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Semantic Examination of a Japanese Center for Epidemiologic Studies Depression: A Cautionary Analysis Using Mixed Methods

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Abstract

Background—Cross-cultural research relies on the linguistic, conceptual, and semantic equivalence of instruments. Widely used translations of the Center for Epidemiologic Studies Depression (CESD) for cross-cultural samples should be analyzed to reaffirm conceptual and semantic equivalence.

Purpose—This methodological study aimed to discover and resolve problematic translations of a Japanese version of the CESD.

Design—Sequential explanatory mixed method design using spiraling integration.

Methods—Sample includes 34 first-generation Japanese women living in the US and 72 community-based women in Japan. Ethnographic analysis of the semantic meanings of items was followed by *t* tests to compare original and retranslated item means, as well as Cronbach's reliability and corrected item-total correlations analyses.

Results—Six problematic items were retranslated: bothered, failure, hope, restless sleep, happiness, and “getting going.” Reliabilities for the CESD that included the new CESD item translations were the same; however, most item-scale correlations were higher for the revised translations across the two groups.

Conclusions—We conclude that both failure and “getting going” may be culturally bound items. Implications for cross-cultural and ethnographic nursing research include planning mini-ethnographic analysis when using translations to discover and reconcile cultural differences in connotations, motivations, and goals.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Note

1. During the preparation of this article, the lead author noted that a new American idiom “*It is what it is*” might be similar to the Japanese concept *shikata ga nai*. However, the cultural background of Buddhism, as well as the related ethos about impermanence and proscriptions about attachment, is entirely different for the Japanese. The new use of the Americanism “*It is what it is*” suggests an attitude of acceptance being part of active coping (Safire, 2006).

Keywords

depression measurement; mixed-method research; Japanese depression; instrument translation; semantic equivalence

Background

In 2011, Canada had a foreign-born population of about 6.5 million, which is about 20.6% of the total population, making it the highest proportion of immigrants among the G8 countries. Asia is the largest source of immigrants (Statistics Canada, 2015). In the US, East Asian immigrant women have the highest distress of all immigrants (Takeuchi et al., 2007; Williams, 2002; Yeung et al., 2008), consistently reporting more depressive symptoms than Caucasians, with prevalence rates ranging from 18% to 40% (Cho, Nam, & Suh, 1998; Mui, Suk-Young, Chen, & Domanski, 2003; Saint Arnault, 2004a; Shibusawa & Mui, 2001). These women also have 50% to 80% higher risk for depression when compared with Caucasians (Yeung et al., 2002). Worldwide, suicide is the seventh leading cause of death among childbearing Asian women (World Health Organization, 2009). Despite high distress, East Asian immigrant women have the lowest overall service utilization rates of any cultural group in the US (Garland et al., 2005; Kimerling & Baumrind, 2005), and Asian immigrants to Canada are also much less likely to use any service, especially mental health services, compared with European Canadians (Tiwari & Wang, 2008). Some of the reasons for low service use include interacting cultural processes that may inhibit service utilization, such as group harmony values fostering indirect, nonverbal, and contextualized communication; somatic symptom distress patterns; stigmatizing values; and role expectations that restrict help-seeking options (Ro, 2002; Saint Arnault, 2009, 2014; True, 1990; Williams, 2002; Yeung et al., 2008).

As nursing research emerges as a leader in international and global research, investigators are turning their attention to best practices for instrument translation (Guo, Dixon, Whittemore, & He, 2013; Ljungberg, Fossum, Fürst, & Hagelin, 2015; Squires et al., 2013; Symon et al., 2013). This project seeks to add to this body of work by using mixed methods to examine the conceptual issues that surfaced during the conduct of an NIH-funded study on depression in first-generation Japanese women living in the US (RO1MH071307) (Saint Arnault & Fetters, 2011). This article uses ethnographic and quantitative methods to examine the semantic and connotative aspects of a widely used Japanese translation of the Center for Epidemiological Studies Depression (CESD) instrument (Shima, Shikano, Kitamura, & Asai, 1985). In our study, ethnographic methods are defined as the systematic study of the cultural dimensions of the experience and understanding of health, distress, and mental health through the use of methods that focus on the worldview (emic perspective) of the people under study. Ethnographic research is designed to capture the behavior, language, and health–culture interactions of individuals within a specific ethnic group (Mendlinger & Cwikel, 2008).

Cross-cultural and ethnographic nursing research relies on the equivalence of instruments with lived experience (Banville, Desrosiers, & Genet-Volet, 2000; Behling & Law, 2000;

Kristjansson, Desrochers, & Zumbo, 2003; Van de Vijver & Poortinga, 1997). Assessment of suffering and distress across cultural groups requires the assumption that there is phenomenological equivalence between the symptoms on translated self-assessment indicators and the experiences of the subject and that the translation used accurately captures that equivalence. The equivalence types are often hierarchically organized, from the more general or technical to exacting levels of precision at the phrase or word meaning level. Content equivalence is the assurance that the research instrument, as a whole, measures a phenomenon that is relevant to the culture under study, while conceding that there may be variations in the specifics within the culture. Technical equivalence is the assurance that the data collection methods are the same between cultural groups. Criterion equivalence is also sometimes called phenomenological equivalence, assuring that the symptoms or characteristics of the phenomenon are the same for the two cultures and that the measure in question assesses all of the relevant symptoms and indicators necessary to adequately and accurately capture the phenomenon of interest. Conceptual equivalence refers to a meaning-level equivalence, such that the terms used in the study have analogous meanings, and that those meanings are relevant to both cultures (Wang, Lee, & Fetzer, 2006). Semantic equivalence is attention to the meaning of the items within an instrument and focuses on the cultural nuances that are variant between cultures. Semantic equivalence refers to the meaning of each item and attends to both the connotations, cultural idioms, and use of the words or phrases in the speech of each culture (Squires et al., 2013). This study examines the semantic equivalence of the Japanese translation of a depression instrument used in ethnographic mixed-method study of depression in the Japanese.

The phrase “idioms of distress” is used in medical anthropology to describe the culturally specific experiences of distress and suffering. The concept of idioms of distress is used as a perspective that can capture the multitude of distress experiences across cultures and seek to understand the meanings of them, which may be the presence of physical diseases or disorders, an experience of mental illness, a symbolic representation of interpersonal conflicts, or may be culturally coded ways of expressing social discontent (Kirmayer, Dao, & Smith, 1998). From this perspective, cross-cultural research on depression presents several challenges (Interian, Lewis-Fernández, & Dixon, 2013), including accurate assessment of symptom expression, symptom variability, the meaning of the symptoms, and stigma associated with the symptoms impacting response patterns (Delisle et al., 2014; Joffres et al., 2013; H. Li et al., 2010; Z. Li & Hicks, 2010; Limon, Lamson, Hodgson, Bowler, & Saeed, 2016; Sung, Low, Fung, & Chan, 2013; Wong, Lam, & Poon, 2010; Young, Fang, & Zisook, 2010). Despite acknowledgement that depression symptoms may vary culturally, many recent studies have confirmed the reliability of the use of western-developed depression instruments in cross-cultural studies (which were probably translated at the content equivalence level) (Butucescu et al., 2013; De Silva, Ekanayake, & Hanwella, 2014; Kojima et al., 2002; Malakouti, Pachana, Naji, Kahani, & Saeedkhani, 2015; Mazlan & Ahmad, 2013; Tapia, Wagner, Heredia, & González-Forteza, 2015; Ying, 1988). Despite this, many researchers are calling for more careful analysis of construct validity and semantic equivalence, seeking to understand the meanings of the depressive experience as well as the impact of these on interpretation of findings (Delisle et al., 2014; Hui & Triandis, 1985; Kim, Landis, & Cain, 2013; Kwakkenbos et al., 2013; Limon et al., 2016; Sidani,

Guruge, Miranda, Ford-Gilboe, & Varcoe, 2010; Smit, Van den Berg, Bekker, Seedat, & Stein, 2007).

As we have seen, cross-cultural studies of depression have often translated and validated the CESD. This article examines one such translation of the CESD into Japanese. Shima et al. (1985) translated and validated the Japanese version of the CESD (Radloff, 1977). The CESD is a 20-item screening instrument that asks participants to rate whether they had experienced the symptoms described in each item during the previous two weeks on a 4-point scale from 0 (never) to 3 (more than five days), with higher scores (above 16) indicative of clinically significant depression. The analysis presented here is a subproject of a larger research study that aimed to understand culture and depression in Japanese women. In that larger project, we used the Shima Japanese translation of the CESD. Because there was such wide use of this scale and because it was available in Japanese, we used the published Japanese version.

For the first 180 surveys in the Japanese women in the US, we were unaware of any semantic nuances in our CESD instrument. We selected a conservative initial item-total correlation of .6 for our initial analyses. Three items in the CESD had item-total correlations below this threshold (see Table 2), and the statistical team suggested that we consider carefully these items: CESD1 (bothered), CESD11 (restless sleep), and CESD12 (happiness). They also suggested that we explore dropping CESD8 (hope) and CESD20 ("get going") to improve the reliability of the instrument. While we knew that there may be several reasons for low item-total correlations, this was an ethnographic study of the concept of depression in the Japanese population and these data signaled a problem with the instrument or the translation. The aim of this article is to describe our use of mixed ethnographic and quantitative methods to understand the possible conceptual and semantic issues that might have been hidden in our translation of the CES-D.

Methods

Design

This research is a subproject of a larger ethnographic mixed-method study that examined culture, distress, and help seeking for Japanese women in the US and in Japan. The parent project was a concurrent mixed-method design aimed at examining the relationship between distress experiences, cultural interpretations, social structures, and help seeking for a random sample of 250 first-generation Japanese women (Saint Arnault & Fetters, 2011). However, this research is part of a broader program of research that includes 30 years of fieldwork with the Japanese in Japan and in the US (Saint Arnault, 1998; Saint Arnault, 2004, 2014). Details of these field studies and the parent study are reported elsewhere; however, in summary, we gathered both ethnographic and quantitative data concurrently and integrated the data at the end of the project. We used quantitative measures to examine the relationships among known variables, which included symptoms, causal beliefs, stigma attitudes, values, and help seeking. We also used ethnographic interview methods to expand our knowledge about aspects of those same variables that were unknown, including how these processes operated in the women's lives.

In the subproject reported here, we employed the sequential explanatory design, using a spiraling integration. *Spiraling*, as a mixed-method strategy, is the strategic oscillation or alternation between one type of data and another for the purpose of deeper understanding. In this method, the researcher integrates understanding gleaned from the analysis of one method toward the analysis of the subsequent methods, providing a sequential “building up” of understanding (Mendlinger & Cwikel, 2008) (see Figure 1). This spiraling for us was the sequential analysis that began with the identification of the three items that had lower item-total correlations, followed by a mini-ethnographic study of the semantic nuances in the concepts in the CESD, and the resulting retranslation of six new CESD (NCESD) items. Then, we gathered quantitative data using both the old and newly translated items, and finally, integrated both sets of findings with an ethnographic interpretation, which is presented in our discussion.

Participants

The full sample for the parent project was 209 Japanese women in the US who were immigrant women who came to the US for reasons other than their education, were part of the population of families working in the Japanese Automotive industry, and were sampled from primary care sites and the general community. We focused on Japanese women because they are at risk for mental health problems due to separations from extended families, intergenerational conflict, and family system and role relationships changes. Men were excluded because this study aimed to examine social and cultural factors specific to the women.

The sample for this subproject was the 34 Japanese women in our U.S. sample who could still receive the revised CES-D items in their survey after we made any necessary changes. In addition, because we wanted to test the new translations, we also sought a nonimmigrant sample of Japanese women in Japan. This second sample was 72 Japanese women living in Japan recruited from publically available names from a voter registry in Shiga prefecture. All research staff used random start interval sampling to select from names on their lists and mailed survey packets to the selected women. Because this subproject was exploratory, statistical power for these analyses was not conducted.

Procedures and data collection

All procedures and materials for this study were approved by the university institutional review boards in the US and Japan. All communication with women was in Japanese, including all written contact, consents, surveys, and all research materials. Translation of most of the research instruments in the parent study was carried out with a team of three graduate-level bilingual staff from three different regions of Japan, with the assistance of two other bilingual Japanese research assistants. One graduate level staff was bicultural, and the others were either international graduate students or immigrants. One of the three graduate level staff had training in mental health. Our procedure was that two translators translated each instrument independently while making systematic notations of difficulties with translations of concepts. Next, we rotated instruments to another translator for back translation into English, and the staff again made careful notes of translation difficulties and nuances. Then, we met as a team and began detailed reconciliation of the differences in the

translations, back-translations, and notations. Items of concern received a second round of translations. Our overall translation aim was typical daily speech, without clinical jargon and local dialect differences, as well as conceptual and semantic equivalence.

Our study examined depression, and we selected the translation by Shima et al. (1985) for our depression instrument because the scale had been used in numerous studies and had been identified in publications as one of the only depression scales that had received rigorous back translation for semantic equivalence (Furukawa, Hirai, Kitamura, & Takahashi, 1997). However, research has shown that some East Asian groups may have cultural biases against endorsing positive affect, possibly affecting the response pattern on the CESD (Cho, Kim, Cho, & Shin, 2007; Iwata & Roberts, 1996; Iwata, Roberts, & Kawakami, 1995; Noh & Avison, 1996; Noh, Avison, & Kaspar, 1992). Therefore, we reversed the wording for the four positive items of the Japanese version of the CESD as suggested by Cho, Noh, and Iwata. In order to make these reversals, we used our usual protocol involving independent translations, independent back translations and reconciliation meetings. However, we translated the items *for those four positive items only*. All instruments in the entire final survey were field tested with a panel of eight Japanese women, each of whom took the survey in total, then received a cognitive interview about semantic or cultural issues, as well as readability and clarity. They did not find problems in any of our instruments. It should be noted, however, that the cognitive interviewing did not ask women about the cultural relevance of the questions in the survey or the cultural appropriateness of them but only addressed natural speech, readability, and clarity.

Mini-ethnography

After our discovery of the six problematic items, we used mini-ethnography to examine the concepts within the CESD. A mini-ethnography is a focused interview technique aimed at gathering data about cultural beliefs, concepts, and practices related to a clinical problem (Nastasi et al., 2015). We used the mini-ethnography within the research team to understand the cultural aspects that may be related to the semantic and connotative concepts we identified as problematic. However, our ability to use this approach was because the lead author has over 30 years of fieldwork in Japanese culture. These ethnographic analyses focused on concepts contained within each of the problematic items, and the author acted as an ethnographic investigator, carrying out group interviews with the five research staff, who acted as “key informants” or “culture brokers.” We used a “compare and contrast” framework that sometimes included a review of literature about a concept in Japanese or Western culture. After these meetings, we finally selected our final new translations. We used two criteria to ultimately employ a new revised translation: the independent translations and back-translations revealed that there was a concept in the translation that differed from what our ethnographic discussion deemed best to use, and that it was possible and appropriate to translate the original English CESD concept into Japanese.

Quantitative analysis

We used quantitative data gathering of both the original 20 items (CESD) and the additional six retranslated New CESD (NCESD) items for remaining 34 women in the U.S. Japanese group, as well as for 72 women in Japan. All analyses reported here are only for those

women who took the original and the revised Japanese CESD items (N = 106). We used quantitative psychometric analysis of the old and revised scales including alpha reliability analyses, as well as a review of item-total correlations. Our quantitative analysis also included *t* tests to examine whether there were within-group and between-group differences in CESD total mean scores for the original and revised scales for both the US and the Japan sample. We examined whether there were within-group differences between Cronbach's alpha reliability scores for the original and revised scales, differences between item-total correlations, and differences between item means. Finally, we integrated both the ethnographic and quantitative findings in the discussion of the overall findings, adding literature to explain our findings.

Results

Mini-Ethnography Results and Revised Translations

Table 1 shows the original English CESD, the published Shima Japanese, our back-translation of their Japanese, our reversal, our new CESD (NCESD) Japanese and English, and the means and inter-item correlation ranges for the Japanese in the US and Japan. As noted earlier, the final NCESD items are the result of our mini-ethnographic analyses of these concepts.

CESD1 captures the concept of being bothered. The original Shima translation used the concept "annoyed" and also included the concept of "tiredness." In our ethnographic meetings, we noted that being irritated or bothered is a significant part of Japanese distress and depression. We discussed that while being tired or fatigued is an also important symptom, it is possible to feel bothered or irritated without being tired. Therefore, in our NCESD1 revision, we used the concept of "irritated" as the Japanese equivalent to "bothered," and our NCESD1 was "*Things that I am not usually irritated by irritate me.*"

CESD8 was one of our reversal items and captures the concept of hope (or hopelessness in our reversal). The original Shima translation captured the concept of "thinking or viewing things positively." Our original reversal was "*My thinking is pessimistic.*" Our ethnographic discussions centered on why we had originally used the attitude of "optimism" and the reversal concept of "pessimism." Our discussion revealed a strong stigma about the concept of hopelessness for the Japanese. This aversion to using the terms hope and hopelessness was related to a Japanese cultural sense that as long as one is attached to their group, there was hope. Our discussion also distinguished the Japanese concept of hope from an American ideal of autonomy, understanding that the American concept of hope relates to personal control, while the Japanese concept of hope references an embeddedness with in a group. We ascertained that translation using optimism and pessimism might have been part of a desire to de-stigmatize the concept, softening it so that women would not be offended. Next, we distinguished pessimism from hopelessness, deciding that optimism and pessimism were attitudes or dispositions, while hopelessness was a feeling of insecurity, a lack of confidence, or negative expectations when one imagines their future. Therefore, in our NCESD8 revised reversal, we used the concept of "not feeling hope," and our NCESD8 was "*I do have hope for the future.*"

CESD9 captures the concept of feeling that one's life was a failure. In the original Shima translation, the concept tapped was obsessive thinking about the past (or rumination). In our ethnographic meetings, we discussed the Japanese tendency to “worry” about others opinions and noted that worry, and even rumination, was very common for average Japanese people. We also discussed the way that the Japanese understand mistakes or failure. In Japanese culture, the informants noted that past mistakes are often recalled as a way to work towards being “a better Japanese person.” The team thought that worry and rumination were related to anxiety about social relationships. In the end, we decided that it is possible to think about failure without necessarily ruminating about it and that the concept of failure distinguishes depressive thinking from a more typical Japanese “worrying about past mistakes.” Therefore, we used the concept of “failure in life,” and our NCESD9 was “*I think my life is a failure.*”

CESD11 captures the concept of restless sleep. In the original Shima translation, they used the concept of “being unable to fall asleep.” In our ethnographic discussions, we noted that while sleep quality is an important aspect of functioning, the team did not believe that this concept revealed any important cultural differences. We decided that falling asleep was not equivalent to restlessness while sleeping, and therefore used the concept of “good and quiet” sleep, and our NCESD11 item was “*I do not have a good and quiet sleep.*”

CESD12 was another one of our reversal items and captures the concept of “happiness” (or unhappiness in our reversal). In the original Shima translation, they used the concept of “no complaints in life,” and our reversal was “*I have complaints in life.*” In our ethnographic meetings, we discussed the concept of happiness in Japanese culture. The team described that, while they thought that Japanese people certainly want to be happy, the feeling of happiness in Japanese culture might be understood as a transient experience and that a more typical desire was life satisfaction, peace, or contentment. The team discussed several movies, *haiku* poetry, and even Buddhist concepts that promote acceptance of sadness as a state in life and impermanence as inevitable. The team explained the concept of the impermanence of things (物の哀れ *mono no aware*), saying it could also be loosely translated as “understanding the gentle sadness about things.” In the end, the team agreed that the concept of happiness and unhappiness is a natural and directly translatable concept in Japanese, despite the fact that the cultural emphasis on the feeling might not be equivalent for the Japanese. Therefore, in our revised NCESD12 translation, we used the concept of “unhappy,” and our NCESD12 item was “*I am unhappy.*”

CESD20 captures the concept of “getting going.” The original Shima translation used the concepts of “cognitive focus and distraction.” The concept of “getting going” generated an interesting discussion among the team. First, we talked about the Japanese concept of “*ki*” or vital energy. The idea of *ki* being “blocked (きがおもい, *ki ga omoi*)”, or sluggish (気がめいる, *ki ga meiru*), are idioms for depression, and one might even ask “元氣ですが(*O genki desu, ka*)” which loosely translated as “Is the source (*gen*) of your vital energy (*ki*) good, solid, robust or healthy? Are you well?” We also discovered that the Japanese have herbal remedies that focus on mobilizing or energizing the *ki*, and may be used for treatment of depression. We noted that “getting going” is an American idiom about “forward movement,” “feeling an ability *to* move,” and suggesting carrying out activities of daily living. We

thought the “getting going” idiom connoted motivation, energy, and drive. Since *ki* is a familiar concept in Japanese and was similar enough to the idea of motivation, will, or energy, we decided that we could use the concept of *ki* in the translation. We also decided that distraction or attention span were not the same as having energy or “getting going.” Therefore, in our NCESD20 revision, we used the concept of “energy to move and do things,” and our NCESD20 was “*I cannot get myself to move to do things; I don’t have the energy to do things.*”

Quantitative analysis of revised items

Sample characteristics

The mean age for the women in Japan was higher ($M = 49.8$, $SD = 14.5$) than the women living in the US ($M = 40.0$, $SD = 8.2$), $p = .00$. In our U.S. subsample, 44% had a college education, compared with 23% in the Japan sample. The women in the U.S. sample generally could not work because of visa restrictions, and 83% were unemployed or volunteers, while only 50% of the Japan sample was unemployed.

Between-group comparisons

Between-group comparisons of CESD scores using independent samples *t*-test revealed no statistical differences between women in the US and Japan for either the CESD or the NCESD means. Cronbach’s alpha reliability coefficients for the original and the revised scale for both the Japanese women in the US and Japan were the same ($\alpha = .94$).

Within-group Japanese in the US

Findings from the quantitative analysis are included in Table 2. The original CESD total mean ($M = 9.5$, $SD = 10.9$) was significantly higher than the revised NCESD total mean ($M = 8.8$, $SD = 10.5$); $t(32) = 2.19$, $p = .04$. Cronbach’s alpha reliability coefficients for the original scale and the revised scale were the same ($\alpha = .94$).

Pairwise *t* tests of the original and revised translation item means revealed that four of the item means were significantly different. The original Item 9 failure was significantly higher ($M = .60$, $SD = 1.0$) than the revised NCESD9 ($M = .27$, $SD = .69$); $t(29) = 2.28$, $p = .03$. The original Item 20 “get going” was significantly lower ($M = .27$, $SD = .79$) than the revised NCESD20 ($M = .60$, $SD = .93$); $t(29) = -2.28$, $p = .03$. The original Item 8 hope was also significantly lower ($M = .63$, $SD = 1.1$) than the revised NCESD8 ($M = .37$, $SD = .76$); $t(29) = 2.11$, $p = .04$.

The item-total correlations for four of the six revised items were higher for our revised version: Item 1 bothered (CESD1 $r = .59$; NCESD1 $r = .68$); Item 8 hopelessness (CESD8 $r = .84$; NCESD8 $r = .89$); Item 11 restless sleep (CESD11 $r = .24$; NCESD11 $r = .59$); and Item 20 “get going” (CESD20 $r = .71$; NCESD20 $r = .85$). Two of the item-scale correlations were lower for our revised items: Item 9 failure (CESD9 $r = .75$; NCESD9 $r = .53$); and Item 12 unhappiness (CESD12 $r = .60$; NCESD12 $r = .59$) (Table 3).

Japanese women in Japan

The mean for the original CESD total scores ($M = 8.5$, $SD = 10.6$) were statistically higher than the revised NCESD ($M = 7.9$, $SD = 10.4$); $t(71) = 2.43$, $p = .02$ for women in Japan. Cronbach's alpha reliability coefficients for the original and the revised scale were the same ($\alpha = .94$).

A pairwise t -test of the original and revised item means revealed that two-item means were significantly different. The original Item 12 happiness was significantly higher ($M = .69$, $SD = .93$) than the revised NCESD12 ($M = .37$, $SD = .74$); $t(64) = 3.00$, $p = .00$. The original Item 20 "get going" was significantly lower ($M = .27$, $SD = .70$) than the revised NCESD20 ($M = .53$, $SD = .85$); $t(64) = 2.79$, $p = .01$.

The corrected item-total correlations for five of the six revised items were higher for our revised translations: Item 1 bothered (CESD1 $r = .72$; NCESD1 $r = .76$); Item 9 failure (CESD9 $r = .74$; NCESD9 $r = .79$); Item 11 restless sleep (CESD11 $r = .57$; NCESD11 $r = .62$); Item 12 unhappiness (CESD12 $r = .68$; NCESD12 $r = .78$); and Item 20 "get going" (CESD20 $r = .75$; NCESD20 $r = .81$). The corrected item-total correlation for revised Item 8 hopelessness was lower than the original (CESD8 $r = .86$; NCESD8 $r = .83$).

Integration and discussion

This research was an extension of decades of ethnographic fieldwork and interviewing by the lead author aimed at understanding Japanese culture, gender, distress, and help seeking. Despite the fact that our research was focused on using ethnographic approaches to understanding the meaning of depression in a Japanese population, even we took the translated CESD items at face value. This kind of conceptual blindness, cultural bias, or ethnocentrism is a familiar trap in cross-cultural research. Researchers and translators will always hold biases and assumptions, and it is human nature to be blind to them. Discovering biases requires rigorous personal scrutiny of assumptions, as well as practice level policies and procedures. For example, one of our practice level policies was our translation procedure, which involved having bilingual translators make notes about their cognitive processes as they translated and back translated. This served us well throughout all aspects of the project, especially when we discovered the semantic differences in the CESD instrument. The research presented here reminds us that nursing and health research might be well served to incorporate a rigorous translation protocol, even when the research uses translated instruments.

Item-scale correlations were higher for most of the revised translations across the two groups for the CESD concepts, including feeling bothered, restless sleep, and unhappiness. However, we had mixed results for feelings of failure and "getting going." Moreover, the reliability of the scales remained the same. While these differences were small, this study gives some evidence that careful attention to culturally based semantics can make a difference. Moreover, this process greatly informed our overall understanding of depression, as well as how culture affects the items within a scale. These findings reinforce for researchers that attention to cultural aspects of symptomology is critical for cross-cultural research, suggesting that attention to semantics can be an important part of the translation

and interpretation process. It is likely that the concepts that had mixed results (feelings of failure and “getting going”) are culturally understood phenomena, making them likely to involve connotative or idiomatic dimensions. For example, there is a body of psychological research illustrating cultural differences in perceptions of success and achievement, as well as general concepts of self-esteem, within Japanese culture (Falk & Heine, 2015; Heine & Lehman, 1999; Heine, Takata, & Lehman, 2000; Kitayama, Markus, & Kurokawa, 2000; Markus, 1991; Markus, Mullally, & Kitayama, 1997). This may help explain the mixed results in the revised failure translation. However, the presence of idioms within either the English or the Japanese CESD was not evident to us as we embarked on this project. The best example of this is the concept of “getting going.” From an ethnographic point of view, the use of this concept in the American developed CESD instrument may reference a historical, perhaps Protestant, American value that it is good to be clear, focused, and on a mission (Kang, 2009). Along a similar line, other research on western values embedded in western biomedicine has documented the use of idioms that reference the human body as being “like a machine” (Martin, 2001). It is possible that the concept of “getting going” may reference humans as being “like a car,” and the concept of not getting going is like a car that will not start. Finally, it is entirely possible that the Shima team selected the concepts of optimism, obsessive thinking, being unable to fall asleep, and not having complaints in life because they were important dimensions in Japanese depression. This research shows that investigators need to have a knowledge of the cultural aspects that are under study, as well as how their instrument’s concepts relate to those cultural beliefs and practices. In addition, the field of cross-cultural nursing research could benefit from more emphasis on the way that western derived instruments do *or do not* match cultural concepts of health.

Psychological research on health, psychological well-being, and life satisfaction has recognized that there are cultural differences in the meaning of happiness (Tov & Diener, 2009; Uchida & Ogiwara, 2012). Like evaluations of success and failure, evaluations of good feelings are based on broader evaluations of cultural goals, motivations, and ideals (Kitayama et al., 2000; Markus & Kitayama, 1991). The Japanese have been described as a group-oriented culture (Kitayama et al., 2000; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Markus & Kitayama, 1991). To the extent that happiness is a value for the Japanese, feeling happy is rooted in the operations of the group and one’s contentment with their place within that group. Other studies have explored the interaction between cultural values on the one hand and response bias to surveys about happiness and psychological wellbeing on the other (Veenhoven, 2012). Indeed, we knew this going into this project, which was why we used the culturally revised version of the CESD, which purports to eliminate the tendency to under-report positive emotions. We recommend that investigators consider the biases and assumptions about what constitutes health, as well as illness, from a cultural lens.

Cross-cultural nursing research is uniquely situated to examine health and functioning. However, our research reminds us to be aware that concepts of normal or preferred patterns of sleep, energy, motivation, or feeling “bothered” or irritated are rooted in cultural expectations about what constitutes health and optimum functioning (Behling & Law, 2000). For example, sleep quality can be alternatively interpreted as falling asleep, staying asleep, waking up too early, feeling rested after sleeping, and/or sleeping restfully. Similarly, what

qualifies as motivation depends on normative expectations about temporal orientation and productivity. Health-related emphasis on motivation implies values for vitality, zest for life, and general enthusiasm. Of course, all of these nuances cannot be captured in a 20-item instrument. However, understanding implicit assumptions about health and functioning is critical when carrying out cross-cultural studies of health, quality of life, and functioning.

The translation of hopelessness generated the most vigorous discussion within our translation team. First, we had a discussion of the Japanese idiom of *shikata ga nai* (仕方が無い), which refers to a disposition, attitude, or philosophical position toward difficult or tragic circumstances (Long, 1999). It translates as “it can’t be helped,” or “nothing can be done about it.”¹ However, while there may be an element of hope within that phrase, we discussed that hope within an American cultural value system was related to notions of individual will, personal power, and social autonomy (Del Vecchio Good, Good, Schaffer, & Lind, 1990). In group-oriented cultures, confidence about future security rests on connection with, and optimal functioning of, one’s group (Kitayama et al., 1997, 2000; Markus & Kitayama, 1991). Therefore, endorsements of feeling hopeful for the Japanese may relate to both personal will, but also may reference a sense of group-level security. This complex conceptualization of hope may make answering this question difficult, or at least multifaceted, from a Japanese perspective. We recommend that investigators carry out focused or mini-ethnographic studies about the concepts they want to understand when carrying out cross-cultural research. These findings can inform translation and interpretation of findings.

We recognize many limitations of this study. First, the sample sizes were small and the US and Japan samples were not equivalent for age, education, or employment. The larger study from which this data were drawn aimed to understand women’s immigration experience because gender greatly influences stress, coping, and engagement with social networks. Therefore, we did not gather data from men in this research, although future research should compare and contrast findings in these populations. Our US sample characteristics were consistent with migration patterns for immigrants coming to the US as part of the Japanese automobile industry (Black, 1994; Briody & Chrisman, 1991; Flory, 1989; White, 1988), who report that these migrant women average around 35 years old and stays an average of five years, suggesting very limited acculturation on the whole. Women who come to the US are also typically more educated than the general Japanese population. Secondly, we had only 34 women in the US and 72 women in Japan who received our revised NCESD items. Therefore, we may not have had sufficient power to draw generalizations.

Because we had not carried out appropriate analysis of the semantic equivalence of the CESD items for the reasons explained above, this work represents an internal critique and strategy to appropriately examine our depression instrument, albeit late in our study. Even with our due diligence, this effort did not yield major changes in item-total correlations. What this work did do was to elevate our confidence that we could understand the patterns we were seeing, and that these patterns related to the concepts under study. It also contributed to our understanding of one approach that could be used to ensure the reliability of the instruments used in our study. However, all women who received the six retranslated items also received the 20 original CESD items, and this may have influenced their

responses. Finally, the CESD scores in both groups were very low. Despite our efforts to eliminate positive affect item bias by reversing positive items, we believe that women had a general tendency to under-report symptoms on this instrument, probably related to the stigma of the topic of depression. While this study reveals interesting patterns and illustrates potential issues, we recognize that these results would need to be replicated in larger and more complex psychometric studies. What we provide here is a mixed-method model to begin such inquiry.

Conclusion

Cross-cultural nursing research that aims to move beyond description to theory testing and interventional research relies on instrumentation to draw conclusions about phenomena of interest to nursing. While translation and back-translation are often the “gold standard,” we recommend ethnographic approaches that help researchers attend to conceptual and semantic equivalence in the concepts held within scales and instruments. This requires in-depth knowledge of the cultures under study, and examination of connotations and idioms that may be hidden in the original instruments, as well as those in the culture under study. Careful attention to protocols that bring this material to the surface can lead to more trustworthy results.

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References

Banville D, Desrosiers P, Genet-Volet Y. Translating questionnaires and inventories using a cross-cultural translation technique. *Journal of Teaching in Physical Education*. 2000; 19:374–387.

- Behling, O., Law, KS. Translating questionnaires and other research instruments: Problems and solutions. Vol. 133. Thousand Oaks, CA: Sage; 2000.
- Black JS. *Okaerinasai*: Factors related to Japanese repatriation adjustment. *Human relations*. 1994; 47(12):1489–1508.
- Briody E, Chrisman J. Cultural adaptation on overseas assignments. *Human organization*. 1991; 50(3): 264–282.
- Butucescu A, Usc tescu L, Constantinescu PM, Ion BC, Sandu CG, Stevens MJ. The Romanian CES-D Scale: A promising instrument for clinical and nonclinical use. *International Journal of Education and Psychology in the Community (IJEPC)*. 2013; 1(III):7–21.
- Cho M, Nam J, Suh G. Prevalence of symptoms of depression in a nationwide sample of Korean adults. *Psychiatry Research*. 1998; 81(3):341–352. [PubMed: 9925185]
- Cho SM, Kim HC, Cho H, Shin YM. Factors influencing perceptions of need for and decisions to solicit child mental health services by parents of 9–12 year-old Korean children. *Child Psychiatry and Human Development*. 2007; 38(4):279–286. [PubMed: 17564830]
- De Silva V, Ekanayake S, Hanwella R. Validity of the Sinhala version of the Centre for Epidemiological Studies Depression Scale (CES-D) in out-patients. *Ceylon Medical Journal*. 2014; 59(1):8–12. [PubMed: 24682190]
- Del Vecchio Good MJ, Good BJ, Schaffer C, Lind SE. American oncology and the discourse on hope. *Culture, Medicine and Psychiatry*. 1990; 14(1):59–79.
- Delisle VC, Kwakkenbos L, Hudson M, Baron M, Thombs BD, Group, C. S. R. An assessment of the measurement equivalence of English and French versions of the Center for Epidemiologic Studies Depression (CES-D) scale in systemic sclerosis. *PLoS One*. 2014; 9(7):e102897. [PubMed: 25036894]
- Falk CF, Heine SJ. What is implicit self-esteem, and does it vary across cultures? *Personality and Social Psychology Review*. 2015; 19(2):177–198. [PubMed: 25063044]
- Flory, M. More Japanese than Japan: Adaptation and social network formation among the wives of Japanese businessmen in Bergen county, New Jersey (Unpublished Dissertation). Columbia University; New York: 1989.
- Furukawa T, Hirai T, Kitamura T, Takahashi K. Application of the Center for Epidemiologic Studies Depression Scale among first-visit psychiatric patients: A new approach to improve its performance. *Journal of Affective Disorders*. 1997; 46(1):1–13. [PubMed: 9387082]
- Garland AF, Lau AS, Yeh M, McCabe KM, Hough RL, Landsverk JA. Racial and ethnic differences in utilization of mental health services among high-risk youths. *American Journal of Psychiatry*. 2005; 162(7):1336–1343. [PubMed: 15994717]
- Guo J, Dixon JK, Whittemore R, He GP. Instrument translation and initial psychometric evaluation of the Chinese version of the Self-Management of Type 1 Diabetes for Adolescents scale. *Journal of Advanced Nursing*. 2013; 69(4):960–969. [PubMed: 22931463]
- Heine SJ, Lehman DR. Culture, self-discrepancies, and self-satisfaction. *Personality & Social Psychology Bulletin*. 1999; 25(8):915–925.
- Heine SJ, Takata T, Lehman DR. Beyond self-presentation: Evidence for self-criticism among Japanese. *Personality & Social Psychology Bulletin*. 2000; 26(1):71–78.
- Hui CH, Triandis HC. Measurement in cross-cultural psychology a review and comparison of strategies. *Journal of Cross-Cultural Psychology*. 1985; 16(2):131–152.
- Interian A, Lewis-Fernández R, Dixon LB. Improving treatment engagement of underserved US racial-ethnic groups: A review of recent interventions. *Psychiatric Services*. 2013; 64(3):212–222. [PubMed: 23203442]
- Iwata N, Roberts CR, Kawakami N. Japan-U.S. comparison of responses to depression scale items among adult workers. *Psychiatry Research*. 1995; 58:237–245. [PubMed: 8570779]
- Iwata N, Roberts R. Age differences among Japanese on the Center for Epidemiologic Studies Depression scale: An ethnocultural perspective on somatization. *Social Science and Medicine*. 1996; 43(6):967–974. [PubMed: 8888466]
- Joffres M, Jaramillo A, Dickinson J, Lewin G, Pottie K, Shaw E, Tonelli M. Recommendations on screening for depression in adults. *Canadian Medical Association Journal*. 2013; 185(9):775–782. [PubMed: 23670157]

- Kang N. Puritanism and its impact upon American values. *Review of European Studies*. 2009; 1(2):P148.
- Kim E, Landis AM, Cain KK. Responses to CES-D: European American versus Korean American adolescents. *Journal of Child and Adolescent Psychiatric Nursing*. 2013; 26(4):254–261. [PubMed: 24180605]
- Kimerling R, Baumrind N. Access to specialty mental health services among women in California. *Psychiatric Services*. 2005; 56(6):729–734. [PubMed: 15939951]
- Kirmayer, LJ., Dao, THT., Smith, A. Somatization and psychologization: Understanding cultural idioms of distress. In: Okpaku, S., editor. *Clinical methods in transcultural psychiatry*. Washington, DC: American Psychiatric Press, Inc; 1998. p. 233-265.
- Kitayama S, Markus HR, Kurokawa M. Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition & Emotion*. 2000; 14(1):93–124.
- Kitayama S, Markus HR, Matsumoto H, Norasakkunkit V. Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality & Social Psychology*. 1997; 72(6):1245–1267. [PubMed: 9177018]
- Kojima M, Furukawa TA, Takahashi H, Kawai M, Nagaya T, Tokudome S. Cross-cultural validation of the Beck Depression Inventory-II in Japan. *Psychiatry Research*. 2002; 110(3):291–299. [PubMed: 12127479]
- Kristjansson EA, Desrochers A, Zumbo B. Translating and adapting measurement instruments for cross-linguistic and cross-cultural research: A guide for practitioners. *CJNR (Canadian Journal of Nursing Research)*. 2003; 35(2):127–142. [PubMed: 12908201]
- Kwakkenbos L, Arthurs E, van den Hoogen FH, Hudson M, van Lankveld WG, Baron M, Group, C. S. R. Cross-language measurement equivalence of the Center for Epidemiologic Studies Depression (CES-D) scale in systemic sclerosis: A comparison of Canadian and Dutch patients. *PLoS One*. 2013; 8(1):e53923. [PubMed: 23326538]
- Li HC, Zhang MY, Wang G, Zhang HG, Zhang HY, Liu Y, Ang QQ. Association between painful physical symptoms and clinical outcomes in Chinese patients with major depressive disorder: A three-month observational study. *Chinese Medical Journal (Engl)*. 2010; 123(15):2063–2069.
- Li Z, Hicks MH. The CES-D in Chinese American women: Construct validity, diagnostic validity for major depression, and cultural response bias. *Psychiatry Research*. 2010; 175(3):227–232. [PubMed: 20006386]
- Limon FJ, Lamson AL, Hodgson J, Bowler M, Saeed S. Screening for depression in latino immigrants: A systematic review of depression screening instruments translated into Spanish. *Journal of Immigrant and Minority Health*. 2016; 8(4):787–798.
- Ljungberg AK, Fossum B, Fürst CJ, Hagelin CL. Translation and cultural adaptation of research instruments—guidelines and challenges: An example in FAMCARE-2 for use in Sweden. *Informatics for Health and Social Care*. 2015; 40(1):67–78. [PubMed: 24393044]
- Long SO. *Shikata ga nai*: Resignation, control, and self-identity. *Cornell East Asia Series*. 1999; 106:11–26.
- Malakouti SK, Pachana NA, Naji B, Kahani S, Saeedkhani M. Reliability, validity and factor structure of the CES-D in Iranian elderly. *Asian Journal of Psychiatry*. 2015; 18:86–90. [PubMed: 26442988]
- Markus HAKS. Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*. 1991; 98:224–253.
- Markus HR, Kitayama S. Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*. 1991; 98(2):224.
- Markus, HR., Mullally, PR., Kitayama, S. Selfways: Diversity in modes of cultural participation. In: Neisser, U., Jopling, DA., editors. *The conceptual self in context: Culture, experience, self-understanding*. New York, NY: Cambridge University Press; 1997. p. 13-61.
- Martin, E. *The woman in the body: A cultural analysis of reproduction*. Boston, MA: Beacon Press; 2001.
- Mazlan NH, Ahmad A. Validation of the Malay-translated version of the Center for Epidemiological Study–Depression Scale (CES-D). *ASEAN Journal of Psychiatry*. 2013; 15(1):54–65.

- Mendlinger S, Cwikel J. Spiraling between qualitative and quantitative data on women's health behaviors: a double helix model for mixed methods. *Qualitative Health Research*. 2008; 18(2): 280–293. [PubMed: 18216346]
- Mui AC, Suk-Young K, Chen LM, Domanski MD. Reliability of the geriatric depression scale for use among elderly Asian immigrants in the USA. *International Psychogeriatrics*. 2003; 15:253–271. [PubMed: 14756161]
- Nastasi BK, Schensul JJ, Schensul SL, Mekki-Berrada A, Pelto PJ, Maitra S, Saggurti N. A Model for Translating Ethnography and Theory into Culturally Constructed Clinical Practices. *Culture, Medicine, and Psychiatry*. 2015; 39(1):92–120.
- Noh S, Avison WR. Asian immigrants and the stress process: A study of Koreans in Canada. *Journal of Health and Social Behavior*. 1996; 37(2):192–206. [PubMed: 8690879]
- Noh S, Avison WR, Kaspar V. Depressive symptoms among Korean immigrants: Assessment of a translation of the Center for Epidemiologic Studies—Depression Scale. *Psychological Assessment*. 1992; 4(1):84–91.
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Ro M. Moving Forward: Addressing the Health of Asian American and Pacific Islander Women. *American Journal of Public Health*. 2002; 92(4):516–519. [PubMed: 11919042]
- Safire, W. It Is What It Is *New York Times*. 2006. Retrieved from <http://www.nytimes.com/2006/03/05/magazine/it-is-what-it-is.html> (accessed 16 June 2016)
- Saint Arnault, DM. Diversity of co-occurring symptoms in depressed Japanese and Americans; Paper presented at the Midwest Nursing Research Society; Indiana. 2004a.
- Saint Arnault, DM. Japanese Company Wives living in America: Culture, social relationships, and self (Dissertation). Wayne State University; Detroit: 1998.
- Saint Arnault, D. The Japanese. In: Ember, CR., Ember, M., editors. *Encyclopedia of Medical Anthropology*. Vol. 1. New Haven, CT: Yale University; 2004b. p. 765–776.
- Saint Arnault DM. Cultural determinants of help seeking. *Research and Theory for Nursing Practice*. 2009; 23(4):259–278. [PubMed: 19999745]
- Saint Arnault, DM. The mental health system in Japan. In: Babb, J., editor. *Handbook of modern Japanese studies*. Thousand Oaks, CA: Sage; 2014.
- Saint Arnault DM, Fetters MD. RO1 funding for mixed methods research: Lessons learned from the mixed-method analysis of Japanese depression project. *Journal of Mixed Methods Research*. 2011; 5(4):309–329. [PubMed: 25419196]
- Shibusawa T, Mui A. Stress, coping, and depression among Japanese elders. *Journal of Gerontological Social Work*. 2001; 36(1–2):63–81.
- Shima S, Shikano T, Kitamura T, Asai M. New self-rating scales for depression (in Japanese). *Clinical Psychiatry*. 1985; 27:717–723.
- Sidani S, Guruge S, Miranda J, Ford-Gilboe M, Varcoe C. Cultural adaptation and translation of measures: an integrated method. *Research in Nursing & Health*. 2010; 33(2):133–143. [PubMed: 20069612]
- Smit J, Van den Berg C, Bekker L, Seedat S, Stein D. Translation and cross-cultural adaptation of a mental health battery in an African setting. *African Health Sciences*. 2007; 6(4):215–222.
- Squires A, Aiken LH, van den Heede K, Sermeus W, Bruyneel L, Lindqvist R, Brzostek T. A systematic survey instrument translation process for multi-country, comparative health workforce studies. *International Journal of Nursing Studies*. 2013; 50(2):264–273. [PubMed: 22445444]
- Statistics Canada. Immigration and ethnocultural diversity in Canada. Canada: Census program; 2015.
- Sung SC, Low CCH, Fung DSS, Chan YH. Screening for major and minor depression in a multiethnic sample of Asian primary care patients: A comparison of the nine-item Patient Health Questionnaire (PHQ-9) and the 16-item Quick Inventory of Depressive Symptomatology–Self-Report (QIDS-SR16). *Asia-Pacific Psychiatry*. 2013; 5(4):249–258. [PubMed: 24123813]
- Symon A, Nagpal J, Maniecka-Bryla I, Nowakowska-Glab A, Rashidian A, Khabiri R, Wu L. Cross-cultural adaptation and translation of a quality of life tool for new mothers: A methodological and experiential account from six countries. *Journal of Advanced Nursing*. 2013; 69(4):970–980. [PubMed: 22812385]

- Takeuchi DT, Zane N, Hong S, Chae DH, Gong F, Gee GC, Alegría M. Immigration-related factors and mental disorders among Asian Americans. *American Journal of Public Health*. 2007; 97(1): 84–90. [PubMed: 17138908]
- Tapia AJ, Wagner F, Heredia MER, González-Forteza C. Study of depression in students from Mexico City and the state of Michoacán using the revised version of the CES-D. *Salud Mental*. 2015; 38(2):103–107.
- Tiwari SK, Wang J. Ethnic differences in mental health service use among White, Chinese, South Asian and South East Asian populations living in Canada. *Social Psychiatry and Psychiatric Epidemiology*. 2008; 43(11):866–871. [PubMed: 18500481]
- Tov, W., Diener, E. Culture and Subjective Well-Being. In: Diener, E., editor. *Culture and Well-Being: The Collected Works of Ed Diener*. Dordrecht: Springer Netherlands; 2009. p. 9–41.
- True RH. Psychotherapeutic issues with Asian American women. *Sex Roles*. 1990; 22(7/8):477–486.
- Uchida Y, Ogihara Y. Personal or interpersonal construal of happiness: A cultural psychological perspective. *International Journal of Wellbeing*. 2012; 2(4):354–369.
- Van de Vijver FJ, Poortinga YH. Towards an integrated analysis of bias in cross-cultural assessment. *European Journal of Psychological Assessment*. 1997; 13(1):29–37.
- Veenhoven R. Cross-national differences in happiness: Cultural measurement bias or effect of culture? *International Journal of Wellbeing*. 2012; 2(4):333–353.
- Wang WL, Lee HL, Fetzer SJ. Challenges and strategies of instrument translation. *Western Journal of Nursing Research*. 2006; 28(3):310–321. [PubMed: 16585807]
- White, M. *The Japanese overseas*. New York, NY: The Free Press; 1988.
- Williams DR. Racial/ethnic variations in women's health: The social embeddedness of health. *American Journal of Public Health*. 2002; 92(4):588–597. [PubMed: 11919058]
- Wong FKD, Lam AY, Poon A. Depression literacy among Australians of Chinese-speaking background in Melbourne, Australia. *BMC Psychiatry*. 2010; 10:7. [PubMed: 20082724]
- World Health Organization. *Women and health: Today's evidence, tomorrow's agenda*. Geneva, Switzerland: Department of Mental Health and Substance Dependence; 2009.
- Yeung A, Fung F, Yu SC, Vorono S, Ly M, Wu S, Fava M. Validation of the Patient Health Questionnaire-9 for depression screening among Chinese Americans. *Comprehensive Psychiatry*. 2008; 49(2):211–217. [PubMed: 18243896]
- Yeung A, Neault N, Sonawalla S, Howarth S, Fava M, Nierenberg AA. Screening for major depression in Asian-Americans: A comparison of the Beck and the Chinese Depression Inventory. *Acta Psychiatrica Scandinavica*. 2002; 105(4):252–257.
- Ying YW. Depressive symptomatology among Chinese-Americans as measured by the CES-D. *Journal of Clinical Psychology*. 1988; 44(5):739–746. [PubMed: 3192712]
- Young CB, Fang DZ, Zisook S. Depression in Asian-American and Caucasian undergraduate students. *J Affect Disord*. 2010; 125(1–3):379–382. [PubMed: 20303181]

Figure 1.
Spiraling analysis.

Table 1

Shima CESD and revised NCESD Japanese, with reversals and back translations.

English CESD	Shima Japanese original	Shima back-translation	Revised Japanese	Revised back-translation
1 I was bothered by things that usually do not bother me.	普段は何でもないことが煩わしい。	I feel tired and get annoyed by things that do not usually make me feel that way.	これからのことについて積極的に考えることができる。	Things that I am not usually irritated by irritate me.
8 I felt hopeful about the future.	これからのことについて考えると悲観的になる。	I think positively.	Used reversal	
Reversal: I felt hopeless about the future.	過去の事についてよくよく考える。	My thinking is pessimistic.	なかなか眠れない。	I do not have hope for the future.
9 I thought my life had been a failure.	生活について不満なく過ごせる。	I obsessively think (ruminate) about my past.	生活に不満がある。	I think my life was a failure.
11 My sleep was restless.	仕事の手につかない。	I cannot fall into a sleep; It takes time to fall asleep.	普段は何でもないことでイライラする。	I cannot have a good and quiet sleep.
12 I am happy.	これからのことについて考えると希望が持てない。	I am without complaints or unhappiness in my life.	Used reversal	
Reversal: I am unhappy.	私の人生は失敗だったと思う。	I have complaints in my life.	安眠できない。	I feel unhappy.
20 I could not get "going."	不幸せだと感じる。	I cannot focus on my work; I feel distracted so that I cannot get my work done.	何もする気が起こらない。	I cannot get myself to move to do things; I do not have the energy to do things.

CESD: Center for Epidemiologic Studies Depression.

Table 2

CESD and NCESD mean and t test for Japanese in US and Japan.

Item: concept	US Japanese (<i>n</i> = 34)			Japan Japanese (<i>n</i> = 72)				
	Mean (SD)			Mean (SD)				
	CESD	NCESD	<i>t</i>	<i>p</i>	CESD	NCESD	<i>t</i>	<i>p</i>
CESD total	9.5 (10.9)	8.8 (10.5)	2.19	.04	8.5 (10.6)	7.9 (10.4)	2.43	.02
Item 1: bothered	.53 (.86)	.50 (.78)	.23	.83	.57 (.75)	.46 (.81)	1.473	.15
Item 8: hope	.63 (1.1)	.37 (.76)	2.11	.04	.69 (.89)	.58 (.81)	1.841	.70
Item 9: failure	.60 (1.0)	.27 (.69)	2.28	.03	.56 (.77)	.42 (.72)	1.637	.11
Item 11: sleep	.50 (.94)	.53 (1.0)	-.22	.83	.52 (.84)	.60 (.92)	-.798	.43
Item 12: happiness	.27 (.65)	.10 (.40)	1.31	.20	.69 (.93)	.37 (.74)	3.001	.00
Item 20: “get going”	.27 (.79)	.60 (.93)	-2.28	.03	.27 (.70)	.53 (.85)	-2.792	.01

CESD: Center for Epidemiologic Studies Depression.

Table 3

CESD and NCESD Item-total correlations for Japanese in US and Japan.

Item: concept	US Japanese (<i>n</i> = 34)		Japan Japanese (<i>n</i> = 72)	
	Item-total <i>r</i>		Item-total <i>r</i>	
	CESD	NCESD	CESD	NCESD
Item 1: bothered	.59	.68	.72	.76
Item 8: hope	.84	.89	.86	.83
Item 9: failure	.75	.53	.74	.79
Item 11: sleep	.24	.59	.57	.62
Item 12:happiness	.60	.59	.68	.78
Item 20: “get going”	.71	.85	.75	.81

CESD: Center for Epidemiologic Studies Depression; NCESD: New CESD.