Research Article

Journal of Positive Psychology and Wellbeing
2017, Volume 1(2): 73–84
www.journalppw.com
ISSN 2587-0130
OPEN ACCESS

Reliability and Construct Validity of the Gratitude Questionnaire 6 Item Form (GQ 6) in a Sample of Japanese College Students

Katsunori Sumi[1]

Abstract

This study examined the reliability and construct validity of the Japanese translation (GQ-6-J) of the Gratitude Questionnaire 6-item form (GQ-6) in a sample of 409 Japanese college students (166 women, 263 men; mean age = 20.6 years, SD = 1.36), who completed the questionnaire on two occasions separated by four weeks. Internal consistency reliability (αs = .92 and .92 for the two administrations, respectively) and test–retest reliability (r = .86) were good. Exploratory and confirmatory factor analyses on the GQ-6-J confirmed the same single factor structure as that of the original GQ-6. A confirmatory factor analysis revealed that the GQ-6-J is distinguishable from the measures of hedonic and eudaimonic well-being. As expected, the GQ-6-J scores were moderately correlated with scores on the measures of hedonic and eudaimonic well-being. Because these results provided support for the reliability and construct validity of the GQ-6-J, the measure is expected to contribute to research in the Japanese population as a suitable instrument to assess dispositional gratitude.

Keywords

Gratitude Questionnaire 6-Item Form, Japanese version, dispositional gratitude, reliability, construct validity, and Japanese college students

[1]Nagoya Institute of Technology**,** Japan.

Corresponding Author: Katsunori Sumi, Nagoya Institute of Technology, Gokiso-cho, Showa-ku, Nagoya, 466-8555, Japan.
Email: sumi@nitech.ac.jp

Article History: Received: 22 June 2017 | Accepted: 9 September 2017 | Published Online: 10 September 20

Gratitude has been widely conceptualized as including a moral virtue, an emotion, and an affective trait (Emmons, McCullough, & Tsang, 2003; McCullough, Emmons, & Tsang, 2002). Of these conceptualizations, gratitude as an affective trait, or dispositional gratitude, can be defined as a stable tendency to experience gratitude as an emotion (Emmons et al., 2003; McCullough et al., 2002; Watkins, 2014), and it is characterized by four facets or qualities, namely, intensity, frequency, span, and density of grateful experiences in people's lives (Bono, Emmons, & McCullough, 2004; Froh, Fan, Emmons, Bono, Huebner, & Watkins, 2011; McCullough et al., 2002).

The moral affect theory (McCullough, Kilpatrick, Emmons, & Larson, 2001; McCullough, Kimeldorf, & Cohen, 2008) is one of the major theoretical perspectives on gratitude (Fincham & Beach, 2010). Referring to gratitude as a moral affect, this theory supposes that gratitude has the following three prosocial or moral functions: (1) a detector of benefitting from others, (2) a reinforcer of prosocial behavior, and (3) a motivator of prosocial behavior. The moral affect theory has received empirical support from extensive research (Emmons, 2008; Fincham & Beach, 2010; McCullough et al., 2001, 2008; Watkins, 2014).

Gratitude has been extolled as a beneficial influence on social life and well-being across times and cultures (Emmons et al., 2003; Watkins, 2014; Wood et al., 2010). The relationship between gratitude and well-being is also supported in the theoretical models of gratitude (Wood, Froh, & Geraghty, 2010). For example, the moral affect theory (McCullough et al., 2001) suggests that gratitude, like other positive emotions, is relevant for well-being. Moreover, in accordance with this theory, social ties developed by dispositional gratitude would increase coping resources, which in turn could promote well-being (McCullough et al., 2001). In recent years, accumulated empirical findings strongly support a close relationship between dispositional gratitude and well-being (Emons & Mishra, 2011; Watkins, 2014; Wood et al., 2010). Based on numerous empirical findings, it has been proposed that gratitude and well-being form a virtuous cycle that describes the way that one develops and improves the other (Watkins, 2014).

Although a number of studies have provided empirical support for the contribution of gratitude to adaptation and health, few have considered the contribution of dispositional gratitude among Japanese people. A useful Japanese measure to assess dispositional gratitude is obviously required. Moreover, a Japanese version of a well-validated and widely used measure of dispositional gratitude would facilitate examining the cultural universality of the construct. A short measure of dispositional gratitude would be of use to researchers. The Gratitude Questionnaire 6-item form (GQ-6), developed by McCullough et al. (2002), meets these requirements. It is the most promising self-report measure of dispositional gratitude (Snyder, Lopez, & Pedrotti, 2011). The GQ-6 is designed to assess individual differences in the tendency to experience gratitude in daily life, and is available in several languages. The items of the GQ-6 reflect the four facets of dispositional gratitude.

The original GQ-6 has exhibited adequate internal consistency reliability (Cronbach's alphas = .76 to .87; McCullough et al., 2002; McCullough, Tsang, & Emmons, 2004), and high temporal stability over approximately three months (r = .59 and .73 for two samples of undergraduate students; Wood, Maltby, Gillett, Linley, & Joseph, 2008). Further, a single factor structure for the GQ-6 has been supported by exploratory and confirmatory factor analyses (McCullough et al., 2002). The discriminant validity of the GQ-6 was indicated by the results (using a confirmatory factor analysis)

of the factorial independence of the GQ-6 from measures of related constructs, including life satisfaction, positive and negative affect, happiness, and optimism (McCullough et al., 2002). These measures of the related constructs showed moderate correlations with the GQ-6 (|*r*|s = .31 to .53; McCullough et al., 2002). In addition, convergent validity was supported through a correlation with peer-reports of dispositional gratitude (McCullough et al., 2002) and with scores on other gratitude scales (Froh et al., 2011).

However, a few studies have observed a problem with the factor structure of the GQ-6. Specifically, two studies (Chen, Chen, Kee, & Tsai, 2009; Froh, Fan, Emmons, Bono, Huebner, & Watkins, 2011) have found poor factor loadings for Item 6: "Long amounts of time can go by before I feel grateful to something or someone" (reverse-scored item). As a result, these studies developed a 5-item scale by excluding Item 6.

The purpose of the present study was to translate the GQ-6 into Japanese and to provide preliminary data to support the utility of the translation (GQ-6-J). The sample population for this study was college students, as a similar sample was used for the development of the original version (McCullough et al., 2002) and the Chinese version (Chen et al., 2008). Test–retest reliability was examined over a 4-week period. Exploratory and confirmatory factor analyses were performed to identify the factor structure underlying the GQ-6 items. This study expected to observe the same single factor structure in the GQ-6-J as that reported by McCullough et al. (2002). It was presumed that this factor structure would have temporal stability after retesting four weeks after initial testing.

The construct of dispositional gratitude has been considered as distinct from that of well-being (Chen et al., 2009; McCullough et al., 2002, 2004). Research has evidenced that the GQ-6 is distinct from many measures of well-being (McCullough et al., 2002). Therefore, the discriminant validity of the GQ-6 would be supported by a good fit of a two-factor model with the GQ-6 and well-being measure as separate factors, and the superiority of the two-factor model over a one-factor model that combines the GQ-6 with the well-being measure. In accordance with the distinction between two types of well-being, hedonic and eudaimonic (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001), well-being was assessed using measures of life satisfaction as a cognitive component of hedonic well-being, positive and negative affect as affective components of hedonic well-being, and psychosocial flourishing as eudaimonic well-being (Diener, Oishi, & Lucas, 2003; Ryan & Deci, 2001; Ryff, 1989). On the other hand, theoretical arguments and empirical findings have shown that dispositional gratitude has reliable relationships with well-being (Emons & Mishra, 2011; McCullough et al., 2002, 2004; Watkins, 2014; Wood et al., 2010). Therefore, it was expected that GQ-6 scores would be moderately and positively correlated with life satisfaction, positive affect, and psychosocial flourishing, and negatively correlated with negative affect.

Method

Participants

A total of 409 Japanese second-year to fourth-year students from two colleges in Japan participated (166 women, 263 men; ages 18 to 27 years, M = 20.6, SD = 1.36). They studied engineering or cross-

cultural studies. All the participants voluntarily participated in this study, which was independent of their courses.

Measures

Gratitude Questionnaire 6-Item Form. The original GQ-6 was translated from English to Japanese by two bilingual professors using a translation and back-translation procedure (Brislin, 1970). One psychology professor translated the items from English to Japanese, and the other translated it from Japanese to English. Then, two psychology researchers rated the consistency between the translation and the back translation. This process was repeated until an acceptable degree of consistency was achieved. The items of the GQ-6 are written in plain words and they express experiences of gratefulness and appreciation in daily life that are easy to understand for Japanese people. Therefore, cultural relevant and item difficulty accounted for little in the translation process. Six graduate and undergraduate students were asked to assess the difficulty of understanding the translated items and the relevance of the items to their life. As a result, they reported no problem with the items and confirmed their clarity.

Each GQ-6 item is rated on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Four of the items were positively worded (e.g., "I am grateful to a wide variety of people"), while the remaining two items were negatively worded and were reverse scored (e.g., Item 6). Possible scores range from 6 to 42, with higher scores indicating a higher level of dispositional gratitude.

Well-being measures. The four indicators of well-being were assessed using the Japanese versions of the following measures.

Satisfaction with Life Scale. The 5-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) was used to assess life satisfaction as a cognitive component of hedonic well-being (e.g., "I am satisfied with my life"). Although the original version of the Satisfaction with Life Scale (Diener, et al., 1985) uses a 7-point response format, the Japanese version (Sumi, 2008) uses a 5-point response format ranging from 1 (strongly disagree) to 5 (strongly agree). Acceptable internal consistency reliability (α = .84) was found (Sumi, 2008). An exploratory factor analysis of the Japanese version revealed a single factor solution, indicating good factorial validity (Sumi, 2008). Convergent and discriminant validity has been supported based on correlations with measures of related constructs, including depression and positive and negative affect (Sumi, 2008, 2014).

Scale of Positive and Negative Experience. Affective components of hedonic well-being were assessed using the 12-item Scale of Positive and Negative Experience (Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, & Biswas-Diener, 2010), which comprises the positive affect and negative affect scales. Each scale consists of a list of 6 adjectives (e.g., happy, and sad). Respondents indicate the degree to which each adjective describes them during the past four weeks, using a 5-point response format ranging from 1 (very rarely or never) to 5 (very often or always). The Japanese versions (Sumi, 2013, 2014) of these scales have exhibited adequate internal consistency and test-retest reliability over one month (αs= .86 to .93; rs = .60 and .57; Sumi, 2013, 2014). An exploratory and confirmatory factor analysis showed a two factor structure, supporting the factorial validity of the

Japanese version (Sumi, 2013). Convergent and discriminant validity were supported by correlations with several well-being measures (Sumi, 2013).

Flourishing Scale. The 8-item Flourishing Scale (Diener et al., 2010) was used to assess psychosocial flourishing as an indicator of eudaimonic well-being (e.g., "I lead a purposeful and meaningful life"). This measure uses a 7-point response format ranging from 1 (strongly disagree) to 7 (strongly agree). The Japanese version of the measure (Sumi, 2013, 2014) has good internal consistency (αs= .94 to .95) and test-retest reliability over one month (r = .87; Sumi, 2013, 2014). The validity of a one-factor model for the Japanese version was supported by an exploratory and confirmatory factor analysis (Sumi, 2013). Convergent and discriminant validity was confirmed through correlations with several well-being measures (Sumi, 2013).

Data analyses

First, to assess the reliability of the GQ-6-J, internal consistency and temporal stability, corrected item-total correlations, Cronbach's alphas, and correlation between GQ-6-J scores at Time 1 and Time 2 were calculated. Second, the factor structure of the GQ-6-J was examined using an exploratory and confirmatory factor analysis for Time 1 and Time 2 data. Specifically, after participants were divided into two subsamples, the exploratory factor analysis was conducted on the data from one subsample. The confirmatory factor analysis was subsequently conducted on the data from the other subsample. Third, discriminant validity was examined by testing a discrimination of the GQ-6-J from the well-being measures using confirmatory factor analysis. Finally, to provide further information about the construct validity of the GQ-6-J, correlations between scores on the GQ-6-J and the well-being measures were examined. The problem concerning Item 6 was approached by assessing Cronbach's alphas excluding Item 6 as well as the factor loading for Item 6.

Procedure of questionnaire administration

After obtaining informed consent from the participants, questionnaires were administered by a teacher, outside class. All participants completed the GQ-6-J twice, separated by a 4-week interval (Time 1 and Time 2). All other measures were administered only at Time 1.

Results

Internal consistency and temporal stability

Table 1 shows the means, standard deviations, range of scores, absolute values of range of corrected item-total correlations, and Cronbach's alphas for the GQ-6-J at Time 1 and Time 2. All corrected item-total correlations were high (r = .68 to .88). Cronbach's alphas were quite high (.92 for both Time 1 and Time 2). These Cronbach's alphas were the same as the values for the five items when excluding Item 6 at Time 1 and Time 2 (.92 and .92, respectively). Additionally, there was a high correlation between GQ-6-J scores at Time 1 and Time 2 (r = .86, 95% confidence interval = .83, .88).

Table 1. Means, standard deviations, range of scores, and Cronbach's α for GQ-6-J at Time 1 and Time 2 (N = 409)

	M	*SD*	Range of Scores	Range of CITC	Cronbach's α
Time 1	32.67	5.79	11 - 42	.71 - .88	.92
Time 2	32.49	5.73	11 - 42	.68 - .86	.92

Note. Range of CITC = absolute values of range of corrected item-total correlations

Factor structure

To examine the factor structure of the GQ-6-J, participants were randomly divided into two subsamples of approximately equal size, i.e., Sample 1 (n = 205) and Sample 2 (n = 204). There was no significant difference between the groups with regard to sex, $\chi^2(1, N = 409) = .131$, $p > .05$, and age, $t\ (407) = .31$, $p > .05$. For Sample 1, exploratory factor analyses using principal axis factoring were performed on the data collected at the two administrations of the questionnaire. For Time 1 and Time 2 data, the Kaiser-Meyer-Olkin measures of sampling adequacy were .91 and .91, and Bartlett's tests of sphericity were 901.02 and 962.49 (*p*s < .001), respectively. These results indicated that both data sets were appropriate for use for the factor analyses. The exploratory factor analyses on the data from each administration yielded only one factor with eigenvalues above 1.0, which explained 67.63% and 69.08% of the total variance at Time 1 and Time 2, respectively. Eigenvalues of the first two factors were 4.37 and 0.47 at Time 1, and 4.44 and 0.54 at Time 2. An examination of the scree plots also supported the one factor solution. As shown in Table 2, absolute values of the factor loadings of the six items were all more than .70.

Table 2. Factor loadings for exploratory and confirmatory factor analysis at Time 1 and Time 2

Item No.	Exploratory Factor Analysis of Sample 1 (*n* = 205)		Confirmatory Factor Analysis of Sample 2 (*n* = 204)[a]	
	Time 1	Time 2	Time 1	Time 2
1	.86	.89	.88	.87
2	.83	.90	.89	.88
3	-.80	-.77	-.73	-.80
4	.93	.90	.92	.91
5	.73	.77	.77	.76
6	-.77	-.75	-.69	-.66

Note. Item 3 and 6 are reverse-scored items. [a]For confirmatory factor analyses, standardized factor loadings are shown. All the factor loadings are significant at the .01 alpha level.

To test the fit of the single factor model, confirmatory factor analyses were conducted using data from Sample 2 at Time 1 and Time 2. The goodness of fit indices (Table 3) showed an acceptable fit between the single factor model and the data. Table 2 also includes the standardized factor loadings from the confirmatory factor analyses. All absolute values of the factor loadings were over .66 and were statistically significant (*p*s < .001). Factor loadings for Item 6 were also sufficiently high (.69 and .66 for Time 1 and Time 2, respectively).

Table 3. Goodness of fit indices for Sample 2 at Time 1 and Time 2 (n = 204)

	χ^2	*df*	GFI	AGFI	RMSEA	SRMR	NFI	CFI
Time 1	23.45**	9	.96	.92	.09	.04	.97	.98
Time 2	21.25*	9	.97	.92	.08	.03	.98	.99

Note. GFI = goodness of fit index; AGFI = adjusted goodness of fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; NFI = normed fit index; CFI = comparative fit index. *$p < .05$, **$p < .01$.

Discrimination from the well-being measures

Confirmatory factor analyses were performed to examine the one-factor and two factor models of the GQ-6-J with each of the four well-being measures (i.e., Satisfaction with Life Scale, Positive Affect scale and Negative Affect scale of the Scale of Positive and Negative Experience, and Flourishing Scale) at Time 1. As shown in Table 4, a good fit to the data was observed for all the two-factor models, with the GQ-6-J and corresponding well-being measure as two separate factors. In contrast, all the one-factor models that combined the items of the GQ-6-J and corresponding well-being measure did not have a good fit on all indices. These results suggested that the GQ-6-J constituted a distinct factor from the hedonic and eudaimonic well-being measures.

Table 4. Goodness of fit indices for one- and two-factor models

Well-being Measure	χ^{2a}	df	GFI	AGFI	RMSEA	SRMR	NFI	CFI
Satisfaction with Life Scale	533.60	44	.76	.64	.17	.14	.78	.78
	92.95	43	.96	.94	.05	.04	.96	.98
Positive Affect scale	1647.43	54	.48	.25	.27	.29	.61	.62
	131.92	53	.95	.93	.06	.03	.97	.98
Negative Affect scale	1142.66	54	.58	.39	.22	.23	.62	.63
	93.18	53	.96	.95	.04	.04	.97	.99
Flourishing Scale	799.75	77	.70	.59	.15	.12	.75	.77
	203.59	76	.93	.90	.07	.06	.94	.96

Note. The results of the analysis for the one- and two-factor models presented in the upper side and lower side of the row for each of the well-being measures, respectively. GFI = goodness of fit index; AGFI = adjusted goodness of fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; NFI = normed fit index; CFI = comparative fit index. [a]All significance probabilities are less than .001.

Correlations with well-being measures

Table 5 shows Pearson correlations between scores on the GQ-6-J at Time 1 and Time 2 and well-being measures at Time 1. GQ-6-J scores at Time 1 were positively correlated with scores on the Satisfaction with Life Scale, Positive Affect scale, and Flourishing Scale, and negatively correlated with Negative Affect scale scores at Time 1. These correlations were generally moderate ($|rs| = .25$ to .52). Compared with these correlations, those between scores on the GQ-6-J at Time 2 and the well-being measures at Time 1 were slightly weaker.

Table 5. Pearson correlations between GQ-6 and the other measures

	M	*SD*	Cronbach's α	*r1*[a]	95% CI	*r2*[a]	95% CI
Satisfaction with Life Scale	14.19	3.81	.78	.33	[.24, .41]	.31	[.22, .40]
Positive Affect scale	21.89	4.58	.85	.37	[.29, .45]	.33	[.24, .41]
Negative Affect scale	16.77	4.83	.87	-.25	[-.34, -.16]	-.21	[-.30,-.11]
Flourishing Scale	36.81	6.78	.83	.52	[.45, .59]	.45	[.37, .53]

Note. r^1 = Pearson correlations with GQ-6 scores at Time 1; r^2 = Pearson correlations with GQ-6 scores at Time 2; CI = confidence interval. [a]All significance probabilities are less than .001.

Discussion

The present study aimed to conduct a preliminary assessment of the reliability and construct validity of the translated GQ-6 into Japanese using data from Japanese college students. The findings of this study suggest that the GQ-6-J has adequate reliability, as does the original GQ-6 (McCullough et al., 2002). The translated measure showed good internal consistency reliability with high Cronbach's alphas, which were slightly higher than those of the original GQ-6 (McCullough et al., 2002, 2004). Test–retest reliability over four weeks was acceptable, with a high correlation between the scale scores at Time 1 and Time 2. This correlation was higher than the correlation over a three-month interval that was reported by Wood et al. (2008).

The present results also support the construct validity of the GQ-6-J. A series of exploratory and confirmatory factor analyses revealed that the GQ-6-J has the same single factor structure as the original GQ-6 (McCullough et al., 2002). This result establishes the factorial validity of the GQ-6-J. In addition, the temporal stability of the single factor structure was supported by the single factor structure revealed for both Time 1 and Time 2 data. Moreover, a series of confirmatory factor analyses provided support for dispositional gratitude as distinct from hedonic and eudaimonic well-being (as measured using life satisfaction and positive and negative affect, and psychosocial flourishing, respectively). These results are consistent with the findings for the original GQ-6 (McCullough et al., 2002), and therefore supported the discriminant validity of the GQ-6-J. As expected, there were moderate correlations between scores on the GQ-6-J and well-being measures at Time 1. These correlations with measures of well-being, which are distinct but related constructs of dispositional gratitude (Chen et al., 2008; McCullough et al., 2002), provide further support for the construct validity of the GQ-6-J.

Although studies (Chen et al., 2009; Froh et al., 2011) have found poor factor loadings for Item 6, in the present study, the factor loadings for Item 6 were high and comparable to those for the other items. In addition, the obvious disadvantage of Item 6 was not found when evaluating internal consistency reliability and the fit of the single factor model. Therefore, Item 6 may not have a disadvantage for Japanese people.

The results of the present study provide preliminary support for the use of the GQ-6-J as a measure of dispositional gratitude. However, several limitations of this study require attention. First, further study is warranted to test the reliability and construct validity of the GQ-6-J in other populations such as workers or the elderly. Second, examining test–retest reliability over a longer

interval is necessary. Finally, further assessment of the validity of the GQ-6-J, including predictive and convergent validity, will be important. These findings would provide additional support for the psychometric properties of the GQ-6-J.

Declaration of Conflicting Interests

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

Funding

This research was supported by JSPS KAKENHI Grant Number 15K04121.

References

Bono, G., Emmons, R. A., & McCullough, M. E. (2004). Gratitude in practice and the practice of gratitude. In P. Alex Linley and Stephen Joseph (Eds.), *Positive Psychology in Practice* (pp. 464-481). Hoboken, NJ: John Wiley & Sons.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216. doi:10.1177/135910457000100301

Chen, L. H., Chen, M. Y., Kee, Y. H., & Tsai, Y. M. (2009). Validation of the Gratitude Questionnaire (GQ) in Taiwanese undergraduate students. *Journal of Happiness Studies*, 10(6), 655-664. doi:10.1007/s10902-008-9112-7

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. doi:10.1207/s15327752jpa4901_13

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, *54*(1), 403-425. doi: 10.1146/annurev.psych.54.101601.145056

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, *97*(2), 143–156. doi: 10.1007/s11205-009-9493-y

Emmons, R. A. & Mishra, A. (2011). Why gratitude enhances well-being: What we know, what we need to know. In K. M. Sheldon, T. B. Kashdan, & M. F. Steger (Eds.), *Designing positive psychology: Taking stock and moving forward* (pp. 248-262). New York, NY: Oxford University Press.

Emmons, R. A. (2008). Gratitude, subjective well-being, and the brain. In M. Eid, & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 469-489). New York, NY: Guilford Press.

Emmons, R. A., McCullough, M. E., & Tsang, J. (2003). The assessment of gratitude. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models of measures* (pp. 327-341). Washington, DC: American Psychological Association.

Fincham, F. D., & Beach, S. R. H. (2010). Gratitude and forgiveness in relationships. In J. Simpson & L. Campbell (Eds.), *The Oxford Handbook of Close Relationships* (pp. 638-663). New York, NY: Oxford University Press. doi: 10.1093/oxfordhb/9780195398694.013.0029

Froh, J. J., Fan, J., Emmons, R. A., Bono, G., Huebner, E. S., & Watkins, P. (2011). Measuring gratitude in youth: Assessing the psychometric properties of adult gratitude scales in children and adolescents. *Psychological Assessment*, 23(2), 311-324. doi: 10.1037/a0021590

Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, 82(6), 1007–1022. doi: 10.1037/0022-3514.82.6.1007

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82(1), 112-127. doi: 10.1037/0022-3514.82.1.112

McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin*, 127(2), 249-266. doi: 10.1037/0033-2909.127.2.249

McCullough, M. E., Kimeldorf, M. B., & Cohen, A. D. (2008). An adaptation for altruism: The social causes, social effects, and social evolution of gratitude. *Current directions in psychological science*, 17(4), 281-285. doi: 10.1111/j.1467-8721.2008.00590.x

McCullough, M. E., Tsang, J., & Emmons, R. A. (2004). Gratitude in intermediate affective terrain: Links of grateful moods to individual differences and daily emotional experiences. *Journal of Personality and Social Psychology*, 86(2), 295–309. doi: 10.1037/0022-3514.86.2.295

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), 141–166. doi: 10.1146/annurev.psych.52.1.141

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081. doi: 10.1037/0022-3514.57.6.1069

Snyder, C. R., Lopez, S. J., & Pedrotti, J. T. (2011). *Positive psychology: the scientific and practical explorations of human strengths* (2nd ed.). Thousand Oaks, CA: Sage.

Sumi, K. (2008). Shinri-teki tekiou ni taisuru rakkan-sei ariuha hikan-sei to sosiaru sapoto no kankei [Optimism, pessimism, social support, and psychological adjustment: A test of a mediation model]. *Kyouiku Igaku* [*Journal of Educational and Health Science*], 53(3), 119–125.

Sumi, K. (2013). Reliability and validity of Japanese versions of the Flourishing Scale and the Scale of Positive and Negative Experience. *Social Indicators Research*, 118(2), 601-615. doi: 10.1007/s11205-013-0432-6

Sumi, K. (2014). Temporal stability of the Japanese versions of the Flourishing Scale and the Scale of Positive and Negative Experience. *Journal of Psychology & Psychotherapy*, 4(2), 4:140. doi: 10.4172/2161-0487.1000140

Watkins, P. C. (2014). *Gratitude and the good life: Toward a psychology of appreciation*. New York, NY: Springer.

Wood, A. M., Froh, J. J., & Geraghty, A. W. A. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical psychology review*, 30(7), 890-905. doi: 10.1016/j.cpr.2010.03.005

Wood, A. M., Maltby, J., Gillett, R., Linley, P. A., & Joseph, S. (2008). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality*, 42(4), 854–871. doi: 10.1016/j.jrp.2007.11.003