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# Development and validation of a measure of intercultural adjustment potential in Japanese sojourners: the Intercultural Adjustment Potential Scale (ICAPS)

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## Abstract

We describe the creation and development of a measure that predicts intercultural adjustment potential in Japanese sojourners and immigrants to the US, which we call the ICAPS. We report eight studies that provide evidence for its internal, temporal, and parallel forms reliability; for its predictive ability with not only subjective indices of adjustment, but also with psychometrically standardized measures, peer ratings, and expert ratings; for its convergent validity with a similar measure; for its construct validity with various personality scales; for its incremental validity; and for its external validity in predicting changes as a result of intercultural training, and in identifying experts who work in the intercultural field. We discuss the implications of the availability of this measure to the field for training, research, and education. © 2001 Elsevier Science Ltd. All rights reserved.

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## 1. Introduction

Intercultural adjustment and culture shock are of paramount importance to millions of people. They are a concern not only to those who are adjusting to new and different cultures, but also to teachers, administrators, businesspersons, and individuals who, in their everyday lives, live, work, and play with people from

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different cultures. These issues are relevant for students, immigrants, indigenous peoples, refugees, asylum seekers, and many others.

In this article, we describe the development and validation of an individual difference measure that assesses intercultural adjustment potential in Japanese sojourners and immigrants to the United States. In eight studies, we demonstrate the reliability and validity of this measure, called the Intercultural Adjustment Potential Scale (ICAPS). First, we briefly discuss previous theoretical approaches and empirical work in this area, reformulate them around the role of emotion, and describe the development and creation of the ICAPS using this conceptual framework.

### *1.1. Understanding intercultural adjustment*

Berry and Sam (1997) have identified six types of individuals that need to deal with the issues concerning intercultural adjustment. Migrant groups that have intercultural contact voluntarily, for example, involve ethnocultural groups; permanent migrants involve immigrants, and temporary migrants involve sojourners. Migrants with involuntary contact with new cultures include indigenous peoples; permanent groups involve refugees, and temporary groups involve asylum seekers. The focus of the work described in this article, and indeed of most of the literature, is on sojourners and immigrants.

Another issue of particular importance to work in this area concerns the definition of successful adjustment. Previous researchers have incorporated a wide range of outcome measures, including self-awareness and self-esteem (Kamal & Maruyama, 1990), mood states (Stone & Ward, 1990), health status (Babiker, Cox, & Miller, 1980), and the like (all cited in Ward, 2001). Some writers have developed synthesizing strategies to integrate these specific approaches in order to highlight a smaller number of features. For example, Brislin (1981) has identified three factors of adjustment, including: (1) having successful relationships with people from other cultures; (2) feeling that interactions are warm, cordial, respectful, and cooperative; and (3) accomplishing tasks in an effective and efficient manner. Hammer, Gudykunst, and Wiseman (1978) focused on these factors, and also included the ability to manage psychological stress effectively. Black and Stephens (1989) identified general adjustment involving daily activities, interaction adjustment involving interpersonal relations, and work adjustment related to work and tasks. Ward and her colleagues (see Ward, 2001) have broadly divided adjustment into two categories: psychological and sociocultural.

However successful adjustment is defined, an important question arises concerning the patterns of behaviors that are most effective in leading to successful adaptation. While a number of theoretical perspectives and empirical evidence exists, perhaps the most well known is Berry's analysis of interaction styles for sojourners, immigrants, and refugees (Berry, 1994). In this model, four categories of interaction style are identified on the basis of the yes/no answers to two questions: (1) is it important to maintain my cultural identity and characteristics, and (2) do I value and want to maintain relationships with people of the host culture? Individuals who say yes to

both are considered “integrators”; those who say no to both are “marginalizers”. Those who say yes to the first and no to the second are “separators”, while those who say no to the first and yes to the second are “assimilators”. Research over the years has demonstrated amply that integration is not the only method of choice among immigrants and sojourners, but that it is most effective in leading to successful intercultural adaptation (see reviews by Berry & Sam, 1997; Ward, 2001).

Studies have identified a wide range of variables that appear related to integration and adaptation. Among these, knowledge of host culture and culture specific information have been singled out as important factors. Knowledge and identification with one’s own culture has also been shown to be predictive of adjustment. Language proficiency is identified not only by researchers but also by practitioners alike as important. Attitudes, previous experiences, levels of ethnocentrism, social support, cultural similarity, adventure, self-construals, and many other such variables have also been identified in the literature.

In sum, therefore, previous work on the adjustment and adaptation of sojourners and immigrants has shown that integration works best in producing successful adaptation outcomes. Among the factors that appear to facilitate integration are those described immediately above, most notably knowledge of host and other culture and language proficiency.

### *1.2. A new way of understanding intercultural adjustment*

In our work, we have chosen to focus on the social psychology of adjustment through an analysis of intercultural encounters. Because of differences in language, nonverbal behaviors, values, norms, attitudes, rules, systems, and all the other manifestations of culture, intercultural adjustment is replete with conflict, frustration, and struggle. They are, in fact, inevitable because of cultural differences, at least on the level of manifest behaviors (despite possible cultural similarities in underlying psychological goals and intentions). These conflict-arousing contexts are seeped with emotion, often negative. Once these are aroused, intercultural encounters can easily lead to negative experiences, frustrations, stereotypes, attitudes, and a host of other affective/cognitive outcomes that are not conducive to successful adaptation. Therefore, we believe one of the keys to successful intercultural adjustment and integration is the ability to regulate one’s emotions, and to not allow negative affect, which may be inevitable, to overcome oneself and color one’s cognitions and motivations.

Emotion regulation allows individuals to engage in clear thinking about intercultural incidents without retreating into psychological defenses. If sojourners do not have the ability to regulate or control their emotions, they will be unlikely to adjust well because they will be locked into their automatic or habitual ways of thinking and interacting with the world. Emotion regulation seems likely to be the gatekeeper skill for intercultural adjustment.

The ability to control negative emotions, however, alone is not sufficient. Once held in check, individuals must then engage in learning about the new culture, which requires them to analyze the cultural underpinnings of the context, and understand

the intentions and behaviors that produced conflict in the first place from a different cultural perspective. In doing so, individuals may draw on the reservoirs of knowledge that previous research has shown to be important in predicting adjustment, such as knowledge of host and own culture, previous experience, and the like. Important aspects of this ability to learn a new culture are likely to include being free of over-attachment to previous ways of thinking that have worked in the past and a willingness to tolerate the ambiguity of not knowing or being able to predict the likely outcomes of one's actions. One also needs the openness and flexibility to call to mind and to consider alternatives that would have been inappropriate in previous social experience. A further necessity in adjusting to a new culture must be the monitoring of the behaviors and reactions of one's self and others around one's self. It may also be the case that conscious, critical thinking about intercultural incidents, the generation of rival hypotheses that explain conflict other than those from their own cultural framework and the creation of a new set of ideas about social interaction are critical to adjustment.

To be sure, these psychological skills have been described in the previous literature. To our knowledge, however, they have not been empirically compared nor integrated into a single set of dimensions that accounts for intercultural adjustment. This set of studies represents an attempt to create a more complete model of the psychology of intercultural adaptation.

### *1.3. The development of the ICAPS*

The field has struggled with the creation of valid and reliable individual difference measures that will predict intercultural adjustment, for various reasons. For one, when researchers focus on variables that are culture- or context-specific, such as knowledge of host culture, it is nearly impossible to generate a valid measure because it would necessitate the assessment of knowledge that is specific to different cultures, and would be based on the assumption that such knowledge existed and was applicable to all contexts within that culture. Such measures would border on the assessment of knowledge of cultural stereotypes.

Another factor that has hindered the development of valid and reliable individual difference measures has been a lack of consensus on the underlying psychological components that are important to adaptation. As mentioned above, while previous research has identified many variables that appear to be associated with successful adjustment, there is no coherent model that unifies these components into a comprehensive and understandable framework for predicting adaptation. The identification of several psychological variables as the keys to intercultural adaptation bypasses the problem of culture-specific knowledge, and views the *potential* for intercultural adjustment as a function of the psychological skills that individuals possess within them. In doing so, it does not rely on the knowledge or attitudes that sojourners or immigrants may have, or on the specific host culture in which they reside, or on language proficiency. Thus, the potential applicability of this approach is considerably larger than previous models that are tied to knowledge and attitudes.

Because there was no measure that could assess individual differences in the potential for intercultural adjustment based on the factors outlined above, we opted to create our own, resulting in the development of the Intercultural Adjustment Potential Scale—ICAPS. Our strategy was to embody the several factors previously suggested as being related to intercultural adjustment in a pool of items and then to empirically test which had the strongest ability to predict intercultural adjustment, rather than to decide on an a priori basis which items should predict intercultural adjustment.

We thus examined item content from a number of valid and reliable personality inventories assessing psychological constructs related to emotion regulation, critical thinking, openness/flexibility, interpersonal security, emotional commitment to traditional ways of thinking, tolerance of ambiguity, and empathy. These included the Eysenck Personality Inventory (EPI), the Beck Depression Inventory (BDI), the State-Trait Anxiety Inventory (STAI), the Bem Sex Role Inventory (BSRI), the original Minnesota Multiphasic Personality Inventory (MMPI) item pool, the California Personality Inventory (CPI), the NEO Personality Inventory (NEO-PI), the Big 5 Personality Inventory (BFI), the California F-Scale, and the Interpersonal Reactivity Index. We created items based on the ideas gleaned from our examination of these scales. We also constructed our own items. This resulted in the initial development of 193 items.

One issue that arose early in this work was whether this test would be developed for any sojourner of any cultural background, or for those from a single culture. We opted for the latter, assuming that it would be more beneficial to create and validate a measure that has as high a predictive validity as possible for one cultural group, rather than develop a general measure at the sacrifice of predictive validity. The development of a culture-general measure would require the testing of people from multiple home cultures in multiple host cultures, which would be practically infeasible. If a culture-specific measure were created, however, it could serve as the baseline platform for similar method development in other cultures. Thus, we focused on Japanese sojourners and immigrants, because of the literature in the area and our own expertise with this culture.

Since we were concerned with the cross-cultural equivalence of the 193 items, to take into account that respondents might have different English language capabilities, and to remove any colloquialism and difficulty of wording, two of us (D.M. and J.L.) created the items, reviewing and modifying all items in terms of language and style, rendering the wording appropriate for Japanese students who might possess a limited selection of English idioms commonly in use. Two native Japanese research assistants then reviewed the new items, ensuring that they were understandable to native Japanese. Care was taken to exclude items that depended for their utility on a cultural value in which Japanese and US cultures differ. In all cases, items were written to adapt the cultural meaning of an item in the United States to the same cultural context from a Japanese perspective.

In the remainder of this article, we report eight studies that describe the empirical selection of items and demonstrate the reliability and validity of the ICAPS in predicting intercultural adjustment success for Japanese sojourners and immigrants.

The final selection of items based on their empirical ability to predict intercultural adjustment is the preferred method of item selection, because a large number of items that are theoretically considered to be related to the target constructs were initially selected, but it is unclear as to whether they each predict aspects of intercultural adjustment. Items having little or nothing to do with intercultural adjustment should be eliminated, even if elsewhere they reliably measure an aspect of an underlying psychological skill (e.g., openness) that is theoretically purported to be related to adjustment. Also, some items may predict adjustment better than others; thus, only items that predict adjustment the best, according to empirical criteria, should be retained. The evidence provided in these eight studies will demonstrate the unique contribution of the ICAPS to the field.

## **2. Study 1**

Because the transference of theory to practice is always uncertain, the purpose of the first study was twofold: (1) an initial assessment of the feasibility of the ICAPS to predict adjustment to life in the United States by Japanese student sojourners, and (2) item reduction. The first goal will be achieved if items in the ICAPS correlate with a measure of adjustment; the second goal will be achieved by eliminating items that have smallest or zero correlations.

### *2.1. Method*

#### *2.1.1. Participants*

The participants included 28 (19 female, 9 male) Japanese sojourners who were international students at universities in the San Francisco Bay Area. All were born and raised in Japan, and had come to the US to study. Their ages ranged from 20–29, and they had been living in the US for varying periods of time, ranging from less than 1 yr to more than 6 yr.

#### *2.1.2. ICAPS-193*

The 193 item ICAPS was used in this initial study. Using a seven-point scale, respondents rated the degree to which each item described them accurately.

#### *2.1.3. Criterion variables*

We created seven criterion variables to indicate the participants' internal psychological states in terms of three aspects of intercultural adjustment to the US and their well-being: adjustment to the general environment, adjustment to school/work, and to interacting with host nationals. These were:

1. It has been hard to get used to living in the United States.
2. I like American food.
3. I miss my family very much.
4. I enjoy living in the culture of the United States.

5. I wish I had never left Japan.
6. I have close American friends.
7. It has been easy for me to live in the United States.

For each, respondents answered using a 7-point Likert scale, ranging from 1, strong disagreement, to 7, strong agreement. In order to reduce response bias on the scales, items 2, 4, 6, and 7 were posed positively, while items 1, 3, and 5 were posed negatively.

In addition, respondents told us about their length of stay in the US, and their GPA in Japan and the US. We considered these items to reflect objective indices of adjustment.

#### *2.1.4. Demographic and other personal information*

We wanted to ascertain whether other variables had mediating effects on adjustment. On a one-page, confidential personal information form, respondents were asked if they had close relatives in the immediate area, gender, age, marital status, household situation, race/ethnicity, religious or spiritual background, place of birth, place primarily raised, native language, economic level of family-of-origin, occupation (including student status), annual income, education level, and degrees attained.

#### *2.1.5. Procedures*

Respondents were given the 193 item ICAPS, a corresponding answer sheet, the personal information form, and an additional sheet containing the criterion variables. They completed the measure on their own time, and returned the completed answer sheet and supplemental questions within a few days.

## *2.2. Results and discussion*

Our goal was to be broadly inclusive of items that had the potential to predict intercultural adjustment, and to exclude those that had little to do with that prediction. Pearson correlations were computed separately for each of the 193 items with each of the subjective and criterion variables. Almost all the items correlated significantly with more than one criterion variable. In order to reduce the item pool to a more practical size, we eliminated any item that did not reach  $r = 0.35$  with any criterion variable, leading to the exclusion of 40 items, resulting in a 153-item ICAPS. For each of the 153 items, we computed the mean, standard deviation, variance, kurtosis, skew and range. Twenty four items that did not use the full response range of 1–7 were reviewed to examine if respondents were using culturally biased response sets. In most cases, the responses used almost all of the range, and therefore, all those items were retained.

This study achieved its goals of examining the initial feasibility of the ICAPS items to predict adjustment, and in somewhat reducing its number of items. We desired, however, more certainty about the validity of our criteria of adjustment, and a further reduction of the item pool to a more practical size. In Study 2, therefore, we

included a wider range of criterion variables, including measures of adjustment that were based on in-depth, small group interviews. Correlations between the ICAPS items and these various measures of adjustment would provide further evidence for its predictive validity; elimination of items with the smallest or no correlation with the adjustment measures would allow us to reduce further the item pool.

### **3. Study 2**

#### *3.1. Method*

##### *3.1.1. Participants*

Participants were 34 Japanese students living in the San Francisco Bay Area (58.8% female, 41.2% male; 41.2% undergraduates, 55.9% graduate or post-baccalaureate, 2.9% declined to state). Age range was 21–35, with a mean of 27.8. Most were not employed (91.2%), and only one worked more than 15 h per week.

##### *3.1.2. Instruments*

Participants completed the same three measures used in Study 1: the 153-item ICAPS, using the same 7-point scale; the subjective adjustment variables; and the demographics information. In this study, the seven subjective adjustment variables were averaged to create a composite subjective adjustment score, after reverse coding the negative items. In addition, respondents made 7-point ratings of their abilities in listening, speaking, reading, and writing English. Averaging the listening and speaking ratings computed a composite conversational score; likewise, a composite text score was computed by averaging the reading and writing scores; an overall language proficiency score was computed by averaging all four items.

##### *3.1.3. Focus group interviews and procedures*

Respondents were recruited in small groups of 4–5 individuals, generally according to friendship or acquaintance. Prior to coming to the laboratory, all completed the instruments, and brought them to the focus group sessions. Upon arrival to the laboratory, the respondents were served refreshments, and some time was allowed to become acquainted with the two interviewers, one research assistant who was a Japanese native, and one of the authors (D.M.) who was fluent in Japanese. After some time had elapsed, the purpose of the study was introduced to the respondents, who were told about the necessity for honest rather than polite answers. The groups then engaged in a frank discussion about six themes:

1. What are the biggest differences between living in Japan and living in the US?
2. What things do people in the US not know about Japanese students?
3. What do you like most about studying and living in the US?
4. What do you like least about studying and living in the US?
5. What are the hardest parts of studying and living in the US for you?
6. What are some of the small things that you do not like about being in the US?

Using these six themes, discussion was focused on the kinds of problems and benefits they (or their friends) had experienced in adjusting to life in the US and the consequences of those experiences. Each respondent contributed fairly evenly to the discussion, which lasted about 2 h per session. For the most part, all respondents had several good and bad examples to give of adjustment to life in the US, not only from their lives but also from their friends' or acquaintances'.

At the end of the session, each participant rated him or herself on two items: how well he or she matched with the American culture prior to coming to the US, and how well he or she has adjusted to life in the US. Respondents used a 7-point scale for each, ranging from 0, not at all adjusted/matched to 6, perfectly adjusted/matched. In addition, all respondents rated all other members of the focus group on both items, based on their previous knowledge of them, and on the content of the discussion that had occurred, using the same scale. The two interviewers also made both ratings of all participants. No mention was made of any ratings until the end of the discussions. The peer ratings were averaged for each respondent separately for both items; likewise, the interviewer ratings were also averaged on both items for each respondent. Thus, in addition to the criterion variables described previously, this study utilized self-, other-, and interviewer ratings of adjustment based on in-depth focus group interviews.

#### **4. Results and discussion**

Product moment correlations were computed between each of the 153 ICAPS items and the six ratings from the focus groups, the composite subjective adjustment score, and three composite language scores. We then selected items for final inclusion based on the following criteria. First, we selected the 30 items with the lowest summed probabilities of adjustment ratings by peers and interviewers. Then, using self-, peer, and interviewer ratings and outcome measure adjustment score correlations, items were selected if two or more of the four correlations were significant ( $p \leq 0.05$ ), if one correlation was significant ( $p \leq 0.05$ ) and another approached significance ( $p \leq 0.10$ ), if one correlation was highly significant ( $p \leq 0.01$ ), or if two correlations approached significance ( $p \leq 0.10$ ). This resulted in the final selection of 55 items. These varied strategies were employed to ensure that no item that uniquely contributed to the prediction of intercultural adjustment would be excluded.

A composite score was created for the ICAPS by averaging across the 55 items, reverse coding items that correlated negatively in the earlier analyses. We then computed correlations on this composite score with the four adjustment scores (Table 1). All adjustment scores correlated significantly with the new scale. Intercorrelations for all ratings scores were also significant.

As a check, we then randomly split the excluded ICAPS items into two scales, created two new scores for each, and computed correlations between these scale scores and the four adjustment measures. Of the eight correlations, only two were significant (one for each scale). Thus, we were fairly certain that the 55-item

Table 1  
Correlations between adjustment ratings, Study 2<sup>a</sup>

	1	2	3	4	5
1. Composite ICAPS scale score	—	0.6817***	0.6967***	0.6600***	0.5289**
2. Self rating of adjustment		—	0.5281***	0.5396***	0.4046*
3. Peer rating of adjustment			—	0.5953***	0.2867
4. Facilitator rating of adjustment				—	0.3093
5. Composite adjustment score					—

<sup>a</sup> \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .

score more reliably predicted adjustment as measured by a variety of indices than did the excluded items.

Reliability analyses were computed on the new 55-item scale and on the two scales created by random selection of the excluded items. The alpha coefficient for the 55-item scale was 0.7828; the alphas for the other two scales were 0.5143 and 0.3904.

These results indicated that a 55-item measure of the ICAPS, selected according to empirical criteria, has internal consistency (reliability), and can predict adjustment measured according to subjective criteria, self-, peer, and expert-interviewer ratings. The fact that the ICAPS can predict adjustment as rated by peers and interviewers is fairly conclusive evidence that the prediction is not reliant on self-ratings, which may be biased by equivalent methods or halo effects. In addition, the elimination of ICAPS items resulting in a 55-item measure allows for the ICAPS assessment to be relatively easy to use by researchers and practitioners alike.

While Study 2 established the internal reliability and predictive validity of the ICAPS, Study 3 examined its temporal and parallel forms reliability with a Japanese version. Temporal reliability will be established through the existence of a significant correlation between ICAPS test scores taken at two different times; parallel forms reliability will be established through a significant correlation between the English and Japanese forms.

## 5. Study 3

### 5.1. Method

#### 5.1.1. Participants

The participants included 25 respondents who previously participated in Study 1 or 2.

#### 5.1.2. Instruments

The 55-item ICAPS (ICAPS-55) was used. In addition, we created a Japanese version of the ICAPS-55 by translating the items to Japanese. Accuracy of the translation was ensured by back-translation procedures. There were no problems

during the translation or the back-translation. The ICAPS-55 was scored according to the same procedure as in Study 2.

### *5.1.3. Procedures*

We attempted to recruit all of the participants from Studies 1 and 2. Many of them, however, had moved or were on vacation during the time of this data collection. All of whom we were able to contact agreed to take part in this study. Participants were provided with the English and Japanese versions of the ICAPS-55, and completed them at their leisure and returned them either to the laboratory or the recruiter. In general, these forms were returned between one and two months of their initial participation, allowing for sufficient time to have elapsed so that they could not have remembered their responses to the first ICAPS administration.

## *5.2. Results and discussion*

Test–retest reliability was examined by computing a correlation between the ICAPS-55 score at time 1 with their scores at time 2. The English–English test–retest reliability coefficient was 0.7938; the English–Japanese reliability coefficient was 0.8356. These findings provide fairly convincing evidence for the temporal reliability of the ICAPS-55.

Parallel forms reliability was examined by computing a correlation between the ICAPS-55 scores for the English and Japanese versions at time 2. This correlation was 0.9314, which provides convincing evidence for their parallel forms reliability.

At this point in the research the ICAPS had been shown to be reliable and valid with our subject groups. However, both the reliability and the validity of any scale is likely to diminish when used with groups other than those used to select its items as well as when measuring it against different criteria of validity. Therefore, in Study 4, we examined the ICAPS' predictive validity using other standardized measures related to adjustment. Given this more stringent test, further evidence for predictive validity would be established through significant correlations between ICAPS scores and the standardized measures of adjustment.

## **6. Study 4**

### *6.1. Method*

#### *6.1.1. Participants*

Participants were 95 Japanese students living in the San Francisco Bay Area. Forty one percent were undergraduates, 53.4% were in graduate or post-baccalaureate programs, and 5.5% declined to state (mean years of education = 3 + years of college). Of the total group, 39.7% had been in the US for less than 1 yr, 32.9% for 1–3 yr, and 24.7% for 4 yr or more (mean length of time in the US = 2.61 yr). The age range was 19–46, with a mean of 26.57. Women (74%) outnumbered men (26%).

### 6.1.2. Instruments

Six questionnaires were used in this study, four of which operationalized adjustment outcome themes derived from the focus groups described in Study 2. They included:

1. ICAPS-55: Summing all items after reverse coding negatively loading items created a composite score; a high score reflects greater adjustment potential. Cronbach's alpha with this sample was 0.4692.
2. Social Adjustment Scale Self-Report (SAS-SR): This scale is a multiple-section measure of general adjustment. For this study, only the sections on school (items 1–6) and spare time (items 7–17) were included. The former was selected to measure how well the participants felt they were achieving their primary goals as students (School/Work Effectiveness Theme). The latter was included to measure participants' level of social adjustment to and comfort in the US (Personal Relationships and Social Involvement Themes). Taking the mean of the item scores for that subscale scores the two subscales, and the mean of all items gives a total score; higher scores indicate more impairment. Alphas for the school, social, and total scales were 0.5263, 0.6340, and 0.6702, respectively.
3. Somatic, Cognitive, Behavioral Anxiety Scale (SCBAI): This scale is a 36-item scale of anxiety measuring the level and type of discomfort or uncertainty participants were experiencing (Emotional Well-Being Theme). Separate scores were derived for somatic (16 items), cognitive (11 items), and behavioral (9 items) dimensions of anxiety by summing the item scores for each subscale. A total score is also computed; higher scores indicate greater anxiety. Alphas were as follows: somatic scale = 0.8547, cognitive scale = 0.8189, behavioral scale = 0.8119, and total scale = 0.9053.
4. Beck Depression Inventory II (BDI-II): The measure assessed affective discomfort not measured by the SCBAI. It includes items operationalizing depression according to DSM-IV criteria, including changes in appetite and sleep. Summing the 21 individual item responses generates a single score; higher scores reflect greater depression. The alpha for this scale was 0.9163.
5. Subjective adjustment: This outcome measure was similar to that used in Studies 1 and 2, and included 14 face-valid items on subjective well-being or adjustment specific to international visitors, plus questions on grades in the US and Japan, relatives in the San Francisco Bay Area, and self-perceived competence in written and spoken English. Six of the 14 adjustment items were reverse-coded, and a mean score is computed; a high mean score reflects a higher level of adjustment. The alpha was 0.6887. Three language scores are also computed: verbal communication skill (mean of listening and speaking scores, alpha = 0.8672), text skill (mean of reading and writing scores, alpha = 0.7856), and overall language skill (mean of all four language scores, alpha = 0.8615). High scores indicate greater confidence in language ability.
6. Demographic Questionnaire: This measure included items regarding age, gender, length of time in the US, and education level.

All measures were translated into Japanese, and accuracy of the translation was verified using back-translation procedures. No problems were encountered in either the translation or the back-translation of the measures. Participants were given their choice of either English or Japanese language packets, depending on their preference and language proficiency.

### *6.1.3. Procedures*

Packets containing the six questionnaires, a consent form, and an instruction sheet were distributed to participants in a variety of ways. In most cases, the study was introduced to Japanese international students in classes, clubs, or social events. Participants at club meetings and social events completed the surveys immediately; participants in classes took them home to complete and return to class a week later. In a few cases, survey packets were mailed to participants. These packets included self-addressed, stamped envelopes for returning completed surveys. The contact information and the consent form were separated from the completed questionnaires immediately upon receipt, and maintained in separate, secure locations, so that the confidentiality of the participants could be preserved.

## *6.2. Results and discussion*

The predictive validity of ICAPS-55 was assessed by computing correlations between the ICAPS-55 total score and each of the outcome scores measured by the SAS-SR, SCBAI, BDI, and the Subjective Adjustment scales. As shown in the left column of Table 2, ICAPS-55 was significantly correlated with all nine adjustment scores. Participants with greater ICAPS-55 scores had less adjustment problems in school and their social lives; less somatic, cognitive, and behavioral anxiety; less depression; and greater subjective well-being in their adjustment to the US.

Correlations were also computed among the three language scale scores and selected demographics information with the ICAPS-55 scores and all of the outcome measures, to identify possible mediators of the above correlations. Significant correlations with either ICAPS-55 or any of the outcome measures were found with gender, age, economic level, education, number of years in the US, and overall language scores. Thus, we recomputed the correlations between the ICAPS-55 scores and the outcome measures, partialling out the influence of each of these six potential mediators separately, and then also as a group. As seen in Table 2, the findings reported above nearly perfectly survive even when these six mediators are controlled for. These analyses were also replicated separately for males and females.

These findings provided rather convincing evidence for the validity of the ICAPS to predict adjustment in Japanese sojourners, utilizing not only a subjective measure of adjustment that has now replicated findings in three studies, but also three standardized measures of adjustment that operationalize themes derived from the content of the focus groups discussed in Study 2. Moreover, the predictive validity of the ICAPS survives even when the effects of potential mediators are statistically eliminated, both individually and as a group, and separately for males and females.

Table 2  
Correlations between ICAPS-55 and adjustment outcome measures, Study 4<sup>a</sup>

Outcome variables	Product moment correlation	Controlling for gender	Controlling for age	Controlling for econ. level	Controlling for education	Controlling for years in US	Controlling for language	Controlling for all six variables
SAS-SR school scale	-0.194*	-0.187*	-0.194*	-0.210*	-0.178*	-0.193*	-0.169	-0.165
SAS-SR social scale	-0.447***	-0.447***	-0.475***	-0.463***	-0.446***	-0.453***	-0.427***	-0.454***
SAS-SR composite scale	-0.450***	-0.448***	-0.471***	-0.478***	-0.444***	-0.454***	-0.424***	-0.456***
SCBAI somatic scale	-0.196*	-0.203*	-0.202*	-0.196*	-0.216*	-0.202*	-0.155	-0.178
SCBAI cognitive scale	-0.295**	-0.290**	-0.293**	-0.295**	-0.305**	-0.289**	-0.281**	-0.295**
SCBAI behavioral scale	-0.408***	-0.405***	-0.407***	-0.409***	-0.401***	-0.410***	-0.398***	-0.388***
SCBAI composite scale	-0.357***	-0.354***	-0.358***	-0.357***	-0.370***	-0.358***	-0.329**	-0.341**
BDI composite scale	-0.344***	-0.346***	-0.343***	-0.352***	-0.332**	-0.337***	-0.317**	-0.332**
Adjustment scale	0.253**	0.252**	0.248**	0.253**	0.225*	0.234*	0.168	0.153

<sup>a</sup> \* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Collectively, the findings from the first four studies provide strong evidence for the reliability and predictive validity of the ICAPS to predict adjustment potential in Japanese sojourners. In the next study, we turned our attention to the assessment of its convergent, concurrent, and incremental construct validity through an examination of its relationships with another test of intercultural adjustment (the CCAI), and with standardized measures of personality and psychopathology (the BFI and the MCMI, respectively). Evidence for the convergent validity of the ICAPS would be established through a significant correlation between the ICAPS and the CCAI. Concurrent validity would be established through the significant correlations between ICAPS and the BFI and MCMI. Additionally, the correlation of ICAPS with BFI or MCMI after statistically controlling for the contribution of the CCAI would provide evidence for its incremental validity.

## **7. Study 5**

### *7.1. Method*

#### *7.1.1. Participants*

Participants were 136 students (101 females, 35 males) attending San Francisco State University, recruited from undergraduate psychology classes, who participated in partial fulfillment of class requirements. Their age range was 18–53, with the majority in their early twenties. Fifty-six self-reported their ethnicity as Caucasian, 42 as Asian, 7 Black, and 12 Hispanic; the rest declined to state their ethnicity or could not be classified.

#### *7.1.2. Instruments*

Five measures were used in the study.

1. ICAPS-55: This was the same scale, with the same scoring procedures, as used in Study 4.
2. Cross-Cultural Adaptability Inventory (CCAI): This scale was included to assess the convergent validity of the ICAPS. It includes 50 items with a 6-point rating scale ranging from 1, Definitely Not True About Me Right Now to 6, Definitely True About Me Right Now. Items are averaged to score four subscales, Emotional Resilience (ER), Flexibility/Openness (FO), Personal Autonomy (PAu), and Perceptual Acuity (PAc). A total score is also calculated by averaging across all items, after reverse coding negatively loading items. This scale is purported to measure general cross-cultural adaptability. Although validity and reliability statistics are scarce (Kelly & Meyers, 1992), this instrument is the only one available to assess the convergent validity of the ICAPS.
3. Big Five Inventory (BFI): This 54-item questionnaire measures the five personality dimensions thought to represent the universal five factor model of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. Respondents use a 5-point scale ranging from 1, Disagree Strongly to 5, Agree Strongly in response to each item. The scores for the five personality

dimensions are calculated by averaging across items loading on that scale (John, 1989, 1990).

4. Millon Clinical Multiaxial Inventory-II (MCMI-II): This 175-item true/false questionnaire measures 24 dimensions of psychopathology, and a validity scale: Schizoid, Avoidant, Dependent, Histrionic, Narcissistic, Antisocial, Aggressive, Compulsive, Passive-Aggressive, Self-Defeating, Schizotypal, Borderline, Paranoid, Anxiety, Somatoform, Bipolar-Manic, Dysthymia, Alcohol Dependence, Drug Dependence, Thought Disorder, Major Depression, Delusional Disorder, Desirability, and Debasement. A score for each was created by summing each of the items that compose the scales in accordance to their weights (Millon, 1992). Base rate adjustments were not used as there were no data available as to the base rates of the various pathologies among this group of subjects.
5. Demographic Questionnaire: This measure included 19 items regarding gender, age, education, income level, and other demographic information.

### 7.1.3. Procedure

Packets containing the five questionnaires, a consent form, and an instruction sheet were distributed to students who volunteered for the project in their classes. Participants completed the questionnaires at their leisure, and returned them the following class period. In order to guarantee anonymity of the participants, the consent form was separated from the rest of the questionnaires.

## 7.2. Results and discussion

Correlations between the composite score of ICAPS and the CCAI total score and its four subscales tested the convergent validity of the ICAPS. All correlations were significant and high,  $r(136) = -0.450, p < 0.001$ ;  $-0.409, p < 0.001$ ;  $-0.443, p < 0.001$ ;  $-0.274, p < 0.01$ ; and  $-0.245, p < 0.01$ , for CCAI total, ER, FO, PAu, and PAc, respectively. These correlations suggest concurrent validity for the ICAPS.

Construct validity of the ICAPS was examined by computing correlations between ICAPS and the five personality dimensions of the BFI and the 24 dimensions of the MCMI-II. All five of the correlations with the BFI were statistically significant, indicating that individuals with higher ICAPS scores were more extroverted, agreeable, conscientious, and open, and less neurotic and suggesting the ICAPS is likely to have multiple statistical factors. These correlations suggest that the ICAPS taps into the basic dimensions of personality. Additionally, 16 of the 24 correlations with the MCMI were significant, indicating that individuals with higher ICAPS scores had less psychopathology, suggesting that there is a strong component in the ICAPS related to difficulties in dealing with one's emotions (Table 3).

Since the ICAPS was correlated with the CCAI, we were interested in the extent to which the correlations between the ICAPS and the BFI or MCMI were accounted for by overlapping variance with the CCAI. Thus, we recomputed all of the correlations reported above, partialling out CCAI total scores (bottom cell entries in Table 3). Four of the five correlations with the BFI were still statistically significant, as were 10 of the 24 correlations with the MCMI. These findings provide strong

Table 3  
Correlations between ICAPS-55 and the BFI and MCMI, Study 5<sup>a</sup>

		BFI ext	BFI agr	BFI con	BFI neu	BFI ope			
ICAPS	Pearson <i>r</i>	0.455***	0.296***	0.320***	-0.278**	0.571***			
	Partial <i>r</i>	0.366***	0.183*	0.193*	-0.161	0.491***			
		MCMI dysthymia	MCMI major depression	MCMI paranoid	MCMI somatoform	MCMI thought disorder	MCMI borderline	MCMI passive-aggressive	MCMI schizotypal
ICAPS	Pearson <i>r</i>	-0.394***	-0.345***	-0.193*	-0.229**	-0.261**	-0.359***	-0.296**	-0.380***
	Partial <i>r</i>	-0.234**	-0.197*	-0.149	-0.102	-0.123	-0.212*	-0.187*	-0.231**
		MCMI self-defeating	MCMI alcohol dependence	MCMI anxiety	MCMI bipolar manic	MCMI debasement	MCMI delusional	MCMI desirability	MCMI drug dependence
ICAPS	Pearson <i>r</i>	-0.274**	-0.266**	-0.309***	0.143	-0.385***	-0.141	0.164	-0.065
	Partial <i>r</i>	-0.144	-0.122	-0.148	0.108	-0.231**	-0.094	-0.093	0.030
		MCMI schizoid	MCMI narcissistic	MCMI histrionic	MCMI dependent	MCMI compulsive	MCMI avoidant	MCMI antisocial	MCMI aggressive
ICAPS	Pearson <i>r</i>	-0.350***	0.149	0.227**	-0.199*	-0.143	-0.387***	-0.076	-0.101
	Partial <i>r</i>	-0.202*	0.094	0.189*	-0.124	-0.177*	-0.249**	-0.003	-0.062

<sup>a</sup> \**p*<0.05, \*\* *p*<0.01, \*\*\* *p*<0.001, *n* = 134.

evidence for the incremental validity of the ICAPS as well suggesting that the ICAPS predicts the psychological dimensions predictive of intercultural adjustment better than does the CCAI. All of the analyses reported here were recomputed separately for men and women, producing essentially the same findings (full report given by Kim et al., 1999, and can be obtained from the first author).

While the results of Study 5 further demonstrated the construct validity of the ICAPS-55, in the next study, we were interested in assessing the external validity of the ICAPS by examining whether it can be improved through participation in seminars that are designed to aid in intercultural adjustment. Evidence of the external validity of the ICAPS would be established through the significant increase in ICAPS scores from before to after training. This is of immense practical significance in a world of rapidly increasing intercultural contact in that if intercultural adjustment is a fixed characteristic then nothing can be done if a person is found to be low on it. But, if it can be raised, then persons found to be low on intercultural adjustment potential can be trained in ways that will allow them to more easily adapt to new cultures.

## **8. Study 6**

### *8.1. Method*

#### *8.1.1. Participants*

The participants for this study were 30 third-year Japanese university students who were part of two groups of students visiting the US on an educational/cultural exchange tour. Of these, 6 were females, 24 were males; their mean age was 20.64 yr.

#### *8.1.2. Instruments*

All participants completed the ICAPS-55 and a brief demographic information sheet. ICAPS total scores were computed in the same method as described previously.

#### *8.1.3. Intercultural seminar*

Upon arrival in the US, all individuals participated in a fairly standard, one-day seminar on intercultural communication and adjustment. The seminar began with refreshments, self-introductions, and an introduction to the goals of the seminar. Participants viewed a 20-min videotape highlighting cultural differences, and then engaged in a discussion about cultural influences on perception. Participants then viewed another 20-min video highlighting cultural differences, and engaged in a discussion on intercultural communication. They then participated in some exercises to raise their awareness about verbal and nonverbal communication. During lunch, they were given exercises that required them to observe others around them. Resuming after lunch, they discussed their observations, and used a description, feeling, interpretation, and evaluation process to evaluate and understand the differences they observed. They then engaged in some role playing,

simulating intercultural communication situations, and engaged in discussions about how to deal with communication difficulties and breakdowns. They were then introduced to what intercultural research has shown to be effective ingredients of intercultural adjustment, and finally given some practical useful information for their stay in the US. A closing evaluation of the seminar marked its end.

#### *8.1.4. Procedures*

All participants were identified for participation in this study well before their arrival in the US. Approximately 1 month before their arrival, they completed the ICAPS-55, while still in Japan. That data was returned to our laboratory, but was not processed until the end of the second data collection, ensuring that the researchers and seminar facilitator were blind to the ICAPS-55 scores of the participants. Upon arrival in the US, all individuals participated in the seminar described above on their first full day. Immediately at the completion of the seminar, the participants once again completed the ICAPS-55 a second time. (Consideration was given to allowing the participants to complete the ICAPS-55 at the end of their visit in the US, which generally lasted 2 weeks; the content of their stays, however, would confound the scores at time 2. Thus, we opted to assess ICAPS-55 immediately after the seminars.)

#### *8.2. Results and discussion*

If the intercultural seminars had the intended effect of improving intercultural adjustment potential in the students, and if the ICAPS measures those psychological constructs that reflect the components associated with such potential, then we would expect an increase in the ICAPS-55 total scores in the seminar participants. A *t*-test comparing ICAPS-55 total scores between the first and second administrations indicated that that was indeed the case, with the second ICAPS-55 total scores being significantly higher than the first,  $t(30) = 2.896$ ,  $p < 0.01$ . Cohen's *d* was 0.504, indicating a moderate sized effect.

To examine the degree to which these findings represented changes on the level of the individuals, we also computed sign tests comparing ICAPS-55 total scores from time 1 to 2. The scores for 80% of the sample increased, while the rest either decreased or remained the same. This difference was also statistically significant,  $z = 2.226$ ,  $p < 0.01$ .

Thus, the first six studies we conducted on the ICAPS has documented its internal, temporal, and parallel forms reliability; its convergent validity with another similar measure; its construct validity with widely used measures of personality and psychopathology; its incremental validity; its external validity in reflecting change according to participation in educational programs designed to improve intercultural adjustment; and most importantly, its predictive validity of intercultural adjustment of actual Japanese sojourners using multiple methods. In our next study, therefore, we obtained normative data on the ICAPS in order to allow comparisons among groups and of individuals to a norm group. Having previously obtained suggestions

that the ICAPS contained multiple factors we also examined its factor structure using this large sample.

## 9. Study 7

### 9.1. Method

#### 9.1.1. Participants

The participants were 552 undergraduate students in various universities in and around Tokyo, Japan, and 1199 undergraduate students enrolled in various courses at San Francisco State University, resulting in a total sample size of 1751 individuals. All individuals participated as volunteers, and/or in partial fulfillment of class requirements. Thirty six percent were male, and 64% were female. The mean age was 22.2 (s.d. = 4.96), with a range from 17 to 76. Individuals' ethnicities in the American sample were self-reported as follows; 39.6% Asian, 30.2% Caucasian, 10.4% Hispanic/Latino, 4.2% Black/African-American, 2.9% other (e.g., Caribbean, Native American, Indian, Middle Eastern), 12.8% unclassified (e.g., listed more than one ethnicity).

#### 9.1.2. Instruments

A demographic questionnaire was used to obtain general background information of the participants. The items include gender, age, ethnicity, native language, years in the US, and other biographical information. In addition, all participants completed the ICAPS-55. The ICAPS-55 total score was computed in the same way as in the previous studies reported above.

#### 9.1.3. Procedure

The demographics questionnaire and the ICAPS-55 were distributed to students in classes, who either completed them in class, or took them home to complete at their leisure to return the next class session. Americans completed the English version of the ICAPS; Japanese completed the Japanese version.

## 9.2. Results

### 9.2.1. Computation of normative data

Using the scoring procedures adopted in our previous work, we computed the overall mean and standard deviation for the entire sample for the ICAPS-55 total score. This score was used in a subsequent study to compare single-sample data (see below).

### 9.2.2. Comparison of US and Japanese data

Although not a main goal of this study, we computed a two-way Analysis of Variance (ANOVA) on the ICAPS-55 total score, using country (2) and gender (2) as the independent variables. The country main effect was significant,  $F(1, 1655) = 6.91$ ,

$p < 0.01$ , indicating that Americans had significantly higher ICAPS-55 total scores than did the Japanese. We then computed a number of effect size statistics to aid in the interpretation of this result. Cohen's  $d$  was 0.133, indicating that the American mean was 0.133 standard deviation units higher than the Japanese mean. The point-biserial  $r$  associated with the data was 0.303. The probability of superiority statistic was 0.36, indicating that a randomly sampled American had a 64% chance of having a higher ICAPS-55 total score than did a randomly sampled Japanese individual. These analyses, therefore, indicated that there was a moderate difference between Americans and Japanese on the ICAPS-55 total scores.

In addition, the country by gender interaction was also significant,  $F(1, 1655) = 22.085$ ,  $p < 0.001$ . We then examined gender simple effects separately for both countries. There was no difference between males and females in the American sample,  $F(1, 1131) = 0.115$  (ns). The Japanese data, however, indicated that females had significantly higher ICAPS-55 total scores than males,  $F(1, 524) = 38.440$ ,  $p < 0.001$ .

### 9.2.3. *Exploration of the factor structure of the ICAPS-55*

Prior to exploring the factor structure of the ICAPS-55, we doubly standardized the data. That is, we standardized all of an individual's 55 ratings to his or her own mean and standard deviation; then, we standardized all of the individual's ratings to his or her country mean and standard deviation on that item. This procedure eliminated individual and country differences in the data set, while leaving interrelationships among the variables intact. Factor analyses on such doubly standardized data, therefore, produce factors that can be considered pancultural across the cultures studied (Van de Vijver & Leung, 1997).

We then conducted a free principal components factor analysis, with Varimax rotation. This analysis yielded 20 factors using eigenvalues greater than one as the criterion. Since the number of factors relative to the number of items was too large for any meaningful interpretation of the factor structure, we created a scree plot of the eigenvalues and examined the slope of the line between adjacent factors. This analysis indicated that the slope of the scree line approached zero after the fourth factor (0.14); thus, we opted to interpret the first four factors. Examining the factor loading structure, we then established a criterion of factor loading  $\geq 0.196$ , which was the critical value of a significant product moment correlation for this sample size at  $\alpha = 0.05$ . This resulted in the inclusion of 9 items on Factor 1, 7 on Factor 2, 6 on Factor 3, and 7 on Factor 4 (Table 4). Cumulatively, these four factors accounted for 18.6% of the total variance in the data set.

In interpreting the factor structure, we were guided by two sources of information: first, the content of the items that load significantly on a factor, and second, any known relationship between those items and real world variables. The items that loaded significantly on the first factor are concerned primarily with the experience of negative emotions. These items were either derived from or intended to tap into an overly emotional reaction to the environment. It is expected that a subscale composed of these items would correlate highly with scales measuring neuroticism, depression, emotional vulnerability and anxiety as their content was borrowed from

Table 4  
Factor loadings and items for the four factors, Study 7

Item number	Factor loading	Item
<i>Factor 1—Emotional regulation</i>		
9	−0.736	I do not worry very much
10	−0.720	I rarely feel anxious or fearful
11	0.571	I often worry about things that might go wrong
33	−0.345	I feel happy most of the time
36	0.292	I get angry easily
4	0.230	Being in tense emotional situations scares me
13	0.225	I usually feel lower than others
15	0.206	If I have done something wrong I want to hide from other people
26	−0.198	People should not care what other people do
<i>Factor 2—Openness</i>		
44	−0.546	I have tried to write poetry
19	0.490	Watching ballet or modern dance performances is boring
53	−0.467	I like to wonder about the origins of the universe
23	−0.454	Smells remind me of old memories
5	0.452	When I see someone being treated unfairly, I sometimes don't care much
21	−0.427	I like haiku poems
37	0.318	I hardly ever get excited
<i>Factor 3—Flexibility</i>		
55	0.736	I think women should have as much sexual freedom as men
54	0.723	Sex education is a good thing
2	0.527	I would not object to my husband or wife having friends of the opposite sex
37	−0.255	I hardly ever get excited
39	−0.217	I am a traditional person
12	−0.207	I don't get much pleasure from talking with people
<i>Factor 4—Creativity</i>		
8	−0.696	Spanking a child is the best way to teach them
41	−0.676	The trouble with children nowadays is their parents don't punish them enough
46	−0.398	My parents were always strict with me
39	−0.249	I am a traditional person
30	0.230	Sometimes I rearrange my room just to make it different
44	0.223	I have tried to write poetry
18	0.208	The average citizen can influence governmental decisions

such scales as well as the obvious fact that the content of the items reflected such themes. Thus, we interpreted this factor as Emotional Regulation.

The items loading significantly on the second factor reflect openness to experience, particularly to ideas and esthetic experience. We named this factor Openness.

Items loading on the third factor reflect flexibility with regard to traditional ideas and social roles. We named this factor Flexibility.

Items loading on the fourth factor come from a variety of sources. The common theme in their content is a desire for self-direction and freedom from arbitrary constraint. We named this factor Creativity.

### *9.3. Discussion*

The goal of this study was to obtain normative data on the ICAPS-55, and to examine its factor structure. Both goals were achieved. Normative data were obtained on a large sample of Japanese individuals in Japan, and an even larger comparison sample of Americans. These data are particularly useful in comparing subsequent samples of data, as will be reported below. Care must be taken with these samples as both are samples of university students, not random samples of the populations. Also the sample from San Francisco State University may not be characteristic of university samples from the United States in general as the San Francisco Bay area is among the most culturally diverse in the world; there is both a self-selection process whereby people who are more able to adjust to a variety of people are likely to live here as well as those living here are likely to have had a greater exposure to people from other cultures than are Americans in general.

Additional analyses of the normative data also indicated the existence of significant differences between Americans and Japanese on the ICAPS-55 total score. Effect size statistics showed these differences to be of a moderate magnitude. Interestingly, there were no differences between men and women in the US; but, Japanese women did have higher ICAPS-55 total scores than did Japanese men. This suggests that differential gender socialization practices in the two cultures exist with regard to the factors associated with intercultural adjustment. Given the identification of the four factors underlying the ICAPS reported above, future research can examine the causal bases of these differences in Japan on such variables as emotional regulation, openness, flexibility, and creativity.

The findings from this study regarding the factor structure underlying the ICAPS-55 are well in accord with the theoretical assumptions about some of the psychological components necessary for successful intercultural adjustment described earlier in the introduction, especially concerning emotion regulation, openness, and flexibility. One difference between the obtained and predicted factors, however, concerned the obtained factor we labeled Creativity. As described in the introduction, we originally suggested that critical thinking may be an important predictor of intercultural adjustment. While this concept refers to a broad range of cognitive skills and abilities, we defined it here in relation to intercultural adjustment as the skill that allows individuals to learn about new and different cultures, to analyze the cultural underpinnings of context, and to understand intentions and behaviors from different cultural perspectives. Important aspects of this ability, as we discussed earlier, include being free of an over-attachment to previous ways of thinking that have worked in the past, the generation of rival hypotheses that explain conflict other than those from their own cultural framework, and the creation of a new set of ideas about social interaction. These aspects of critical thinking are closely related to creativity, and also have a nuance of autonomy. Therefore, the labeling of

the obtained factor as Creativity is not entirely incongruent with our original theoretical conceptions.

In addition to the theoretical relevance of the factor structures, the findings are even more impressive when one considers the fact that it was computed on doubly standardized data, ensuring pancultural comparability of the obtained factors. Furthermore, the ratio of sample size to variables (31.84) was sufficiently large to ensure a reliable factor analysis.

At the same time, however, we would argue for restraint in computing factor scores based on these items, and the use of the factor scores in analyses with other variables, for several reasons. First of all, the cumulative variance in the entire data set accounted for by the four factors was small. Optimally, it is more desirable for the factors to account for a larger percentage of the variance before computing factor scores and using them in analyses. Second, as a trial we created such factor scores, averaging items loading significantly on each factor, reverse coding those items loading negatively. The alphas were relatively low—0.638, 0.601, 0.568, and 0.433, for factors one through four, respectively. These alpha coefficients probably are a result of the relatively small number of items loading on each factor. Future studies are needed to identify a larger number of items that assess each factor that can also predict intercultural adjustment prior to the use of such factor scores as reliable variables in meaningful analyses.

Given our suggestion that intercultural adaptability is a learned set of skills, it then follows that those with high levels of experience in intercultural contexts would score highly on ICAPS. In the next study, we sought additional external validation for the ICAPS-55 using only the total score, by comparing the scores of intercultural experts to the normative mean. Further evidence for its external validity would be obtained through a significant difference between the mean of the experts from the mean of the norm data.

## **10. Study 8**

### *10.1. Method*

#### *10.1.1. Participants*

The participants were 31 intercultural counselors and consultants in Japan, all of whom either worked with Japanese students who were interested in studying abroad, or with international business employees. Of the 31 participants, 26 were native Japanese, and five were Americans. All lived and worked full time in Japan. Average age was 43.33 yr. Fifteen of the participants were female, while 16 were male.

#### *10.1.2. Instruments*

All participants completed the ICAPS-55; total scores were computed in the usual fashion. In addition, participants were asked to self-rate their skills and abilities on items related to their jobs and intercultural adjustment, such as reading, writing, listening, and speaking English skills (Japanese for the Americans); the amount of

their own intercultural experiences; the degree to which they felt that they have been successful in their own intercultural experiences; and their own subjective degree of intercultural adjustment potential. In making these ratings, participants used a 5-point rating scale.

### *10.1.3. Procedures*

Participants were recruited in two seminars given by one of us (D.M.) in Japan on intercultural adjustment. All the participants were members of intercultural societies or organizations, who circulated announcements about the seminars. One seminar was given in Tokyo ( $n = 15$ ), the other in Kobe ( $n = 16$ ). All participants completed all instruments at the beginning of the seminars, prior to their involvement with any of the seminar content.

### *10.2. Results*

We compared the ICAPS-55 total score for this sample against the normative data obtained in Study 7. The intercultural experts in Study 8 collectively had a significantly higher ICAPS-55 total score than the normative mean,  $t(30) = 3.255$ ,  $p < 0.001$ . Effect size statistics indicated a moderately strong effect size (Cohen's  $d = 0.585$ ). Furthermore, the difference is even larger when the mean for the intercultural experts (Japanese only) are compared to the Japanese normative mean,  $t(25) = 5.332$ ,  $p < 0.001$ , Cohen's  $d = 0.958$ . These findings provide further evidence both for the external validity of the ICAPS-55 and the possibility that training and experience can elevate a person's capacity to adjust to a new culture.

We also computed product moment correlations between the ICAPS-55 total scores and the various personal skill ratings made by the participants. ICAPS-55 total scores were correlated with participants' ratings of their own subjective success in intercultural situations; with their own, subjective intercultural adjustment potential; and with the number of years they have worked in their occupation,  $r(30) = 0.683$ ,  $p < 0.001$ ;  $r(30) = 0.689$ ,  $p < 0.001$ , and  $r(30) = 0.605$ ,  $p < 0.001$ , respectively. These findings lend further support to the external validity of the ICAPS-55.

## **11. General discussion**

The findings from these eight studies provide considerable evidence for the internal, temporal, and parallel forms reliability of the ICAPS-55; for its predictive ability with not only subjective indices of adjustment, but also using psychometrically standardized measures, peer ratings, and expert ratings; for its convergent validity with a similar measure; for its construct validity with various personality scales; for its incremental validity; and for its external validity in predicting changes as a result of intercultural seminars, and in identifying experts who work in the intercultural field. Its underlying factor structure suggests a model of the psychological components related to intercultural adjustment, including emotion

regulation, openness, flexibility and creativity or personal autonomy which we believe are necessary to the kind of critical cultural thinking that is necessary in intercultural adjustment. This measure is unique, and these data are the most comprehensive data collected on such a measure to assess these psychological components in the intercultural arena.

These findings support well a theoretical formulation in which the importance of emotion regulation, critical thinking, and openness/flexibility are the key psychological ingredients to intercultural adaptation. These skills were hypothesized as necessary in allowing immigrants and sojourners to cope with stress and conflict that are inevitable in intercultural sojourns, while at the same time allowing for personal growth in understanding, tolerance, and acceptance of cultural differences. The correlations with the various adjustment outcomes—self-ratings, peer-ratings, facilitator ratings, and standardized tests—provided strong support for this conglomeration of skills to predict adjustment.

At the same time, the results of the eight studies presented here are not in conflict with the previous literature; indeed, the core psychological skills measured by the ICAPS have been mentioned sporadically throughout the literature, and complement well approaches that posit the importance of knowledge of host and own culture, attitudes, and other cognitive variables. Furukawa and colleagues, for example, have indicated in a number of studies that variables such as neuroticism and emotion-focused coping predict adjustment and re-adjustment in Japanese sojourners and immigrants (Furukawa, 1997; Furukawa & Shibayama, 1993, 1994). The factors identified and measured by the ICAPS should work in conjunction with other cognitive variables identified by previous research as important in intercultural adjustment. We view the core themes measured by ICAPS as the psychological engine that drives adjustment, while knowledge, language, and other cognitive variables serve as the content resources accessed by that engine.

The availability of the ICAPS is a major plus for researchers and practitioners alike. Empirically, future studies involving the ICAPS can investigate a host of interesting and relevant topics that heretofore have been unaddressed in the literature. This includes changes in intercultural adjustment potential across time during one's sojourn, factors correlated with such changes, and factors that predict adjustment potential. Of particular importance will be studies on the development of intercultural adjustment potential—how children and young adults develop such skills, under what contexts, and in what fashion. The availability of the ICAPS also provides an important tool for evaluation and assessment of the validity and efficacy of training programs, many of which exist today but operate with no formal assessment tool, or ad hoc measures.

For practitioners in the field of intercultural consulting, international business, or counseling, the availability of the ICAPS is a major boon for their work. Advisors of individuals in Japan can administer the ICAPS to those interested in intercultural experiences prior to their leaving Japan. Scores on not only the total ICAPS but also the factors can be used as guidelines for counseling or training, raising the candidate's intercultural adjustment potential to maximize benefits—academic, social, or otherwise—during the sojourn. Businesses that regularly send employees

abroad for work can use ICAPS as a screening tool. Counselors, therapists, and organizations that aid Japanese newcomers to adjust to their new lives can use the ICAPS as an assessment tool that can provide valuable information that will ultimately help guide treatment and intervention.

Of course, further validation studies are necessary to continue to examine the predictive validity of the ICAPS. In particular, research assessing ICAPS scores in Japanese individuals *prior to* leaving Japan, correlating those scores with later adjustment outcomes and/or culture shock, is necessary to shore up this limitation in the studies presented here. We are currently conducting such research, and anticipate that its results will be equally promising as those reported here.

Also, future research needs to incorporate greater samples of nonstudents, particularly representing the large numbers of Japanese businesspersons and spouses of intercultural marriages, in assessing the relationship between ICAPS and their particular adjustment outcomes. At this point, we have no reason to suspect why the ICAPS would not be equally reliable and valid for these different groups of Japanese sojourners, and look forward to subsequent studies to address this limitation as well.

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