Running head: RELIABILITY AND VALIDITY OF JAPANESE MAACL-R

Validation of the Japanese Multiple Affect Adjective Check List-Revised

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Abstract

In order to develop a Japanese version of the Multiple Affect Adjective Check List-Revised (MAACL-R), the 66 scored adjectives were translated into Japanese and translated back into English as recommended by Werner & Campbell (1971). Internal consistency ranged from .61 to .92 and four week retest reliability ranged from .60 to .77 on the seven scales (Anxiety, Depression, Hostility, Positive Affect, Sensation Seeking, Dysphoria, and PASS). Correlations with self-report scales established good convergent and discriminant validity of the MAACL-R scales. Moreover, PASS demonstrated good discriminant validity in differentiating depression from anxiety. The Japanese version of the Multiple Affect Adjective Check List-Revised seems to be ready for use in research.

Validation of the Japanese Multiple Affect Adjective Check List-Revised

The Multiple Affect Adjective Check List (Zuckerman & Lubin, 1965) originally consisted of three rationally constructed bipolar scales: Anxiety, Depression, and Hostility. Factor analyses reported in 1983 (Zuckerman, Lubin, Rinck, 1983) produced five unipolar scales: Anxiety, Depression, Hostility, Positive Affect, and Sensation Seeking. Two higher order affect scales were also created: Dysphoria= the sum of Anxiety, Depression, and Hostility; and Well-being= sum of Positive Affect and Sensation Seeking scales. The same pool of 66 scored adjectives was used in both the State form ("How You Feel Today") and the Trait form ("How You Generally Feel") of the Multiple Affect Adjective Check List-Revised (MAACL-R; Zuckerman & Lubin, 1985). Reliability (internal consistency and test-retest) and validity (concurrent, discriminant, predictive, and construct) were shown to be good. The brevity of the MAACL-R, the range of affects that it measures, and its high reliability and validity have led to its frequent use in research (Lubin, Swearngin, & Zuckerman, 1998). and clinical practice (Lubin & Zuckerman, 1999).

Possible use of the MAACL-R in cross-national and cross-cultural research prompted its translation into French (Beckingham, Coutu-Wakulczyk, Lubin, 1993). Other translations are being developed. The study of affect in personality development and psychopathology in Japan would seem to present potentially fruitful comparisons with patterns in western culture. Others have reported on stress-related mental problems in the Japanese population (Nadaoka, Kashiwakura, Morioka, Oiji, & Totsuka, 1997; Kawakami, Araki, Kawashima, & Matsumoto, 1997; DeFrank, Ivanvevich, & Schweiger, 1988).

In order to facilitate such comparisons, this study reports on the translation of the MAACL-R into Japanese and the determination of the reliability and validity of the translated version.

Study 1

The purpose of this study was to translate the original English version of the MAACL-R into Japanese and determine the initial psychometric properties including reliability and validity of the Japanese translated version. Reliability was assessed by examining internal consistency (alphas) and four-week interval retest. Validity (convergent and discriminant) was investigated by calculating and comparing the correlation coefficients between the MAACL-R scales and subscales of State Trait Personality Inventory (STPI: Spielberger, 1995). The highest correlations were expected between the MAACL-R scales and the corresponding STPI subscales. However, the moderately high to high correlations were also expected to exist between non-corresponding scales (e.g., the MAACL-R anxiety and the STPI depression), given the existing literature regarding the substantial comorbidity between anxiety and depression (e.g., Goltib, 1984; Tanaka-Matsumi & Kameoka, 1986). On the other hand, the absence of positive emotional experience (i.e., low positive mood) was reported to be unique to the depressive symptoms, while the symptoms of both anxiety and depression are strong markers of general distress or negative affectivity (Clark & Watson, 1991). Thus, the analyses of the positive affect scale (PASS) were also included by examining its discriminant validity regarding whether the PASS negatively predicted depression, but not anxiety, after controlling for the variances that are associated with depression or anxiety.

Intercorrelations among the MAACL-R dysphoric affect scales (i.e., Anxiety, Depression, and Hostility) or the positive affect scales (Positive Affect and Sensation Seeking) was expected

to be positive and high in magnitude, whereas correlations among each counterpart scales should be low or nearly zero. Moreover, low magnitude or near zero relationships should exist between the Dysphoric and PASS scale, given the relative orthogonal relationship found between the construct of the negative and positive affect (e.g., Watson & Tellegen, 1985; Watson, Clark, & Tellegen, 1984).

Translation

Development of the Japanese translated version of the MAACL-R followed the procedure recommended by Werner and Campbell (1971). Thus, the MAACL-R was first translated into Japanese and then translated back into English in order to compare the back-translated items with those of the originals. Two translation teams, each of which consisted of three bilingual individuals, were involved in the translation. First, the three bilingual individuals whose native language was Japanese engaged independently in translation from English to Japanese. They produced two Japanese adjectives for each MAACL-R adjective. Two of the three translations agreed upon 63 Japanese-translated items (95%). After discussion, the three translators agreed on alternative adjectives for the remaining three words (joyful, mad, and whole). The 66 Japanese-translated items were then translated back into English by another three bilingual individuals whose native language was English. This group was also instructed to produce two alternatives for each Japanese-translated item. At least two of the three translators agreed upon 53 items (84 % agreement). Discussion among the three back-translators produced agreement on alternatives in the case of 13 adjectives.

Participants and Procedures

A total of 615 Japanese students (303 males and 312 females) were recruited from seven schools in the Tokyo area and Kumamoto prefecture in Japan (one junior highschool, two high schools, and three universities). Data collection took place in classroom settings and participants completed two questionnaires (Japanese version of the MAACL-R and the STPI) and, four weeks later, a Japanese version of the MAACL-R was again administered.

University Sample: This sample was comprised of 299 students from three schools in the Tokyo area and Kumamoto prefecture. There were 75 freshmen, 112 sophomores, 80 juniors, and 32 seniors. The mean age of the sample was 19.9 years (range: 18-45; SD = 2.06). Males (57 %) and females (43 %) were about equally distributed.

High School Sample: There were 202 high school students selected from two private schools located in the Tokyo area. High school samples included freshmen (N = 157) and sophomores (N = 45) and the mean age was 15.4 (range: 15-17; SD = .58). The numbers of males (41 %) and females (59 %) was about the same.

Junior High School Sample: The junior high-school sample consisted of 114 students from a public school located in the Tokyo area. These participants were selected from the 8th and 9th grade (N = 114) and the mean age of the sample was 13.4 years (range: 12-14; SD = 2.64). About half of the students were male (46% - versus 54% female).

Measures

The Trait form of Multiple Affect Adjective Check List-Revised (MAACL-R; Lubin & Zuckerman, 1999);

Trait MAACL-R measures test takers' enduring affects, or how they generally feel (Lubin & Zuckerman, 1999). The numbers of items for the five subscales are as follows: Anxiety

(10), Depression (12), Hostility (15), Positive Affect (21), and Sensation Seeking (8). Two composite scales were comprised of the following numbers of items: Dysphoria (37 = Anxiety + Depression + Hostility) and PASS (29 = Positive Affect + Sensation Seeking). The MAACL-R requires approximately 3 minutes to complete. Internal consistency for the Trait Form of the MAACL-R has been reported as satisfactory, yielding alpha coefficients with Anxiety (.79), Depression (.81), Hostility (.84), Positive Affect (.74), Sensation Seeking (.69), Dysphoria (.92), and PASS (.69) for the general adult population (Lubin & Zuckerman, 1999). Test-retest reliability for intervals from two to eight weeks for college samples were all satisfactory, where coefficients ranged from .69 to 92 (Lubin & Zuckerman, 1999). The MAACL-R has been correlated with other instruments including the State-Trait Anxiety Inventory, Profiles of Mood States, and Beck Depression Inventory, showing good convergent and discriminant validity with correlation coefficients ranged from - .40's to .70's (Lubin & Zuckerman, 1999). Moreover, stress-related symptoms indicated on a symptom check list were correlated with the Anxiety, Depression, Hostility, and Dysphoria scales, where correlation coefficients ranged from .39 to .48 (Nickel, Lubin, & Rink, 1986).

The Trait form of Revised State Trait Personality Inventory (STPI; Spielberger, 1995); Trait STPI consists of four 10-items self-report scales for measuring anxiety (T-Anx), depression (T-Dep), anger (T-Ang), and curiosity (T-Cur). Participants' response to the 40 statements was measured by a four-point frequency scale that ranged from almost never (1) to almost always (4). Alpha coefficients ranged from .82 to .85, suggesting good levels of internal consistency. The test-retest reliabilities were also satisfactory, with coefficients ranging from .60 to .80. Collins and Hailey (1989) reported moderate to high correlation between STPI scales (i.e., T-Anger, T-Anx, and T-Cur) and the total anger-expression (AX/EX) of the Anger Expression Scale (AX;

Spielberger, Johnson, Jacobs, Krasner, Oesterle, and Worden, 1986), with correlation coefficients .67 (T-Ang), .43 (T-Anx), and -.18 (T-Cur).

The STPI was translated into Japanese and back into English by the same method. The examination of internal consistency for the STPI scales revealed adequate results for the T-Dep, T-Anx, and T-Ang scales across the samples, with alpha coefficients being, respectively; .81, .81, and .80 for the university sample; .78, .74, and .77 for the highschool sample; .83, .76, and .74 for the junior highschool sample. However, T-Cur showed low reliability across the samples (alpha ranged from .61 to .65). The assessment of validity using such a low reliability scale is called into question because the lack of dicriminant and convergent validity may be due to its low reliability. As a result, the convergent and discriminant validity of the Japanese MAACL-R was examined by using T-Dep, T-Anx, and T-Ang of the STPI.

Results and Discussion

Means and Standard Deviations of Samples

Means and standard deviations were calculated for each MAACL-R scale and reported in Table 1 along with the number of items in each MAACL-R scale. Overall, the mean scores of each MAACL-R scales were similar across all samples. Series of 2 (Sex: male and female)×3 (Group: junior highschool, highschool, and university) analyses of variance (ANOVAs) was performed on each MAACL-R scale to examine possible sex differences and the interaction of the Sex with Group. There was a statistically significant interaction on Sensation Seeking, $F(2, 609) = 5.58$, $p < .01$), indicating that the university and junior highschool males had higher scores on Sensation Seeking than females of the same group, whereas the highschool females had higher scores than the highschool male samples. We calculated the effect size (eta^2) to

investigate the magnitude of this Sex×Group interaction and rule out the possibility of obtaining statistically significant results due to the sample size as large as that used in this study. The results indicated that less than 2 % (eta^2 = .018) of the variances on Sensation Seeking were accounted for by this interaction, suggesting the Sex× Group interaction was small in magnitude and negligible; thus both male and female data was combined into one for the subsequent analyses.

Reliability

The reliability of the Japanese version of the MAACL-R was determined by investigating its internal consistency (alphas) and its retest reliability for each sample. Table 2 reports the internal consistency (alphas) of the Japanese version of the MAACL-R, along with those of the original version for adolescent samples (N = 880) as reported by Lubin & Zuckerman (1999). As can be seen in Table 2, most subscales showed moderately high to high internal consistency (alphas = .61 to 91). Alphas for Anxiety (range: .71 - .74) and Sensation Seeking (range: .61 - .75) were relatively lower than for other scales, but these patterns were also found in the original version (Lubin & Zuckerman, 1999). As had been found in the original MAACL-R, the composite scales (Dysphoria and PASS) were the most reliable for the Japanese version, probably because the larger number of items on the Hostility, Sensation Seeking, and PASS scales. The retest reliabilities for a four-week interval were found to be adequate with reliability coefficients for each scale ranging from .61 to .77.

Convergent and Discriminant Validity

Convergent validity of Depression, Anxiety, and Hostility was assessed by examining the relationships with each corresponding STPI scale (i.e., T-Anx, T-Dep, T-Ang) and summarized

in Table 3. The magnitudes of correlations between each negative affect counterpart scale were moderately high (*r*s range: .34 - .45) in which all coefficients were statistically significant ($p < .001$), suggesting adequate convergent validity. On the other hand, adequate discriminant validity was observed by the higher significant correlations between the corresponding STPI and MAACL-R subscales than between MAACL-R scales and the non-corresponding STPI scales. For example, T-Dep and T-Anx correlated moderately and negatively with the positive affect scales (i.e., Positive Affect and Sensation Seeking); T-Ang correlated low and positively with Sensation Seeking.

Of particular interest was the similar magnitudes and directions of relationships (i.e., moderate and positive) existed between the MAACL-R Depression or Anxiety scales and the STPI T-Anx or T-Dep scales, as expected. There might have been an overlap of construct between what the T-Anx or T-Dep claim to measure and what Depression or Anxiety measures. In fact, the test for the significance of the difference between the correlation coefficients (Cohen & Cohen, 1983) revealed that the correlations of the Depression or the Anxiety scales with T-Anx and T-Dep did not differ significantly across the samples.

Further analyses involved the dicriminant validity of the PASS scale using the hierarchical regression analyses that were modeled after Clark and Watson (1991) and applied by Laurent et al. (1999). The analyses were intended to examine whether the PASS scale can differentiate between STPI T-Dep and the T-Anx by PASS negatively predicting T-Dep after controlling for the nontarget variance (i.e., the T-Anx and Dysphoria) that is associated with T-Dep. Thus, in predicting T-Dep, T-Anx and Dysphoria were entered as predictors in Step 1, followed by PASS in Step 2. Similarly, T-Dep and Dysphoria were entered as predictors in Step 1, followed by PASS in Step 2 when T-Anx was used as the criterion. If PASS can differentiate

symptoms of depression from anxiety according to the formulation proposed by Clark and Watson (1991), then PASS should have a significant, and negative in direction, partial correlation only with T-Dep, but not with any significant partial correlation with T-Anx. As can be seen in Table 5, significant negative partial correlations only existed between T-Dep and PASS, which suggests that the PASS played a role in differentiating the symptoms of depression from anxiety.

Intercorrelations among the MAACL-R scales

Correlation coefficients among the MAACL-R scales were calculated for each sample and reported in Table 4. High intercorrelations were found among the dysphoric affect scale (Anxiety, Depression, and Hostility), with the median coefficient being .63 (range: .64 - .73, all *p*s < .001) ranging from .64 to.73, as well as between the positive affect scales (Positive Affect and Sensation Seeking) (median coefficient = .55; range: .51-.55, all *p*s < .001). On the other hand, the magnitudes of relationships between components of the Dysphoria scale and the PASS scale were consistently low. Moreover, low to near zero relationships were detected between the two composite scales (Dysphoria and PASS) across the samples.

Consistent with the findings reported in the manual (Lubin & Zuckerman,1999), it was also found that the Anxiety correlated highly with Depression across the samples. This high correlation may be attributed to the acquiescence response set (i.e., one's tendencies to either check or not check items on both scales) (Lubin, et al., 1986) and, thus, individuals who scored high or low on Depression might also have scored high or low on the Anxiety. To examine this possibility, further investigation was conducted by categorizing the participants based on the quartile-split scores of the Anxiety and Depression, in which the participants were assigned into high, medium, and low score group (e.g., Goltib, 1984; Meites, Lovallo, and Pishkin, 1984) (see

Table 4 for the universitiy example). Chi-square analyses indicated statistically significant tendencies that the scores of Depression and Anxiety fell into the same levels across the samples {the university: χ^2 (4) = 115.25, p <.001; the highschool: χ^2 (4) = 98.44, p <.001; χ^2 (4) = 62.39, p <.001}. More than 44% of the participants scored high or low on both of these scales, whereas less than 5 % of the participants scored high on one scale and low on the other.

Study 2

The purpose of Study 2 was two fold: 1) Assessment of convergent and discriminant validity of the MAACL-R Positive Affect and Sensation Seeking scales; 2) Partial replication of Study 1 with the further examination of convergent and discriminant validity of the MAACL-R Anxiety and Depression scales. First, because of the inadequate reliability of the STPI T-Cur in Study 1, the convergent validity of the two MAACL-R positive affect scales was left unexamined and was yet to be established. In this study, the sensation seeking and positive affect scales were validated using the Japanese sensation seeking and subjective well-being scales. Moderately high to high correlation was expected to exist between each of the MAACL-R positive affect scales and the corresponding Japanese scales. Second, further assessment of convergent and discriminant validity was conducted by correlating the MAACL-R Anxiety and Depression scales with the Japanese version of the Center for Epidemiological studies-Depression scale (CES-D; Radloff, 1977) and State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). Similar patterns of correlations among scales, yet the highest correlations between the MAACL-R depression scale and CES-D or the MAACL-R anxiety scale and STAI, were expected, given the similar results found in Study 1.

Methods

Participants and Procedures

The participants for this study consisted of 507 students (259 males and 248 females) from four schools in the Tokyo area and Kumamoto prefecture in Japan (one junior highschool, one high school, and two universities). The data collection procedures were similar to Study 1, except that there was no retest of the Japanese MAACL-R scales. Participants were asked to respond to the five questionnaires including the Japanese version of the MAACL-R.

University Sample: The university sample was comprised of 213students from two schools (private and public) in the Tokyo area and Kumamoto prefecture. There were two freshmen, 141 sophomores, 42 juniors, and 27 seniors and the mean age of this sample was 19.64 years (range: 19-26; SD = .99). 59.6 % of this sample were males (females: 40.4 %).

High School Sample: The high school sample consisted of 155 students (62 males and 93 females) selected from a public school in the Tokyo area. All students were freshmen and their mean age was 15.10 (range: 15-16; SD = .31).

Junior High School Sample: There were 139 students from a public school located in the Tokyo area. All of these participants were 9^{th} graders and their mean age was 14.17 years (range: 14-15; SD = .38). About half of the students were male (51% - versus 49% female).

Measures

Multiple Affect Adjective Check List-Revised (Lubin & Zuckerman, 1999); The Japanese version of the MAACL-R used in Study 1 was again administered to each student group. The internal consistencies of the MAACL-R scales for the present samples were comparable to those of Study 1 with the mean alpha coefficients being as follows: Depression

(.85), Anxiety (.75), Hostility (.86), Positive Affect (.86), Sensation Seeking (.73), Dysphoria (.92), PASS (.92).

Center for Epidemiological studies-Depression scale (CES-D; Radloff, 1977); The CES-D comprised of 20 items measuring the presence of depressive symptoms in nonpsychiartric samples. The respondents rate the frequency of their depressive symptoms over the previous week for each item in a 4-point scale ranging from rarely (1) to all of the time (4). The Japanese version of the CES-D was developed by Shima, Shikano, Kitamura, and Asai (1985) and demonstrated adequate reliability, with internal consistency (alpha = .81) (Iwata, Saito, & Roberts, 1994) and five day retest reliability (r = .84) (Shima et al., 1985). In the present investigation, the internal consistency (alpha) for the university, high school, and junior highschool were found to be .86, .85, and .81, respectively. On the other hand, good convergent validity of the Japanese version was also reported using Japanese version of the Zung Self-Rating Depression Scale (SDS; Zung, 1965), with correlation coefficient being .73 (Shima et al., 1985). In this study, the participants were asked to rate how they generally feel for each CES-D item using 4-point Likert scale, which ranges from almost never (1) to almost always (2).

State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970); The Trait Anxiety scale (TAS) of STAI was used to measure respondents' enduring anxiety. The TAS consists of 20 items and respondents indicate the degree to which they generally feel using 4-point scale ranging from not at all (1) to very much so (4). The Japanese version of the STAI was developed by Shimizu and Imae (1981) and reported that the TAS posses good internal consistency (alpha = .85) as well as 80-day retest reliability (r = .80). Alpha coefficients for the present study were as follows: the university (.86), the highschool (.84), and junior highschool (.81). Moreover, concurrent validity of the TAS was reported by the correlation between the

TAS and Japanese version of Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953), with correlation coefficient being .59.

Sensation Seeking Scale-Anstract Expression (Furusawa, 1989); The respondents' levels of sensation seeking were measured by a Japanese Sensation Seeking Scale (Sensation Seeking Scale – Abstract Expression; Furusawa, 1989). This scale comprised of 15 items and these items were developed by referring to the content of the Sensation Seeking Scale (SSS; Zuckerman, 1979). Furusawa (1989) noted that the items of the Japanese version were culturally relevant and suitable for use among Japanese population. The alpha coefficients were reported to be .83 and .86 for male and female, respectively, and adequate concurrent validity was established in the form of correlations with a translated version of the SSS (Furusawa, 1989). In the present study, internal consistencies (alphas) was found to be adequate with coefficients being .79 (the university), .81 (the highschool), and .83 (the junior highschool).

The Subjective Well-being Scale (Makino & Tagami, 1998); Respondents' positive affect was assessed by their levels of subjective well-being using the subjective well-being scale (Makino & Tagami, 1998). This scale was designed to measure their levels of subjective well-being by one-item, which asks how happy they are lately. Respondents answer the item on 10-point scale ranging from never (1) to always (10). The two-week interval retest reliability was reported to be adequate ($r = .69$) (Makino & Tagami, 1998). Concurrent validity was established by the correlation with a Japanese health measure ($r = .44$) (Makino & Tagami, 1998).

Results and Discussion

Cross Validation of the Japanese MAACL-R

To compare the performances of each MAACL-R scale for the study 2 of Study 2 with the corresponding samples in Study 1 (e.g., the university samples in Study 1 and 2, etc), a series

of independent t-tests were conducted. The results of the t-tests were nonsignificant for most of the MAACL-R scales, indicating that the performances of these MAACL-R scales did not differ significantly from the corresponding samples across the two studies. On the other hand, statistically significant differences were detected for some other scales (e.g., the Hostility scores of the university sample in Study 1 and 2), yet the calculation of the estimated population effect size (ω^2) indicated that the sample differences across the studies explained no more than three percent of the variances (ω^2s: .01-.03) in the scales, suggesting that the differences were small and negligible. The overall equivalence of the performances on the MAACL-R scales across the two studies was, thus, demonstrated.

Convergent and Discriminant Validity

Table 5 reports the validity data on Depression, Anxiety, Sensation Seeking, and Positive Affect. For Sensation Seeking and the Positive Affect, moderately high to high correlations were detected with each of the corresponding scales (i.e., the SSS or the SWBS), indicating the existence of these MAACL-R scales' good convergent validity. Low to moderately high negative correlations were found with the CESD and the STAI. Furthermore, the validity coefficients for Positive Affect were higher with the SWBS than with the SSS except for the junior highschool sample as well as the coefficients of Sensation Seeking were higher with the SSS than SWBS across the three samples. This result suggested the Positive Affect scale and the Sensation Seeking scale possess good discriminant validity. the Anxiety

The examination of convergent and discriminant validity for the Depression and Anxiety scales was again conducted in this study using other instruments including the CESD and STAI. The convergent validity of these two MAACL-R scales was good with the coefficients ranging from .38 to .51 (all rs < .001). The scales' discriminant validity examined by the patterns of

correlations with the SWBS and SSS were also found to be good, with the validity coefficients ranging from moderately high, yet negative, to zero (*r*s: -.33 - .08). Furthermore, the examination of discriminant validity with CESD and STAI indicated that the MAACL-R Anxiety and Depression scales possessed adequate discriminant validity. Though the magnitudes of correlations were somewhat similar, Anxiety generally correlated higher with the STAI than with the CESD. Similarly, Depression correlated higher with the CESD than with the STAI. The only contradict finding observed in the junior highschool sample (i.e., $r_{DepressionSTAI} > r_{DepresisonCESD}$) was not found to be statistically significant (e.g., Cohen & Cohen, 1988), suggesting that Anxiety did not correlated higher with the CESD than with the STAI to the significant degree.

General Discussion

The purpose of this study was to develop a Japanese version of the trait form of the MAACL-R, an instrument that assesses the disposal affect ("How You Generally Feel") using a pool of 66 adjectives. This instrument was adapted to be used with Japanese-speaking adolescents and adults. The translation followed the method described by Werner and Campbell (1971) and appears to be adequate. Psychometric characteristics of the Japanese version of the MAACL-R were comparable to those of the original English version of the MAACL-R. The examination of the retest reliability suggested adequate stability over a month period. Alpha coefficients, reported in the Study 1 samples, were comparable to those of the Study 2 samples and were similar to those of the American adolescent and college samples reported by Lubin and Zuckerman (1999). The alphas for the two composite scales were the highest (alphas = .90s). Furthermore, those for Depression, Hostility, and Positive Affect (alphas = .80s - .90s) were higher than those Anxiety and Sensation Seeking (alphas = .70s-80s) (Lubin & Zuckerman, 1999).

Adequate convergent and discriminant validity demonstrated in Study 1 and 2 suggested that the Japanese version of the MAACL-R has abilities to detect each domain of the affect with subscales as well as with the two higher-order affect scales. Validity coefficients for the Hostility and the two positive affect scales (i.e., Positive Affect and Sensation Seeking) were acceptable across the samples. The MAACL-R anxiety or depression scale also demonstrated higher correlations with other self-report anxiety or depression scales regardless of the substantial commobidity reported for the symptoms of anxiety and depression (e.g., Goltib, 1984; Tanaka-Matsumi & Kameoka, 1986). On the other hand, although the degree of the two correlation coefficients were not statistically significant, finding a stronger correlation to the MAACL-R depression with the corresponding anxiety measures than those depression measures were contrary to our expectations (e.g., the highschool and juniorhigh school samples in Study 1; the junior highschool sample in Study 2). However, further examination based on the Clark and Watson's (1991) formulation confirmed the ability of PASS in differentiating the symptoms of anxiety and depression; significantly negative, and modest in magnitude, partial correlation existed only between the PASS scale and the STPI depression. Moreover, this pattern of relationship was observed across the samples, suggesting that the lack of positive mood is unique to the symptoms of depression in general.

The investigation of the intercorrelation among MAACL-R scales indicated a strong magnitude of relationship between the components of the dysphoric scale as well as those of the positive affect scale. On the other hand, a weak relationship was detected between the components from the two different higher-order scales. In particular, the examination of a pattern of response to the Anxiety and Depression items suggested a significant tendency to either check or not check items on both scales. This response pattern was also found in previous research

(Goltib, 1984; Meites, Lovallo, & Pishkin, 1980) using sets of other anxiety and depression measures (e.g., Beck Depression Inventory, State Trait Anxiety Inventory, Taylor Manifest Anxiety Scale, etc.). This finding implicates that, in some respects, either the presence of depressive and anxious symptoms or the lack thereof could have existed across the individuals.

Several limitations of this study should be noted. First, our samples were drawn from a student population and, thus, similar patterns of correlations or mean scores cannot be assumed for non-student or clinical samples that are different from the samples in the present study. It is possible that the nature of psychometric characteristics for Japanese non-student samples can be greatly different from those of the student sample. Future research needs to consider for the inclusion of the non-student samples.

Second, the investigation of construct validity using factor analyses was not performed in this study. More than half of the responses on the MAACL-R items across the samples was found to deviate from a 50/50 split. The use of factor analyses on such a dichotomous data is known to be questionable practice (e.g., Comrey, 1978). Further investigation is needed to examine the latent structure underlying the responses of the MAACL-R. Within these limitations, the results of the present study assured us that the utility of the Japanese version of the MAACL-R was comparable to that of the original English version. Most important, the change in the language utilized in the MAACL-R items did not seem to influence the overall psychometric properties of this instrument on which the English language is based. The Japanese MAACL-R can serve as a useful instrument in cross-cultural research in human affect.

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Table 1
Means and Standard Deviations on the Japanese Version of the MAACL-R

	No.	Junior-high school (N = 114)		Highschool (N = 202)		University (N = 299)	
MAACL-R	Items	M	SD	M	SD	M	SD
Anxiety	10	2.37	2.17	2.04	2.18	1.90	2.05
Depression	12	1.86	2.53	2.17	2.62	2.02	2.69
Hostility	15	3.60	3.28	2.79	3.18	2.40	2.96
Positive Affect	21	7.18	5.29	7.24	5.55	7.18	5.29
Sensation Seeking	8	2.27	1.99	2.14	1.78	2.21	2.08
Dysphoria	37	7.82	6.98	7.01	6.89	6.32	6.70
PASS	29	10.35	7.44	9.39	6.77	9.38	6.73

Table 2
Reliabilities (alphas and retest) on the Japanese version of the MAACL-R

	Junior-high school (N = 114)		Highschool (N =202)		University (N =299)	
MAACL-R	Alpha	Retest r[a]	Alpha	Retest r[a]	Alpha	Retest r[a]
Anxiety	.71	.60[b]	.74	.68[b]	.73	.69[b]
Depression	.83	.58	.82	.60	.85	.68
Hostility	.81	.63	84	.73	.84	.68
Positive Affect	.92	.72	.90	.76	.89	.67
Sensation Seeking	.70	.61	.61	.70	.75	.71
Dysphoria	.90	.71	.91	.73	.91	.74
PASS	.92	.72	.90	.77	.90	.70

[a]Four week interval
[b]All retest correlations are statistically significant at the .001 level

Table 3
Correlations between MAACL-R and STPI (T-Dep, T-Anx, and T-Ang)

	MAACL-R						
STPI	Depression	Anxiety	Hostility	Positive Affect	Sensation Seeking	Dysphoria	PASS
University Sample							
T-Dep	.44***	.42***	.32***	-.29***	-.16**	.45***	-.28***
T-Anx	.37***	.44***	.24***	-.21***	-.20**	.39***	-.23***
T-Ang	.24***	.22***	.41***	.04	.18**	.34***	.09
Highschool Sample							
T-Dep	.34***	.32***	.27***	-.31***	-.07	.35***	-.28***
T-Anx	.41***	.41***	.25***	-.17*	.01	.40***	-.14
T-Ang	.24**	.27***	.45***	-.09	.20**	.38***	-.02
Junior Highschool Sample							
T-Dep	.44***	.39***	.30**	-.40***	-.26**	.42***	-.40***
T-Anx	.53***	.45***	.36***	-.34***	-.21*	.50***	-.34***
T-Ang	.22*	.27**	.34***	-.11	.08	.32**	-.07

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4
Summery of Hierarchical Regression Analyses

Scales	Step 1		Step 2
	Nontarget Scale	Dysphoria	PASS
University Sample			
T-Dep	.72*** (T-Anx)	.25***	- .26***
T-Anx	.72*** (T-Dep)	.08	- .05
Highschool Sample			
T-Dep	.70*** (T-Anx)	.10	- .34***
T-Anx	.70*** (T-Dep)	.21*	.02
Junior Highschool Sample			
T-Dep	.71*** (T-Anx)	.05	- .27**
T-Anx	.71*** (T-Dep)	.34***	- .13

Table 5
Intercorrelations Among MAACL-R Subscales for the University Sample (Below the Diagonal), the Highschool Sample (Above the Diagonal), and the Junior Highschool Sample.

	MAACL-R						
MAACL-R	D	A	H	PA	SS	DYS	PASS
(University\Highschool)							
Depression	-	.66***	.55***	.14	.25***	.86***	.19**
Anxiety	.73***	-	.58***	.28***	.29***	.85***	.31***
Hostility	.64***	.64***	-	.13	.36***	.85***	.21**
Positive Affect	.10	.19**	.15**	-	.55***	.21**	.97***
Sensation Seeking	.11	.11	.25***	.51***	-	.36***	.74***
Dysphoria	.89***	.88***	.89***	.16**	.19**	-	.27***
PASS	.12*	.19**	.20**	.97***	.72***	.19***	-
(Junior Highschool)							
Depression	-						
Anxiety	.63***	-					
Hostility	.57***	.37***	-				
Positive Affect	.01	.03	.01	-			
Sensation Seeking	.06	.04	.21*	.55***	-		
Dysphoria	.88***	.75***	.83***	.02	.14	-	
PASS	.03	.04	.06	.98***	.72***	.05	-

*** $p < .001$ ** $p < .01$ * $p < .05$

Table 6 Numbers of participants in the quaterile-split for the university sample (N = 299)

	Anxiety		
Depression	Low (0)	Medium (1-2)	High (3-10)
Low (0)	77	36	10
Medium (1-3)	23	43	26
High (4-11)	3	25	56

Table 7 Correlations between the MAACL-R and CES-D, STAI, SWBS, and SSS.

	MAACL-R						
STPI	Depression	Anxiety	Hostility	Positive Affect	Sensation Seeking	Dysphoria	PASS
University Sample							
CESD	.44***	.34***	.26***	- .21**	-.13**	.38***	-.21**
STAI	.39***	.38***	.22***	- .20**	-.10**	.36***	-.18**
SWBS	-.28***	-.21**	-.14*	.28***	.11	-.23**	.25***
SSS	-.01	-.01	.07	.25***	.39***	.02	.30***
Highschool Sample							
CESD	.42***	.45***	.38***	-.31***	-.07	.47 ***	-.27***
STAI	.40***	.51***	.40***	-.31***	-.15	.49***	-.29***
SWBS	-.19**	-.08	-.19*	.39***	.16	-.18 ***	.35***
SSS	.08	.04	.05	.34***	.44***	.06	.39***
Junior Highschool Sample							
CESD	.41***	.39***	.35**	-.32***	-.12**	.44***	-.29***
STAI	.46***	.43***	.41***	-.39***	-.17*	.49***	-.35***
SWBS	-.33***	-.16	-.14	.42***	.23**	-.23**	.40***
SSS	.08	.15	.18*	.46***	.55***	.16	.52***