

REVIEW ARTICLES

A review of guidelines for cross-cultural adaptation of questionnaires could not bring out a consensus

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Abstract

Objectives: The aim of cross-cultural adaptation (CCA) of a questionnaire is to achieve equivalence between the original and adapted questionnaire. Here, we aimed to review the state of the art in CCA methods.

Study Design and Setting: We reviewed cross-disciplinary bibliographic databases for articles on methods and guidelines for CCA of questionnaires. Articles were first selected by their abstract and title, and then, we retrieved full-text English articles. References of selected articles were searched for additional relevant studies.

Results: We identified 31 guidelines and found no consensus in CCA methods. Most methods included use of committees, focus groups, and back translations. Evidence for the best methods is lacking, although clues indicate that back translation may not be mandatory.

Conclusion: Several methods are available for CCA of questionnaires. According to experts only, most would achieve comparable results, and choosing one is a matter of preference and logistic. More evidence is needed to support recommendations. Adaptation and validation of a questionnaire are two different processes that should be distinguished and undertaken with care. © 2015 Elsevier Inc. All rights reserved.

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1. Introduction

Over the last decades, the number of self-report questionnaires, used in multiple fields of science, has increased exponentially. Often these questionnaires are meant to explore a construct that cannot be measured directly, quality of life being one example among patient-reported outcomes. These questionnaires are composite measurement scales (CMSs). A CMS consists of items or questions that assess one or several attributes scored by a scale. A construct consists of several attributes that are evaluated by a number of selected elementary criteria or items, each scored on a scale [1]. For clarity, we use the term questionnaire, which implies a CMS, in this article.

Creating a questionnaire implies expenditure of time and money, first to develop the questionnaire and choose

domains and items that will best explore the construct of interest and second to validate the questionnaire, ensuring that it actually measures what it is intended to measure.

Cross-cultural research can be conducted to explore the same question in several cultures or measure differences across cultures. For either goal, researchers need the same questionnaire in different languages. If the questionnaire is available in another language, researchers should adapt a questionnaire with documented validity rather than create a new one because the cross-cultural adaptation (CCA) is faster and is assumed to produce equivalent measure [2]. This situation is true under the condition that the construct exists in the target culture and that the existing instrument measures it appropriately.

However, CCA of one questionnaire for another culture can be problematic. First, the translation can involve linguistic problems because two languages can have nonequivalent words or idiomatic expressions. For example, the word “fair” in English, which is often used in questionnaires, has no fixed equivalent in French and can be translated in two slightly different ways: “moyen” or “mediocre,” which would not elicit the same answer [3].

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What is new?**Key findings**

- The concept of equivalence between languages in cross-cultural adaptation (CCA) of questionnaires in the literature involves different definitions and frameworks. The most comprehensive definition can be useful as a reference.
- We identified 31 different CCA methods in a review of the literature.

What this adds to what was known?

- The methods of CCA can differ by their main focus (technical translation, focus groups, concepts, and so forth), but we lack evidence of the superiority of one method over another.

What is the implication and what should change now?

- CCA of questionnaires is a delicate process. Any validated method can be used as long as its process is rigorous enough to achieve equivalence between the original and the translated questionnaire. More research is needed to provide evidence to support current guidelines.

Second, the adaptation itself in another culture can be the problem because one item can have a very different meaning or no meaning at all in a specific cultural background. For example, in the Health Assessment Questionnaire (HAQ), people are asked if they can sit in their bathtub. For the Thai version of the HAQ [4], the adapter replaced the action of sitting in a bath by sitting to pay homage to a sacred image because in the Thai culture, people do not use bathtubs. Finally, the cultures can be so far apart that the way of thinking can be different [5].

A clear distinction should be made between translation, adaptation, and cross-cultural validation. Translation is the single process of producing a document from a source version in the target language. Adaptation refers to the process of considering any differences between the source and the target culture so as to maintain equivalence in meaning. This adaptation is referred to CCA. The cross-cultural validation of a questionnaire is a different process from the CCA. Cross-cultural validation aims to ensure that the new questionnaire functions as intended and has the same properties as the original and functions in the same way [6]. The adaptation and validation of a questionnaire are two different steps but can be part of an iterative process because if the questionnaire is not valid, the adapted version must be changed.

Many different methods of CCA exist, but none are considered the gold standard. Thus, reviewing the state-of-the-art methods of CAA and their respective level of evidence is useful.

2. Equivalence

Many authors have worked on the concept of equivalence [7–10]. Herdman et al. [11] defined three approaches: absolutist, relativist, and universalist. Many CCA articles and most current guidelines follow a universalist approach [12], which considers that a person's culture can affect how people answer any given question depending on the concept explored.

Equivalence has been divided into different categories, with the number varying depending on the author [13–15]. With a universalist approach to a literature review, Herdman et al. [16] proposed dividing equivalence into five categories, with a sixth summary category:

- Conceptual equivalence: domains have the same relevance, meaning and importance regarding the explored concept in both cultures.
- Item equivalence: items are as relevant and acceptable in both cultures.
- Semantic equivalence: the meaning of the items is the same in both cultures.
- Operational equivalence: the questionnaire can be used in the same way by its target population in both cultures; for example, a self-reported questionnaire implies literacy, and an online questionnaire could be more difficult to use in some areas with low internet access.
- Measurement equivalence: no significant difference in psychometric properties (construct validity, reliability, responsiveness, and so forth) of the two versions.
- Functional equivalence is a summary of the preceding five equivalences: both versions of the instrument “do what they are supposed to do equally well.”

Because the articles by Herdman provided the most comprehensive framework for the concept of equivalence, we retained it as our reference point for equivalence.

3. Achieving equivalence

The ways to achieve equivalence first depend on the stage at which the question of equivalence is encountered.

- Before the original questionnaire is developed: some authors proposed to develop questionnaires for different cultures at the same time [17–21].
- At the beginning of the CCA process, before any translation, the potential conceptual equivalence should be evaluated. This case corresponds to the recommendation by Herdman et al. [16]. This evaluation is rarely performed [22] but can be found for example in the companion article by Santo et al. [23].

- During the CCA process, once a translation has been started: most guidelines address this case. In some of these guidelines, the first step of considering the possibility of conceptual equivalence is implicit but is not described.

4. Literature review of guidelines and methods for CCA

We aimed to identify potentially relevant articles concerning methodological approaches to CCA published between 1970 (the model by Brislin) [24] and mid-2014. We used search strategies [25] for the databases MEDLINE via PubMed, EMBASE, PsycINFO, and the Web of Science with the terms “cross-cultural” and “adaptation or translation or validation” combined with “questionnaire or instrument.” The results of the searches were combined by use of EndNote X7 (Thomson Reuters).

Articles were selected on the basis of the title, abstract, and key words. We aimed to include full-text articles in English that described a strategy for CCA of self-reported questionnaires or a review of the guidelines used for CCA or compared methods. We screened the reference lists in articles to identify additional relevant studies, including guidelines available online. The flow chart of literature searching strategy is shown in Fig. 1.

We identified 42 articles proposing 30 methodological strategies relevant to translation and adaptation of questionnaires across cultures (See Appendix). One of the articles was about adapting objectively assessed outcomes [26] and not CMS and was therefore excluded. Three additional guidelines [27–29] were available online, including two strategies described in previous articles [30–32] totalizing 31 guidelines. Appendix Table at www.jclinepi.com summarizes the content of the reviewed CCA guidelines and their specificities.

We found one article specifically analyzing the reconciliation process [33] and 53 articles reviewing CCA strategies. Only six compared methods for CCA [13,34–38]. One article [39] proposed the extension of a common set of standardized patient-reported outcome measures to the international community, with a bank of items that would be adapted following a standardized procedure of computer adaptive testing.

Although the focus in translating instruments changed from linguistic equivalence to conceptual matters, cultural relevance, and subtle connotations of words and phrases within a particular group of target subjects [40], most of the guidelines were proposed on the basis of the practical experience of the researchers. However, we did not find strong scientific evidence for what would be a “gold standard.”

The methodological approaches of the numerous studies varied greatly [41]. One method applied in most articles on CCA of outcome measures and in some systematic reviews of CCA of disease-specific questionnaires, translation, and adaptation processes [42–44] relied on recommendations

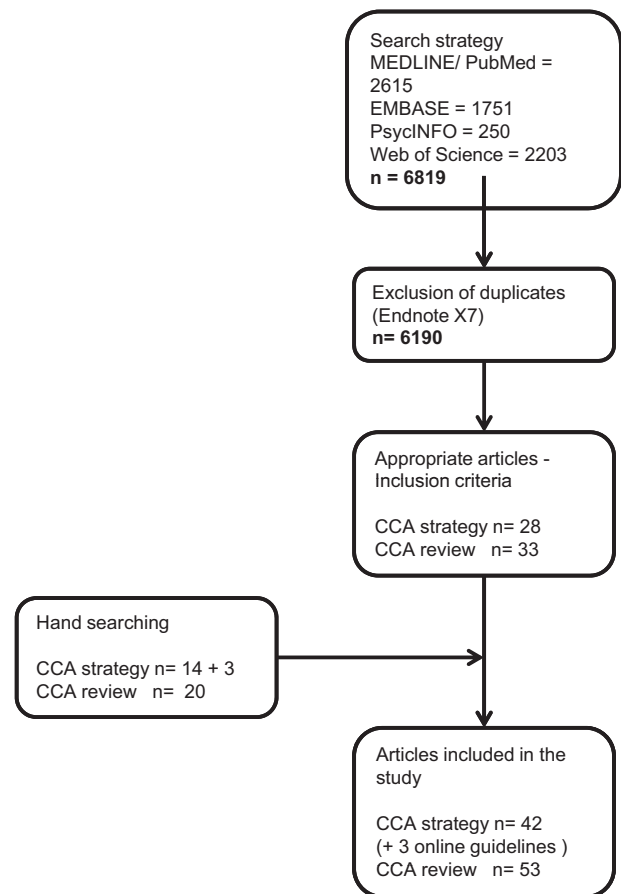


Fig. 1. Search strategy for the literature review.

[45]. The authors of the recommendations presented an extensive review with suggested guidelines for CCA of self-reported measures in 1993, followed by an update and a more formal presentation in 2000 [2]. The American Association of Orthopedic Surgeons Outcomes Committee currently endorses these guidelines. The guidelines comprise well-defined steps (initial translation, synthesis/reconciliation of the translations, back translation, expert committee review, pretesting).

Although the forward- and back-translation design is the most common technique used for cross-cultural research, the proposed methodological steps have not been applied uniformly [34]. The recommended number and characteristics of translators and back translators varied, as did the timing of back translation and discrepancies regarding the need to specify the types of equivalence used and weight of scores [32,34]. Moreover, whether all steps are essential was not clear [34,35].

Hambleton and Patsula [46] presented a set of myths and problems about the test adaptation that needed to be overcome and the steps to test adaptation. Despite no universal consensus among researchers, considerable evidence suggests that well-qualified translators should be fluent in both source and target languages (bilingual), familiar with both cultures (bicultural), and have some knowledge of the

content of the instrument being assessed [46]. Some authors suggest that translators would benefit from some training in test construction, especially in item writing [47]. This procedure would reduce the chances of test translators creating flaws in items, which might change item difficulty or attractiveness. Nevertheless, critical translation problems adversely affect studies, even when professional translators are used [9]. Professional translators may have superior linguistic skills but cannot compensate for lack of familiarity with the content area. Moreover, colloquial phrases, idiomatic expressions, and emotionally evocative terms may be particularly difficult to translate. Unfortunately, when translators know that their work is going to be subjected to back translation, they use wording that ensures that a second translation would faithfully reproduce the original text rather than a translation using the optimal wording in the target language [48].

Translation may induce bias and affect equivalence. Involving more than one translator in the process is advisable to provide a mix of perspectives. The use of a single translator, no matter how competent and conscientious, does not allow for valuable discussions of independent translations across a group of translators [47]. Some articles describe that panels or committees of people translate better than do individuals [15,21,46,49–55]. Adding a psychometrician to the mix may be desirable [46].

Reconciliation refers to the process whereby two or more independent forward translations are merged into a single translation. Although reconciliation is an important step, this topic seems to be underestimated and little space is reserved for describing this process. In a recent study, Koller et al. [33] analyzed the reconciliation process in leading guidelines for the translation of quality-of-life questionnaires and specified recommendations to follow that process.

The role of an expert committee is crucial to review all the translations, make critical decisions, reach a consensus on any discrepancy, and consolidate all versions of the questionnaire. Bracken and Barona [56] suggested a multinational or multiregional bilingual committee ensuring that the translation is appropriate for examinees regardless of their nation or region of origin. The expert committee may be composed of researchers, translators, health professionals, methodologists, and lay people.

The requirement for and number of back translations is a matter of debate [57]. Each back translation is intended to reveal or amplify mistakes in each forward translation. In the back-translation design, proposed by Sperber et al. [58], equivalence is assessed by comparing the back-translated version (the target language instrument back translated into the source language) and the original language version and has the errors checked. However, the sole use of this model may not provide adequate evidence of equivalence because examinee responses to the translated/adapted instrument are not collected and analyzed [47].

Indeed, the back-translation step seems to generate much controversy. Some authors consider it an essential part of the process of cross-cultural research because it allows researchers to have some control over the final version of the translated instrument by examining the original and back-translated versions and make inferences about the quality of translation [58,59]. However, others [15,21,46,49–51,54,55] do not even recommend this step.

Most guidelines recommend the use of a committee and a back translation, but their relevance lacks supporting evidence. Perneger et al. [35] and Falcao et al. [34] compared two methods to obtain adapted versions of the same instrument: one the international Quality of Life Assessment group's methodology and the other a quicker process without back translation or committee; both versions had similar psychometric properties. A recent study [38] with an experimental design showed that back translation might have limited use, particularly if the adaptation team speaks both source and target languages.

CCA requires a collaborative effort that involves input from qualified translators, clinicians, and patients [60]. Thus, pilot testing is an important and valuable step because translators cannot anticipate all problems encountered by examinees taking a test in a second language [46]. This step requires an examiner fluent in the target language to administer the test to several examinees from different social economic backgrounds and relevant geographic regions [54,56,61]. Others suggest individuals from the target population [15,27,30,31,46,48–50,62–64]. The literature suggests four testing groups: (1) bilingual speakers, (2) both source and target monolingual speakers, (3) only source monolingual speakers, or (4) only target language monolingual speakers.

Whether the target language examinees perceive the meaning of each item in the same way as the source language examinees must be determined [49]. The examiner should attend to any vocabulary words or phrases that systematically fail to elicit an appropriate response [56]. Questionnaires may be pilot tested with focus groups or one-to-one cognitive debriefing interviews. Focus groups usually involve one or more facilitators and several participants (6–10) who provide input into the wording and content of the measure [65]. Cognitive interviews can augment the information collected in focus groups, and cognitive interviews should be used as a follow-up to focus groups. Cognitive interviews involve one participant at a time, which requires more time and greater resources than with focus groups. However, the investigator can explore the participant's reactions to the measure in considerable depth [65]. Cognitive debriefing allows researchers to check for misunderstandings, incomplete concept coverage, and inconsistent interpretations [66]. Moreover, this method allows researchers to establish whether respondents can understand the question concept and task, in a consistent way, and how the researcher intended. This process is important because if the respondent interprets the question in a

different way from what was intended, conclusions drawn from the respondent's answer may be flawed. Thus, literally understanding the words is not sufficient to be able to answer the question [66].

Geisinger [48] emphasized that rather than performing a back translation, a more effective technique to ensure an appropriate translation or adaptation is to use a group of individuals fluent in both languages, familiar with both cultures and expert in the content measured on the instrument (the same criteria used to select translators) to carefully review the quality of translations or adaptations.

Another method is the dual-panel approach proposed by McKenna et al. [54,55], which involves professional and lay panel meetings rather than back translation. In this approach, a translation panel composed by five or seven translators with varied profiles works as a team under an experienced bilingual coordinator. The participants are informed of the model underlying the questionnaire, its design and content, and the target audience. Once the translated version of the instrument has been agreed on, a monolingual lay panel working as a focus group in the target language assesses the questionnaire. In the dual-panel approach, the focus group should have access to only the translated version (not the source version) of the questionnaire because their assessment should not be affected by what they think the translated items should mean but rather what they do mean. The coordinator involved in the translation panel should also work with the lay panel to ensure the construct and the conceptual equivalence.

The cross-cultural validation process was refined in an example of linguistic and psychometric testing for a self-reported measure of dry eye in a companion article [23]. The guidelines from Beaton et al. [2] were used, but the expert committee contributed in several steps. Notably, the committee reviewed the potentiality for conceptual equivalence of the source questionnaire before doing any translation. Moreover, focus groups and cognitive interviews were used to ascertain the face and content validity of the adapted questionnaire.

Hagell et al. [36] compared two versions of a questionnaire translated into Swedish by forward–backward translation and dual-panel methodologies regarding the preference of wording and psychometric properties. The authors found that the dual-panel approach appeared to be able to produce item wording preferred by patients and lay people to that produced by forward–backward translation. Nevertheless, the two methods did not seem to result in any major differences in psychometric performance. Thus, both methodologies were able to produce a reliable adapted instrument.

5. Adaptation and validation

Adaptation specifies that the underlying concept and hypotheses of the adapted questionnaire are those of the original questionnaire. In theory, an adapted questionnaire

should have the same properties as the original, so if the properties of the original are poor, the adapted questionnaire will also have poor properties. In any case, the adapted questionnaire should always be validated by means of proper statistical tools. The COSMIN group provided recommendations and a checklist to verify a proper validation [67–70].

Interestingly, most guidelines for cultural adaptation include methods to check for the content validity, at the same time as the adaptation, with focus groups mainly and/or committees. The translatability assessment proposed by Conway et al. [71] could help identify problematic items in retrospect. However, the guidelines rarely provide ways to test measurement validity, which is outside their scope.

6. Conclusion

Many different recommendations for CCA exist; some are quite different and most differ by their focus (technical translation, focus group, concepts, and so forth). However, only two experimental studies [36,38] and two quasi-experimental studies [34,35] compared different methods of adaptation. Studies comparing methods suggest that the back translation should not be mandatory but can be useful as a communication tool with the author of the original questionnaire. As well, expert committee could play an important part to assure equivalence between the translated and the original instrument. Target population input, by cognitive debriefing interviews, lay panel, or focus groups, could be equally important. Without further proof of the superiority of one method over another, we cannot recommend a specific method. Generally speaking, the lack of evidence limits the possibilities of clear-cut recommendations. Researchers should choose any validated method of adaptation that seems the most appropriate in the context of the questionnaire of interest. Of note, adaptation is not a way to improve a questionnaire; therefore, one should choose a questionnaire of good and documented quality; otherwise, the properties of the adapted questionnaire will be either as poor as or not equivalent to the source questionnaire. Finally, adaptation and validation are two separate if sometimes partially intricate processes. Both should be performed with great care by competent researchers.

Overall, the process of translating and adapting a questionnaire for a different cultural group represents a challenge and requires time, skill, knowledge, and experience. It involves an adequate methodological strategy for adaptation of the measurement instrument, criteria for analyzing the equivalence and quality of translation, and techniques for evaluating the psychometric properties of collected data. It may be arduous, demands a considerable investment of time and money, and requires a meticulous advanced planning. Unless this process is successfully implemented, the validity of the research results may be dubious and lead to erroneous conclusions. Therefore, the questionnaire should be adapted with great care to ensure the best properties possible. From a cross-cultural research point of

view, further proof is needed for the current CCA guidelines to be evidence-based rather than expert-based.

Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.jclinepi.2014.11.021>.

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