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Practical Issues in Multi-lingual Research

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Abstract

Background—With an increasing number of ethnic minority populations, the use of multiple languages in one research study has increased in recent years. The use of multiple languages helps increase comprehensiveness of educational materials and/or survey questionnaires, and promote ethnic minorities' participation in research. However, little has been clearly known about practical issues in using multiple languages in one research study.

Objectives—The purpose of this paper is to explore practical issues in using multiple languages in a study among diverse sub-ethnic groups of Asian American breast cancer survivors in order to propose future directions for the use of multiple languages in research projects.

Methods—Throughout the research process, research team made written records of practical issues and possible reasons for the issues as they arose. Weekly group discussions among research team members were administered, and the written records of these discussions were reviewed and analyzed using the content analysis. The unit of analysis was individual words. The words in the data (memos and written records) were classified into idea categories that emerged from the coding process.

Results—The idea categories included issues in: (a) collaborators from various sub-ethnic groups; (b) IRB protocol submissions; (c) consistencies in translation process, (d) conceptual equivalence; (e) cultural differences; (f) existing translated versions; and (g) authorship issues.

Based on the issues, we made the following suggestions for multi-lingual research: (a) networking and setting multiple communication channels with potential collaborators; (b) checking the institution's IRB policies related to the use of multiple languages; (c) setting the rules and procedures for translation process; (d) checking existing different language versions of instruments; and (e) setting the rules for authorship in advance.

Conclusions—The suggestions made in this study would help the researchers be prepared in advance to deal with the challenges.

Keywords

Cultural Competency; Issues; Languages; Research; Translation

With an increasing number of ethnic minority populations, the use of multiple languages in one research study has increased in recent years (Angel, 2013; Squires, 2009; Wong & Poon, 2010). Using multiple languages helps increase comprehensiveness of educational materials and/or survey questionnaires, and promote ethnic minorities' participation in research (Angel, 2013; Squires, 2009; Wong & Poon, 2010). However, this could result in some fundamental problems due to the complexity and subjectivity of languages (Angel, 2013). Perfect equivalence of concepts in different linguistic, cultural, and social class contexts is not possible (Angel, 2013; Squires, 2009). Furthermore, other issues such as those related to the credentials of translators and the roles of translators in research process have also been pointed out (Angel, 2013; Squires, 2009).

To standardize the translation process, great efforts have been made. One example would be the American Community Survey's effort to improve response rates and the validity of the information collected from non-English speaking individuals (U.S. Census Bureau, 2014). The current best practices of translation are structured procedures for translating questionnaires (Harkness et al., 2010; Kessler & Üstün, 2008). However, these procedures just superficially minimize uncertainty in translation by simply following the standards, and there has been debate on how to evaluate the quality of translations (Harkness et al., 2010; Kessler & Üstün, 2008). Furthermore, formal criteria for assessing the adequacy and quality of translation are still lacking (Angel, 2013).

The equivalence of concepts in translating multiple languages is much more important in quantitative studies because of its stance on objectivity (Angel, 2013). Quantitative studies are based on empiricism whose core goal is clear objectivity in comparisons among different groups using different languages. Subsequently, translated measures should measure a similar concept or construct on a similar metric across different linguistic groups. However, in reality, this basic assumption could be questionable because a specific linguistic group has its own social and cultural factors that influence the reality (Angel, 2013). Virtually, it may not be possible to have valid comparisons through the use of multiple languages. However, in real world research, it is also impossible to avoid comparisons among different linguistic groups. Rather, cross-cultural researchers use multiple language translation while hoping that it would be possible to arrive at comparable or similar metric comparisons. However, little has been clearly known about pros and cons in using multiple languages in quantitative studies.

The purpose of this paper is to explore practical issues in using multiple languages through a research study among diverse sub-ethnic groups of Asian American breast cancer survivors as a case example and to propose future directions for the use of multiple languages in research projects. First, challenges in multilingual research that are currently known in the literature are concisely summarized. Then, the study through which the practical issues were identified is described to provide the background of the issues. Then, practical issues in using multiple languages raised in the study are discussed. Finally, based on the discussion of the issues, directions for the use of multiple languages in future research are proposed.

Translation could be roughly categorized into intra-lingual translation, inter-lingual translation, and inter-semiotic translation (Venuti, 2012). Intra-lingual translation means a translation of verbal signs to other signs of the same language; inter-lingual translation means a translation of verbal signs to some other languages; and inter-semiotic translation means a translation of verbal signs to signs of non-verbal sign systems (Venuti, 2012). In this paper, translation limitedly means inter-lingual translation.

What is Known in the Literature?: Challenges in Multilingual Research

Challenges in multilingual research that have been reported in the literature can be categorized into: (a) conceptual equivalence; (b) timing of translation; (c) quality of translators; and (d) ethnocentricity.

Conceptual Equivalence

Depending on the purpose of translation, the translation process needs to be different. For a literary translation to make a novel accessible to a different language community, substantial modifications from the original text may be often needed to create a new work of art (Angel, 2013). However, the simultaneous translation at international meetings such as those at the United Nations aims to provide precise word-for-word translation of the speaker's message, and modification from the original text is not desirable at all (Angel, 2013).

In comparative quantitative research that aims to compare numbers among different language groups, the purpose of translation is to measure similar latent constructs on similar metrics from different groups (Angel, 2013). However, there are many cases that such an assumption of the same or similar latent constructs on similar metrics is not possible because many other sociocultural factors influence subjective reality (Angel, 2013; Larkin, de Casterlé, & Schotsmans, 2007). First, cultural norms affect cultural differences in the manifestation of constructs, such as suicide (Ervin & Bower, 1952; Small et al., 1999). Second, culture shapes the way we conceive of health and illness and influences the relative value or importance of symptoms (Kristjansson, Desrochers, & Zumbo, 2003). Moreover, the meaning of a word or an idiomatic expression used in one cultural region does not map exactly onto that of its dictionary equivalent in another cultural region (Small et al., 1999). Therefore, a "transcreation" or adaptation process has been often adopted in multi-lingual research (Simmons, Cruz, Brandon, & Quinn, 2011; Vani N. Simmons et al., 2011). In transcreation, the source text is completely rewritten in the target language to convey the same concepts and to achieve the same aims of the source text in literacy and cultural appropriateness (Gany, Diamond, Meislin, & González, 2014; Macario & Boyte, 2008).

Timing of Translation

The timing of translation may compromise the validity of research and requires different approaches in translation and different competencies of translators and researchers (Santos, Black, & Sandelowski, 2015). For instance, late-phase translation handles research reports as an end product of the study and aims at publications in journals in the target language, which requires the approaches and competencies that are different from those required in early-phase translation that simply involves the translation of instruments for data collection (Santos et al., 2015).

The timing of translation also depends on the composition of the research team (Nurjannah, Mills, Park, and Usher, 2014). Translation before data analysis can be an appropriate option if the entire research team does not speak the research participants' language. In contrast, translation after data analysis may be the best option if all members of the research team speak the same language as the research participants. If one member of the research team speaks a different language from other members, translation during data analysis may be the most appropriate.

Quality of Translators

Translation is highly dependent on quality of translators (e.g., skill, knowledge, and experience), and translators are not always sufficiently knowledgeable in the specific subject area of the instrument, especially medical subjects (Sperber, 2004). Even professional translators are often insufficiently aware of the rigorous requirements of translation for cross-cultural research; they may spend time on literal translation without devoting enough attention to cultural nuances (Sperber, 2004).

Although people belonging to another culture speak fluent English, they do not necessarily share the beliefs and values of native English speakers (Ervin & Bower, 1952; Hunt & Bhopal, 2004). Colloquial phrases, slang and jargon, idiomatic expressions, and emotionally evocative terms may be particularly difficult to handle (Sperber, 2004; van Eeden & Mantsha, 2007). Also, bilingual translators may unwittingly introduce words directly from the second language, increase use of words similar to those in the second language, and borrow stylistic devices (Ervin & Bower, 1952). According to Holmes (1992), bilinguals' different information process from monolinguals' could contribute to somewhat different interpretation of the original question's meaning (as cited in Hunt & Bhopal, 2004, p. 620). Differential understanding and interpretation of words by translators can interfere with scientific translation, which stems from their differences in experience and learning (Kristjansson et al., 2003).

Ethnocentricity

The basic assumption of translation is: the translated questionnaires or educational materials would provide the same questionnaires or educational materials and elicit the same response tasks. However, in reality, to provide the same content and elicit the same response tasks, the wording of the original question needs to be substantially modified because of differences in semantics, pragmatics, and other aspects of language structure. This modification could introduce serious potential measurement bias in a methodological way especially in

quantitative data collection methodologies. Angel (2013) pointed out that “in order to communicate, and certainly to translate effectively, all parties involved must not only arrive at the same semantic understanding; in addition, they must arrive at a reasonably similar understanding of the cultural context in which the communication occurs” (p. 227). In this sense, dominance of the English language in health research inevitably brings in the issues of cultural hegemony (ethnocentricity) because categories and concepts in health research are based on Western epistemological order. Questionnaires translated mostly from English are limited to reflect various social, political, and cultural dimensions embedded in the corresponding categories and concepts used in non-Western countries not using English (Crane et al., 2009).

The Study as the Case Example

The pilot study that was used as the case example in this paper aimed to examine the efficacy of a culturally tailored Internet cancer support group among Asian American cancer patients. This study included two phases: one phase for a usability test and an expert review, and the other phase for a randomized intervention.

In Phase 1, four Asian American breast cancer survivors who participated in previous studies of the principal investigator and who agreed to participate in an additional study were recruited for a usability test through a one-month online forum. The survivors were requested to visit the forum site, navigate the Internet Cancer Support Group for Asian Americans (ICSG-AA), and provide their feedback on the ICSG-AA in one month. Seven topics for the evaluation were provided: (a) the overall structure, (b) preferences for color, designs, and menus, (c) preferences for contents, (d) technical support and difficulties, (e) areas for additional content, (f) preferences for links to Internet resources, and (g) other issues that should be considered. Then, the survivor’s feedback was analyzed using a content analysis (Weber, 1990).

In the expert review, 6 experts in breast cancer survivorship were recruited through the institutes where the researchers were affiliated. They were asked to navigate the ICSG-AA and requested to provide their feedback on the ICSG-AA by email within 2 weeks. The email feedback was also analyzed using the content analysis (Weber, 1990). Then, the research team decided the directions for refinement of the ICSG-AA, and further developed the ICSG-AA based on the findings from the usability test and expert review.

In Phase 2, 60 Asian American breast cancer survivors were recruited through Internet communities/groups for breast cancer survivors and/or Asian Americans (30 for a control group and 30 for an intervention group). This was a randomized repeated measures pretest/posttest control group design phase (i.e., pre, post 1 month, and post 3 month). The control group was not asked to use the ICSG-AA, but instead used Internet resources related to Asian Americans’ daily life (e.g., news in Asian countries, Asian businesses in the U.S.) while the intervention group was asked to use both the ICSG-AA and the Internet resources related to Asian Americans’ daily life.

Background factors (14 questions on age, gender, education, religion, family income, etc.) and disease factors (8 questions on general health, diagnosis of breast cancer, length of time since diagnosis, stage of cancer, etc.) were considered as confounding variables. Perceived social support, perceived interactions, support care needs, uncertainty, perceived self-efficacy, physical and psychological symptoms, pain, and quality of life were included as outcome variables. The instruments to measure these outcomes included: the Personal Resource Questionnaire (Weinert, 2003), the Perceived Isolation Scale (Cornwell & Waite, 2009a; Cornwell & Waite, 2009b), the Support Care Needs Survey-34 Short Form (Rutten, Squiers, & Hesse, 2006), the Mishel Uncertainty in Illness Scale-Community (Mishel, 1997), the Self-efficacy Items of the Cancer Behavior Inventory (Lorig, 2001; Merluzzi, Martinez Sanchez, 1997; Merluzzi, Nairn, Hegde, Martinez Sanchez, & Dunn, 2001), the Memorial Symptom Assessment Scale-Short Form (Portenoy et al., 1994), the Brief Pain Inventory-Short Form (McDonald et al., 2008; Wang et al., 2006), and the Functional Assessment of Cancer Therapy Scale-Breast Cancer (Brady et al., 1997). The reliability and validity of all the instruments were high among Asian Americans; Cronbach's alphas of all the instruments ranged from .76 to .96 among Asian Americans. Then, the data were analyzed to examine differences in continuous outcomes measures collected over the study period, using an intent-to-treat linear mixed-model growth curve analysis with SAS Proc Mixed (Littel, Milliken, Stroup, & Wolfinger, 1996).

The Practical Issues from the Study as Examples

This section is organized around the known challenges described above and additional relevant issues that emerged from our pilot study. In the research process, practical issues in the use of multiple languages were recorded by individual research team members as memos, and possible reasons for the issues were also inferred and written on the individual memos. Also, the research team weekly met and had discussions on the issues, and the discussions were recorded as research team memos. Later, the written records were reviewed and analyzed using the content analysis suggested by Weber (1990). Individual words were the unit of analysis, and the words in the memos were classified into idea categories reflecting the codes from the coding process. The extracted idea categories were issues in: (a) collaborators from various sub-ethnic groups; (b) IRB protocol submissions; (c) consistencies in translation process, (d) conceptual equivalence; (e) cultural differences; (f) existing translated versions; and (g) authorship. The issues within the idea categories are discussed as follows.

Collaborators from Various Sub-ethnic Groups

For this multilingual study, the research team decided to include four languages including English, Mandarin Chinese, Korean, and Japanese. To approach Asian American breast cancer survivors, the research team needed to consider what sub-ethnic groups among over 71 sub-ethnic groups of Asian Americans (Ito, Chung, & Kagawa-Singer, 1997) would be targeted in the study. For this study, only three sub-ethnic groups (Chinese, Koreans, and Japanese) were selected mainly due to the inherent nature of a pilot study (e.g., limited funding, limited time, etc.). Among the large number of different sub-ethnic groups within Asian Americans, Chinese were chosen because they are the largest sub-ethnic group within

Asian Americans (Hoeffel, Rastogi, Kim, & Shahid, 2012; U.S. Census Bureau, 2011); Koreans were chosen because they are the fastest growing sub-ethnic group within Asian Americans (Hoeffel, Rastogi, Kim, & Shahid, 2012; U.S. Census Bureau, 2011); and Japanese were chosen because they are the sub-ethnic group at the highest risk of breast cancer within Asian Americans (National Cancer Institute, 2014; American Cancer Society, 2013; Miller, Chu, Hankey, & Ries, 2008; National Cancer Institute, 2008). Subsequently, four languages including English, Mandarin Chinese, Korean, and Japanese were chosen for this study because they are one of the major languages used by the three sub-ethnic groups of Asian Americans for the study.

After choosing the languages, the first task was to decide the translation methods. The most current and most fully developed set of general procedures for translation are the Translation, Review, Adjudication, Pre-Testing and Documentation (TRAPD) (Harkness, 2008). The essence of the TRAPD process is its focus on a group of experienced translators with expertise in both source and target languages, at least some with formal training and experience in translation. Then, the process needs to include the careful review and editing of translated materials by expert editors who have expertise in survey research, pre-testing of the translated materials, and clear documentation of the procedures followed and problems encountered in the translation process. The process could minimize the number of issues related to non-comparability. In the study reported in this paper, we basically followed these procedures in addition to standard-back-translation process.

Because of the inherent nature of a pilot study, the research team was not affordable to hire professional translators for each language. Furthermore, professional translators may not have adequate expertise for the translation in this study because the translators would need to have some expertise in breast cancer-related materials. Indeed, translations of the Rose Angina Questionnaire (RAQ) exemplify that hiring professional translators is not sufficient to achieve scientific translations. The RAQ was translated into Cantonese and Punjabi by professional translators, but many problems were raised (e.g., incorrect translations, inappropriateness, and lack of cultural relevance)(Hunt & Bhopal, 2003).

The selection of non-professional translators, however, needed to be conducted carefully. For example, in the U.S., many bilingual individuals never had any formal education in their languages and are good at speaking but not writing. Thus, we invited international collaborators who were bilingual through formal education (e.g., a master's degree from an institute in their countries of origin, and a PhD from an institute in the U.S.) and had a PhD in nursing. Because Asian culture is based on strong networks among family members, friends, and colleagues, it was easier than expected to have bilingual collaborators for each language through the research team's networks. However, at the planning stage of the study, the necessity of getting international collaborators was not recognized.

The IRB Protocol Submission

The use of multiple languages raises unexpected IRB issues to consider. Wolf, Walden, and Lo (2005) asserted that, if the underlying meaning is the same, researchers need to accept differences among multiple sites without informing other IRBs about the requested changes. The same rule could be applied to multilingual research. Thus, in each language version of

the informed consent that we translated in this study, we accepted differences in some wordings in different languages if the underlying meanings were the same.

Another issue related to the IRB protocol was what language version could be included for the IRB protocol. Surely, English versions needed to be included to communicate with the reviewers and board members, but the main question was if all the multiple language versions would need to be included or not. Depending on the institution where a researcher is working, the policy related to multiple language versions of educational materials and questionnaires would be different. Some would require only an English version for an IRB approval while others would require all the language versions. For example, according to the U.S. Food and Drug Administration (2014), a translated consent document is required when the study subject population includes non-English speaking people. The institution where the researchers were working did not require all language versions, but they required the measures that could ensure accuracy of the translation. Despite the differences among institutions, all IRBs try to make sure that measures/materials in other languages are of the same quality as those in English.

Consistencies in Translation Process

Across the multiple language versions, it was important to set the consistent translation process in the study. Throughout the translation process, the research team used the standard-back translation process for the questionnaires and the accuracy check on educational materials by a different bilingual researcher. The questionnaires had the feasible number of items that could go through the standard-back translation process. However, the volume of educational materials was too large for the standard-back translation process. Thus, at the beginning of the translation process, the research team set the rules for the translation process, and we used the consistent methods except the Japanese version of the questionnaire. In the case of the Japanese version, we used the accuracy check by two bilingual researchers with PhDs rather than the standard-back translation process. Because one of the Japanese collaborators was in transition back to Japan, the communication was not adequately done regarding the translation process. However, the research team agreed that the accuracy-checking by two bilingual researchers would ensure the adequacy and accuracy of the translation. Cha, Kim, and Erlen (2007) supported that the cross-cultural researchers could use a combination of techniques without a back-translation method or a team approach depending on research environments (e.g., accessibility and availability of bilingual people) and research questions.

Conceptual Equivalence

In many cases, the context of a specific word can be entirely different even when similar words exist (Bassnett, 2013; Munday, 2009; Venuti, 2012). As a result, participants possibly experience difficulties in comprehending the meaning of study items that have been translated literally from the source to the target language (Weeks, Swerissen, & Belfrage, 2007). For example, in a previous study involving translation, after completing the translation process for an Arabic version of the Rome II criteria questions for irritable bowel syndrome, the translated questionnaire was given to Israeli Bedouin and non-Bedouin Arab physicians for review. These physicians said that the term used for bowel movement, a

critical term in this setting, would be understood by non-Bedouin Israeli Arabs but would not be understood by 80%–90% of Israeli Bedouins, who use a different Arabic term for the same thing. The translation was literally good but confusing when applied to a different cultural group (Sperber, 2004).

We had similar cases in our study, one of which is a marital status of the participant. “Partnered, permanent relationship” is hard to be described in Korean. It cannot be expressed in a concise single word because such a relationship is not commonly accepted in Korean culture. Even though Koreans, younger generations in particular, become more open to cohabitation without marriage, the cohabitation rates are very low compared with those in other Western countries. Being permanently partnered is even rarer in Korea.

Also, in the Japanese translation process, it was difficult to translate religious or spiritual topics. For example, churches or Sunday services are usually regarded as a place or an opportunity for social support in the U.S. mainstream culture, but not in Japanese culture. Subsequently, the term “spiritual (霊的)” based on Christianity is frequently not-applicable to Japanese patients, and it is difficult to translate the terms related to spirituality into Japanese cultural contexts. Also, some nutritional recommendations are quite different by the country of residence. For instance, the recommended amount of daily Calcium intake for women is 1,000 mg in the U.S., but 650 mg in Japan. This discrepancy is based on cultural differences in their foods. However, in the case of Japanese American women, it would be difficult to determine the recommended amount because they are Japanese, but they are living in the U.S. We experienced several cases of this kind of situations in our translation process.

Weeks et al. (2007) identified five practical problems in their study that would have affected the understandability of measures by target groups (i.e., Chinese, Vietnamese, Greek, and Italian), subsequently threatening conceptual equivalence. First, differences in grammar and sentence construction between languages were the problem. Second, there were inconsistencies in definitions of terms. Differences in synonyms between languages made direct translations of specific words impossible while still retaining the same meaning. Third, the level of language was not appropriate for the target groups. While not considering educational and literacy level of the target groups, the questions about health status often included highly sophisticated medical terminology. Fourth, the quality of translation was inconsistent, and the translation was inaccurate. Fifth, the quality of translation largely depended on the language that bilinguals were asked to translate.

In our study, we also had the first, second, and third problems that were reported by Weeks et al. (2007). First of all, because Korean language uses totally different grammar and sentence construction, we needed to go through the translation at multiple times by different translators. For example, when a Korean woman is inquired with a question, “don’t you have ever experienced pain during sexual intercourse,” she would say “yes” when she has never had pain during sexual intercourse, which is the opposite to English grammar. Also, there existed inconsistencies in definitions of terms in some cases. In Korean culture, menopausal symptoms are interchangeably used with climacteric symptoms. Thus, the use of menopausal symptoms needed to be carefully used in Korean translation. Finally, because

medical terminology requires a higher level of education, we needed to make several changes in the translated versions to make them easily readable by 6th graders.

Cultural Differences

Frequently, the terms “multilingual research” and “multicultural research” are used interchangeably. Indeed, there is a fine line between two because language constitutes one of cultures’ carriers and ingredients, and many of multicultural studies are conducted on subjects speaking different languages. In principal, however, multilingual research is not a synonym of multicultural research because cultural regions do not always correspond with language regions, and vice versa (Hunt & Bhopal, 2004; Kuli, Arnott, Greimel, Bottomley, & Koller, 2011). For example, both the U.S. and the U.K. are primarily English speaking, but their citizens do not necessarily share the same values with respect to health (Hunt & Bhopal, 2004). Thus, according to the existing literature, cultural issues in translation processes accounted for a great proportion of challenges encountered in multilingual research. Culture has always acted as a very important factor in practical translation process as well as in theoretical discussions of the translation process (Kuli et al., 2011).

In our study, we did not have any specific conflicts among the three different cultures because the three cultures have very similar cultural values such as filial piety, family centeredness, and respect for elderly. However, some materials in the educational modules needed to be carefully translated because Asian cultures tend to avoid discussing a specific topic directly or explicitly. For example, one of the educational modules dealt with sexuality after mastectomy. Younger populations in Asian cultures would be fine with explicit description and discussion of topics related to sexuality, but older populations who were more likely to be the participants of the study would not be comfortable with direct description and discussion of sexuality. Thus, we tried to smoothen the wordings related to sexuality with wordings that would not be offensive to older populations.

The administrative structures in health care systems also vary widely among the countries (e.g., the national health insurance in Taiwan versus private health insurance systems in the U.S.). Thus, the actual words for administrative or health system structures may reflect what is used in the patients’ home country and not conceptually match the equivalent in the U.S. Therefore, these differences needed to be reflected in the translation process.

Existing Translated Versions

Multiple translated versions of an instrument could exist, and the original authors may not be aware of this (Wild et al., 2005). However, the same rules and laws of copyrights are applied to translated versions of instruments (White & Elander, 1992). Researchers should contact the instrument developer at the preparatory stage to ask permission to use and translate the instrument; otherwise, the researcher(s) may be at risk of being persecuted for unauthorized use of copyright material (Wild et al., 2005).

At the beginning of the translation process, the research team did not expect that many existing translated versions of the instruments would exist. The team mainly relied on the articles in English that were retrieved through the databases available in the U.S. Because the team did not have access to the databases of each country and could not understand all

different native languages, there was no way to identify existing instruments in the native languages in advance until the collaborators tried to find them. In terms of Korean and Mandarin Chinese versions, the research team actually did not find any existing translated versions of the instruments. However, the Japanese collaborators found several existing translated and validated versions of the instruments that were used in previous studies in Japan, which eased the burden to translate the original instruments into Japanese. Thus, the research team sought for permissions to use the translated instruments from the authors of the translated Japanese versions.

The research team, subsequently, re-checked if existing translated versions of the instruments were available in the U.S. by directly contacting the authors of all instruments. One of the instruments had all four language versions, and the research team needed to get the permission to use the multiple language versions. In this case, the team needed to pay \$750 to use one instrument (the four language versions). Considering that this is a pilot study, the cost of using multiple language versions of the instruments was quite high.

Authorship

In our study, the entire research team became larger than expected because multiple collaborators joined to translate and prepare the multiple language versions of the educational materials and questionnaires. Although we did not set the rules for authorship in advance, we knew we would need to set them eventually. First of all, to acknowledge the collaborators' efforts, the research team gave permission for them to use the educational materials and questionnaires in their own studies. The collaborators were also included in all publications from the study, and the research team decided the order of authorship depending on how much efforts were made by the collaborators in individual publications and conference presentations. In addition, the order was decided depending on which language version was used in a specific publication. For example, in a conference presentation on methodological issues in recruiting Chinese cancer patients into a randomized intervention study, the Chinese collaborators were given a higher priority in the authorship than the Korean and Japanese collaborators. Although we did not have any problem in determining and agreeing on the order of authorship, this could be a potential big issue in a research team without trustworthy established relationships among the members.

Future Directions for Multi-lingual Research

Based on the discussed practical issues in the use of multiple languages, the following recommendations for future research using multiple languages are made: (a) networking and setting multiple communication channels with potential collaborators; (b) checking the institution's IRB policies related to the use of multiple languages; (c) setting the rules and procedures for translation process; (d) checking existing different language versions of instruments; and (e) setting the rules for authorship in advance.

Networking and Setting Multiple Communication Channels with Potential Collaborators

If a researcher is planning to use multiple languages in her/his study, we recommend the researcher to network with potential collaborators through national and international

conferences and workshops. With an increasing number of international visiting scholars to the U.S. and attendants of national and international conferences, it would be much easier than before to get connected with our international colleagues. Networking with potential international collaborators would provide a unique opportunity for collaborative research, not only for translation, but also for international comparisons of the data. In the International Conference on Health Research for Development held in Bangkok in 2000, strategic networks and partnerships were highlighted for international collaborative research (as cited in McAuliffe and Cohen, 2005, p. 22).

Checking the Institution's IRB Policies Related to the Use of Multiple Languages

At the planning stage of a multilingual study, a researcher needs to check her/his institution's IRB policies related to the use of multiple languages and to prepare the multiple language versions accordingly. When the IRB approval requires all the language versions, the process could be postponed if the multiple language versions are not prepared in advance. Alternatively, the research team can consider other options, such as centralized IRB when multiple languages or multiple sites are involved in the study. The international guidelines by the Sigma Theta Tau International Honor Society of Nursing (2002) also encourage collaborative research teams to check international differences in requirements/procedures for protection of human participants in research from the beginning.

Setting the Rules and Procedures for Translation Process

Translation process also needs to be planned in advance. As discussed above, even when the rules and procedures for translation process are set in advance, the rules and procedures may need to be changed depending on the research process and research team members' situations. In reality, administrative considerations tend to have greater influences than methodological considerations on decisions made to conduct studies in multilingual settings (Ervin & Bower, 1952). The research team should consider the cost of alternative procedures when research is undertaken with a limited budget, the availability of qualified personnel with necessary skills, and the problems of obtaining security clearances in some cases (Ervin & Bower, 1952).

A researcher needs to discuss the rules and procedures for translation process with her/his research team and set and communicate them in advance with all collaborators. Also, in setting the rules and procedures, a researcher needs to be flexible with unexpected or changing situations. In some cultures, specific translation process may not work because of their cultural contexts. While the translation process could be aligned with research conditions, the team members/translators should try as best as possible to stick to the principles of translation to ensure the congruence and equivalency of original content (Van Widenfelt, Treffers, De Beurs, Siebelink, & Koudijs, 2005). The principles could include: using simple sentences of fewer than 16 words, repeating nouns frequently, using active rather than passive tense, avoiding the use of metaphors and colloquialisms, using specific terms rather than general terms, and using one verb rather than two verbs (Weeks et al., 2007).

Checking Existing Different Language Versions of Instruments

Because of increasing international collaborative research and international students and visiting scholars, many English versions of instruments have already been translated and published. Thus, before translating an instrument, a researcher needs to search the literature if there are any articles on existing translated versions of a specific instrument. Van Widenfelt et al. (2005) stressed the importance of finding out if a translated version of an instrument would already exist in the language and culture of interest. They also recommended contacting the original author, reviewing journals and dissertations, and getting advices from colleagues. If possible, checking with collaborators in other countries using the specific language would help because some literature in other languages may not be retrievable through the databases in English. Additionally, the cost of getting permission to use an existing translated version of the instrument needs to be checked even before submitting a proposal. The cost of getting permissions could be expensive in some cases as discussed above.

Setting the Rules for Authorship in Advance

As suggested by Harzing et al. (2012), it would be wise to define authorship rules for every possible scenario in advance to avoid potential conflicts and disappointment in a collaborative study. The rules also need to be informed to the research team (including collaborators) in advance so that they would understand the rules from the beginning. Explicit rules written in documents would help prevent future conflicts in authorship. Indeed, the international guidelines by the Sigma Theta Tau International Honor Society of Nursing (2002) advise researchers to construct a written agreement that defines and confirms processes and ownership of intellectual properties, to determine criteria or standards for authorship of articles and other written materials resulting from the collaboration, to discuss potential abstract submissions for presentations and posters, and to determine who will be responsible for data collection, data maintenance and data analysis and where data will be stored.

It is also important to be aware of different rules on authorship set by different academic journals. In some journals including American Journal of Public Health, no more than six authors could be included (American Journal of Public Health, 2012). Thus, when a study includes more than six members, the rules for authorship should be set to publish the study findings in those cases. For example, the research team could set a rule that only the first three authors are named, and the remaining would be called a group name.

Conclusions

This paper discussed the practical issues raised in a multilingual study among Asian American breast cancer survivors. The issues included those related with (a) collaborators from various sub-ethnic groups, (b) the IRB protocol submission, (c) consistencies in translation process, (d) existing translated versions, and (e) authorship. Based on the discussion on these issues, we suggest that researchers conducting multilingual studies network and set multiple communication channels with potential collaborators; check the institution's IRB policies related to the use of multiple languages; set the rules and

procedures for translation process; check existing different language versions of instruments; and set the rules for authorship in advance.

With the increasing number of multilingual studies, researchers would meet various challenges related to using multiple languages in one study. The suggestions made in this study would help the researchers be prepared in advance to deal with the challenges. However, this paper has a limitation because the case example study was conducted only with Asian languages. Thus, the potential issues due to cultural differences that could arise with other languages, especially with non-Asian languages, may be different.

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