Use of the Personal Report of Communication Anxiety (PRCA-24) in Japanese
Contexts: Reliability, Structural Integrity, and Response Validity

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Abstract

The Personal Report of Communication Anxiety (PRCA-24) has been used extensively in a variety of cultural contexts to measure apprehension in various communication situations. This study examined a Japanese translation of this scale in order to assess reliability and aspects of validity including intra-scale correlations, structural integrity, and measurement continuity.

The scale was administered to 350 Japanese college students. Alpha coefficients and item-scale correlations for the instrument and subscales matched parameters found in development of the English version. While results of these classic reliability measures were comparable, confirmatory factor analysis showed weak goodness of fit relative to subscales, and Rasch analysis indicated that overall use of the scale might fail to fully cover or discriminate levels of the trait.

Using classical assessments, the scale appears to provide a reliable and consistent measure of communication anxiety. However, its apparent weak structural integrity and inability to fully cover the purported trait indicate that caution should be exercised in its use for research in Japan. The uncritical summing of items or summed groupings of the subscales, may fail to differentiate or integrate factors that are particularly relevant to the underlying trait of communication anxiety as it is found in Japan and other cultures. While it would be somewhat easy to delete items in order to create what appears to be a valid scale, the need for attending to cultural constructs while preserving the theoretical integrity of the measure seems evident if a valid assessment suitable for research is to emerge.

Introduction

Communication anxiety has been an especially important variable in communication research in Japan (Klopf, 1984; Tanaka, 1996). One of the most prominently used measures of this trait has been the Personal Report of Communication Anxiety (PRCA-24), and previous studies have indicated consistently high reliability for translated versions of this scale (see McCroskey, Gudykunst, and Nishida, 1985; Pribyl, Keaten, Sakamoto, and Koshikawa, 1998). While these studies have supported the overall viability of using the PRCA-24 for research in communication, little had been done to assess the purported underlying dimensions of the scale or how well it reflects aspects of communication apprehension. In a Likert based scale such as the PRCA-24, it is necessary that the measure include a sufficient number of items necessary to incorporate cultural perceptions related to the underlying trait. In addition, the measure should exclude those aspects that are irrelevant and so preserve parsimony (John & Benet-Martínez, 2000; Judd & McClelland, 1998).

With developments in structural equation modeling (Arbuckle & Wothke, 1999) and item response theory, most especially in the area of Rasch analysis (Wright, 1999; Wright & Masters, 1982), more complex issues of scale measurement may be addressed. Specifically, confirmatory factor analysis (CFA) allows assessment of presumed multidimensional structures, and Rasch analysis provides a means of determining how accurately, continuously, and completely items in a scale are measuring a purported continuous underlying trait. The primary purpose of this study was to assess a translated version of the PRCA-24 in terms of its structural integrity and its ability to provide a continuous and inclusive measure of trait anxiety.

Personal Report of Communication Anxiety (PRCA-24)

The PRCA-24 is a set of 24 items with Likert type responses that attempt to measure the latent trait of communication apprehension in four state situations: group, meeting, dyadic, and public (McCroskey 1970, 1982; Daly & McCroskey, 1984; Richmond & McCroskey, 1998). A number of studies have revealed strong content validity (McCroskey, 1978; McCroskey, Beatty, Kearney, & Plax, 1985) in the
original English version, and the PRCA-24 has been shown to correlate with most other measures of
trait anxiety. Consistent measures of $\alpha \geq .90$ and item-total correlations ranging from .40 to .69 have
been found with $\alpha$ for subscales greater than .75 (McCroskey, 1990, 1992). Using similar classical
measures, strong reliability has also been reported for Japanese translations (see McCroskey, 1978;

Despite its use in Japan, Levine & McCroskey (1990) indirectly questioned the validity of the PRCA-
24 with concerns that some items might be culturally bound. However, summed totals and subscales
have continued to be used (McDowell, & Yotsuyanagi, 1996).

Replication of structures with the four subscales intact has been somewhat elusive, even in the English
version. Levine & McCroskey (1990) tested first and second order confirmatory factor analysis
models and reported strong support for a second order model in which the latent trait of
communication apprehension is reflected in the four subscale dimensions. Perhaps most important for
this study, they failed to replicate such goodness of fit in the one non-United States culture sampled.
This led them to question whether all items would be appropriate for research in cultures other than the
United States.

Pribyl, Keaten, Sakamoto, & Koshikawa (1998) were unable to replicate the four subscale factor
structure in a Principle Components analysis of their Japanese version. While they did not report
results of any confirmatory factor analysis or comparisons with other methods generally recommended
in exploratory analysis (see Johnson & Wichern, 1998), their four-component rotation showed meeting
items loading in various degrees on the public component. Despite its historical base in the theoretic
development of the construct, they recommend removal of the public dimension from Japanese
versions of the scale even though this component explained most variation in their model with public
items having relatively strong and pure loadings. These researchers concluded that the present version
of the PRCA-24 has doubtful use as a multidimensional measure of anxiety. Still, they indicated that a
summation of all items should be used as a general measure of communication anxiety. However, they
provided no real evidence for supporting the viability of using the PRCA-24 as a one-dimensional
measure of trait anxiety.
Research Questions

While the work mentioned in the previous section has assessed the reliability and validity of Japanese versions of the PRCA-24, rigorous testing of the internal structure and ability of the scale to discriminate along a continuum of trait anxiety has been lacking. No confirmatory analysis has been conducted on their theoretical structure of the scale, nor has any item response theory based assessment been made.

Given the discussion and rationale above, the following specific questions were the focus of this research:

1. How reliable and internally consistent is a translated version of the PRCA-24? That is, can reliability be further replicated with Japanese subjects responding to a Japanese version of the scale?

2. How valid are the structural integrity and theoretic dimension or dimensions underlying the purported trait measured by the PRCA-24? Are the underlying dimensions represented by the four subscales replicable in Japanese versions?

3. How viable is the PRCA-24 as a continuous measure of communication apprehension? Does the PRCA-24 provide a measure that adequately assesses the trait from low to high levels?

The first research question includes analysis using classical measures of reliability. It is included to provide a basic check of the data and to replicate research that has included classic assessments made on Japanese versions.
Method

The PRCA-24 was administered with three other anxiety instruments. While some of the scales have been previously translated into Japanese, and some linguistic variability could affect comparisons with those translations, multiple translators working on all four measures were used in order to preserve internal consistency as much as possible. Three independent Japanese translators, including a professor of English, a graduate student in English-Japanese studies, and a professional English-Japanese translator were asked to translate the scales. Another professional English-Japanese translator did a back translation of the translated scales from Japanese into English. Following this work, all translations were compared, and unanimous agreement was reached by all translators on all items. The translated version of the PRCA-24 used in this study may be found in the Appendix. Scales were administered to 350 Japanese college students (78 males, 272 females) consisting primarily of freshmen, sophomores, and juniors at a Kanto area university. To avoid response bias, instruments were presented in four different order combinations using mutually orthogonal Latin Squares. Both Japanese and non-Japanese administered the instruments. Subjects were told that research was being conducted by a professor in the university with no mention of that professor’s cultural background. The measures, including all demographic items, were in Japanese. Items with negative wording were reverse scored. Univariate tests for outliers (above or below 3.0 standard deviations) and Mahalanobis tests for multivariate outliers were conducted. Extreme responses appeared consistent with having extreme levels of the trait variable, and no subject was consistently an outlier on more than one scale. Further, analysis was conducted both with and without outliers, and results were substantially the same. It was judged best to be conservative relative to throwing out any data and consequent information. No subjects were removed from the study. There were no missing values, and F-tests revealed no significant differences due to ordering of the instruments.

1 Other scales included Embarrassability (Modigliani, 1968; Miller, 1987), Fear of Negative Evaluation (Watson and Friend, 1969), and Interaction Anxiousness (Leary, 1983). A comparison and analysis of all four instruments is anticipated in a forthcoming report.
Analysis proceeded in three phases based on the research questions mentioned earlier. In order to provide replication for previously reported results (Research Question 1), classical item analysis was conducted on the data including calculation of alpha coefficients and item-total correlations (Carmines & Zeller, 1979).

To evaluate construct validity in terms of structural integrity (Research Question 2), confirmatory factor analyses were then performed on the data. Attention was paid to the concerns raised by Levine & McCroskey (1990) relative to the validity of the PRCA-24 and subtests for use in cultures outside the United States. Hence, a first order model was initially used to assess this scale. A first-order model with the four subscales as correlated factors was then tested, and this was followed by a second order model with the four subscales as factors reflecting the latent trait of communication apprehension (see Figures 1 and 2 in the Results Section).

Maximum Likelihood methods were used in all models, and a scale value of one was assigned to unobserved variables. With these parameters, all models were identified. Several measures were calculated and compared for goodness of fit, but the following were considered essential and reported in the results (see Kline, 1998; Arbuckle & Wothke, 1999; Byrne, 2001):

1. CMIN – Minimum Value of the Discrepancy (Brown, 1982).
2. CMIN/df – CMIN divided by degrees of freedom. Values over 3 indicate weakness in the model (Carmines & McIver, 1981; Marsh & Hocevar, 1985).
3. AGFI – Adjusted Goodness of Fit Index (Arbuckle & Wothke, 1999; Tanaka & Huba, 1985). Values above .95 are common in adequate models, and values below .90 indicate poorly fitting models.
4. CFI – Comparative Fit Index (Bentler, 1990). Values near one indicate good fit. Values below .90 indicate poor fit.
5. RMSEA – Root Mean Square Error of Approximation (Browne & Cudeck, 1993). In general, values of .05 or less indicate well fitting models; values above .05 and below .08 indicate usable but weak models; values greater than .10 indicate unusable models.

Confirmatory factor analysis is normally conducted on models with strong theoretical bases and with the assumption that any exploratory factor analysis has been performed in the scale’s original
Such an assumption was made in this study relative to testing the integrity of constructs for the PRCA-24. Exploratory analyses and assessment of misfit indices of confirmatory factor analysis is generally not advised (see Cliff, 1983; Kline, 1998), and extensive analysis of scale revision is well beyond the bounds of this study. However, given failure of models to adequately fit theorized constructs, exploratory analysis was conducted to gain a sense of dimensionality and provide reference for assessment of errant items as an aid for future research. Consistent with the confirmatory technique used earlier, a principle factors approach was taken. Rotated factors were chosen based on theoretical assumptions outlined in original scale development. Given that underlying dimensions can and perhaps should be correlated because they theoretically measure one latent trait, an oblique (PROMAX) solution was derived (see Gorsuch, 1983; Maruyama, 1998; Johnson & Wichern, 1998; Tabachnick & Fidell, 2001).

In order to assess the ability of the PRCA-24 to consistently and inclusively measure an underlying trait of communication apprehension, a one-parameter Rasch analysis was conducted on the data (Research Question 3). Developments in item response theory, and especially the application of Rasch methods, have provided a means of assessing the ability of psychological measures to provide valid and continuous measures of underlying traits (see discussions in Hambleton, Swaminathan, & Rogers, 1991; Fischer & Molenaar, 1995; Van der Linden & Hambleton, 1997; Embretson, & Reise, 2000). Further, while Rasch Analysis has generally been applied in educational testing, its applicability to assess measurement properties of rating based instruments, especially those that have Likert based responses, has been amply demonstrated (Wright, 1999; Wright & Masters, 1982; Bond & Fox, 2001). A full explication of the underlying assumptions and ensuing controversies in Rasch analysis is far beyond the scope of this article; readers unfamiliar with the basic tenets are urged to consult the sources cited.

Rasch analysis was chosen in this study in order to determine how well items in the PRCA-24 cover a continuum of varying levels of trait anxiety among subjects responding to the scale. While the theoretical multi-dimensionality of the PRCA-24 would be a direct contradiction of the assumptions of Rasch modeling, this assessment provides a viable means of the testing the contentions of Pribyl,
Keaten, Sakamoto, & Koshikawa (1998) that summed items may provide a good overall measure of communication apprehension.

*SPSS* was used for outlier, reliability, correlational, and factor analysis procedures. Confirmatory factor analysis was conducted using *AMOS* (Arbuckle, 1994; Arbuckle & Wothke, 1999). *WinSteps* (Linacre, 2001) was used for one-parameter Rasch analysis.
Results

Internal Consistency - Reliability

A summary of descriptive statistics and measures of reliability for Japanese subjects in this study may be seen in Table 1. The instrument and subscales showed strong $\alpha$ coefficients and overall high item-scale correlations. Measures of $\alpha$ for the individual subscales of the PRCA-24 ranged from .72 to .83. Though some item-total correlations were low, these results were consistent with earlier findings on both English and Japanese versions of the scales, thus indicating that such metrics could be replicated with this data (Research Question 1).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cronbach’s $\alpha$</th>
<th>Lowest Item Scale Correlation</th>
<th>Highest Item Scale Correlation</th>
<th>Common Inter-Item Correlation</th>
<th>Mean</th>
<th>Var</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRCA-24</td>
<td>.901</td>
<td>.242</td>
<td>.676</td>
<td>.275</td>
<td>75.98</td>
<td>228.21</td>
<td>15.11</td>
</tr>
<tr>
<td>Public</td>
<td>.812</td>
<td>.475</td>
<td>.651</td>
<td>.419</td>
<td>20.43</td>
<td>26.26</td>
<td>5.12</td>
</tr>
<tr>
<td>Group</td>
<td>.798</td>
<td>.416</td>
<td>.684</td>
<td>.397</td>
<td>19.73</td>
<td>22.83</td>
<td>4.78</td>
</tr>
<tr>
<td>Meeting</td>
<td>.830</td>
<td>.435</td>
<td>.647</td>
<td>.449</td>
<td>19.35</td>
<td>24.38</td>
<td>4.94</td>
</tr>
<tr>
<td>Dyadic</td>
<td>.721</td>
<td>.394</td>
<td>.560</td>
<td>.301</td>
<td>16.47</td>
<td>18.90</td>
<td>4.35</td>
</tr>
</tbody>
</table>
Structural Integrity – Confirmatory Factor Analysis

A summary of measures for confirmatory factor analyses of the scale may be seen in Table 2. Models for the first order and second order factor structures involving the four subscales may be seen in Figures 1 and 2.

<table>
<thead>
<tr>
<th>Scale (Number of Components)</th>
<th>CMIN</th>
<th>df</th>
<th>CMIN/df</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRCA-24 (1)</td>
<td>1566.83</td>
<td>252</td>
<td>6.218</td>
<td>.633</td>
<td>.692</td>
<td>.122</td>
</tr>
<tr>
<td>PRCA-24 (4)*</td>
<td>11082.49</td>
<td>246</td>
<td>4.400</td>
<td>.738</td>
<td>.785</td>
<td>.099</td>
</tr>
<tr>
<td>PRCA-24 (4)**</td>
<td>1129.77</td>
<td>251</td>
<td>4.501</td>
<td>.736</td>
<td>.748</td>
<td>.100</td>
</tr>
</tbody>
</table>

Assessment revealed weaknesses in all models. All RMSEA terms were greater than .05. The PCLOSE statistic (Browne and Cudeck, 1993; Arbuckle and Wothke, 1999) tests the null hypothesis that the population RMSEA is not significantly higher than .05. This was less than .001 for all models, thus leading to rejection of that hypothesis for all. Relative to the findings of Levine and McCroskey (1990), both the first order and second order models of the PRCA-24 using four subscales as factors showed weak fit with this data. These results indicate that structural models either assumed or tested in earlier development of the scale could not be replicated in this study with confidence (Research Question 2).
Figure 1. First Order Confirmatory Factor Analysis – PRCA-24 with four subscales; Standardized estimates.
Figure 2. Second Order Confirmatory Factor Analysis – PRCA-24 with four subscales; Standardized estimates.
Structural Integrity - Exploratory Factor Analysis

A Bartlett’s $\chi^2$ of 3665.855 ($p<.001$) and a KMO index of .878 were obtained for the data, thus indicating above criterion levels for both sampling and factorability. Results of Principle Axis factor analysis may be seen in Table 3. Relatively large discrepancies in communality estimates were found on all measures indicating lack of association for some items. In addition, multicollinearity indicated potential problems with redundancy.

<table>
<thead>
<tr>
<th>Components Extracted</th>
<th>Variance Explained by Components</th>
<th>Lowest Communality (Item)</th>
<th>Highest Communality (Item)</th>
<th>Determinant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>45.830</td>
<td>.289 (Item 16)</td>
<td>.685 (Item 9)</td>
</tr>
</tbody>
</table>

The four rotated factors for the PRCA-24 may be seen in Table 4. The first factor appears to have a mix of loadings relative to both meeting and public situations. The second factor seems most close to the group situation, and the third factor contains items related to dyads. The fourth factor includes items from two of the theoretic situations and appears to relate to communication with “new” people.
Response Validity - Rasch Analysis

Results of goodness of fit for items in the Rasch model may be seen in Table 5. Looking at both infit and outfit measures, several scale items (note especially 6, 8, 11, 12, 13, 15, 16, 20, 24) show inadequate fit to a purported continuous measure of the underlying trait.
Table 5. Measures of Goodness of Fit to Rasch Model

<table>
<thead>
<tr>
<th>ENTRY NUMBER</th>
<th>RAW SCORE</th>
<th>COUNT</th>
<th>MEASURE</th>
<th>ERROR</th>
<th>INFIT</th>
<th>OUTFIT</th>
<th>CORR.</th>
<th>ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1062</td>
<td>347</td>
<td>.11</td>
<td>.06</td>
<td>.97</td>
<td>-4.01</td>
<td>.53</td>
<td>PRCA01</td>
</tr>
<tr>
<td>2</td>
<td>1084</td>
<td>347</td>
<td>.04</td>
<td>.06</td>
<td>.88</td>
<td>-1.90</td>
<td>.89</td>
<td>PRCA02</td>
</tr>
<tr>
<td>3</td>
<td>1121</td>
<td>347</td>
<td>-.07</td>
<td>.06</td>
<td>1.00</td>
<td>.11</td>
<td>.02</td>
<td>PRCA03</td>
</tr>
<tr>
<td>4</td>
<td>1123</td>
<td>347</td>
<td>-.08</td>
<td>.06</td>
<td>.94</td>
<td>-.99</td>
<td>.99</td>
<td>PRCA04</td>
</tr>
<tr>
<td>5</td>
<td>1255</td>
<td>347</td>
<td>-.51</td>
<td>.06</td>
<td>1.21</td>
<td>2.81</td>
<td>1.22</td>
<td>PRCA05</td>
</tr>
<tr>
<td>6</td>
<td>1193</td>
<td>347</td>
<td>-.30</td>
<td>.06</td>
<td>.75</td>
<td>-.75</td>
<td>.75</td>
<td>PRCA06</td>
</tr>
<tr>
<td>7</td>
<td>1125</td>
<td>347</td>
<td>-.08</td>
<td>.06</td>
<td>.86</td>
<td>-2.10</td>
<td>.87</td>
<td>PRCA07</td>
</tr>
<tr>
<td>8</td>
<td>1116</td>
<td>347</td>
<td>-.06</td>
<td>.06</td>
<td>.69</td>
<td>-5.10</td>
<td>.73</td>
<td>PRCA08</td>
</tr>
<tr>
<td>9</td>
<td>1264</td>
<td>347</td>
<td>-.54</td>
<td>.06</td>
<td>.87</td>
<td>-1.91</td>
<td>.91</td>
<td>PRCA09</td>
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<tr>
<td>10</td>
<td>991</td>
<td>347</td>
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<td>.06</td>
<td>.86</td>
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<td>.84</td>
<td>PRCA10</td>
</tr>
<tr>
<td>11</td>
<td>985</td>
<td>347</td>
<td>.34</td>
<td>.06</td>
<td>.77</td>
<td>-3.80</td>
<td>.77</td>
<td>PRCA11</td>
</tr>
<tr>
<td>12</td>
<td>1225</td>
<td>347</td>
<td>-.40</td>
<td>.06</td>
<td>.66</td>
<td>-5.50</td>
<td>.67</td>
<td>PRCA12</td>
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<td>13</td>
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<td>347</td>
<td>-.20</td>
<td>.06</td>
<td>1.36</td>
<td>4.60</td>
<td>1.40</td>
<td>PRCA13</td>
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<tr>
<td>14</td>
<td>1018</td>
<td>347</td>
<td>.24</td>
<td>.06</td>
<td>1.05</td>
<td>.81</td>
<td>1.07</td>
<td>PRCA14</td>
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<tr>
<td>15</td>
<td>729</td>
<td>347</td>
<td>1.18</td>
<td>.06</td>
<td>1.30</td>
<td>3.80</td>
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<td>782</td>
<td>347</td>
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<td>.06</td>
<td>1.63</td>
<td>7.44</td>
<td>1.74</td>
<td>PRCA16</td>
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<td>17</td>
<td>1175</td>
<td>347</td>
<td>-.24</td>
<td>.06</td>
<td>1.01</td>
<td>1.10</td>
<td>1.04</td>
<td>PRCA17</td>
</tr>
<tr>
<td>18</td>
<td>833</td>
<td>347</td>
<td>.82</td>
<td>.06</td>
<td>.98</td>
<td>-3.10</td>
<td>1.00</td>
<td>PRCA18</td>
</tr>
<tr>
<td>19</td>
<td>1239</td>
<td>347</td>
<td>-.45</td>
<td>.06</td>
<td>.91</td>
<td>-1.40</td>
<td>.90</td>
<td>PRCA19</td>
</tr>
<tr>
<td>20</td>
<td>1114</td>
<td>347</td>
<td>-.05</td>
<td>.06</td>
<td>1.39</td>
<td>5.24</td>
<td>1.44</td>
<td>PRCA20</td>
</tr>
<tr>
<td>21</td>
<td>1275</td>
<td>347</td>
<td>-.27</td>
<td>.06</td>
<td>1.06</td>
<td>.81</td>
<td>1.08</td>
<td>PRCA21</td>
</tr>
<tr>
<td>22</td>
<td>1163</td>
<td>347</td>
<td>-.20</td>
<td>.06</td>
<td>1.01</td>
<td>1.10</td>
<td>1.03</td>
<td>PRCA22</td>
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<td>23</td>
<td>1188</td>
<td>347</td>
<td>-.28</td>
<td>.06</td>
<td>.90</td>
<td>-1.50</td>
<td>.88</td>
<td>PRCA23</td>
</tr>
<tr>
<td>24</td>
<td>1105</td>
<td>347</td>
<td>-.02</td>
<td>.06</td>
<td>1.20</td>
<td>2.71</td>
<td>1.25</td>
<td>PRCA24</td>
</tr>
<tr>
<td>MEAN</td>
<td>1097</td>
<td>347</td>
<td>.00</td>
<td>.06</td>
<td>1.01</td>
<td>-1.04</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>S.D.</td>
<td>143</td>
<td>0</td>
<td>.45</td>
<td>.00</td>
<td>.23</td>
<td>3.22</td>
<td>.26</td>
<td>3.3</td>
</tr>
</tbody>
</table>

A graphical comparison of Rasch score distributions for subjects (persons) and items is presented in Figure 3. Perusal of this comparison shows that the PRCA-24 is, overall, an “easy” measure in Rasch terms. That is, with the exception of some items on the dyadic dimension (15, 16, 18), full coverage of higher levels of the anxiety trait appears inadequate. Japanese respondents find it easy to agree with the scale’s items, i.e., easy to indicate high levels of apprehension. This corresponds with previous studies that have shown Japanese subjects to score consistently higher on the PRCA-24 than their counterparts in the U.S. (see again McCroskey, Gudykunst, & Nishida, 1985; Klopf, 1984). Weakness in the ability of the scale to adequately measure higher levels of the trait is further seen in Figure 4. Here, item scores are plotted by increasing levels of the underlying trait.
Figure 3. Comparison of Person and Item Rasch Scores of PRCA-24.

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PERSONS MAP OF ITEMS
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-3
  +
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Figure 4. Continuity of PRCA items in measuring underlying trait apprehension
Discussion

Several conclusions relative to a translated version of the PRCA-24 seem apparent from the results of this study. First, while the translated scale shows internal consistency as measured by classical reliability statistics, further analysis indicates weakness in terms of structural integrity and the underlying theoretical assumption of four dimensions. Second, the ability of the scale to be used as an overall measure of anxiety must be questioned. The ability of the scale to adequately cover and discriminate higher levels of trait anxiety, i.e., the lack of items for which subjects find it more difficult to agree, appears to be a prime weakness of the scale. Obviously, results of this study indicate that care should be taken in using summed values of this scale for research or clinical assessment in Japan.

Why does a Japanese version of the PRCA-24 show weakness in terms of clarity and coverage of theoretical and internal constructs related to the trait of communication apprehension? Translation or measurement anomaly cannot be eliminated as a source of error variation, but the high measures of reliability indicate that reasons may lie elsewhere. As noted earlier, a stable structure for this scale has been elusive, even in its English form. Thus, some aspects of model misfit in this study could be due to instabilities or inadequacies in the theoretical foundation of the construct itself. For example, the Dyadic dimension of the PRCA-24 shows lower item-total correlations as well as lower correlations in both the first and second order confirmatory factor analysis models (Figures 1 and 2). This subscale has also appeared to be a somewhat less stable factor than other subscales in prior research on the English version (McCroskey & Beatty, 1984; McCroskey, 1990, 1992; Levine and McCroskey, 1990). On the other hand, as seen in results of Rasch analysis, only items of this theoretic dimension appear to have any ability to measure higher levels of communication apprehension. Obviously, for Japanese subjects, augmentation of the scale to include constructs involving communication situations that involve lower anxiety, and thus are more difficult to agree with, appears to be necessary in order for the measure to adequately cover the a continuous range of the apprehension trait and sub-dimensions. Results of the exploratory factor analysis of the PRCA-24 parallel those of Pribyl, Keaten, Sakamoto, & Koshikawa (1998). As in their results, items related to meetings appear to load highly on the public
dimension (again see Table 4). Japanese terms for “meeting” can include aspects of both group and public situations. Some “meetings” in Japan frequently involve formal presentations by participants rather than discussion while other “meetings” involve strong levels of interpersonal contact. For example, a regular “meeting” of full faculty at a university may require presentation skills on par with a public speaking situation while what is still termed a “meeting” of a small committee may involve much more interpersonal and less formal interaction. The grouping of items 17, 13, and 5 imply that interacting with a “new” person or someone not within one’s sphere of acquaintance may be the basis of a state situation in itself and transcend the PRCA based contexts in which such interaction occurs. Modification or construction of items reflecting these differences awaits not only further empirical research in these specific interactions but in development of appropriate descriptive terms.

Pribyl, Keaten, Sakamoto, & Koshikawa (1998) have recommended discarding items related to the public dimension since this form of communication is more rare in Japan than in the United States. However, such seems rather drastic given the strong loading of items on this dimension and the fact that such removal would destroy the historical and theoretical base of the scale. Further, the Rasch analysis would indicate that if anything, items need to be added to the scale to adequately cover situations which lie somewhere between conversations on the dyadic level and communication situations involving more public performance. Overall, additions or different groupings of items that maintain or enhance the fundamental theoretical situations and also account for different types of communication in each such as performance, participation, conversation, or social adjustment (establishing appropriate communication patterns with a new acquaintance) may be appropriate.

Clarification of the theoretical base for understanding various communication situations and terms describing these situations seems necessary in future development of the PRCA and similar anxiety measures for use in Japan. At present, a theoretical base for such is somewhat weak and lacking in strong empirical support. Objective and empirical research into various forms of anxiety and modes of communication to be measured in the PRCA may lead to further determination of appropriate modifications or additions of items in this still potentially valuable instrument.
Conclusion

That future research with the PRCA-24 in its present form should be conducted with caution seems evident. However, though it may be easy to factor analyze, delete, or force items of the PRCA-24 onto a structure that has no clear theoretical base, such has been avoided in this study for obvious reasons. Instead, these results should provide a base for reevaluating the theoretic base of the PRCA-24 as it reflects communication apprehension in Japanese culture and should also aid in determining which items should be modified, deleted, or augmented in order to produce the most parsimonious, theoretically rich, and culturally independent measure.
Appendix

このアンケートの答え方：この質問表は人とのコミュニケーションに関するあなたの気持ちを尋ねる２４の項目から構成されています。各項目の内容があなたにどの程度あてはまるのかを次の（1）まったくその通りだと思う、（2）その通りだと思う、（3）どちらとも言えない、（4）そうはない、（5）まったくそうは思わない、の中から選択し、各項目の前にある空欄に1から5までの数字を記入して下さい。正しい答えや間違った答えといったものはありません。よく似た記述が繰り返されても心配しないで下さい。時間をかけずに取り組み、あなたの第一印象を記入して下さい。

1. 集団討論に参加することが好きではない。
2. たいてい、集団討論に参加している時は居心地がよく落ち着いた気持ちでいられる。
3. 集団討論に参加している時は緊張して神経を使う。
4. 集団討論に取組むことが好きだ。
5. 新しい人たちは集団討論を行うと緊張して神経質になる。
6. 集団討論に参加している時は落ち着いてリラックスしている。
7. たいてい、会議やミーティングに参加しなければならない時は神経を使う。
8. いつも、会議やミーティングに参加している時は落ち着いた気持ちでリラックスしている。
9. 会議やミーティングで意見を述べるように求められた時、とても落ち着いた気持ちでリラックスしている。
10. 会議やミーティングで自分の意見を述べることが怖い。
11. 会議やミーティングでの意見交換はいつも居心地が悪く落ち着かない。
12. 会議やミーティングで質問に答える時、私はとてもリラックスしている。
13. 新しく知り合った人と会話する時はとても神経を使う。
14. 会話の途中で自分の意見を述べることにまったく怖さを感じない。
15. 普段、会話する時はとても緊張し神経を使う。
16. 普段、会話する時はとても落ち着いてリラックスしている。
17. 新しく知り合った人と会話する時はとてもリラックスしている。
18. 会話をしている時に自分の意見を述べることに怖さを感じる。
19. スピーチをする事はまったく怖くない。
20. スピーチをしている時、身体の一部分が緊張して硬直するように感じる。
21. スピーチをしている時、リラックスした気持ちでいる。
22. スピーチをしている時、頭の中が混乱し考えがまとまらない。
23. スピーチをしなければならない状況を前に、自信を持ってスピーチをする心の準備ができている。
24. スピーチをしている時、あまりにも神経が高ぶり、よく知っていることでさえも忘れてしまう。

The following items are reversed: 2, 4, 6, 8, 9, 12, 14, 16, 17, 19, 21, 23
Subscales are calculated from raw scores as follows (instrument item number in parenthesis):
Group = 18 - (1) + (2) - (3) + (4) - (5) + (6)
Meeting = 18 - (7) + (8) - (9) + (10) - (11) + (12)
Dyadic = 18 – (13) + (14) – (15) + (16) – (17) + (18)
Public = 18 + (19) – (20) + (21) – (22) + (23) – (24)
Overall = Group + Meeting + Dyadic + Public
References


