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Ensuring translation fidelity in multilingual research

Gene Thompson and Karen Dooley

Introduction

Applied linguistics research is often conducted in cross-cultural and cross-linguistic contexts, where data are generated and reported in multiple languages. For rigor, researchers meticulously document data collection and analysis processes and are increasingly expected to share data (Savage & Vickers, 2009), in part, to enable oversight by the field. But what if the data were generated from a poorly translated questionnaire or the translations that produced transcripts of interviews and natural interactions were weak? In multilingual research, translation procedures are crucial; inadequately translated tools and data can lead to invalid conclusions. Furthermore, when translation procedures are unclear or unstated, the trustworthiness and replicability of the research are compromised.

Translation is likely to become more central to research design and method in applied linguistics. The impetus arises, in part, from the “multilingual turn” (May, 2014) within the disciplinary field itself. This is occurring as researchers are investigating the superdiverse linguistic contexts created by flows of people around the globe, while also questioning the monolingual bias of the discipline. New demands for translation arise also from changes in the field of research more generally. University ranking exercises, for instance, are a force for international research collaboration, and internationalisation of faculty and graduate student workforces within universities. In these conditions, data are more likely to collected, analysed and reported across borders and languages, thereby requiring more attention to practices that enable translation fidelity.

This chapter discusses an array of translation procedures for data collection and analysis, and provides guidelines for researchers working in multilingual contexts. It begins with the aims of translation, introduces key issues for multilingual research, and then provides a review of translation techniques, discussing their strengths and weaknesses. It then raises a number of important considerations surrounding translation in applied linguistics research, and finishes with the provision of a checklist for researchers.

Aims of translation in multilingual research

As cross-cultural research expanded during the 1960s and 1970s, translation procedures began attracting greater attention, for it was clear that translation involved decisions about language
that would influence the equivalency of the original (source) and translated (target) texts. At that time, procedures were generally focused on translation during data collection, usually in survey research involving questionnaires (see Iwaniec, this volume). Guidelines recommended use of simple sentences; noun repetition; and avoidance of colloquialisms, passive voice, and subjunctive mood. Some advocated back-translation to ensure “equivalency” between source and target text and the comprehensibility of both (Brislin, 1970). However, others criticized back-translation as a stand-alone technique lest translators focus on linguistic accuracy without attending to other types of equivalency (Hunt et al., 1991). Furthermore, it was observed that target language translations “resulting from poor translation might still retain much of the structure of the source language, so that is easy to back-translate correctly despite translation errors” (Maneesriwongul & Dixon, 2004, p. 175). In other words, translation entails types of equivalency beyond linguistic accuracy.

**Semantic equivalency**

Equivalence of meaning is more important than precise translation of vocabulary items or grammatical structures. The nuance of many words may be lost when they are translated according to dictionary definitions or with focus on linguistic accuracy. Consider “I am happy” (Sechrest, Fay, & Zaidi, 1972). This clause would seem to be easily translatable into multiple languages. However, the meaning of the adjectival may vary contextually from ‘joyous’ (I am happy [and smiling]), for instance, to ‘confident’ (I am happy [with the proposal]). Without semantic equivalency, a research instrument may be “unworkable” (Sechrest et al., 1972, p. 44) or a transcript inaccurate.

**Idiomatic equivalency**

In many cases, idioms are unavoidable in research data. In qualitative analysis of interviews or field notes, idiomatic equivalency becomes important. This often involves substitution of very different wording in the target text in order to achieve equivalent emotional or social reactions to items or expressions. As Guillemin, Bombardier, and Beaton (1993, p. 1423) explain, achieving idiomatic equivalence in the Nottingham Health Profile (NHP) questionnaire involved the item “I am feeling on edge” being translated as “I have my nerves outside my skin” in Italian and “I feel nervous, tense” in French. The use of two alternative terms in the French aligns with traditional guidelines for capturing the emotional dimension of the source term, where multiple terms can be substituted in an attempt to capture the original text meaning. Sometimes, however, there may be no idiomatic equivalent, and drawing direct attention to the original idiomatic expression may be necessary. An illustration of this is the following excerpt from a translated interview, conducted in Mandarin, in which the participant mused on relations between international and domestic students:

S: . . . Perhaps it is like the Chinese saying ‘You walk on your sunny path, and I go on my single-planked bridge.’ (妳走你的陽關道;我過我的獨木橋) That kind of feeling.

*Lin, 2012, p. 199*

**Empirical equivalence**

Translation must also consider the experiences of the target population. In different cultures, questionnaire items and expressions in interview protocols may need to be reworded to match
local conditions and situations. This involves “cultural translation” (Werner & Campbell, 1970), as the types of situations faced by the source and target populations may be vastly different. An example that could be faced by educational researchers concerns the use of libraries or self-access language learning centres. In some cases, such facilities are simply not available, thus an item asking ‘the extent to which you use library resources’ may need to be altered to the ‘extent to which you use resources from other people’ to examine the construct of interest (e.g., use of outside support in learning).

Conceptual equivalence

The notion of conceptual equivalency entails making sure that terms used in the translation have the same framework of reference in the source and target cultures. That is, the terms should capture the same cultural attitudes and breadth of usage – if a term has a relatively narrow meaning in one language but is used in a broader sense in another, difficulties with conceptual equivalence may arise. In PISA 2009, for instance, ‘remedial’ in the international version of the student background questionnaire was rendered as ‘learning support’ in New Zealand and ‘catch-up lessons’ in England, while the three Chinese-language versions, 补习班 (tutoring class) in Shanghai, 補救課程 (rescue course) in Taiwan, and 輔導班 (guidance class) in Macao, were reworded in similar fashion (Bray & Kobakhidze, 2014, pp. 608–609). The translations do not all carry the same connotations of remediation and outside-of-school provision. Translation seems to have compounded problems inherent in the ambiguity of the basic concept of ‘remedial shadow education’, with implications for the validity of results and conclusions from studies using the data (Bray & Kobakhidze, 2014). Researchers must strive for conceptual equivalence to reduce such ambiguities.

Translation techniques

Generally, researchers use a combination of techniques, as a systematic translation approach is required to ensure trustworthiness and validity. This section briefly introduces some main techniques, discussing their strengths and weaknesses.

Forward-translation

Forward-translation refers to translation of the text from the source to the target language. As a stand-alone method, forward-translation is relatively fast and inexpensive. However, it is reliant on the skill of one individual and has no inbuilt checks for equivalency of source and target versions. Thus, although forward-translation is necessary, it is not sufficient. Further steps are needed to ensure accuracy. While forward-translation fidelity can be strengthened by utilizing multiple translators (Maneesriwongul & Dixon, 2004), other steps must be taken to ensure the validity of cross-group comparisons based on the data.

Back-translation

Back-translation is often employed in research. This technique begins with a forward-translation which is then translated ‘back’ into the source language for comparison with the original source item or text. The forward- and back-translators must be independent (i.e., blind translations), by individuals outside the research team, as back-translations should be compared to the original text for equivalence. This method can be strengthened by utilizing multiple
translators, and it is suggested that researchers use the same number of independent translators for the forward- and backward translations (Guillemin et al., 1993). If there are two forward-translators, there should be two back-translators.

Back-translation provides some opportunity to assess the equivalency of the source and target versions. As a result, it is also considered as necessary for comparisons across groups, as the technique provides some assessment of the equivalency of the translations (Maneesriwongul & Dixon, 2004). Nevertheless, as briefly mentioned earlier, this technique also has weaknesses. Poor forward-translations that utilize similar structures as the source language may lead to inaccurate back-translations, resulting in weak target language versions. Equally, forward-translations may not be semantically or conceptually equivalent, despite being easily back-translated to the source language. Finally, as each translator should be independent, variation between the source and back-translation may occur due to differences between the choices of the translator, rather than problems of equivalence between the source and forward-translation (Sechrest et al., 1972). In other words, differences in equivalency may be identified where none are present, due to translator word or phrase choices. Thus, this technique also has limitations as it does not specifically address the equivalence of the forward-translation. Accordingly, while back-translation is also considered a necessary step involved in a systematic translation procedure, additional processes are needed to strengthen equivalency, and thereby the consequential validity of the findings drawn from research.

**Bilingual comparison and testing**

As can be seen, translation systems are serial processes (Herrera, DelCampo, & Ames, 1993) that generally involve forward- and back-translation. Systematic procedures also involve a stage where the equivalence of the source and target translations are assessed. A common technique involves asking (groups of) bilingual individuals to consider the extent of conceptual equivalence of different versions (usually the source and target versions). By adding this step, discrepancies between the source and target versions can be identified. When bilinguals identify problems, items or data can be retranslated or discrepancies resolved.

For survey research using questionnaires, it is common to ask bilinguals to respond to the instrument in both languages, and compare their responses. With this process, discrepancies can be identified by comparing the response patterns of each individual to the ‘same’ item in each language. Recall bias can become an issue with this technique (Maneesriwongul & Dixon, 2004); therefore, cross-over designs are suggested (Chang, Chau, & Holroyd, 1999). Alternatively, when bilingual subjects are strong in one language, participants may be asked to carry out the survey in the weaker (usually additional) language before the stronger (usually L1) language (Son, Zauszniewski, Wykle, & Picot, 2000). This method appears particularly applicable to research within applied linguistics, where bilingual test respondents may be unbalanced bilinguals.

The technique requires that bilingual respondents are available, and may involve a “substantial commitment of time and resources” (Maneesriwongul & Dixon, 2004, p. 181). These are conditions that may not be met in the case of small-scale, unfunded studies. This is of particular pertinence to graduate students, who are amongst those most likely to be undertaking multilingual research in this era of intensifying internationalisation of research training, including joint and dual doctoral awards between institutions in different countries. In situations where bilingual test participants are not available, monolingual testing can be employed. This involves asking different groups (i.e., users of each language) to take the source and target questionnaires, after which the response patterns are compared.
Review

Finally, systematic approaches should include a review stage, either by the research team (e.g., Tsui & Kennedy, 2009), an independent panel (e.g., Hyrkäs, Appelqvist-Schmildechner, & Oksa, 2003), a panel including the researcher or research team (e.g., Chen & Boore, 2010), or an expert panel and the researcher or team (e.g., Thompson, 2016). In many studies, at least some of the researchers will have proficiency in both the source and target language, and their expertise is best used during this stage. Also, review panels can include each of the forward- and back-translators to help resolve equivalence discrepancies (Sousa & Rojjanasrirat, 2011). When such issues cannot be resolved, additional translation rounds may be necessary, and these should be carried out by independent translators.

Review is an essential step of systematic translation procedures, and can be strengthened by using structured techniques to deal with translation problems (see Guillemin et al., 1993), such as the use of rating scales (e.g., Hyrkäs et al., 2003; Squires et al., 2013), and by including members of the target population (e.g., Thompson, 2016) in the review committee. This step adds greater complexity and requires additional resources (e.g., time, cooperation, funding). Accordingly, smaller-scale studies may involve review by the researcher or team, while studies with a stronger need for procedures to ensure consequential validity (e.g., for a high stakes test), may require independent teams that use structured response questionnaires and cycles of review.

Translation within survey style research for questionnaires

During instrument adaptation, translation procedures generally require at least four steps in the translation procedures: (1) forward-translation, (2) back-translation, (3) review, and (4) piloting of the measure, usually involving the use of bilingual or monolingual respondents, as previously discussed.

According to Guillemin et al. (1993), each of these steps can be strengthened by (1) producing several translations with multiple professional translators, (2) asking translators to translate into their L1 language; and (3) including committee review of translations for revision of items, where the committee includes a wide range of expertise in the field, including members of the population of interest. Finally, they suggest testing the translated instrument before using it in a wider study (Guillemin et al., 1993). In other words, for studies that intend to use a translated questionnaire as part of data collection, some pilot testing of the translated instrument with participants of the target community is required. As this chapter focuses upon translation fidelity, readers with an interest in pilot testing of questionnaires are directed to Sousa and Rojjanasrirat (2011), who provide a useful guideline, while Squires et al. (2013) provide a detailed validation procedure for instrument translation and testing for questionnaires with high-stakes consequences (e.g., cross-cultural health care surveys).

The collaborative serial translation approach

Systematic translation procedures clearly involve multiple steps, entailing forward- and back-translation, testing, and review. The collaborative serial translation approach (CSTA) is a procedure developed by the first author for questionnaire adaptation in applied linguistics research. It is based on Carroll, Holman, Segura-Bartholomew, Bird, and Busby’s (2001) six-step Modified Serial Approach (MSA), but emphasizes both independent and collaborative translation
as part of the procedure. The CSTA (presented in Figure 5.1) uses two teams of translators who worked first independently, then collaboratively, in creating a ‘final’ forward-translation (team one) and back-translation (team two). The source to target translation is reviewed by an external panel, while the forward-and back-translation are appraised by the research team. The questionnaire can then be pilot tested and additional changes made as necessary.

The two-step forward- and back-translation procedure allows communication between the translators, and emphasizes the collaborative aspect of teamwork in iterative translation. The use of independent translators can strengthen translation fidelity, while collaboration between translators may also lead to higher quality translations, as they can work together to combine or choose the most appropriate translation for each item or prompt. The CSTA procedure also reduces the workload of the review committee and research team, as only one ‘final’ forward- and back-translation are appraised by the review committee and research team. If translation equivalency issues cannot be resolved during review, further translation cycles can be added.

Although this procedure reduces the number of translations to be appraised, the review stage is vital. One weakness of the CSTA concerns the extent to which translation inaccuracies can be amplified through collaboration. For example, the translator teams may choose a translation for the ‘final’ version that has strong linguistic accuracy but weak conceptual or experiential equivalency – reducing the potential benefit of multiple translators. As a result, researchers should include individuals from the target population as part of the review team, and during future pilot testing, to assess the cultural validity of items and the instrument. For example, in the original study where the CSTA was developed, Thompson (2016) carried out interviews with members of the target population (high school English teachers in Japan), including a pilot study of the instrument, to gauge the extent to which the survey questionnaire items were linguistically and culturally accurate for use with L2 teachers in that context. These procedures (and the back-translation of items) identified small, but crucial, differences in the way that key terms were translated from the source to the target translation. Using a structured rating scale (usually 80% agreement by raters, see Hyrkäs et al., 2003; Squires et al., 2013), and comments for improvement, scale revisions were carried out by the researcher without requiring further translation cycles.

Figure 5.1  The collaborative serial translation approach (CSTA)
Translation of qualitative data

What happens when the researcher is integrated (e.g., as a participant observer) into the data generation and analysis, using highly contextual ‘thick’ descriptive data? For such studies, it may not be feasible to get all data transcribed in the source language, let alone forward-translated, or to use back-translation of all data. As Chen and Boore (2010, p. 237) state, it may be “exceedingly expensive in both time and cost” to carry out (transcription and) translation of all data. In such cases, researchers face choices about what to translate, how much to translate, and how to check translation accuracy. They must also make decisions about their role in the translation process.

In contexts where the researcher or research team do not have the linguistic resources to interact directly with the source data (i.e., are only users of the target language, not the data source language), systematic translation procedures are required for all data, and a serial approach is needed that involves forward-and back-translation with review – such as the CSTA presented earlier in the chapter.

However, with large data sets in small-scale research, the use of multiple, independent, translators may become more difficult. Accordingly, it may be necessary for bilingual researchers to act as the forward-translator (or one of the forward-translators). Furthermore, in cases where all data are forward-translated, either by the researcher or independent translators, full back-translation of all data may be unfeasible. In such situations, a certain percentage of forward-translated data can be randomly selected, and a systematic procedure used to check the equivalency of the translation. By doing so, inferences can be drawn about the accuracy of the forward-translation for the full data set. For example, a total of 10% of the forward-translated data may be selected randomly for back-translation and review. Appraisal of these materials may indicate adequate equivalency, or suggest that all forward-translated data should be reviewed, possibly requiring additional independent forward-translations.

In cases where the researcher is proficient in the data source language, another option may be to transcribe data in the source language and carry out analysis (e.g., thematic analysis, see Braun & Clarke, 2006) upon the source data, developing a table of concepts and themes, with examples of each, in the source language. This set of materials can then become the source material for translation, with procedures followed to appraise equivalency. An example comes from Chen and Boore (2010), who analysed verbatim data in the source language using grounded theory (see Hadley, this volume), and translated the analysis of qualitative interview and observation data (i.e., the concepts and constructs identified by the researchers in the source language). They used a forward-translation team in the same fashion as the CSTA presented earlier in this chapter (i.e., first independently, then collaboratively), with back-translation carried out by an independent translator and review by a five-person panel. This method has the virtue of reducing the amount of interpretation between the production of the data and the analysis.

Some researchers or research teams may have proficiency in both the source and target languages, and the resources to carry out translation and transcription of all data. In such cases, qualitative data analysis techniques can be independently carried out upon both the source and target transcriptions to strengthen the trustworthiness and dependability of the analysis by showing the dependability of the analysis in each language.

The researcher as translator serial approach

In many cases, researchers may act as a translator within studies that involve qualitative analysis of interview or other detailed data. The ‘researcher as translator serial approach’ (RTSA),
presented in Figure 5.2, is a procedure developed by the authors for translation in qualitative research. It is influenced by Chen and Boore’s (2010) procedures and Phillip’s (1959) guidelines. It illustrates how researchers can act as forward-translators, but also take steps to reduce potential bias by using back-translation of all (or some) data, and via review by independent bilinguals. As shown in Figure 5.2, each step can be strengthened by adding additional translators or review team members.

**Other considerations for researchers**

Although translation fidelity has received less attention, thus far, in applied linguistics research, it has generated significant and ongoing discussion in other fields, such as health care (Sousa & Rojjanasrirat, 2011; Squires et al., 2013), most likely due to the social importance of such studies and the consequential impact of findings drawn from research within that field. From such research, a number of additional questions, highlighted next, arise concerning research purpose, resource limitations, and oversight.

**What is the research purpose?**

Research that utilizes translated instruments or data (e.g., interviews) may be concerned with cross-cultural comparison or cross-cultural adaptation (Guillemin et al., 1993; Hyrkäs et al., 2003). ‘Adaptation’ refers to measuring (e.g., survey style research) or understanding (e.g., interview data) a similar phenomenon through different languages; it is essentially the production of an equivalent instrument or text adapted to another language that can be understood by the target population in a similar manner to that of the source population. This usually begins with an existing instrument or set of data that is translated for use in data collection...
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or analysis, where the translation procedures attend to cultural equivalence to ensure that the target materials reflect the original material.

When the purpose of the research is primarily concerned with cross-cultural comparison, that is a “comparative study of a phenomenon across cultures in order to identify differences attributable to culture” (Hyrkäs et al., 2003, p. 620), research tools (e.g., instruments, interview prompts) may need to be developed at the same time to decenter (Brislin, 1970; Sechrest et al., 1972; Werner & Campbell, 1970) the translation procedure from adaptation towards a process where both languages have equal weighting during instrument design. In other words, by not making one language more important than the other, conceptual equivalency and cultural validity can be attended to during the design process, without being based upon one language and cultural conventions.

**What are the limitations?**

Research design involves choice. Each of the techniques introduced earlier requires the use of various resources (e.g., time, funding, availability of different participants), and not all studies will be able to utilize resources fully for each stage, meaning that researchers will need to make decisions that may influence the accuracy of the resulting translations, and accordingly, conclusions that can be drawn from the study.

An example concerns the choice of translators. Guidelines generally suggest involving a number of independent professional translators in the forward- and back-translation stages, where each individual translates to their ‘L1’ language (e.g., Guillemín et al., 1993; Sousa & Rojjanasrirat, 2011). However, not all research teams will be in a position to identify such individuals or have the resources to afford them. For example, in a PhD study that involved the forward- and back-translation of questionnaire items from English to Japanese, Thompson (2016) utilized the collaborative serial approach outlined earlier in this chapter. It involved the use of four translators: two for the forward- and two for the back-translation. All were Japanese L1 speakers, as suitable English L1-speaking translators were difficult to identify for the back-translation. While both translators had graduate translation qualifications from overseas universities, and translations were reviewed by the researcher (an L1 English speaker), one potential limitation of the translation procedure concerned the availability of appropriate translators.

In another study, in which translations were used for questionnaire items, Tsui and Kennedy (2009) explained that contextual experience is also important for cultural equivalence in research in language education (specifically, in a study of language teachers). Professional translators may be able to produce technically correct target translations, but may not have sufficient experience with the target population (e.g., L2 teachers) to utilize their existing knowledge or relate terms in an appropriate manner for such individuals. As a result, researchers may choose to integrate non-professionals as translators to take advantage of their professional experiences with the target population. Thus, in Thompson’s (2016) study of Japanese high school English teachers, one of the forward-translators was not a professional translator, but a working language education professional, as the input of such an individual was seen to benefit the experiential and cultural equivalence of the target translation.

Accordingly, it is essential for researchers to clearly explain the choices made in the research design. Was the translation process a serial procedure involving back-translation, review, and testing? Each of the stages should be clearly outlined, with specifics about the translators used, the extent to which they worked independently or via committee (or both), the procedures followed, and the review processes used to ensure conceptual and experiential equivalency.
How can we maintain rigor in postgraduate study?

Translation fidelity presents a particular challenge for international research teams, where members may have different language resources. Often such teams have significant resources available to strengthen the trustworthiness of translation procedures (e.g., funding to secure multiple translations from professionals for review by expert panels). However, as international research student numbers grow globally, maintaining rigor is a key issue for postgraduate students, and the academics who work with them as supervisors/advisors or panels with an assessment function (e.g., oral defence).

In many cases, academics may be proficient in the language that the student collects/produces, analyses and reports (in full or part) on their data. However, in others, supervisors may have no familiarity with the language used in the research. This is especially problematic in English-dominant Western countries in which it is not uncommon for researchers to be monolinguals, and L1 speakers in the medium of instruction of the university who bring no foreign or second language expertise to the project. At the same time, the students may themselves be variously L1 speakers of the language in which the empirical work is conducted, or second/foreign language speakers living as an expatriate or migrant. The first step, then, is to assess the linguistic strengths and needs of the academic team and the students. This should be done at the outset of the project and will influence the design of the translation procedures used.

Questions may include the following.

1 The choice of language:
   a In what language will ethical procedures with participants be conducted?
   b In what language the data be collected?

2 The extent and timing of translation:
   a Will transcription of verbal data occur before, after or concurrently with translation?
   b Will the entire data set be transcribed and translated?

3 What resources are available for transcription and translation?
   a What role will the student play in transcription and translation?
   b What role will the academic supervisors/advisors play?
   c How can translations be checked? For example, are there other students who speak the same language and might be able to ‘trade’ assistance with each other?

With respect to qualitative research, there are particular risks of bias to be negotiated when students collect, translate, analyse and report data (even partially) in a language that their academic supervisors/advisors do not speak (or speak well). Key amongst these is the risk of inadvertently ‘putting theoretical words into the mouths of research participants’. Students may translate interview data in which the interviewee is made to ‘speak like a researcher’ in the English translation, using terminology from the students’ theoretical framework. A second area of potential translation bias relates to the selection of labels for codes, categories and themes. The process of qualitative analysis often involves turning non-technical words to technical purpose. Such situations can arise when a student-as-translator translates based on their own experience, rather than the interview subjects’. In other words, the student-as-translator may apply their theoretical specialty during the process of translation. This can detract from the reader’s faith in the rigor of the research, affecting the trustworthiness of the findings. Both the students and supervising/advising academic need to be alert, then, to ensure that
translations have experiential and conceptual equivalency for those speakers. In other words, is this how members of the participant population (e.g., language teachers or parents) speak, or is it like a researcher? Provided they have experience in the relevant domain, even a monolingual academic can enter into respectful discussions with student researchers by carefully assessing the forward-translations provided by students-as-translator.

Translation may bring some design questions for the thesis proper. Some students include both the original and the translation of data in the thesis, along with key phrases (e.g., unique, colloquial or otherwise important language). Questions include:

1. In what order will the pieces of text in the different languages be presented?
2. What textual highlights or typographical conventions will be adopted?
3. Will a glossary be provided of words in languages other than the medium of instruction?
4. Will some words be used untranslated in order to achieve certain effects in the relation with the reader?

Accordingly, it is important for the student researcher to include a strong audit trail of translation and transcription procedures. This may include a substantial section in the methods chapter that provides (1) a description and justification of the translation procedures used, and (2) some examples. In addition, some fully worked instances of translation demonstrating the procedures and thinking behind them might be provided in appendices.

Conclusion

By closely attending to and documenting the translation procedures employed in research where multiple languages are being used, the trustworthiness and dependability of the research can be strengthened. Some key questions centre around the role of the researcher(s) and the steps taken to strengthen equivalence. Minimum requirements depend on the use of the data or instrument, and consequences of findings for stakeholders. However, based on the discussion provided in this chapter, guidelines for the design of translation procedures can be summarized with the following:

- Generate multiple forward-translations.
- Produce multiple back-translations.
- Use professional translators.
- Require translators to work independently before any collaboration.
- Gather a committee to compare source, target, and back-translations.
- Integrate members of the target population as translators, reviewers, and testers.
- Use structured techniques (set beforehand) to resolve translation discrepancies.

In survey-style research using translated instruments or prompts for data collection, additional process may be required, such as:

- testing with bilingual or different monolingual groups
- examining the internal reliability of scales via pilot studies

Where qualitative analysis techniques are carried out, researchers should consider:

- analysing both the source and target versions when possible
- back-translating at least some percentage of the forward-translated materials

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• examining translations using bilingual individuals or committees
• clearly outlining the role of the researcher(s) and potential bias

In studies that employ multiple languages for data collection, analysis or reporting, the validity of the conclusions drawn by researchers is reliant upon the rigor of the procedures used to translate data and data collection instruments. Currently, such processes require human appraisals; however, technology is likely to influence translation procedures, as artificial intelligence, machine translation, and deep neural networks become more adept at providing translations with linguistic and cultural equivalence (e.g., Perez, 2018). Nevertheless, although such change may occur, it is, and will remain, crucial to provide clarity about any translation procedures used in research that uses multiple languages.

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