

Translation, Adaptation and Validation of a Chinese Medicine Questionnaire to Brazilian Portuguese

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Abstract

The Constitution in Chinese Medicine Questionnaire [CCMQ] organizes 9 body constitutions according to Traditional Chinese Medicine [TCM]. The translation was realized by a Medical Doctor [MD] specialized in TCM and the back translation by an english-speaking MD. Comprehensibility assessment was performed (N = 40, main scores ranged from 4.20 to 4.95). On the test-retest reliability Cronbach's alpha was 0.920 in the first application and 0.943 in the second, the intraclass correlation scores ranged between good and excellent (0.6 - >0.80). The results show that the adaptation of the CCMQ is valid and ready to be used.

Keywords

Traditional Chinese Medicine, Body Constitution, Cross-Cultural, Questionnaire, Portuguese

1. Introduction

The Chinese concept of body constitution is a model that comprehends many aspects of one individual's health [1]. Constitution (*ti-zhi*) is a widely used term

in Traditional Chinese Medicine [TCM], and implies the description of the quality of the body. The theory of body constitutions was developed to better understand human health and physical and mental aspects related to disease development and course [2] [3]. To improve national health management, the Chinese government created a project to establish a normative system of body constitutions according to TCM based in classificatory questionnaires [4]. The reproducibility, reliability and validation of the questionnaire in development were evaluated and published by the Chinese Association of Chinese Medicine in 2009 as the “Constitution in Chinese Medicine Questionnaire” [CCMQ] [5]. Its reliability and validation were evaluated with more than 20 thousand people in China in 9 distinct geographic districts [6] [7].

Since its development, CCMQ was translated and validated to different languages and communities [8] [9] [10]. The practical application of the CCMQ range from academic learning to preventive healthcare projects and both clinical research and approach to patients [11] [12]. Recent research points to correlations between the TCM body constitution and some diseases as metabolic syndrome, depression and other chronic diseases [13] [14] [15].

Recent data show that TCM plays an important role on treatment and disease prevention [16] [17] [18]. In Brazil, acupuncture and TCM are recognized as valid medical approaches by the Ministry of Health [19]. The goal of the present study was to report on preliminary data about the cultural adaptation and validation of the CCMQ for Brazilian Portuguese. The translation, adaptation, and validation of CCMQ to Brazilian Portuguese can improve acupuncture and TCM teaching and clinical practice in Brazil and other Portuguese-speaking countries, and enables new research projects on this subject.

2. Methods

For the validation of the CCMQ for Brazilian Portuguese, we adopted a six-step procedure, following the proposals of Conti *et al.* [20], Teixeira *et al.* [21] e Toledo *et al.* [22] for validation of English questionnaires to Brazilian Portuguese.

2.1. Step One: Translation

The first translation of the English version into Brazilian Portuguese was provided by the first author (CBSR) based on a previously validated English version from Jing and colleagues [23].

2.2. Step Two: Back-Translation

The translated version was back-translated into English by a native English-speaking doctor (FB), familiar with the TCM concepts.

2.3. Step Three: Peer Review and Evaluation of Semantic Equivalency by Experts

The first and the senior author of the current report (CBSR and HT, respective-

ly) reviewed the semantic equivalence between versions, having correct conceptual equivalence between versions as the main goal.

2.4. Step Four: Instrument Evaluation through a Sample of Students, by Evaluating Their Understanding Level

The second version of the translated questionnaire was then presented to 40 medical students from the School of Medicine of the University of São Paulo (Faculdade de Medicina da Universidade de São Paulo) for the comprehensibility evaluation via an online platform. The students were aware of the study's goal, and could only access the questionnaire after accepting an informed consent form. Also, the principal of the School of Medicine of the University of São Paulo signed a consent form for the students to be accessed by the researchers. An adapted verbal-numeric questionnaire was used [20] [21] [22], by which the subjects could rate the comprehensibility of the item in a Likert-like scale ranging from 0 ("I didn't understand anything") to 5 ("I understood perfectly and do not have questions"). After each item, a space was also made available for suggestions and comments. For the comprehensibility assessment, means of the comprehension scores for each item were calculated, and the Wilcoxon signed-rank test was performed. The items with a mean score of less than 4 and the items with the lowest position in the rank test (if a significant difference were to be found) would be reviewed and eventually submitted to a new evaluation by the authors. A cutoff of 80% of "good" or "excellent" scores was also established to determine which items should be reviewed.

2.5. Step Five: Analysis of the Instrument's Internal Consistency

The internal consistency of the translated version was assessed by calculating Cronbach's alpha applied to the responses obtained with the second application of the questionnaire. The test-retest reliability assessment was performed with another 40 medical students from the same institution, contacted to answer the questionnaire twice via the same online platform, with an interval of two weeks.

2.6. Step Six: Test-Retest Reliability

For this final step, the questionnaire was answered twice by the same group of students, with an interval of two weeks between each assessment. The assessment of test-retest reliability was made using the intraclass correlation analysis method (ICC), which is best indicated for continuous variables [24], by comparing the nine scores for each body constitution according to the scoring-key of the original instrument obtained with the first completion of the CCMQ with the scores of the second application. Analyses were performed with SPSS 22.0 software (SPSS Inc., Chicago, IL, USA).

3. Results

3.1. Transcultural Translation and Adaptation

A total of 6 items presented discrepancies between the original and the back-

translated version, but only two of those were considered important by the authors (CBSR and HT) designated to compare and evaluate the back-translated version in relation to the original version. For one of these items, the authors suggested a specific adaptation regarding the expression “hot flashes”, because a direct translation into the corresponding wording did not describe the symptom in its usual wording for Brazilian Portuguese. The translation for the other item analyzed added the expression “breathe deeply” to clarify the meaning of “sigh”, but this change was considered misleading, as this expression can be related not only to emotional questions (as originally intended) but also to respiratory problems. The suggestions made by these authors were discussed with and approved by the others.

3.2. Comprehensibility Assessment

The comprehensibility mean scores of the CCMQ items ranged from 4.20 to 4.95. The Wilcoxon signed-rank test identified three levels or blocks of comprehensibility. The first block comprised 43 items, headed by item #1.6, with a mean score of 4.88. Then, there was a second block of 20 items, headed by item #6.5, they all differed from the leading comprehensibility score, with a mean score of 4.67. Finally, there was a third block comprising items #4.1, #4.2, #5.2 and #5.7 with the lowest comprehensibility scores, all differing from level two highest score, with a mean score of 4.33. **Table 1** shows the main outcomes.

Only two items scored below the previously established cutoff for comprehension scores. Both (Items 4.1 and 5.2) had an average of 77.5% of good or excellent rating. In fact, both items were just one score 4 or 5 short to achieve the required cutoff. These items were reviewed and discussed by the researchers, but it was concluded that there was no safe way to make the text clearer, at the risk of important conceptual changes.

Table 1. Comprehensibility scores and evaluation.

Comprehensibility	Item ranking	Comprehensibility		Wilcoxon's test	
		Excellent (%)	Good (%)	Z	p
Best ranked item within level 1 ^a	Item #1.6 ^d	95	5	-	-
Worst ranked item within level 1	Item #7.2	85	7.5	-1.890	0.059
Best ranked item within level 2 ^b	Item #6.5 ^e	82.5	10	-2.530	<u>0.011</u>
Worst ranked item within level 2	Item #4.7	75	17.5	-0.884	0.376
Best ranked item within level 3 ^c	Item #5.7 ^f	62.5	22.5	-2.360	<u>0.018</u>
Worst ranked item within level 3	Item #4.1	57.5	20	-1.049	0.294

^aLevel 1 items in ranking order: #1.6, #2.2, #3.6, #3.5, #8.7, #7.4, #1.7, #9.1, #2.6, #2.3, #7.5, #1.1, #3.7, #1.5, #1.3, #9.8, #9.3, #9.2, #8.2, #7.7, #5.3, #4.5, #8.4, #7.6, #6.2, #5.6, #5.4, #3.8, #9.7, #4.4, #6.7, #4.3, #3.4, #3.2, #5.1, #8.3, #2.7, #3.3, #1.2, #8.1, #6.1, #2.8, #7.2; ^bLevel 2 items in ranking order: #6.5, #2.5, #9.6, #6.3, #2.4, #8.5, #2.1, #9.5, #4.6, #3.1, #9.4, #6.6, #7.1, #1.4, #5.5, #6.4, #4.8, #7.3, #8.6, #4.7; ^cLevel 3 items in ranking order: #5.7, #5.2, #4.2, #4.1; ^dReference score for comparison with remaining items from level 1 and first item from level 2; ^eReference score for comparison with remaining items from level 2 and first item from level 3; ^fReference score for comparison with the remaining items from level 3.

3.3. Test-Retest Reliability

The mean completion time for the first application was 12 minutes and 48 seconds.

Cronbach's alpha for the entire instrument was 0.920 in the first application and 0.943 in the second application. The alpha coefficients for each subscale from the CCMQ were considerably lower ranging from 0.53 to 0.88. The majority were slightly above 0.60 (moderate); three fell below 0.60 (low): Stagnant blood, Yin-deficiency and Neutral; and only Stagnant-qui alpha was above 0.80 (very good). The intraclass correlation scores for all CCMQ subscores ranged between good and excellent (0.6 - >0.80). **Table 2** presents a summary of the main outcomes.

4. Discussion

The results show that the adaptation of the CCMQ to Brazilian Portuguese performed in this study is valid and ready to be used. The analyzes of the comprehensibility scores allowed a very careful assessment of the potentially confusing items. There was no item with a mean comprehensibility score below 4. The two items with less than 80% of "good" or "excellent" ratings would be above this cutoff with the change of a single evaluation, thus a decision was made to keep the actual item versions. However, in a posterior reflection, we could not discard the possibility that maybe the translation of these items deserved a review. Our best guesses would be the word "stuffiness" from item #4.1 was misinterpreted and deserved another translation to better indicate constipation of the chest and stomach as originally intended; whereas with item #5.2 a more subtle problem may have happened regarding the concept of "having acne or sore easily", perhaps a more connotative translation could better imply the original concept of experiencing acnes and sores as a passive process rather than something actively sought. In both cases, these adaptations can be provided with slight language adjustments in Portuguese, and they must be tested in the ensuing works of the CCMQ in Brazil.

The value of Cronbach's alpha for the entire questionnaire was very high in both applications, what suggests great reliability of the instrument. In the case of the coefficients for the subscales, however, the values were considerably lower, with only one of these being classified as very good, which suggests that our adapted version may have a structure more complex than a one-factor model, as it happens with its original version. Nonetheless, the study was not designed for the assessment of its domains or underlying dimensions, which requires a factorial analysis and a bigger sample. In fact, testing the underlying structure of the symptoms listed in the CCMQ, according to the theoretical TCM framework, in a larger community sample from a diverse sociocultural milieu would be the natural following step, as it may yield precious insights into theoretical model of the TCM itself, *i.e.*, how much of it can be automatically transposed to a different cultural milieu.

Table 2. Test-retest reliability results.

CCMQ Subscales	Cronbach's alpha ^a	Test-retest intraclass Correlation Coefficient (ICC) ^b
Yang-deficiency	0.692	0.619
Yin-deficiency	0.580	0.781
Qi-deficiency	0.623	0.888
Phlegm-damp	0.624	0.721
Damp-heat	0.630	0.827
Stagnant-blood	0.531	0.836
Inherited-special	0.758	0.861
Stagnant-qi	0.884	0.814
Neutral	0.532	0.798

^aInterpretation of Cronbach Alpha values [21]: Poor < 0.50; Low 0.51 - 0.6; Moderate 0.61 - 0.70; Good 0.71 - 0.80; Very Good > 0.8; ^bInterpretation of ICC values [22]: Poor < 0.40; Fair 0.40 - 0.59; Good 0.60 - 0.74; Excellent 0.75 - 1.00.

The analysis of the ICC coefficients shows that our version of the CCMQ has good to excellent test-retest reliability. Indeed, two out of nine subscores had ICCs within the “Good” range, and the other ICCs for the remaining scores were within the “Excellent” range.

Limitations

Both samples used in this study for comprehension and reliability analyzes were small and participation was on a voluntary basis, which may increase sample skewness. Besides, the subjects constituted a very specific subgroup of, *i.e.*, Medicine School students, which could lead to further bias due to their peculiar profile and soon-to-be professional gaze upon symptom experience and appraisal.

5. Conclusion

The Brazilian Portuguese version of the CCMQ is the only one of its kind validated and ready to be used in future research endeavors, as well as to support the clinical practice of acupuncture and TCM in our country. Overall, the items translation was quite direct, but a continuous validation effort of instruments of the CCMQ, *e.g.*, exploring its factorial structure, is necessary to further investigate the strengths and limitations of tradition-based medical models. So far, the evidence from the current report speaks in favor of the cross-cultural validity of the CCMQ.

Source of Support

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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