Chapter #3

A JAPANESE VERSION OF THE TENDENCY TO FORGIVE SCALE
Translation, Reliability and Construct Validity

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ABSTRACT
As a brief measure of trait forgiveness of others, the Tendency to Forgive Scale (Brown, 2003) has been widely used in research. The purpose of the present study was to provide preliminary reliability and construct validity data on the translation of the Tendency to Forgive Scale into Japanese (TTF-J). Data were collected from 320 Japanese college students (38.1% women; mean age 20.82 years, *SD* = 1.11). The one-factor structure of the TTF-J was confirmed with exploratory and confirmatory factor analyses. Both internal consistency reliability and test-retest reliability over a 4-week period were acceptable. The construct validity of the TTF-J was supported by the hypothesized correlations with scores for hedonic and eudaimonic well-being, self-esteem, depression, anxiety, trait empathy, and trait anger. The findings of this study generally supported that the TTF-J is a useful measure of trait forgiveness of others.

Keywords: forgiveness of others, trait forgiveness, measure, Japanese translation, reliability, construct validity.

1. INTRODUCTION

1.1. Forgiveness: Definitions and Measures

Forgiveness has been attracting considerable research attention in the field of psychology over the past few decades (Thompson & Snyder, 2019; Thompson et al., 2005; Tsang & Martin, 2021). Within the field of positive psychology, forgiveness is considered as an important character strength (Peterson & Seligman, 2004). Numerous studies have found links between individual health, well-being, and forgiveness and reported various antecedents, including intrapersonal and interpersonal variables as well as situational, especially transgression-related, variables (Tsang & Martin, 2021; Webb & Toussaint, 2020).

The literature abounds with definitions of forgiveness (McCullough & Root, 2005; Thompson & Snyder, 2019; Worthington, 2020). An accepted definition is a prosocial change in interpersonal motivations after a transgression from negative motivations such as avoidance and revenge to positive motivations such as benevolence (Tsang & Martin, 2021; Worthington, 2020). However, most scholars agree that forgiveness refers to a socially functional process and intrapersonal and prosocial change in thoughts, emotions, motivations, or behaviors (McCullough & Root, 2005; Tsang & Martin, 2021; Worthington, 2020). Furthermore, forgiveness is differentiated from pardoning, condoning, excusing, reconciling, and justifying (Thompson & Snyder, 2019; Tsang & Martin, 2021; Worthington, 2020). This inconsistency of definition may be caused by the multifaceted and complex nature of forgiveness, which involves an interpersonal phenomenon, despite being intrapersonally experienced by individuals (Tsang & Martin, 2021; Worthington, 2020). Indeed, there are

multiple perspectives of forgiveness, including not only trait or dispositional forgiveness and state or situational forgiveness but also forgiveness of others, self-forgiveness, forgiveness of situations, and intergroup forgiveness (Thompson & Snyder, 2019; Tsang & Martin, 2021; Worthington, 2020).

Corresponding to the diversity of definitions, many—and various—measures of forgiveness have been developed (Thompson & Snyder, 2019). The most frequently used forgiveness measures are self-report type to assess aspects of forgiveness, including trait and state forgiveness of others and the self (Thompson & Snyder, 2019; Tsang & Martin, 2021). Additionally, non-self-report type measures for behavioral, physiological, and chemical aspects have been used to indirectly assess forgiveness (Thompson & Snyder, 2019; Worthington et al., 2015). Commonly used self-report type measures include the Enright Forgiveness Inventory (Enright & Rique, 2004) to measure state forgiveness, and the Heartland Forgiveness Scale (Thompson et al., 2005), which has three subscales to assess trait forgivingness of self, others, and situations.

1.2. Tendency to Forgive Scale

Among the measures for diverse types and targets of forgiveness, the present study focuses on self-report measures of trait forgiveness of others. One such measure is the Tendency to Forgive Scale (TTF: Brown, 2003; Brown & Phillips, 2005); it is a brief measure of four items (e.g., "I tend to get over it quickly when someone hurts my feelings") designed "to capture individual differences in the tendency either to let go of one's offense experiences or hold on to them" (Brown, 2003, p. 761). The TTF items ask respondents to report on their typical responses to past offenses for assessing forgiveness as a disposition (Brown & Phillips, 2005). Translations of the TTF are available in several languages, including German (Weinhardt & Schupp, 2011), Chinese (Jia, Liu, & Kong, 2020), and Urdu (Javed, Kausar, & Khan, 2014).

The TTF has good psychometric properties; Brown (2003) reported adequate internal consistency reliability (Cronbach's $\alpha = .82$) and high test-retest reliability over eight weeks ($r = .71$). The TTF scores were correlated positively with scores for self-esteem and agreeableness, and negatively with trait anger, neuroticism, and depression for undergraduate students, supporting construct validity (Brown, 2003). Additionally, individuals' self-ratings on the TTF converged with their ratings by their romantic partners, and higher scores on the TTF were associated with lower accessibility of past offense experiences (Brown, 2003). Convergent validity was supported through a significant correlation with scores on the Transgression Narrative Test of Forgivingness, which is a scenario-based scale of dispositional forgiveness (Berry, Worthington, Parrott, O'Connor, & Wade, 2001), a positive correlation with scores for positive attitudes toward forgiveness, and a negative correlation with dispositional vengeance scores. Additionally, the discriminant validity of the TTF was confirmed through low relations with depression, life satisfaction, and state forgiveness, as a result of regression analysis (Brown & Phillips, 2005).

1.3. Purpose of the Study

The purpose of this study was to translate the TTF into Japanese (TTF-J) using a back-translation process and evaluate preliminary reliability and construct validity of the TTF-J. There is yet no sufficient accumulation of knowledge about forgiveness among Japanese people through questionnaire survey. A Japanese version of the TTF as a brief and coherent measure of trait forgiveness (Brown, 2003) is necessary for research of trait forgiveness of others in Japanese contexts; it is a measure that has been anticipated by practitioners and researchers in Japan.

After evaluating the dimensionality of the TTF-J, internal reliability was assessed using Cronbach's α. Based on the construct measured by the TTF (Brown, 2003) and the factor structure observed in the Chinese version of the TTF (Jia et al., 2020), a one-factor structure was hypothesized for the TTF-J. High test-retest reliability of the TTF-J over shorter retest intervals was expected because of the results of the previous study (Brown, 2003).

To assess construct validity, correlations of the TTF-J scores with scores on other well-validated measures were examined. In this study, following Cohen (1988) and de Vaus (2014), correlation coefficients were classified as low (.10 to .29), moderate (.30 to .49), and high (.50 to .69). As close relationships between forgiveness and well-being have been supported by previous studies (Tsang & Martin, 2021; Webb & Toussaint, 2020), the relationships were essential for the construct validity of the TTF-J. Building on theoretical traditions, well-being was considered as having two dimensions: hedonic and eudaimonic well-being (Deci & Ryan 2008; Ryan & Deci 2001). Hedonic well-being refers to pleasure and happiness, whereas eudaimonic well-being refers to optimal psychological and social functioning. Hedonic well-being was evaluated by assessing the three components of the tripartite model: life satisfaction, positive affect, and negative affect (Deci & Ryan, 2008; Ryan & Deci 2001). Additionally, self-esteem, which is closely linked to well-being (Diener, Oishi, & Ryan, 2013; Michalos, 2004), was employed to assess construct validity. Based on previous studies (Brown, 2003; Brown & Phillips, 2005) and a meta analytic review (Riek & Mania, 2012), it was expected that the TTF-J scores would be positively and low to moderately correlated with scores for life satisfaction, positive affect, eudaimonic well-being, and self-esteem, and negatively and moderately correlated with negative affect scores.

Depression and anxiety are the most common mental health difficulties (Ridley, Rao, Schilbach, & Patel, 2020); their negative relationships with forgiveness have been well-supported by studies (Tsang & Martin, 2021; Webb & Toussaint, 2020). Based on previous results (Brown, 2003; Brown & Phillips, 2005; Riek & Mania, 2012), the TTF-J scores would be negatively and low to moderately correlated with scores on depression and anxiety measures. Among the related factors of forgiveness, empathy and anger have been most frequently examined for association with forgiveness (Tsang & Martin, 2021; Riek & Mania, 2012). In the present study, trait empathy and trait anger as personality dispositions were assessed to examine construct validity. Based on previous studies (Brown, 2003; Brown & Phillips, 2005; Riek & Mania, 2012), the scores for each personality disposition was expected to have a low to moderate correlation with the TTF-J scores. Additionally, the TTF-J scores were expected to be positively and negatively correlated with scores for trait empathy and trait anger, respectively.

All hypothesized correlations for the construct validity of the TTF-J would support the convergence of the TTF-J and related measures. However, because these correlations were not so high as to show redundancy between the TTF-J and the measures, the correlations would also suggest that the TTF-J discriminates with the measures.

2. METHOD

2.1. Participants

The participants included 320 undergraduate students (38.1% women) from two colleges in two large cities in Japan (mean age 20.82 years, *SD* = 1.11, age range 18–28 years). All participants were informed about the purpose of this study, anonymity, and confidentiality. The participants agreed to voluntarily participate in the test sessions and complete the measures.

2.2. Measures

2.2.1. Japanese Translation of the Tendency to Forgive Scale

The original English version of the TTF was translated into Japanese using a back-translation process conceived by referring to several guidelines (e.g., Brislin, 1986; Beaton, Bombardier, Guillemin, & Ferraz, 2000; Sousa & Rojjanasrirat, 2011) with permission from Dr. Ryan P. Brown (personal communication, March 30, 2022). The items of the original version were translated into Japanese by a bilingual professor, and back-translated into English by another bilingual professor. A detailed comparison between the translation and back-translation was performed by two researchers. By repeating this procedure, acceptable consistency was achieved between them. The final translation of this procedure was confirmed by five Japanese graduate and undergraduate students.

The original TTF comprises four 7-point Likert items, with two reverse-scored items, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The items of the Japanese translation were answered using the same Likert scale as the original measure. All the items were summed after two items were reverse-scored, ranging from 4 to 28, with higher scores indicating greater trait forgiveness of others.

2.2.2. Other Measures

(1) Hedonic well-being

Life satisfaction was assessed using the Japanese version of the five-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Sumi, 2020; e.g., "I am satisfied with my life" in Japanese). The items are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on this measure indicate greater life satisfaction. The Japanese version had good internal consistency reliability (Cronbach's αs = .78 and .82), test-retest reliability over a 4-week interval (r = .73), factorial validity of the single factor structure, and convergent and discriminant validity based on correlations with scores on other well-being measures (Sumi, 2020).

Positive affect and negative affect were assessed using the Japanese version of the 12-item Scale of Positive and Negative Experience (Diener et al., 2010; Sumi, 2013, 2014). This measure has two subscales: the six-item positive affect subscale and the six-item negative affect subscale. Each subscale comprises a list of 6 adjectives (e.g., happy and sad). All items are rated on a 5-point Likert scale ranging from 1 (*very rarely or never*) to 5 (*very often or always*). Higher scores reflect more frequent experiences of positive or negative feelings. Both subscales of the Japanese version showed good internal consistency reliability (Cronbach's αs = .86 to .93), test-retest reliability over a 1-month interval (rs = .60 and .57), factorial validity of the separate factor structure, and convergent and discriminant validities evidenced by correlations with scores on other well-being and health-related measures (Sumi, 2013, 2014).

(2) Eudaimonic well-being

The Japanese version of the eight-item Flourishing Scale (Diener et al., 2010; Sumi, 2013, 2014) was used to assess eudaimonic well-being (e.g., "I am a good person and live a good life" in Japanese). The items of this measure include broad and important aspects of psychological functioning and are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate greater eudaimonic well-being. The Japanese version showed good internal consistency reliability (Cronbach's αs = .94 to .95) and test-retest reliability over a 1-month interval (r = .87), factorial validity of the single factor structure, and convergent and discriminant validities supported by correlations with scores on other well-being and health-related measures (Sumi, 2013, 2014).

(3) Self-esteem

As a measure of self-esteem, the Japanese version of the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; Yamamoto, Matsui, & Yamanari, 1982; e.g., "I feel that I'm a person of worth" in Japanese) was used. Each item has a 5-point response format ranging from 1 (*disagree*) to 5 (*agree*). Higher scores indicate greater self-esteem. The Japanese version showed factorial validity supporting the hypothesized one-factor structure (Yamamoto et al., 1982). Additionally, results from an analysis of preliminary data (Sumi, 2015) of 631 Japanese undergraduate students (42.8% women; mean age = 20.13 years, *SD* = 1.41) supported that the Japanese version had good internal consistency reliability (Cronbach's α = .88), test-retest reliability over a 4-week interval (*r* = .82), factorial validity of the single factor structure, and convergent and discriminant validities supported by correlations with scores on the Japanese version of the Satisfaction with Life Scale (*r* = .37), the positive affect subscale (*r* = 37) and negative affect subscale (*r* = -.40) of the Scale of Positive and Negative Experience, the Flourishing Scale (*r* = .58), and the depression (*r* = -.51) and anxiety subscales (*r* = -.35) of the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Sumi, 1997).

(4) Mental health difficulties

Depression and anxiety were assessed by the Japanese versions of the two subscales taken from the Hopkins Symptom Checklist (Derogatis et al., 1974; Sumi, 1997). The depression (e.g., "Feeling no interest in things" in Japanese) and anxiety subscales (e.g., "Feeling tense or keyed up" in Japanese) comprise 11 and seven items, respectively, and assess the frequency of symptoms during the past seven days on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Higher scores indicate more severe symptoms. Acceptable internal consistency reliability, factorial validity of the separate factor structure, and positive correlation with perceived stress were supported for both subscales (Sumi, 1997, 2007). Results of the analysis of preliminary data (Sumi, 2015) indicated the test-retest reliability over a 4-week interval of the depression (*r* = .83) and anxiety subscales (*r* = .75).

(5) Personality disposition

Trait empathy was measured using the 10-item scale, which was constructed to measure an individual's disposition to experience emotional empathy in social life in general for Japanese people (Hatanaka, 2003; e.g., "I sympathize easily with others" in Japanese). These items are rated on a 5-point Likert scale ranging from 1 (*disagree*) to 5 (*agree*). The scale comprises eight reverse-scored items. Higher scores reflect greater trait empathy. Good internal consistency reliability (Cronbach's α = .83) and unidimensionality were supported (Hatanaka, 2003).

To assess trait anger, the Japanese version of the 10-item Trait Anger Scale (Spielberger, 1996; Suzuki & Haruki, 1994; "I am a hotheaded person" in Japanese) was used. This scale assesses the overall tendency of an individual to experience anger under different situations. The items of the Japanese version are rated on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). There are no reverse-scored items. Higher scores indicate greater trait empathy. The Japanese version had good internal consistency reliability (Cronbach's α = .84) and factorial validity of the single factor structure (Suzuki & Haruki, 1994).

2.3. Procedure

After obtaining informed consent from the participants, questionnaires were administered twice, four weeks apart (Time 1 and Time 2). At Time 1, all questionnaires were administered. At Time 2, all participants who participated in the Time 1 survey completed only the TTF-J. Ethical clearance for the study was obtained from the relevant ethics committee.

2.4. Data Analysis

First, the one-factor structure of the TTF-J was examined using factor analyses. For the analyses, participants at Time 1 were randomly, and equally, divided into two subsamples. Using data from one sample, an exploratory factor analysis using principal axis factoring was performed to explore the underlying factor structure of the TTF-J. Thereafter, a confirmatory factor analysis was performed to test the fit of the factor structure using data from the other sample. Second, internal consistency reliability was assessed using Cronbach's α. Third, test-retest reliability was examined through correlations calculated using the data at Time 1 and Time 2. Finally, construct validity was evaluated by examining correlations between scores on the TTF-J and other measures.

3. RESULTS

3.1. Factor Structure

To conduct factor analyses, participants were divided into two subsamples (*n*s = 180): Sample 1 and Sample 2. There was no significant difference between the subsamples in sex, $\chi^2(1, N = 360) = .83$, $p > .05$, and age, $t(407) = .35$, $p > .05$. Exploratory factor analyses were performed on the data for Sample 1 at Time 1 and Time 2. The Kaiser-Meyer-Olkin measures of sampling adequacy were .65 and .68, and Bartlett's tests of sphericity were 138.13 and 127.90 (*p*s < .001) for Time 1 and Time 2, respectively. These results showed that data sets were appropriate for the factor analysis. The results indicated that one factor was extracted with eigenvalues above 1.0, which accounted for 54.75% and 53.94% of the total variance at Time 1 and Time 2, respectively. The eigenvalues of the first three factors were 2.19, 0.79, and 0.66 at Time 1, and 2.16, 0.85, and 0.57 at Time 2. Hence, the one factor solution was also supported by an examination of the scree plot. As shown in Table 1, absolute values of the factor loadings of the four items were all more than .51.

Next, confirmatory factor analyses were performed using data from Sample 2 at Time 1 and Time 2. As showed in Table 2, the goodness of fit indices indicated an acceptable fit of the one-factor model to the data. Table 1 also showed the standardized factor loadings from the confirmatory factor analyses. All absolute values of the factor loadings were more than .49 and statistically significant (*p*s < .001). There was significant difference in the factor loading of Item 4 between Time 1 and Time 2 ($z = 2.12$, $p < .05$).

Table 1.
Factor Loadings for Exploratory Factor Analysis.

Item No.	Exploratory Factor Analysis of Sample 1 (*n* = 160)		Confirmatory Factor Analysis of Sample 2 (*n* = 160)	
	Time 1	Time 2	Time 1	Time 2
1	.75	.80	.65	.81
2	-.70	-.57	-.77	-.56
3	-.57	-.61	-.65	-.59
4	.51	.73	.49	.74

Note. Item 2 and 3 are reverse-scored items. For confirmatory factor analyses, standardized factor loadings are shown. All the factor loadings are significant at $p < .001$.

Table 2.
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	5.49	2	.98	.92	.06	.03	.96	.97
Time 2	2.88	2	.99	.95	.05	.03	.98	.99

3.2. Internal Consistency and Test-Retest Reliability

Table 3 shows the means, standard deviations, range of scores, corrected item-total correlations, Cronbach's αs, and test-retest correlation for the TTF-J at Time 1 and Time 2. There was little statistical difference between Time 1 and Time 2. Corrected item-total correlations were moderate to high (*r*s = .44 to .62). Cronbach's αs were acceptable (.73 and .75, respectively). There was a high correlation between TTF-J scores at Time 1 and Time 2 (*r* = .76).

Table 3.
Means, Standard Deviations, Range, Corrected Item-Total Correlations, Cronbach's αs, and Test-Retest Correlations.

	M	*SD*	Range	Range of CITC	Cronbach's α	Test-retest *r*	95% CI
Time 1	14.80	4.40	2–28	.44–.57	.73	.76	[.71, .80]
Time 2	15.10	4.36	2–28	.49–.62	.75		

Note: Range of CITC = the range of absolute values of corrected item–total correlations. All correlations are significant at $p < .01$.

3.3. Construct Validity

Table 4 shows the correlations between scores on the TTF-J and other measures at Time 1. In general, the TTF-J scores showed the hypothesized correlations with the scores on them, supporting the construct validity of the TTF-J. The TTF-J scores were moderately positively correlated with the scores on the Satisfaction with Life Scale (*r* = .33). Moreover, the TTF-J scores were low and positively correlated with the scores on the Positive Affect scale, Flourishing Scale, and Rosenberg Self-Esteem Scale (*r*s = .14 to .22) and low and negatively correlated with scores on the Negative Affect scale (*r* = -.19). Scores for depression and anxiety were low and negatively correlated with the TTF-J scores (*r*s = -.14 and -.16, respectively). There were low and positive correlation between scores for trait empathy and the TTF-J scores (*r* = .14). The Trait Anger Scale scores were moderately negatively correlated with the TTF-J scores (*r* = -.36).

Table 4.
Correlations between Scores on the TTF-J and Other Measures at Time 1.

Measure	*r*	95% CI	*M*	*SD*	Cronbach's α
Satisfaction with Life Scale	.33**	[.23, .42]	15.94	5.12	.78
Positive affect scale	.22**	[.11, .32]	21.85	4.52	.94
Negative affect scale	-.19**	[-.29, -.08]	17.41	4.75	.84
Flourishing Scale	.22**	[.11, .32]	35.97	7.17	.83
Rosenberg Self-Esteem Scale	.14*	[.03, .25]	32.02	7.09	.86
Depression scale	-.16*	[-.26, -.05]	25.30	9.90	.90
Anxiety scale	-.14*	[-.25, -.03]	15.05	5.09	.77
Trait empathy scale	.14*	[.24, .03]	33.96	6.52	.81
Trait Anger Scale	-.36**	[-.45, -.26]	22.06	5.57	.86

* $p < .05$. ** $p < .01$.

4. DISCUSSION

This study aimed to develop a Japanese version of the TTF, which is a brief and convenient measure of trait forgiveness of others. The results supported the preliminary reliability and construct validity of the Japanese version for the sample of Japanese university students. The results of the factor analyses support the expected one-factor structure. Although the factor structures have been previously confirmed for the Chinese version of the TTF (Jia et al., 2020), further cross-cultural study is needed to assess measurement invariance across cultures (Dong & Dumas, 2020). Additionally, although there was a difference in the factor loading of Item 4 between the two measurement sessions, the results support the temporal stability of the factor structure over a 4-week period.

Cronbach's αs indicated respectable internal consistency reliability of the TTF-J. The coefficients in the present study were below .80 and somewhat lower than the finding of Brown (2003). This result may be because of a greater influence of the small number of items in the measure (Pallant, 2020). As expected, the correlation between TTF-J scores at Time 1 and Time 2 was high. This test-retest correlation over a 4-week period indicates good test-retest reliability because the correlation is slightly higher than test-retest correlation over an 8-week period reported by Brown (2003).

The construct validity of the TTF-J is generally supported by the hypothesized correlations between the scores on the TTF-J and the other measures in the expected direction. The magnitude of these correlations indicates convergence and discrimination between the TTF-J and the other measures. Most scores for hedonic well-being, eudaimonic well-being, and self-esteem had the hypothesized correlations with the TTF-J scores. However, among the three hedonic well-being, the correlation with scores for negative affect was significant but lower than the hypothesized correlation based on previous studies (Riek & Mania, 2012). There were significant and negative correlations between scores on the TTF-J and the measures of depression and anxiety. As also expected, scores for trait empathy and trait anger as personality disposition were significantly correlated with the TTF-J scores. Like scores for negative affect, the correlations with scores for depression, anxiety, and trait empathy were slightly lower than those expected. It is not clear from the present data why these correlations were slightly lower than the findings of previous studies (Brown, 2003; Brown & Phillips, 2005; Riek & Mania, 2012). A cross-cultural approach would clarify these relationships to trait forgiveness of others (Hanke & Vauclair, 2016; Ho & Worthington, 2020; Karremans et al., 2011).

This study has some limitations. First, the study sample was limited to college students. The psychometric properties of the TTF-J should be further examined by using other groups such as workers, the elderly, and clinical samples. Second, time interval for test-retest reliability was four weeks. It is necessary to examine test-retest reliability over a longer time interval such as eight weeks similar to Brown (2003) and one year. Third, the validity of the TTF-J was assessed by examining convergence and discrimination. Further assessment of the validity, including predictive and concurrent validities, will be needed. Despite these limitations, the findings of the present study provide support for the preliminary reliability and validity of the TTF-J. This Japanese measure is a reliable and valid tool for assessing trait forgiveness of others for Japanese speakers as a simple and brief measure with low respondent burden which is available for wide research settings.

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