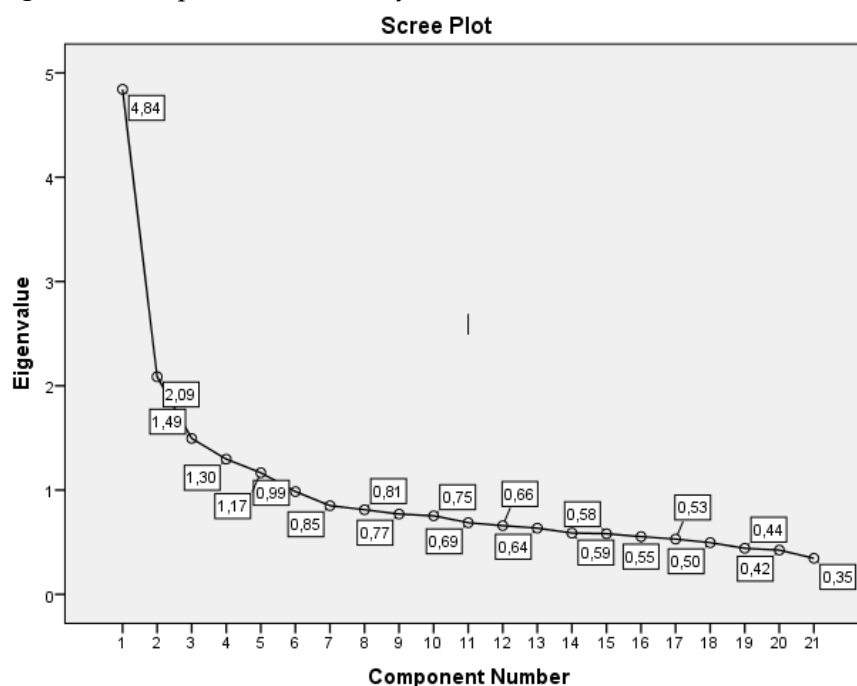
Note: EXPRES: Expressiveness, QUES: Questioningness, EMOT: Emotionality, IM= Impression Manipulativeness, PRE: Preciseness, VA: Verbal Aggressiveness.

Finally, fit indices for the model proposed, CSI-B, were analyzed with the validation sample ( $n=1172$ ) as shown in Figure 1. The Confirmatory Factor Analysis for the model proposed (CSI-B) resulted in the following fit indices:  $\chi^2/df= 2.353$ , CFI= .956, TLI= .947, RMSEA= .034 (.030-.038).

### 3.3. Exploratory factor analysis of the CSI-Brief model (CSI-B)

The principal components analysis revealed six components with eigenvalues over 1. The Scree Test recommended making a rotation with six factors with eigenvalues of 4.84, 2.09, 1.49, 1.30, 1.17 and 0.99 respectively, as they were clearly distanced from the seventh with a score of .85 (Figure 2).

**Figure 2.** Scree plot for factor analysis of Model CSI-B



After the factor analysis, we selected the items with factor saturations over .40 from the Varimax Rotation matrix. Table 2 shows how Factor 1 corresponds to the items included in the Verbal Aggressiveness scale. This Factor 1 is comprised of three items, all with loadings of .69, and explaining 32.06% of the variance. Factor 2 is comprised of three items and forms the Impression Manipulativeness component, explaining 9.94% of the variance. Factor 3 is made up of four items which form the Questioningness component and explain 7.12% of the variance. Factor 4 (four items) is related to Expressiveness and explains 6.18% of the variance. The Emotionality component which is clustered in Factor 5 with four items explains 5.55% of the variance. Finally, Factor 6 (Preciseness) has three items and explains 4.69% of the variance.

Model reliability was analyzed using the Cronbach's alpha, which with the total sample was  $\alpha=.81$ , for Factor 1 (Verbal Aggressiveness)  $\alpha=.77$ , for Factor 2 (Impression Manipulativeness)  $\alpha=.78$ , for Factor 3 (Questioningness)  $\alpha=.64$ , for Factor 4 (Expressiveness)  $\alpha=.63$ , for Factor 5 (Emotionality)  $\alpha=.56$ , and finally for Factor 6 (Preciseness)  $\alpha=.60$ . The data found by parallel forms also showed the consistency of the scales on both the individual level (Spearman-Brown coefficient =.823) and aggregate with a Guttman Split-Half Coefficient of .82

**Table 2.** Factor structure, communalities ( $h^2$ ) eigenvalues, Cronbach's alpha and percentage of explained variance ( $n=1172$ ). Extraction method: Principal components

		F1	F2	F3	F4	F5	F6	$h^2$
Item 1	If something displeases me, I sometimes explode with anger.	.80						.69



Item 2	I sometimes use my charm to get something done.	.76					.65
Item 3	I don't need a lot of words to get my message across.					.67	.51
Item 4	To stimulate discussion, I sometimes express a view different from that of my conversation partner.	.65					.50
Item 5	The comments of others have a noticeable effect on me.					.76	.63
Item 6	I sometimes flirt a little bit to win somebody over.	.83					.75
Item 7	I can be visibly tense during a conversation.					.61	.53
Item 8	Most of the time, I only need a few words to explain something.					.78	.62
Item 9	I tend to snap at people when I get annoyed.	.77					.70
Item 10	I often determine which topics are talked about during a conversation.					.64	.50
Item 11	My jokes always draw a lot of attention.					.61	.45
Item 12	I try to find out what people think about a topic by getting them to debate with me about it.					.69	.53
Item 13	I like to talk a lot.					.73	.57
Item 14	I can sometimes react somewhat irritably to people.	.69					.64
Item 15	People can tell that I am emotionally touched by some topics of conversation.					.61	.49
Item 16	I often determine the direction of a conversation.					.67	.52
Item 17	I regularly have discussions with people about the meaning of life.					.60	.44
Item 18	I sometimes put on a very seductive voice when I want something.	.75					.69
Item 19	I find it hard to talk in a relaxed manner when what I have to say is valued highly.					.56	.39
Item 20	With a few words I can usually clarify my point to everybody.					.76	.62
Item 21	By making controversial statements, I often force people to express a clear opinion.	.65					.47
Eigenvalue		4.84	2.09	1.50	1.30	1.17	.99
Percentage of explained variance		23.06	9.94	7.12	6.18	5.55	4.69
Kaiser-Meyer-Olkin						.86	
Barlett's sphericity							$\chi^2(210)=5566.24, p<.000$
Cronbach's Alpha		.77	.78	.64	.63	.56	.60

Note. The items are listed in decreasing order according to the original scale. Display coefficient >.40. F1: Verbal Aggressiveness; F2: Impression Manipulativeness; F3: Questioningness; F4: Expressiveness; F5: Emotionality; F6: Preciseness.

#### 3.4. Analysis of Invariance of Model CSI-B

**Table 3.** Multigroup analysis of invariance by type of contract (permanent/temporary) and by gender (male/female)

Model	$\chi^2$	df	$\chi^2 / df$	$\Delta\chi^2$	CFI	$\Delta CFI$	IFI	RMSEA (IC 90%)
M0a (permanent)	734.165 ( <i>p</i> =.000)	405	1.812		.946		.946	.027 (.024-.030)
M0b (temporary)	734.165 ( <i>p</i> =.000)	405	1.812		.946		.946	.027 (.024-.030)
M1 (overall base model)	645.863 ( <i>p</i> =.000)	348	1.856	88.302	.946		.946	.027 (.024-.030)
M2 (FS)	654.472 ( <i>p</i> =.000)	363	1.802	79.693	.947	.001	.947	.026 (.023-.029)
M3 (FS + Int)	676.613 ( <i>p</i> =.000)	384	1.762	57.552	.947	.001	.947	.026 (.022-.029)
M4 (FS + Int + Err)	772.819 ( <i>p</i> =.000)	426	1.814	38.654	.937	.011	.937	.026 (.023-.029)
M0a (male)	672.460 ( <i>p</i> =.000)	348	1.932		.941		.942	.028 (.025-.031)
M0b (female)	672.460 ( <i>p</i> =.000)	348	1.932		.941		.942	.028 (.025-.031)
M1 (overall base model)	672.460 ( <i>p</i> =.000)	348	1.932		.940		.940	.028 (.025-.031)
M2 (FS)	694.729 ( <i>p</i> =.000)	363	1.913	22.269	.918	.022	.919	.032 (.029-.035)
M3 (FS + Int)	833.458 ( <i>p</i> =.000)	384	2.170	160.998	.916	.024	.916	.031 (.028-.034)
M4 (FS + Int + Err)	900.886 ( <i>p</i> =.000)	426	2.115	228.426	.914	.026	.914	.031 (.028-.034)

Note: FS= Factor Saturations, Int=Intercepts, Err=Errors.

Table 3 shows the values for the six different models. In the analysis of variance based on type of contract, in all cases,  $\Delta CFI$  was less than .01, so configural, metric and scalar invariance were accepted, except for Model 4, where it was .011, so strict invariance could not be accepted. With regard to gender, the  $\Delta CFI$  was over .01 in Models 2, 3 and 4, and only configural invariance was accepted. Specifically, the  $\Delta CFI$  between Model 1 (overall base model) and the rest of the models 3 and 4 was .022-.026, so metric, scalar and strict invariance could not be accepted.

#### 4. Discussion

The objective of this study was to examine the psychometric properties of the CSI [4] in the healthcare context and more specifically in nursing. The results showed that the CSI brief version for nursing personnel had adequate item discrimination, and may be considered a valid and reliable instrument for evaluating communication styles in this population. Therefore, confirmatory factor analysis of the model supported the six-factor structure of the original model (expressiveness, preciseness, verbal aggressiveness, questioningness, emotionality and impression manipulateness) [4]. Nevertheless, this brief version does not have the 96 items on the original scale. The brief CSI version consists of 21 items resulting from the eliminating three items from the start because they did not have adequate skewness indices, and then 72 more after respecification following theoretical and statistical criteria. Thus, the CSI-B model found has four items each for the expressiveness, questioningness and emotionality factors and three items each for the verbal aggressiveness, preciseness and impression manipulateness factors.

The fit results for this abbreviated model were better than in the original model, both for the calibration sample and for the validation sample. Similarly, internal consistency of the scale was adequate with .81, with somewhat lower alphas for the various subscales (.77 the verbal



aggressiveness factor, .78 for impression manipulativeness, .64 questioningness, .63 on the emotionality factor, .56 for expressiveness and .60 for preciseness).

As communication in healthcare is a variable acquiring more and more importance due to its significant implications for patient care quality [5-7], its evaluation in this context is necessary [44]. To date, the instruments for evaluating communication styles in healthcare professionals, and especially in nurses, have been rare, and furthermore, some of them are based on the analysis of the role of professional communication with the patient [45], and do not analyze all the contexts in which the professional needs communication skills. Therefore, this instrument is an advance in measurement of non-technical attributes, such as communication styles, in nursing personnel, both with their superiors and their coworkers, in addition to persons with whom the most direct attention is given, such as patients and their families [8].

As limitations of this study, we must mention the nonacceptance of some invariance, for example, with respect to the type of contract, for which configural, metric and scalar invariance was accepted, while only configural invariance could be accepted across gender. In view of this result, although there is substantial equivalence of the construct across gender, we cannot affirm that there is equality between scale factors in the subsamples analyzed. Therefore, future research should evaluate each of the items that configure these factors to study the cause of the poor fit. Nevertheless, although this may seem to be influenced by the small sample of men, which is a limitation of this study, this actually corresponds to the reality of the population of nursing professionals, where the ratio of men is very small. Thus, in the future we could work on applying the model proposed of the questionnaire to an equivalent sample of men and women, although it would be very hard and would involve discarding many female participants.

Another limitation of the study is the low alpha scores, especially on the expressiveness and preciseness factors. This may be due to the brevity of the questionnaire, which could have generated losses when evaluating communication styles. Therefore, we emphasize the need to evaluate the adequacy of the items which comprise the factors in the scale and whether to eliminate some of the factors which originally were maintained from the original model, and which when the items were drastically decreased, influenced the alpha.

## 5. Conclusions

Communication in healthcare is a very relevant activity involved in a multitude of areas. Therefore, the styles professionals in this sector use in communicating must be adequately evaluated, to find out related factors as well as their scope. The brief version of the CSI for nursing professionals is a valid instrument for evaluation of this construct.

We can state that the Communication Style Inventory Brief version for nursing personnel has favorable psychometric properties for evaluating these professionals. However, given the limitations commented on above, we recommend that this model continue to be analyzed to make sure of the technical attributes and psychometric characteristics of the instrument and be able to validate its use in other healthcare sectors. Future lines of research evaluating the variance of the model could also consider other variables, such as years of professional experience, since communication style is an attribute developed over time.

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## References

1. Daly, J.A. Personality and interpersonal communication. In *Handbook of interpersonal communication*, 3rd ed.; Knapp, M. L., Daly, J. A., Eds.; Sage Publications: London, 2002; pp. 133-180.
2. Waldherr, A.; Muck, P.M. Towards an integrative approach to communication styles: The Interpersonal Circumplex and the Five-Factor Theory of personality as frames of reference. *Communications* **2011**, *36*, 1-27. DOI: 10.1515/comm.2011.001
3. Olvera, J.; Llorens, S.; Acosta, H.; Salanova, M. Transformational leadership and horizontal trust as antecedents of team performance in the healthcare context. *An Psicol* **2017**, *33*, 365-375. DOI: 10.6018/analesps.33.2.237291
4. De Vries, R.E.; Bakker-Pieper, A.; Konings, F.E.; Schouten, B. The Communication Styles Inventory (CSI): A six-dimensional behavioral model of communication styles and its relation with personality. *Commun Res* **2013**, *40*, 506-532. DOI: 10.1177/0093650211413571
5. Hammar, L.M.; Holmström, I. K.; Skoglund, K.; Meranius, M.S.; Sundler, A.J. The care of and communication with older people from the perspective of student nurses. A mixed method study. *Nurse Educ Today* **2017**, *52*, 1-6. DOI: 10.1016/j.nedt.2017.02.002
6. Kelly, M.; Wills, J.; Sykes, S. Do nurses' personal health behaviours impact on their health promotion practice? A systematic review. *Int J Nurs Stud* **2017**, *76*, 62-77. DOI: .1016/j.ijnurstu.2017.08.008
7. Leonard, P. Exploring ways to manage healthcare professional—patient communication issues. *Support Care Cancer* **2017**, *25*, 7–9. DOI: 10.1007/s00520-017-3635-6
8. Banerjee, S.C.; Manna, R.; Coyle, N.; Shen, M.J.; Pehrson, C.; Zaider, T.; ... Bylund, C.L. Oncology nurses' communication challenges with patients and families: a qualitative study. *Nurse Educ Pract* **2016**, *16*, 193-201. DOI: 10.1016/j.nepr.2015.07.007
9. Riviere, M.; Dufort, H.; Van Hecje, A.; Vandecasteele, T.; Beeckman, D.; Verhaeghe, S. Core elements of the interpersonal care relationship between nurses and older patients during their stay at the hospital: a mixed-methods systematic review. *Int J Nurs Stud* **2019**, In Press. DOI: 10.1016/j.ijnurstu.2019.02.004
10. Charlton, C.R.; Dearing, K.S.; Berry, J.A.; Johnson, M.J. Nurse practitioners' communication styles and their impact on patient outcomes: an integrated literature review. *J Am Acad Nurse Pract* **2008**, *20*, 382-388. DOI:10.1111/j.1745-7599.2008.00336.x
11. Harrison, J.D.; Seymann, G.; Imershein, S.; Amin, A.; Afsarmanesh, N.; Uppington, J.; ... Lay, C.Y. The Impact of Unmet Communication and Education Needs on Neurosurgical Patient and Caregiver Experiences of Care: A Qualitative Exploratory Analysis. *World Neurosurg* **2019**, *122*, e1528-e1535. DOI: 10.1016/j.wneu.2018.11.094
12. He, X.; Sun, Q.; Stetler, C. Warm Communication Style Strengthens Expectations and Increases Perceived Improvement. *J Health Commun* **2018**, *33*, 939-945. DOI:10.1080/10410236.2017.1322482
13. Barrat, J. Collaborative communication: learning from advanced clinical practice patient consultations. *Nurs Stand* **2018**, *33*, 27-32. DOI: 10.7748/ns.2018.e11094

14. Rose, M.; Newman, S. Factors Influencing Patient Safety During Postoperative Handover. *AANA J* **2016**, *84*, 329-338.
15. Kunie, K.; Kawakami, N.; Shimazu, A.; Yonekura, Y.; Miyamoto, Y. The relationship between work engagement and psychological distress of hospital nurses and the perceived communication behaviors of their nurse managers: A cross-sectional survey. *Int J Nurs Stud* **2017**, *71*, 115-124. DOI: 10.1016/j.ijnurstu.2017.03.011
16. Hallet, N. Preventing and managing challenging behavior. *Nurs Stand* **2018**, *32*, 51-63. DOI:10.7748/ns.2018.e10969
17. Llor-Esteban, B.; Sánchez-Múñoz, M.; Ruiz-Hernández, J.A.; Jiménez-Barbero, J.A. User violence towards nursing professionals in mental health services and emergency units. *Eur J Psychol Appl L* **2017**, *9*, 33-40. DOI: 10.1016/j.ejpal.2016.06.002
18. Baby, M.; Gale, C.; Swain, N. Communication skills training in the management of patient aggression and violence in healthcare. *Aggress Violent Behav* **2018**, *39*, 67-82. DOI: 10.1016/j.avb.2018.02.004
19. MacLean, S.; Kelly, M.; Geddes, F.; Della, P. Use of simulated patients to develop communication skills in nursing education: an integrative review. *Nurse Educ Today* **2017**, *48*, 90-98. DOI: 10.1016/j.nedt.2016.09.018
20. Molero, M.M.; Pérez-Fuentes, M.C.; Gázquez, J.J.; Barragán, A.B. Burnout in Health Professionals According to Their Self-Esteem, Social Support and Empathy Profile. *Front Psychol* **2018**, *9*, 1-6. DOI: 10.3389/fpsyg.2018.00424
21. Shao, N.; Sun, H.M.; Huang, J.W.; Li, M.L.; Hunag, R.R.; Li, N. Simulation-Based Empathy Training Improves the Communication Skills of Neonatal Nurses. *Clin Simul Nurs* **2018**, *22*, 32-42. DOI: 10.1016/j.ecns.2018.07.003
22. Brown, T.; Williams, B.; Boyle, M.; Molloy, A.; McKenna, L.; Palermo, C.; ... Lewis, B. Communication styles of undergraduate health students. *Nurse Educ Today* **2011**, *31*, 317-322. DOI: 10.1016/j.nedt.2010.06.006
23. Omura, M.; Stone, T. E.; Maguire, J.; Levett-Jones, T. Exploring Japanese nurses' perceptions of the relevance and use of assertive communication in healthcare: A qualitative study informed by the Theory of Planned Behaviour. *Nurse Educ Today* **2018**, *67*, 100-107. DOI: 10.1016/j.nedt.2018.05.004
24. Foronda, C.; MacWilliams, B.; McArthur, E. Interprofessional communication in healthcare: An integrative review. *Nurse Educ Pract* **2016**, *19*, 36-40. DOI: 10.1016/j.nepr.2016.04.005
25. Norton, R.W. Foundation of a communicator style construct. *Hum Commun Res* **1978**, *4*, 99-112. DOI: 10.1111/j.1468-2958.1978.tb00600.x
26. Norton, R.W. *Communicator Style: Theory, applications, and measures*. Sage Publications: Beverly Hills, CA, **1983**.
27. Burgoon, J.K.; Hale, J.L. Validation and measurement of the fundamental themes of relational communication. *Commun Monogr* **1987**, *54*, 19-41.
28. Gudykunst, W.B.; Matsumoto, Y.; Ting Toomey, S.; Nishida, T.; Kim, K.; Heyman, S. The influence of cultural individualism-collectivism, self construals, and individual values on communication styles across cultures. *Hum Commun Res* **1996**, *22*, 510-543.
29. De Vries, R. E.; Bakker-Pieper, A.; Siberg, R.; van Gameren, K.; Vlug, M. The content and dimensionality of communication styles. *Commun Res* **2009**, *36*, 178-206. DOI: 10.1177/0093650208330250

30. Wechler, S.M.; Benson, N.; Machado, W.L.; Bachert, C.M.; Fernandes, E. Adult temperament styles: a network analysis of their relationships with the Big Five Personality Model. *Eur J Educ Psychol* **2018**, *11*, 61-75. DOI: 10.30552/ejep.v11i1.186
31. Pérez-Fuentes, M.C.; Molero, M.M.; Martos, Á.; Gázquez, J.J. Burnout and engagement: Personality profiles in nursing professionals. *J Clin Med* **2019**, *8*, 1-14. DOI: 10.3390/jcm8030286
32. Bolton, L.R.; Becker, L.K.; Barber, L.K. Big Five trait predictors of differential counterproductive work behavior dimensions. *Pers Individ Dif* **2010**, *49*, 537-541. DOI: 10.1016/j.paid.2010.03.047
33. Molero, M.M.; Pérez-Fuentes, M.C.; Barragán, A.B.; Simón, M.M.; Martos, Á.; Gázquez, J.J. Personality and the Moderating Effect of Mood on a Verbal Aggressiveness Risk Factor from Work Activities. *J Clin Med* **2018**, *7*, 1-9. DOI: 10.3390/jcm7120525
34. Xie, X.; Chen, W.; Lei, L.; Xing, C.; Zhang, Y. The relationship between personality types and prosocial behavior and aggression in Chinese adolescents. *Pers Individ Dif* **2016**, *95*, 56-61. DOI: /10.1016/j.paid.2016.02.002
35. Barlett, C.P.; Anderson, C.A. Direct and indirect relations between the Big 5 personality traits and aggressive and violent behavior. *Pers Individ Dif* **2012**, *52*, 870-875. DOI: 10.1016/j.paid.2012.01.029
36. Grumm, M.; von Collani, G. Personality types and self-reported aggressiveness. *Pers Individ Dif* **2009**, *47*, 845-850. DOI: 10.1016/j.paid.2009.07.001
37. Kee, J.W.Y.; Khoo, H.S.; Lim, I.; Kohn, M.Y.H. Communication Skills in Patient-Doctor Interactions: Learning from Patient Complaints. *Health Professions Education* **2018**, *4*, 97-106. DOI: 10.1016/j.hpe.2017.03.006
38. Falkenstein, A.; Tran, B.; Ludi, D.; Molkara, A.; Nguyen, H.; Tabuenca, A.; Sweeny, K. Characteristics and Correlates of Word Use in Physician-Patient Communication. *Ann Behav Med* **2016**, *50*, 664-677. DOI: 10.1007/s12160-016-9792-x
39. Hermann, R.M.; Long, E.; Trotta, R.L. Improving Patients' Experiences Communicating With Nurses and Providers in the Emergency Department. *J Emerg Nurs* **2019**, In Press. DOI: 10.1016/j.jen.2018.12.001
40. Voge, D.; Meyer, M.; Harendza, S. Verbal and non-verbal communication skills including empathy during history taking of undergraduate medical students. *BMC Med Educ* **2018**, *18*, 1-7. DOI: 10.1186/s12909-018-1260-9
41. Doyen, B.; Vlerick, P.; Maertens, H.; Vermassen, F.; Van Herceele, I. Non-technical attributes and surgical experience: A cross-sectional study comparing communication styles and attitudes in surgical staff, trainees and applicants. *Int J Surg* **2019**, *63*, 83-89. DOI: 10.1016/j.ijssu.2019.02.002
42. Hunter, E.H. An Examination of How Gender May Relate to Communication Styles of Introversion and Extroversion in Nursing Students. *Nurs Educ Perspect* **2018**, *39*, 233-234. DOI:10.1097/01.NEP.0000000000000270
43. Swan, M.; Ferguson, S.; Chang, A.; Larson, E.; Smaldone, A. Quality of primary care by advanced practice nurses: A systematic review. *Int J Qual Health Care* **2015**, *27*, 396-404. DOI: 10.1093/intqhc/mzv054
44. Belasen, A.; Belasen, A.T. Doctor-patient communication: a review and a rationale for using an assessment framework. *J Health Organ Manag* **2018**, *32*, 891-907. DOI: 10.1108/JHOM-10-2017-0262
45. Giménez-Espert, M.C.; Prado-Gascó, V.J. The development and psychometric validation of an instrument to evaluate nurses' attitudes towards communication with the patient (ACO). *Nurse Educ Today* **2018**, *64*, 27-32. DOI: 10.1016/j.nedt.2018.01.031

46. Finney, S.J.; DiStefano, C. Non-normal and categorical data in structural equation modeling. In *Structural Equation Modeling: A Second Course*; Hancock, G.R., Mueller, R.O., Eds.; Information Age: Greenwich, CT, USA, 2006; pp. 269–314.
47. Pérez-Fuentes, M.C.; Molero, M.M.; Martos, Á.; Gázquez, J.J. New Burnout Evaluation Model Based on the Brief Burnout Questionnaire: Psychometric Properties for Nursing. *Int J Environ Res Public Health* **2018**, *15*, 2718. DOI: 10.3390/ijerph15122718
48. Bentler, P.M. *EQS Structural Equations Program Manual*. BMDP Statistical Software: Los Angeles, CA, USA, 1989.
49. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E.; Tatham, R.L. *Multivariate Data Analysis*, 7th ed.; Pearson Prentice Hall: Upper Saddle River, NJ, USA, 2006.
50. Akaike, H. A new look at the statistical model identification. *IEEE Trans Automat Contr* **1974**, *19*, 716–723. DOI: 10.1109/TAC.1974.1100705
51. Byrne, B.M.; Stewart, S.M. The MACS approach to testing for multigroup invariance of a second-order structure: A walk through the process. *Struct Equ Modeling* **2006**, *13*, 287–321. DOI: 10.1207/s15328007sem1302\_7
52. Cheung, G.W.; Rensvold, R.B. Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling* **2002**, *9*, 233–255. DOI: 10.1207/S15328007SEM0902\_5