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Abstract

The Gratitude Questionnaire (GQ) became a popular measurement for gratitude research, yet there was no Japanese version published. The purpose of this study was to create a valid and reliable Japanese version of the GQ. One hundred thirty Japanese undergraduate students completed the GQ, subjective happiness, optimism, life satisfaction, hope, and positive and negative affect questionnaires. Confirmatory factor analysis (CFA) found that the sixth item did not have a significant factor loading, and the 5-item version indicated a better model fit than the original 6-item version. The 5-item version of the GQ was negatively correlated with negative affect and positively correlated with subjective happiness, optimism, life satisfaction, hope, and positive affect. A coefficient alpha was .70 and a 4-week test-retest correlation coefficient was .72. All other CFAs brought affirmative results for its discriminant validity. The 5-item version GQ was recommended for use as a measurement of dispositional gratitude of Japanese undergraduate students.

Keywords: gratitude, Japan, positive psychology, cross-cultural, indebtedness

Development and Validation of the Gratitude Questionnaire (GQ) in Japanese Undergraduate Students

Psychologists have conducted more research on gratitude since the turn of this century (Emmons, 2007; Emmons & McCullough, 2004; Emmons & Mishra, 2011). Today, there are several measurements of gratitude for adults (Wood, Froh, & Geraghty, 2010). Among them, one of the most widely used measurements for gratitude is the Gratitude Questionnaire (GQ) by McCullough, Emmons, and Tsang (2002). The GQ has six items that are supposed to measure the latent factor of gratitude. Previous studies have already found that the GQ is an excellent measure for predicting adults' personality and well-being (for review see Wood, et al.). Besides, the GQ has been translated to different languages (e.g., German, Chinese, Spanish, Hungarian, Polish, Lithuanian, and Farsi) and utilized in various countries.

Froh, et al. (2011) assessed psychometric properties of the GQ for studying gratitude of children and adolescents. They reported the low factor loadings of the sixth item (i.e., "Long amounts of time can go by before I feel grateful to something or someone.") in three adult undergraduate student samples in the United States (.33 and .38) and United Kingdom (.44), and even lower factor loading in an American youth sample (.21). Additionally, the youth participants ten to nineteen years of age, commented their difficulty in comprehending the meaning of the sixth item due to its abstractness. Therefore, the sixth item was removed and the final version of the GQ for the English-speaking youth became the remaining five items. The study underscored the necessity of psychometric testing when the researchers use an established instrument with a different population.

Cultural psychologists know that even the best translation of a psychological measurement cannot guarantee sound psychometric properties for the translated measurement when used with a different culture (van de Vijver & Leung, 1997). After translating with the utmost care, the translated measurement should have its reliability and validity tested with local samples in the different culture. Chen, Chen, Kee, and Tsai (2008) tested the reliability and validity of the Chinese version of the GQ with Taiwanese samples. After data collection, they made two equal samples from the undergraduate sample. Confirmatory factor analysis (CFA) of the first sample ($n = 304$) found that the sixth item did not load to a latent factor (standardized factor loading = .01, *ns*). The sixth item was removed and they compared the 5-item version of GQ and the original 6-item version and found that the former exhibited a better model fit than the latter. They repeatedly achieved the similar CFA result and the model fit preference from the second sample ($n = 304$). Thus, the sixth item was removed. The construct validity of the GQ was supported with the scales of subjective happiness (i.e., Taiwan Social Change Survey), optimism (i.e., Chinese Life Orientation Test-Revised), agreeableness, neuroticism, and extraversion (i.e., Chinese Big Five personality scale). They reported a coefficient alpha of .80 and concluded that the 5-item version of the Chinese GQ would be useful to measure gratitude in Taiwanese undergraduate students. The study epitomized the necessity of psychometric testing on local samples after the development of a translated measurement. However, an anomaly was found in a situation in which local people are bilingual. Another Chinese researcher in Hong Kong simultaneously administered the Chinese and English versions of the GQ and reported no psychometric problems (Chan, 2010).

There are many different conceptualizations for gratitude, such as an emotion, an attitude, a moral virtue, a habit, a personality trait, and so forth (Emmons & McCullough, 2003). However, Emmons, McCullough, and Tsang (2003) defined gratitude, that was supposed to be measured by the GQ, as "a generalized tendency to recognize and respond

with positive emotions (appreciation, thankfulness) to the role of other moral agents' benevolence in the positive experiences and outcomes that one obtains" (p. 335). It means that the GQ is supposed to measure a response tendency of positive emotions that are evoked by the benevolence from others.

Cultural psychologists have emphasized the importance of cultural differences in social scripts to understand human emotions (Kitayama & Markus, 1994). For example, Mesquita (2010) claimed that traditionally, psychologists have recognized that human emotions are psychological properties of each individual. Yet in reality, human emotion emanates from the dynamic interaction between an individual and the environment and thus called it "emoting" (p. 84) to underscore the magnitude of the cultural context where each emotion emerges. In American culture, gratitude is typically assumed as a positive emotion among researchers (Tsang, 2007). In American culture, where the GQ was conceived, psychologists customarily assume that an individual would respond with positive emotions (e.g., gratitude) more than negative emotions (e.g., indebtedness) when they receive help from others because it is a standard social script in the U.S. Watkins, Scheer, Ovnicek, and Kolts (2006) empirically demonstrated that American undergraduate students initially exhibited gratitude over indebtedness when receiving a gift. However, the more they were expected to return the favor, gratitude decreased and indebtedness increased. In a contemporary American psychological lexicon, gratitude and indebtedness are two distinctive emotions (Tsang, 2006).

In Japanese culture, an embedded nature of gratitude and indebtedness has been discussed by anthropologists (Benedict, 1946; Lebra, 1976), psychiatrist (Doi, 1993), and sociolinguists (Ide, 1998; Kimura, 1994; Kumatoridani, 1999). Japanese speakers can express gratitude in two different ways: (a) "arigatou", meaning "thank you" and (b) "sumimasen", meaning "I am sorry." Although such an intermingled expression might seem bizarre to English speakers, Ide (1998) stressed that "the use of sumimasen in expressing thanks, apologies, and other functional meanings represents one of the defining traits of Japanese public discourse" (p. 524). The Japanese, who possess interdependence as one of their treasured values (e.g., Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009; Markus & Kitayama, 1991), are aware of both the value of the help they received and the preciousness of others' efforts and sacrifice to them (Lebra, 1976). When they perceive their own benefits, the "thank you" expression appears. The "I am sorry" expression emerges when they empathize with the efforts and sacrifice that are made by others (Kumatoridani, 1999). Not only in the case of gratitude, the empirical study of general emotion vocabulary that is used by rural populations of Japan and the U.S. has also shown that the conceptualization of emotion varies significantly culture to culture (Kobayashi, Schallert, & Ogren, 2003).

Following these studies, Naito, Wangwan, and Tani (2005) hypothesized gratitude in Japanese culture as a construct that has both positive and negative feelings. Both Japanese and Thai undergraduate students read the vignettes in cases in which they were injured and received various kinds of help from others and were asked about their evoked emotions. A factor analysis found two major factors: positive feelings (i.e., pleasure, warmth, happiness, & thankfulness) and negative feelings (i.e., shame, regret about causing a problem, feeling uneasy, & indebtedness). Additionally, they found that the negative feelings (i.e., the second factor) of Thai participants were significantly lower than that of Japanese counterparts. This suggested that indebtedness has more significant existence in the concept of gratitude in a Japanese culture than that of a Thai culture. Japanese psychologists studying gratitude generally assume that gratitude is a mixture of positive and negative emotions that are evoked from receiving favors (Ikeda, 2006; Kuranaga & Higuchi, 2011; Naito & Sakata, 2010; Naito, et al.).

Further, Naito and Sakata (2010) translated the GQ and reported adequate internal consistency in the study 1 ($\alpha = .77$) and the study 2 ($\alpha = .73$). From the data of Japanese female undergraduate students, they found that positive and negative feelings from receiving help had different roles: the former related with the enhancement of prosocial motivation and the latter related with the enhancement of obligatory help toward others.

Although Naito and Sakata (2010) reported Cronbach's alpha coefficients of their translated GQ, other psychometric properties of it were unknown. The Japanese version of the GQ should be validated and used for various reasons, even though it is supposed to measure only positive emotions of Japanese gratitude. First, as long as I am aware of, there is no Japanese measurement that is published in journals and supposed to measure dispositional gratitude. Second, the Japanese version of the GQ with sound psychometric properties is essential in order to facilitate further development of gratitude research in Japan. Third, such a measurement can promote international and cross-cultural comparisons and dialogues regarding gratitude because the GQ has been used in several different languages and cultures.

The present study tested the reliability and validity of the Japanese version of GQ. There was one research question and four hypotheses in the present study. In considering the results of Chen, et al. (2008), the factor structure of the Japanese GQ was investigated. Following the validation process of the original GQ (McCullough, et al., 2002), I hypothesized that the Japanese GQ would (1) be negatively correlated with negative affect and positively correlated with happiness, optimism, life satisfaction, hope, and positive affect, and (2) indicate acceptable levels of Cronbach's alpha and (3) test-retest reliability.

In order to demonstrate discriminant validity of the GQ, McCullough, et al. (2002) exhibited that the two correlated factor solution was superior to the one factor solution in accounting for the covariances among the combination of the GQ items and items of each relevant scale. Accordingly, as the fourth hypothesis, the two correlated factor solution for the combination items of each relevant scale (i.e., happiness, optimism, life satisfaction, hope, and positive and negative affect) and the items of GQ would demonstrate better model fit than the one factor solution.

Method

Participants

The 130 Japanese participant sample consisted of 41 men, 82 women, with 7 participants not indicating their gender (M age = 20.4, SD age = 1.6, age range: 18-27). All participants are undergraduate students at a liberal arts college in Miyazaki, Japan.

Materials

Gratitude. The GQ has already demonstrated sound psychometric properties in English-speaking adult samples (e.g., Kashdan, Mishra, Breen, & Froh, 2009; McCullough, et al., 2002; Wood, Joseph, & Maltby, 2009). As can be seen in Table 1, there are six items and each is rated from 1 (*strongly disagree*) to 7 (*strongly agree*) in a Likert-type scale. After obtaining permission to develop a Japanese version of the GQ from the authors of the GQ, a translation assistant with proficiency in English and I translated it to Japanese, then revised it five times to create more natural Japanese sentences. Then, it was back-translated to English by a bilingual English speaker who is an instructor of English and Linguistics with Japanese undergraduate students. Finally, the translation assistant and I confirmed the equivalence between the original and the back-translated versions. Participants rated each item in the same way as the original GQ did.

Hope. The Hope Scale (Snyder, et al., 1991) has 12 items. Among them, eight items are intended to measure two dimensions of hope: agency and passways, and with the four remaining items being fillers. The dimension of agency refers “a sense of successful determination in meeting goals in the past, present, and future” (Snyder, et al., 1991, p. 570) and the dimension of passways means “a sense of being able to generate successful plans to meet goals” (Snyder, et al., 1991, p. 570). Each item is rated from 1 (*definitely false*) to 4 (*definitely true*) in a Likert-type scale. The scale has already demonstrated excellent psychometric properties in English speaking samples (Snyder, 2000). Shinohara and Katsumata (2000, 2001) translated the scale to Japanese in order to use it for validation of their newly created KU competence scale for elementary school students (Shinohara & Katsumata, 2000) and junior high school students (Shinohara & Katsumata, 2001). From samples of 526 elementary school students and 701 junior high school students, they conducted factor analyses of the Japanese hope scale to test its construct validity. They repeatedly found two major factors that had significant loadings of the target items. They reported Cronbach’s alpha coefficients as follows: .671 (agency), .651 (passways) and .760 (total score) from the elementary school student sample and .678 (agency), .657 (passways) and .754 (total score) from the junior high school student sample. Participants rated each item in the same way as the original scale did.

Subjective Happiness. Lyubomirsky and Lepper (1999) developed the Subjective Happiness Scale (SHS) to measure global subjective happiness. The SHS has four items and each is rated as a 7-point Likert-type scale. In 14 studies with 2,732 participants, the scale demonstrated excellent psychometric properties. Shimai, Otake, Utsuki, Ikemi, and Lyubomirsky (2004) developed a Japanese SHS and tested its psychometric properties with 364 Japanese undergraduate students. The Japanese SHS demonstrated a coefficient alpha of .82 and a 5-week test-retest correlation coefficient of .86. Also, it exhibited adequate validity. In keeping with the hypothesis, a latent factor that had significant loadings from all the items emerged from a factor analysis. It correlated positively with self-esteem and positive health and negatively with physical symptoms, anxiety and sleeplessness, problems in social activity, and depression. Participants rated each item in the same way as the original SHS did.

Life Satisfaction. Diener, Emmons, Larsen, and Griffin (1985) created the Satisfaction With Life Scale (SWLS), which has five items that are supposed to measure cognitive aspects of subjective well-being. Each item is rated from 1 (*strongly disagree*) to 7 (*strongly agree*) in a Likert-type scale. The scale’s reliability and validity have already been established by many studies (see Pavot & Diener, 1993, for a review). Sumino (1994) translated the SWLS to Japanese and tested its psychometric properties in five different studies with Japanese samples. The factor analysis found a latent factor with significant loadings from all the items, as it was hypothesized. The construct validity was demonstrated with significant correlations with five relevant scales (e.g., happiness, self-esteem, depression). The Japanese SWLS evidenced sound internal consistency in 200 undergraduate sample ($\alpha = .84$) and 72 middle-age adult sample ($\alpha = .90$). It exhibited a test-retest correlation coefficient of .80 with a 4-week interval. Participants rated each item in the same way as the original SWLS did.

Optimism. The Life Orientation Test-Revised (LOT-R) by Scheier, Carver, and Bridges (1994), has ten items and each item is rated from 0 (*strongly disagree*) to 4 (*strongly agree*) in a Likert-type scale. Among these items are four filler items. It demonstrated sound internal consistency ($\alpha = .78$) and test-retest correlation coefficients that ranged from .56 (24

months) to .79 (28 months). The LOT-R evidenced high correlations with the scales of self-mastery, anxiety, self-esteem, and neuroticism. Regarding the results of factor analyses, they reported two different solutions: one factor model and two factor model. Although Scheier, et al. supported the former because they viewed “optimism and pessimism as opposite poles of the same dimension” (p. 1076), both models “provided an acceptable fit to the observed data” (p. 1076). The LOT-R has established solid psychometric properties in various studies (see Carver, Scheier, & Segerstrom, 2010, for a review). Sakamoto and Tanaka (2002) developed a Japanese version of the LOT-R and tested its psychometric properties using 668 Japanese undergraduate students. Each item of the Japanese LOT-R is rated from 1 (*do not think so at all*) to 5 (*strongly think so*) in a Likert-type scale. They reported a coefficient alpha of .62 and a test-retest correlation coefficient of .84 with a 3-week interval. Results of the CFA indicated superior model fit of the two factor solutions over the one factor solution. Sakamoto and Tanaka (2002) admitted that they could not support the two factor solutions strongly due to a high correlation between the two factors ($r = -.79$). Hashimoto and Koyasu (2011) conducted the CFA of the Japanese LOT-R using 337 undergraduate students and selected the one factor solution instead of the two factor solutions because of (a) low Cronbach’s alpha coefficients for the two factors, (b) a high correlation between the two factors, and (c) two of the six items received influences from both factors. They reported a coefficient alpha of .61. Although the Japanese LOT-R indicated low Cronbach’s alpha coefficients, it demonstrated sound construct validity (Hashimoto & Koyasu, 2011; Kawahito & Otsuka, 2010).

Positive and Negative Affect. Watson, Clark, and Tellegen (1988) created the Positive and Negative Affect Schedule (PANAS) to measure both positive and negative emotions. There is a list of 20 adjectives and participants rate them from 1 (*very slightly or not at all*) to 5 (*extremely*) as their emotional state in a Likert-type scale. The PANAS is able to measure participants’ emotional state of different time (e.g., this moment, today, past few days, week, past few weeks, year, and general) according to the needs of the researchers. The PANAS has already demonstrated an excellent reliability and validity in a large sample of English speakers (Crawford & Henry, 2004). Sato and Yasuda (2001) translated the PANAS and tested its validity and reliability. The factor analysis found two major factors that had significant loadings from many of the target adjectives. Nevertheless, two adjectives for negative affect were excluded due to their low loadings (i.e., lower than .30). Also, two adjectives for positive affect were excluded due to (a) negative influence on Cronbach’s alpha coefficient or (b) relatively high loading on a negative affect factor. The final version of the Japanese PANAS has eight adjectives for positive affect and eight adjectives for negative affect and the participants rate each adjective from 1 (*does not apply to me at all*) to 6 (*apply to me extremely*) in a Likert-type scale. It exhibited strong internal consistency for both positive affect ($\alpha = .90$) and negative affect ($\alpha = .91$).

Procedure

After obtaining institutional review board approval to collect data, five other faculty members and I invited undergraduate students to participate the research. At the end of the classes, the survey sheets with relevant scales (i.e., gratitude, subjective happiness, optimism, life satisfaction, hope, and positive and negative affect) and the informed consent were given to students who wished to participate. When the students returned answered survey sheets, a small packet of chocolate was given to each participant in appreciation for their involvement. It took less than 20 minutes in the whole process. Four weeks later, these students were invited to fill out the GQ again. When they returned the answered GQ, another small packet

of chocolate was given again as in appreciation for their involvement. It took less than several minutes in the whole process.

Results

In order to answer the research question and test the fourth hypothesis, I conducted confirmatory factor analyses (CFAs) by using the AMOS version 20. In keeping with West, Finch, and Curran (1995), I chose maximum likelihood estimation because all the relevant variables did not exhibit non-normality (i.e., $-2 < \text{skewness} < 2$, $-7 < \text{kurtosis} < 7$).

Table 1 described the means, standard deviations, standardized estimates, errors for estimates, and p values of the six items of the GQ. Except for the sixth item, all five other items loaded significantly on a latent factor. Similar to the Chinese GQ (Chen, et al., 2008), the sixth item indicated virtually no loading (standardized factor loading = .02, *ns*). The model fit indices were as follows; $\chi^2(9) = 14.79$, $p = .10$, normed fit index (NFI) = .92, comparative fit index (CFI) = .96, root mean square error of approximation (RMSEA) = .06, Akaike Information Criterion (AIC) = 50.79, and expected cross-validation index (ECVI) = 0.25. I surmised that removal of the sixth item would result a better model fit and conducted the second CFA on the remaining five items. The standardized factor loadings and p values for these five items did not change from the results from the first CFA. The model fit indicated improvement; $\chi^2(5) = 10.96$, $p = .05$, NFI = .94, CFI = .96, RMSEA = .08, AIC = 40.96, ECVI = 0.20. In accordance to the model fit criteria of CFA that were recommended by Stevens (1996, see pp. 402-407), I regarded the one-factor model with five items as more valid than the original one-factor model with six items. Thus, the Japanese GQ became the 5-item version.

In order to test the first three hypotheses, I calculated (a) Pearson's correlation coefficients between gratitude and the theoretically relevant variables (i.e., subjective happiness, optimism, life satisfaction, hope, and positive and negative affects), (b) a coefficient alpha, and (c) a test-retest correlation coefficient by using the SPSS version 19.

As shown in Table 2, the 5-item version of the Japanese GQ was negatively correlated with negative affect ($r = -.31$, $p < .01$) and positively correlated with subjective happiness ($r = .48$, $p < .01$), optimism ($r = .42$, $p < .01$), life satisfaction ($r = .47$, $p < .01$), hope (pathways) ($r = .40$, $p < .01$), hope (agency) ($r = .46$, $p < .01$), and positive affect ($r = .23$, $p < .05$). Cronbach's alpha coefficient was .70 and test-retest reliability coefficient was .72 ($p < .01$) with a 4-week interval.

The comparative results of CFAs of the two correlated factor solution for the combination items of each relevant scale (i.e., subjective happiness, optimism, life satisfaction, hope, positive affect, and negative affect) and the five items of GQ demonstrated a better model fit than the one factor solution according to the criteria of Stevens (1996). See Table 3 for details. Thus, all the four hypotheses were supported.

Discussion

After observing similar results with the Chinese GQ (Chen, et al., 2008), such as virtually no factor loading of the sixth item and a better model fit of the 5-item version GQ (GQ5) than the original GQ (GQ6), I contacted other researchers who used a translated GQ in gratitude research. No such phenomena were reported in the German version (R. T. Proyer, personal communication, February 8, 2012) and in Farsi (N. Aghababai, personal communication, February 8, 2012).

However, the Polish GQ exhibited a similar problem. The sixth item loaded only .22 and its coefficient alpha reached .67 after removal of the sixth item (M. Kossakowska,

personal communication, February 16, 2012). Dr. Takashi Naito, who used his version of the Japanese GQ in his study (Naito & Sakata, 2010), mentioned similar problems. After the back-translation procedure in Naito's study, the sixth item indicated a low loading on a latent factor and also a coefficient alpha was low. Therefore, he tried an innovative translation of the sixth item. Then, both the factor loadings of these six items and the coefficient alpha improved and reached to levels of significance (T. Naito, personal communication, February 22, 2012).

The sixth item is a reversal item and has a unique sentence structure: A subject is time. From Japanese linguistic viewpoint, this is an unusual sentence structure. The present study utilized one of the common procedures in cross-cultural research: a back-translation method with a committee (i.e., two bilinguals and a native Japanese speaker with high English ability) and decided the equivalence of the both English and Japanese versions as the first priority in the translation process. Dr. Naito speculated that such a Japanese translation of the sixth item could have been interpreted, "I ponder over the grateful actions from others thoroughly for a long time then I started to feel grateful." Thus, it could have tapped a different dimension of gratitude: thoughtful gratitude (T. Naito, personal communication, February 22, 2012).

After presenting the results of this research at the 55th Annual Meeting of the Japanese Association of Educational Psychology, Dr. Kenji Hatori kindly informed me that he also conducted the similar study to the present study (K. Hatori, personal communication, August 23, 2013). Without knowing each other, Dr. Hatori and I separately received translation permissions from Dr. McCullough (i.e., the first author of the original GQ article) and started to test reliability and validity of our own Japanese versions of GQ. Using the data from 199 Japanese undergraduate students, Hatori and Ishimura (2012) found that their GQ was significantly correlated with life satisfaction, optimism, hope, positive affect, subjective happiness, and negatively correlated with depression and envy. Cronbach's alpha coefficient was .75. They also conducted an exploratory factor analysis and reported similar factor loadings of the items to the present study. Although the first, second, fourth, and fifth items loaded over .80, the third item loaded only .36 and there was virtually no factor loading of the sixth item (.06).

The researchers are responsible for presenting solid and reliable results to the public, and thereupon, cannot compromise the precision of psychological measurements that they use. The sixth item has been problematic to various versions of the GQ (i.e., English-speaking youth, and the Chinese, Japanese, and Polish versions, at least). Although an innovative translation of the sixth item may improve the psychometric qualities of the GQ, its equivalence to the original becomes questionable. Scientists should make progress with certainty, instead of moving forward with the slightest doubt. In considering all the available facts, as a tentative conclusion, I recommend using the GQ5, instead of the GQ6, to measure the dispositional gratitude of Japanese undergraduate students.

The Japanese GQ in this particular sample evidenced sound reliability: adequate internal consistency and test-retest stability. It also exhibited solid construct validity with theoretically relevant constructs (i.e., subjective happiness, optimism, life satisfaction, hope, and positive and negative affect) and discriminant validity from the results of the CFAs. In other words, the present study demonstrated that more grateful Japanese undergraduate students were happier, more optimistic, more hopeful, more satisfied with their lives, and felt more positive and less negative affect than the less grateful counterparts, as same as the American students indicated in McCullough, et al. (2002).

Although the factor loading of the third item (i.e., "When I look at the world, I don't see much to be grateful for.") was lower than the others (.28), it was retained. There were two main reasons. First, if that item was removed, the scale might lose its detection ability for

gratitude from different aspects, as Chen, et al. (2008) argued. Second, no other versions of the GQ (i.e., GQs of Chinese, Farsi, German, Polish, and the GQ for English-speaking youth) omitted the third item. In order to communicate the results of Japanese gratitude research on an international basis, the third item must be retained.

There are several shortcomings in this study. First, the sample size is small and all the participants are undergraduate students who attend a particular college in Japan. It is possible that results from this study might be created by an idiosyncrasy of the sample. Future studies using different samples are imperative. Second, the reliability and validity of the Japanese GQ for other populations (e.g., children, adolescents, senior citizens) is unknown. There should be psychometric investigations regarding use with other populations before using it with those who are not undergraduate students. Third, the Japanese GQ can measure only positive portions of Japanese gratitude. There are distinct cultural differences in the conceptualization of gratitude between English and Japanese. In such cases, development of a new scale might be indispensable and worthwhile as a future study (van de Vijver & Leung, 1997). Fourth, the present study measured gratitude with only self-reports. Future gratitude studies should utilize more diverse methods (e.g., observer reports, behavioral measurements, content analyses, and manipulations in experiments).

There are both cultural differences and similarities in gratitude. Thanks to wide usages of the GQ in various languages and countries, it is possible for the researchers around the world to discuss one of the significant aspects of gratitude: a response tendency of positive emotions that are evoked by the help from others. I recommend researchers to use scores from the GQ5 when making cross-cultural comparisons of gratitude, due to problems with the sixth item. The “psychology” we learn and teach in colleges and universities worldwide is mainly based on results from the samples in North American and European countries. I believe that psychology should advance to a new stage that encompasses all the people in this small planet. The GQ would become an excellent tool for researchers in facilitating international and cross-cultural dialogues regarding gratitude, one of the important virtues of our species.

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Table 1*Descriptive Statistics and the Results of Confirmatory Factor Analysis of Each Item of the GQ*

| GQ Item | <i>n</i> | <i>M</i> | <i>SD</i> | Standardized estimate | <i>p</i> |
|---|----------|----------|-----------|-----------------------|----------|
| 1. I have so much in life to be thankful for. | 130 | 6.50 | 0.71 | .85 (.14) | < .001 |
| 2. If I had to list everything that I felt grateful for, it would be a very long list. | 130 | 5.98 | 1.21 | .80 (.54) | < .001 |
| 3. When I look at the world, I don't see much to be grateful for. | 130 | 2.37 | 1.53 | .28 (2.1) | .003 |
| 4. I am grateful to a wide variety of people. | 130 | 5.59 | 1.37 | .49 (1.4) | < .001 |
| 5. As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history. | 130 | 6.02 | 1.26 | .60 (1.0) | < .001 |
| 6. Long amounts of time can go by before I feel grateful to something or someone. | 129 | 4.67 | 1.66 | .02 (2.7) | .803 |

Note. Item 3 and 6 are reverse scored. Values in parentheses are errors for estimates.

Table 2
Psychometric Properties of the Major Variables and Their Correlations

| Variable | <i>n</i> | <i>M</i> | <i>SD</i> | <i>α</i> | 1 | 2 | 3 | 4a | 4b | 5 | 6 | 7 |
|-------------------------|----------|----------|-----------|----------|--------|--------|--------|--------|-------|--------|------|------|
| 1. Gratitude | 130 | 29.7 | 4.20 | .70 | 1.00 | | | | | | | |
| 2. Life Satisfaction | 123 | 19.1 | 6.56 | .83 | .47** | 1.00 | | | | | | |
| 3. Optimism | 123 | 19.0 | 4.25 | .69 | .42** | .47** | 1.00 | | | | | |
| 4a. Hope (Pathways) | 123 | 11.7 | 2.03 | .68 | .40** | .48** | .36** | 1.00 | | | | |
| 4b. Hope (Agency) | 123 | 11.2 | 2.37 | .77 | .46** | .65** | .47** | .66** | 1.00 | | | |
| 5. Subjective Happiness | 122 | 19.5 | 4.16 | .81 | .48** | .68** | .61** | .51** | .56** | 1.00 | | |
| 6. Positive Affect | 114 | 25.7 | 7.97 | .87 | .23* | .44** | .31** | .46** | .47** | .45** | 1.00 | |
| 7. Negative Affect | 114 | 19.5 | 8.42 | .88 | -.31** | -.37** | -.42** | -.24** | -.21* | -.41** | -.06 | 1.00 |

Note. * $p < .05$; ** $p < .01$.

Table 3*Comparison of One Factor Solution With Two Correlated Factors Solution for Each Combined Scale*

| Combined Scales | χ^2 | <i>df</i> | <i>p</i> | NFI | CFI | RMSEA | AIC | ECVI | <i>r</i> |
|---------------------------------------|----------|-----------|----------|-----|-----|-------|--------|------|----------|
| 1a. Gratitude & Life Satisfaction (1) | 127.36 | 35 | < .001 | .73 | .78 | .11 | 187.36 | 0.91 | |
| 1b. Gratitude & Life Satisfaction (2) | 53.66 | 34 | .017 | .88 | .95 | .05 | 115.66 | 0.56 | .59*** |
| 2a. Gratitude & Happiness (1) | 154.42 | 27 | < .001 | .65 | .68 | .15 | 208.42 | 1.01 | |
| 2b. Gratitude & Happiness (2) | 61.94 | 26 | < .001 | .86 | .91 | .08 | 117.94 | 0.57 | .48*** |
| 3a. Gratitude & Optimism (1) | 132.51 | 44 | < .001 | .63 | .70 | .10 | 198.51 | 0.96 | |
| 3b. Gratitude & Optimism (2) | 63.49 | 43 | .023 | .82 | .93 | .05 | 131.49 | 0.64 | .44*** |
| 4a. Gratitude & Hope (Agency) (1) | 124.61 | 27 | < .001 | .68 | .71 | .13 | 178.61 | 0.86 | |
| 4b. Gratitude & Hope (Agency) (2) | 72.99 | 26 | < .001 | .81 | .86 | .09 | 128.99 | 0.62 | .54*** |
| 5a. Gratitude & Hope (Passways) (1) | 91.94 | 27 | < .001 | .69 | .74 | .11 | 145.94 | 0.71 | |
| 5b. Gratitude & Hope (Passways) (2) | 47.28 | 26 | .007 | .84 | .92 | .06 | 103.28 | 0.50 | .47*** |
| 6a. Gratitude & Positive Affect (1) | 262.66 | 65 | < .001 | .59 | .64 | .12 | 340.66 | 1.65 | |
| 6b. Gratitude & Positive Affect (2) | 127.96 | 64 | < .001 | .80 | .88 | .07 | 207.96 | 1.01 | .27** |
| 7a. Gratitude & Negative Affect (1) | 302.14 | 65 | < .001 | .58 | .62 | .13 | 380.14 | 1.84 | |
| 7b. Gratitude & Negative Affect (2) | 163.71 | 64 | < .001 | .77 | .84 | .09 | 243.71 | 1.18 | -.22* |

Note. Values in parentheses are numbers for factor solution. Happiness means subjective happiness. NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; AIC = Akaike Information Criterion; ECVI = expected cross-validation index; *r* = correlation between two latent factors; * *p* < .05; ** *p* < .01; *** *p* < .001.

Appendix

日本語版感謝尺度

以下の基準を手引きとして使い、あなた自身がどれくらい各陳述に当てはまるかを示すために各陳述の横に数字を記入してください。

- 1 = まったく当てはまらない
- 2 = 当てはまらない
- 3 = あまり当てはまらない
- 4 = どちらともいえない
- 5 = 少し当てはまる
- 6 = 当てはまる
- 7 = 大変よく当てはまる

- _____ 1. 私には自分の人生の中で感謝することがたくさんある。

- _____ 2. もし、自分が感謝を感じていることを全てリストにあげなければなら
ないならば、それはとても長いリストになるだろう。

- _____ 3. 私が世の中を見るとき、感謝すべきことはあまり見当たらない。

- _____ 4. 私は広範囲にわたる多種多様な人々に感謝している。

- _____ 5. 年齢を重ねるにつれて、私は自分の人生の一部となってきた人々、
出来事、状況について、自分自身がより感謝ができるようになって
いることを発見する。