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The robustness of the intercultural adjustment potential scale (ICAPS): the search for a universal psychological engine of adjustment

David Matsumoto*, Jeffery A. LeRoux, Mariko Iwamoto, Jung Wook Choi, David Rogers, Haruyo Tatani, Hideko Uchida

Culture and Emotion Research Laboratory, Department of Psychology, San Francisco State University, 1600 Holloway Avenue, San Franciso CA 94132, USA

Abstract

Recently, Matsumoto et al. (Int. J. Intercultural Relations (2001) 1) reported the development of a new scale that can measure intercultural adjustment potential (the ICAPS). This article reports six studies that provide further evidence for the reliability and validity of the ICAPS to do so. Although originally developed for use with Japanese sojourners and immigrants, we report data that extend those findings to samples in other cultures as well. Similarities in the findings across cultural samples suggest the existence of a pancultural core of psychological constructs that may be necessary for intercultural adjustment.

Keywords: Intercultural adjustment; Emotion regulation; Openness; Flexibility; Critical thinking; Japan; Satisfaction with life; Culture shock; Anxiety

1. Introduction

The psychological correlates of the ability to adjust interculturally have been a topic of great concern for many years. In the past scientists have highlighted the potential contribution of a number of psychological constructs to intercultural adjustment, including cognitive appraisal, coping styles, personality traits, social support, perceived discrimination, acculturation, and the like (see review by Ward, 2001). Specific psychological skills that have been discussed include emotion

*Corresponding author. Tel.: +1-510-236-9171; fax: +1-510-217-9608.
E-mail address: dm@sfsu.edu (D. Matsumoto).

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regulation, openness, flexibility, empathy, critical thinking, autonomy, interpersonal security, emotional commitment to traditional ways of thinking, and tolerance of ambiguity (see review by Matsumoto et al., 2001).

Recently Matsumoto and his colleagues reported the development of a scale called the Intercultural Adjustment Potential Scale (ICAPS) to measure individual differences in four constructs they considered necessary for intercultural adjustment: emotion regulation (ER), openness (OP), flexibility (FL), and critical thinking (CT) (Matsumoto et al., 2001).[1] They suggested that these skills were necessary to manage conflict and stress that is inevitable during the process of adjusting to life in a new and different culture in positive, constructive ways. In that framework ER was posited as the gatekeeper skill as it is necessary for individuals to control, regulate, and otherwise manage their emotional reactions to stress and conflict that occur in intercultural situations. Once regulated their energies can be channeled to more constructive paths and individuals can engage in critical thinking, creating new schemas representing culture–cognition–behavior interactions. Individuals also need the openness and flexibility to engage in necessary critical thinking and to assimilate new schemas into their existing cognitive frameworks, expanding their response repertoire in the process of intercultural adjustment.

Matsumoto et al. (2001) described eight studies demonstrating the internal, temporal, and parallel forms reliability of the ICAPS and its predictive, convergent, construct, and external validity in predicting intercultural adjustment success. The outcome indices used included self-reported indices of subjective adjustment including standardized scales assessing depression, anxiety, and psychopathology; peer and expert ratings based on interviews with participants; and objective indices such as GPA and language proficiency. Respondents rated their agreement or disagreement with 55 items that corresponded to the four psychological skills. Factor scores for the four scales were created based on a pancultural factor solution involving over 2000 individuals. A total score was also computed and it was the best predictor of the various adjustment indices measured. Based on norm data all five ICAPS scores were transformed to a mean of 50 and SD of 10. The ICAPS was initially designed for use with Japanese sojourners and immigrants and to our knowledge represents the only test of its kind to validly and reliably predict the intercultural adjustment success of these or any individuals.[2]

These initial studies were limited in several ways. First, the samples on which the ICAPS was tested were primarily international students already in the US attending post-secondary schools in the San Francisco Bay Area. Questions remain as to

[1] For a copy of the ICAPS test with all 55 items, please contact the first author.

[2] In actuality, there are other tests that purport to measure the psychological constructs related to intercultural adjustment potential. These include the Cross-Cultural Adaptability Inventory (CCAI; Kelley & Meyers, 1995), the Intercultural Development Inventory (Hammer, 1998), the Intercultural Sensitivity Scale (Bhawuk & Brislin, 1993), and the Multicultural Personality Questionnaire (Moi, Van Oudenhoven, & Van der Zee, 2001; Van der Zee & Van Oudenhoven, 2000, 2001). Close inspection of the validity data for these scales, however, suggests that other than the CCAI, none has been validated against actual adjustment outcomes, and that the validity data for the CCAI has not been published in a peer-review journal (according to an anonymous reviewer).

whether or not the test is valid for non-students; that the students had already been in the US further limits the validity of the scale as these individuals may not represent a broader range of individuals for whom intercultural adjustment potential can be assessed.

We also do not know whether or not the ICAPS can predict intercultural adjustment for individuals other than Japanese. Conceptually it should because it was developed using a theoretical framework that focused on the psychological skills necessary to manage intercultural conflict regardless of home or host cultural background. It can be argued that the same psychological skills may be necessary for intercultural adjustment of any individuals from any culture as they adjust to a different culture because the psychological skills underlying the process of managing intercultural stress and conflict may be the same regardless of culture even though the manifest content of the conflict is culturally specific. If true the psychological skills assessed in the ICAPS may represent a universal psychological engine that reflects the core skills necessary for effective and constructive conflict management.

We report here six studies that address these limitations and in doing so assess the degree to which the psychological constructs measured by it represent a universal psychological engine of intercultural adjustment. Studies 1–4 focused on Japanese individuals who were not students who had already been in the US Study 1 focused on full-time businesspersons and housewives; Study 2 focused on students who came to the US for a short period of time and were initially assessed while they were in Japan; Study 3 focused on Japanese individuals who were in an international marriage; Study 4 focused on students who were to come to the US to become international students but the ICAPS was assessed prior to their departure from Japan. Study 5 tested the validity of the ICAPS in predicting intercultural adjustment success for individuals from Sweden, India, and other cultures sojourning in the US, as well as Americans who have sojourned abroad. Finally, Study 6 tested the reliability and validity of both the original English version of the ICAPS and a Spanish version to predict intercultural adjustment of Central and South Americans.

2. Study 1—Businesspersons and housewives from Japan

2.1. Method

Participants: Participants were 76 Japanese individuals living in the San Francisco Bay Area (22 males, 54 females). All were born and raised in Japan and were ethnically Japanese. All males and 37 females were employed full-time; the remaining 17 females were housewives (some had part-time jobs). None was currently enrolled in a university. They had been in the US from less than 1–40 yr (mean = 6.97 yr, modes = 1 and 2 yr) and their age range was 24–72 (mean age 36.07).

Instruments: Six questionnaires were used in this study, and these were exactly the same as those used in Study 4 in Matsumoto et al. (2001). They included:

1. *ICAPS-55*: The ICAPS-55 was used. Five scores were computed: total, Emotion Regulation (ER), Openness (OP), Flexibility (FL), and Critical Thinking (CT). The alpha for the total ICAPS score was 0.63. While this was lower than desired it was not unexpected because of the existence of multiple factors underlying the total scale.
2. *Social Adjustment Scale Self-Report (SAS-SR)*: This is a multiple-section measure of general adjustment (Weissman & Bothwell, 1976). For this study only the sections on work (6 items), housework (6 items), spare time (11 items), and family (25 items) were included. Higher scores on all scales indicated greater impairment. Alphas were 0.54, 0.35, 0.64, and 0.90, respectively. The first three alphas were lower than desired and the results should be viewed with this caution.
3. *Somatic, Cognitive, Behavioral Anxiety Scale (SCBAI)*: This is a 36-item scale of anxiety measuring the level and type of discomfort or uncertainty participants were experiencing (Lehrer & Woolfolk, 1982). 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 was also computed; higher scores indicated greater anxiety. Alphas were 0.88, 0.87, 0.82, and 0.93, respectively.
4. *Beck Depression Inventory II (BDI-II)*: This measure assessed affective discomfort not measured in the SCBAI, operationalizing depression according to DSM-IV criteria (Beck, Steer, & Brown, 1996). Summing the 21 individual item responses generated a single score; higher scores reflected greater depression. The alpha for this scale was 0.76.
5. *Subjective adjustment (SA)*: This outcome measure was similar to that used in all studies reported in Matsumoto et al. (2001) and served as a standard instrument in the studies reported here as well. It included 14 face-valid items on subjective well-being or adjustment specific to international visitors, questions about relatives in the area, and self-perceived competence in written and spoken English. Six items were reverse-coded and a mean score was computed; higher scores reflected better adjustment. The alpha was 0.81. Three language scores were also computed: verbal communication skill (mean of listening and speaking scores, alpha = 0.89), text skill (mean of reading and writing scores, alpha = 0.88), and overall language skill (mean of all four language scores, alpha = 0.85). High scores indicated greater confidence in language ability.
6. *Demographics*: A demographic questionnaire included items on age, gender, length of time in the US, education level, occupation, number of hours worked per week, religion, marital status, and income.

All measures were translated into Japanese and their accuracy was verified using back-translation with no problems. Participants completed all protocols in Japanese.[3]

[3] The parallel forms reliability of the English and Japanese versions of the ICAPS had already been established as reported in Matsumoto et al. (2001). In addition, Japanese versions of all the other measures used here were utilized successfully in Matsumoto et al. (2001).

Procedures: Packets containing the six questionnaires, a consent form, and an instruction sheet were distributed. The study was introduced to participants through contacts with international companies and Japanese organizations in the San Francisco bay area. All were given the packets to take home to complete and return by mail using self-addressed, stamped envelopes. The contact information and consent form were separated from the completed questionnaires immediately upon receipt and maintained in a secure location so that confidentiality could be preserved.

2.2. Results and discussion

Product moment correlations were computed between each of the dependent variables with the five ICAPS scores (Table 1). ICAPS total and ER significantly predicted all but one of the outcomes; even when adjusting p levels to 0.01, ICAPS total and ER significantly predicted 10 of the 13 dependent outcome variables. Individuals with higher ICAPS scores had less stress and anxiety at work, home, during their leisure time, and in general; exhibited stress less cognitively, behaviorally, or somatically; and had less depression. They also had significantly higher adjustment and language scores. These results replicated the findings reported previously by Matsumoto et al. (2001) and extend those findings to a non-student sample.

To ensure that these results were not confounded by demographic variables, we correlated all demographics with each of the outcomes in one of two ways. We computed product moment correlations for scalar demographics and t-tests for categorical demographics with $n \geqslant 20$ in each cell (there were no demographic variables with three or more levels that met this criterion). All demographic variables that produced a statistically significant result by either method were entered in the first step of a hierarchical regression, separately for each dependent. These analyses were done twice, once using the ICAPS total score on the second step (Table 2), and a second time using the four ICAPS scale scores entered on the second step (Table 3). The ICAPS significantly predicted almost all of the dependent outcomes above and beyond what was already accounted for by the significant demographic variables, providing fairly conclusive evidence for the ability of the ICAPS to predict adjustment in this non-student sample.

3. Study 2—Newly arrived Japanese sojourners

The purpose of Study 2 was to replicate the findings from Matsumoto et al. (2001) Study 6. In that study Japanese students visiting the US on an educational/cultural exchange tour participated in a full-day seminar designed to aid in intercultural adjustment upon arrival in the US They completed the ICAPS 1 month prior to their arrival and again a second time immediately at the conclusion of the seminars. The results indicated a significant increase in ICAPS total scores from pre- to post-seminar.

Table 1
Product moment correlations between ICAPS scores and outcome variables, Studies 1, 5, and 6

Study	Outcomes	Total	ICAPS Scales			
			ER	OP	FL	CT
Study 1	SAS-Work	−0.298*	−0.357*	−0.138	−0.105	−0.142
	SAS-Housework	−0.106	−0.251*	0.038	0.086	−0.305*
	SAS-Spare time	−0.438*	−0.560**	−0.185	−0.034	0.098
	SAS-Family	−0.658*	−0.385*	0.253	−0.570	0.124
	SCBAI-Somatic	−0.338**	−0.447**	−0.099	−0.015	−0.031
	SCBAI-Behavioral	−0.645**	−0.666**	0.022	0.062	0.140
	SCBAI-Cognitive	−0.428**	−0.543**	−0.303**	0.123	0.002
	SCBAI-Total	−0.537**	−0.627**	−0.147	0.089	0.050
	BDI	−0.534**	−0.627**	−0.396**	0.055	−0.078
	SA	0.454**	0.508**	0.147	0.005	−0.008
	Language-Text	0.263*	0.341**	0.282*	0.225*	0.028
	Language-Communication	0.455**	0.422**	−0.052	0.170	0.004
	Language-Total	0.404**	0.428**	0.184	0.220*	0.018
Study 5	SA ($n = 154$)	0.266**	0.161*	0.208*	−0.082	0.066
	GPA ($n = 81$)	0.341**	0.355**	0.098	0.029	0.334**
	Working? ($n = 99$)	0.049	0.212*	0.029	0.168†	0.236*
	More money? ($n = 62$)	0.063	0.225*	0.207†	0.233*	−0.066
	POQ ($n = 40$)	0.742**	0.661**	0.135	0.367*	0.095
	SWLS ($n = 40$)	0.263†	0.212†	0.064	0.327*	0.228†
Study 6			Spanish ICAPS Scales			
	English ICAPS	0.867***	0.898***	0.885***	0.848***	0.891***
	SA	0.283***	0.392***	−0.015	0.048	−0.101
	SWLS	0.387***	0.441***	0.096	0.270	0.177
			English ICAPS Scales			
	SA	0.228**	0.322***	0.091	0.278**	0.120
	SWLS	0.398***	0.450***	0.078	0.130	0.216**

†$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

3.1. Method

Participants: The participants were 15 Japanese third-year university students and 9 working adults, all of whom were visiting the US on an educational/cultural exchange tour (mean age 24.58, range 19–54). Two were female and the rest were male. Data from both groups were merged for this study.

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 its goals. Participants viewed a 20-min videotape highlighting cultural differences and then engaged in a discussion about cultural influences on perception. Participants

Table 2
End results of hierarchical regression analyses using ICAPS total score, Study 1

Dependent	Demographic variables entered on Step 1	Final R	R^2 change
SAS-Work	Age	0.426*	0.041
	Number of years in the US		
SAS-Housework	Number of hours per week at work	0.484*	0.013
	Age		
	Gender		
SAS-Spare time	Education level	0.475*	0.144*
SAS-Family	Number of years in the US	0.659**	0.418**
SCBAI-Somatic	Age	0.378**	0.100**
SCBAI-Behavioral	Education level	0.658***	0.184**
	Reading skills		
	Writing skills		
	Speaking skills		
	Listening skills		
	Previous experience abroad		
SCBAI-Cognitive	No statistically significant correlation with demographic variables; previous findings thus not confounded by demographics		
SCBAI-Total	No statistically significant correlation with demographic variables; previous findings thus not confounded by demographics		
BDI	Age	0.598**	0.249***
	Number of years in the US		
SA	Number of years in the US	0.486**	0.116**
Language-Text	Degrees attained	0.557***	0.001
	Economic level of household of upbringing		
	Annual income		
	Education		
	Number of years in the US		
	Number of hours per week at work		
Language-Communication	Degrees attained	0.706***	0.036*
	Number of years in the US		
	Economic level of household of upbringing		
Language-Total	Degrees attained	0.676***	0.027
	Economic level of household of upbringing		
	Annual income		
	Education		
	Relatives in the Bay area		
	Number of years in the US		
	Number of hours per week at work		

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. After

Table 3
End results of hierarchical regression analyses using ICAPS scale scores, Study 1

Dependent	Demographic variables entered on Step 1	Final R	R^2 change	Significant standardized betas
SAS-Work	Age, number of years in the US	0.463*	0.074	
SAS-Housework	Number of hours per week at work, age, gender	0.587**	0.123*	
SAS-Spare time	Education level	0.625***	0.309***	ICAPS ER (0.596)
SAS-Family	Number of years in the US	0.841***	0.691***	
SCBAI-Somatic	Age	0.461**	0.169*	ICAPS ER (0.430)
SCBAI-Behavioral	Education level, reading skills, writing skills, speaking skills, listening skills, previous experience abroad	0.755***	0.421***	ICAPS ER (0.775), ICAPS CT (0.259)
SCBAI-Cognitive	No statistically significant correlation with demographic variables; previous findings thus not confounded by demographics			
SCBAI-Total	No statistically significant correlation with demographic variables; previous findings thus not confounded by demographics			
BDI	Age, number of years in the US	0.701***	0.383***	ICAPS ER (0.596), ICAPS OP (0.290)
Adjustment	Number of years in the US	0.545**	0.178**	ICAPS ER (0.463)
Language-Text	Degrees attained, economic level of household of upbringing, annual income education, number of years in the US, number of hours per week at work	0.674***	0.146*	ICAPS OP (0.292), ICAPS FL (0.306)
Language-Communication	Degrees attained (1), number of years in the US (2), economic level of household of upbringing (3)	0.742***	0.088*	1 (−0.338), 2 (0.304), 3 (0.293), ICAPS ER (0.280)
Language-Total	Degrees attained (1), economic level of household of upbringing (2), annual income (3), education (4), relatives in the Bay area (5), number of years in the US (6), number of hours per week at work (7)	0.751***	0.134*	1 (−0.336), 6 (0.284), ICAPS ER (0.323)

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 in discussions about how to deal with communication difficulties and breakdowns. They were then introduced to what intercultural research had shown to be effective components 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.

Procedures: One month before their arrival the participants completed the ICAPS-55, and they completed it once again immediately at the completion of the seminar.

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 participants' scores.

3.2. Results and discussion

We computed paired *t*-tests on the ICAPS total and four scale scores. Significant increases were obtained on ICAPS total, ER, and FL, $t(23)=1.726$, $p<0.05$, $t(23)=2.61$, $p<0.01$, and $t(23)=1.65$, $p<0.05$, respectively. We also computed Wilcoxin signed rank tests, which produced a significant effect for ER, $z=2.54$, $p=0.01$; ICAPS total scores were marginally significant, $z=1.30$, $p<0.10$. These findings replicated those reported in Matsumoto et al. (2001) Study 6 and provide further support for the external validity of the ICAPS to reflect changes in meaningful psychological variables related to adjustment according to participation in educational programs designed to improve intercultural adjustment.

4. Study 3—Japanese individuals in international marriages

4.1. Method

Participants: Participants were 134 Japanese females married to a non-Japanese spouse who were recruited from two groups—the Nikkei International Marriage Association ($n=44$) and the Association for Multi-Cultural Families ($n=90$). The International Marriage Association, with approximately 400 members, is located in Yelm, Washington and is an organization for Japanese women who married American soldiers after World War II. All members of this association live in the United States. Participants from this association were recruited at an annual convention of the association. Consent was obtained from the association for recruitment and from the individuals prior to participation. The Association for Multi-Cultural Families, with approximately 300 members, is an association for Japanese spouses in international marriages headquartered in Tokyo, Japan. The members of this association live all over the world. Consent was obtained from this association to mail the research protocols to the membership requesting anonymous participation.

The data from both groups were merged for this study (mean age 47.95, range 24–79). Fifty-three percent were married to Americans, the rest to people from a variety of countries. Average length of marriage was 18.86 yr (range 1–60) and the average length of time living in the partner's country was 13.82 yr (range 0–50). They averaged 3.29 yr of college level education.

Materials: In addition to the ICAPS-55 (total score alpha = 0.73) four other measures were used. All were translated into Japanese and back-translated with no problems. They included:

1. *Locke–Wallace Marital Satisfaction Adjustment Test (LWMSAT)*: This 15-item instrument measures marital adjustment (Locke & Wallace, 1959). A total score is

computed by summing all items; higher scores reflect a better relationship. Alpha was 0.86.

2. *Dyadic Adjustment Scale (DAS)*: This 32-item instrument assesses the quality of the relationship (Spanier, 1976). Four scale scores and a total score are computed: Dyadic Satisfaction (DS), Dyadic Cohesion (DCOH), Dyadic Consensus (DCON) and Affectional Expression (AE). Alphas were 0.94, 0.70, 0.89, 0.91, and 0.87, respectively.
3. *Satisfaction with Life Scale (SWLS)*: The 5-item SWLS assesses the cognitive-judgmental aspects of general life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). Participants rate each item from 1 to 7 in terms of "strongly disagree" to "strongly agree". A score is computed by summing all items; higher scores reflect a greater satisfaction with life. Cronbach's alpha with this sample was 0.95.
4. A Demographic Questionnaire including items on age, gender, length of time in the host country, and education level.

Procedures: Packets containing the instruments, a consent form, and an instruction sheet, were distributed to participants either in person (by a researcher in attendance at the annual meeting of the International Marriage Association) or by mail. In both cases the participants were informed that their participation was strictly voluntary and that all of the information was confidential. Participants at the conference completed the surveys and returned them to the experimenter immediately. All other surveys were completed at the participant's leisure and mailed back. The questionnaires were placed in four different sequences in the packets and the packets were randomly distributed.

4.2. Results and discussion

Correlations were computed between the ICAPS total score and each of the dependent variables (LWMSAT, DAS total, DS, DCOH, DCON, AE, and SWLS). The ICAPS total score was significantly correlated with three of these—DAS total, DCON, and SWLS, Rs = 0.19, $p < 0.05$; 0.23, $p < 0.05$; and 0.24, $p < 0.05$, respectively. We also computed simultaneous multiple regressions on each of the seven dependents, using the four ICAPS scale scores (ER, OP, FL, and CT) as predictors. The multiple *R*s for DAS total, DS, DCON, AE, and SWLS were all significant (Table 4), and DCOH was marginally significant. The betas for each of the ICAPS predictors indicated a significant contribution to at least one of the significant regressions.

To investigate the possibility of demographic variables confounding these findings we also correlated them with the dependent variables. Of 35 correlations computed between five scalar demographic variables and the seven dependents, only two were significant, indicating that the demographics could not confound the results reported above. These findings provide considerable support for the notion that the ICAPS can predict marital and life satisfaction among Japanese spouses in international marriages.

Table 4
Results of simultaneous multiple regressions, Study 3

Dependent	*R*	ICAPS Scales	Betas
LWMSAT	0.212	ER	0.054
		OP	0.088
		FL	0.137
		CT	0.105
DAS Total	0.333**	ER	0.184*
		OP	0.089
		FL	0.133
		CT	0.177*
DS	0.320**	ER	0.088
		OP	0.176*
		FL	0.164*
		CT	0.152†
DCOH	0.243†	ER	0.130
		OP	0.042
		FL	0.110
		CT	0.138
DCON	0.332**	ER	0.210*
		OP	0.130
		FL	0.101
		CT	0.130
AE	0.317**	ER	0.088
		OP	0.099
		FL	0.224**
		CT	0.154†
SWLS	0.328**	ER	0.232**
		OP	0.194*
		FL	0.051
		CT	−0.082

†$p<0.10$, *$p<0.05$, **$p<0.01$.

5. Study 4—Japanese students assessed prior to their sojourning to the US

5.1. Method

Participants: The subjects were 106 Japanese sojourners (35 male, 71 female, mean age 24.42, range 16–60). At the time of the follow-up assessment (see below), 37.7% had lived in the US for 1 month or less, 29.3% for 2–6 months, and the remainder for more than 7 months. For 57.5% of the subjects, the current sojourn was their first international experience from Japan. Ninety percent of the subjects were single,

8% were married, and 3% were divorced or uncategorized (does not add to 100% due to rounding errors). The vast majority (88.6%) were from middle and upper middle class families, 8.6% were from low and lower middle class families, and 0.9% were from upper class families.

Instruments: In addition to the ICAPS-55 (total score alpha = 0.93), the following instruments were used.

1. *Measurement of Culture Shock (CS)*: CS is a 12-item instrument that estimates the degree of culture shock while encountering a new and alien culture for the first time (Mumford, 1998). The ranking of the responses is in order of adjustment difficulty; the first response listed is given a score of 2, the second 1, and the third 0. There are two subscales: a 7-item core culture shock (CCS) and 5 interpersonal stress items (IS). The two subscales are scored by adding all items within each, and the sum of the two-subscale totals gives a total score for this scale (range 0–24). Higher scores indicate greater culture shock. The alpha for the CS Total score was 0.43, which was lower than desired. The results should therefore be reviewed with this caution.
2. *Homesickness and Contentment Scale (HS)*: HS is designed to be culturally sensitive to an Asian population in measuring emotional and psychological adjustment to a new culture (Shin & Abell, 1999). The scale consists of 20 items using a scale ranging from 1 (Very Often) to 5 (Never). A total score is computed by adding all items (range 20–100; alpha = 0.86). Lower scores indicate greater homesickness.
3. *Satisfaction with Life Scale (SWLS)*: The same SWLS that was used in Study 3 was used here (alpha = 0.85).
4. *Subjective Adjustment (SA)*: This was the same 14-item scale used in Study 1 described earlier (alpha = 0.85).
5. *Demographics*: A standard demographics questionnaire was also included as used in all other studies reported in this article.

Procedures: Participants were identified prior to their coming to the US through our contacts with student and travel advisors in Japan who recruited individuals for international exchange programs. In all cases the participants completed the ICAPS at least 1 month prior to their arrival in the US. After arriving in the US they were then contacted for the follow up data collection that included all the other scales. Packets of the remaining scales were created by randomizing their order and were either mailed to the students or distributed in classes or at social events. All participating students were instructed to mail back the survey by using the enclosed stamped envelope.

5.2. Results and discussion

We first identified all possible demographic variables that were related to any of the six dependent variables in the study—CS total, CCS, IS, HS, SWLS, and SA—in one of two ways. We computed product moment correlations for scalar demographics and *t*-tests for categorical demographics with $n \geqslant 20$ in each cell (no

Table 5
End results of hierarchical regression analyses, Study 4

Dependent	Demographic variables entered on Step 1	Final R	R^2 change	F change	P change	Significant standardized betas
CS Total	Family financial status, reading skills, writing skills, listening skills	0.555	0.227	7.960	0.000	ICAPS ER (0.355), ICAPS OP (0.252)
CCS	Family financial status, speaking skills, listening skills	0.476	0.165	5.241	0.001	ICAPS ER (0.290), ICAPS OP (0.212)
IS	Family financial status, reading skills, writing skills, listening skills	0.427	0.122	3.628	0.008	ICAPS ER (0.255)
HS	Annual income	0.564	0.258	9.449	0.000	Annual income (0.273), ICAPS ER (0.236), ICAPS OP (0.369)
SWLS	Speaking skills, listening skills, previous experience abroad	0.529	0.186	6.328	0.000	ICAPS ER (0.362), ICAPS OP (0.185)
SA	Education level, reading skills, writing skills, speaking skills, listening skills, previous experience abroad	0.658	0.184	7.690	0.000	Previous experience abroad (0.298), ICAPS ER (0.286), ICAPS FL (0.208)

demographics with three or more levels met this criterion). All significant demographics were entered in the first step of a hierarchical regression, separately for each dependent, using the four ICAPS scale scores on the second step. The ICAPS scales significantly predicted all six of the dependent variables above and beyond what was already accounted for by the significant demographic control variables (Table 5). In addition, at least one ICAPS subscale was associated with a statistically significant beta coefficient for each regression. In particular, the findings indicate considerable roles for ER and OP. This provides fairly convincing evidence supporting the notion that the psychological skills assessed by the ICAPS prior to sojourning can predict culture shock, homesickness, life satisfaction, and subjective adjustment in Japanese sojourners.

6. Study 5—Non-Japanese immigrants

In order to test the robustness of the predictive validity of the ICAPS it was necessary to obtain data from non-Japanese individuals, which was the goal of this study.

6.1. Method

Participants: The subjects were 154 immigrants and sojourners drawn from the Northern California Bay area. Thirty were born and raised in Sweden (18 female, 12 male, age range 21–35, mean age 24.13, all self-reporting Caucasian ethnicity) who were recruited by Swedish research assistants through personal contacts and contacts with community organizations with predominant Swedish involvement. Forty-four were born and raised in India (15 female, 22 male, 7 unspecified; age range 13–73, mean age 42, all self-reporting Indian ethnicity) who were recruited by Indian research assistants through personal contacts and contacts with community organizations with predominant Indian involvement. Forty were US-born and raised Americans who had lived abroad in another country (21 female, 18 male, 1 unspecified; mean age 30.87 years; 19 self-reporting Caucasian ethnicity, the remainder representing a range of ethnicities); collectively they reported living in 17 countries spanning five continents. All were recruited by research assistants through personal contacts. Finally, 40 were a mixed group of immigrants (18 male, 22 female, age range 19–66, mean age 35.58) having emigrated from the following geographic areas: Asia ($n = 19$), Central or South America ($n = 6$), Europe ($n = 8$), and others ($n = 7$). All were recruited by students in a psychology course at San Francisco State University who were instructed to obtain data from volunteers born and raised outside the US. Each student recruited one participant. Approximately half of the sample were students while the other half were not. For the non-US samples, the mean length of stay in the US was 9 yr and 10 months; for the Americans, their mean length of stay in the host country was 2 years and 1 month.

Instruments: The questionnaires were administered in English and included the ICAPS-55 (total score alpha = 0.75), the SA used in Studies 1 and 4 (alpha = 0.72) without the perceived language competency items, and a demographics questionnaire assessing age, gender, ethnicity, and the like. The Americans also completed the SWLS used in Studies 3 and 4, and the mixed group of immigrants also completed an additional measure of subjective adjustment called the Personal Opinion Questionnaire (POQ). It consisted of 44 items related to the subject's adjustment to and attitudes about life in American culture (e.g., food, language, and dress code). A 7-point Likert scale was used ranging from 1, Strongly Disagree, to 7, Strongly Agree. A total score was computed by adding all items after reverse coding 13. The total scores ranged from 44 to 308 (alpha = 0.72), with higher scores indicating better adjustment to American culture.

For the purposes of this study we utilized the SA total score, POQ total (mixed immigrants only), and SWLS (Americans only) as subjective outcome variables, and GPA (students only), working or not (non-students), and a comparison of how much money they made in the US compared to their home country (more, same, less; non-students) as objective outcome variables.

Procedures. Packets were arranged randomly and distributed to student recruiters. The participants completed the packets at their leisure. All data collection occurred within 2 weeks of initial distribution. There were no problems with the recruitment or data collection.

6.2. Results and discussion

Correlations were computed between the five ICAPS scores and the five outcome variables (Table 1). ICAPS total predicted SA, POQ, and GPA. ICAPS ER predicted SA, POQ, GPA, Working, and More Money. ICAPS OP predicted SA; FL predicted More Money, POQ, and SWLS; and CT predicted GPA and Working.

To determine whether ICAPS predicted adjustment above and beyond demographic contributions, we first correlated the demographic variables measured with the six outcome variables. Country of origin was dummy coded for these analyses. Demographics with significant correlations with an outcome variable were then entered into the first step of a hierarchical regression on that outcome variable; the four ICAPS scale scores were then entered on the second step. None of the demographics significantly correlated with POQ, SWLS, or Working, indicating that they could not confound their correlations reported in Table 1.

For SA, age was significantly correlated with it and entered in the first step of the regression. The R^2_{change} was of modest value (0.059) but was not significant, $F(4,111) = 1.835$, ns. The final Multiple $R(0.324)$, however, was significant, $F(5,111) = 2.602, p < 0.05$. The final betas for age (-0.173), ER (0.122), OP (0.155), and FL (0.144) were all marginally significant. The decrease in the beta for age to predict SA on the first step (-0.214, $p < 0.05$) to the second indicated that the ICAPS mediated the relationship between age and SA.

For GPA, age was significantly correlated with it and entered on the first step. The R^2_{change} was of moderate value (0.142) and marginally significant, $F(4,43) = 2.058$, $p = 0.10$. The final Multiple $R(0.509)$ was significant, $F(5,43) = 3.00$, $p < 0.05$, and the final betas indicated that age (0.292) and ER (0.258) contributed unique variance to the prediction; the beta for CT (0.202) was marginally significant. The decrease in the beta for age to predict GPA from the first step (-0.342, $p < 0.05$) to the second indicated once again that the ICAPS mediated the relationship between GPA and age.

For more money, both age and gender were significantly correlated with it and entered on the first step. The R^2_{change} was of moderate value (0.098) but not significant, $F(4,45) = 1.405$, ns. The final multiple $R(0.461)$ was marginally significant, $F(6,45) = 2.022$, $p < 0.10$. The final beta for FL (0.239) was significant indicating it contributed unique variance to the prediction. The final beta for ER (0.185) was marginally significant. Non-significant final betas for both age and gender indicated that the ICAPS mediated the relationship between these variables and More Money. Collectively, these findings provided strong support for the ICAPS to predict a variety of subjective and objective outcomes.

Given that the participants had been in their host countries for a considerable period of time and that their SA mean scores were significantly above zero (which is what would be expected for midrange responses and an equal number of positive and negatively worded items), $t(147) = 7.348$, $p < 0.001$, another test of the ability of the ICAPS to predict adjustment would be to compare their ICAPS scores to the normative data involving 2350 individuals (approximately 1700 were reported in Matsumoto et al., 2001). The participants' ICAPS total score mean in this study was

1.486 SD units above the norm mean, which was highly significant, $t(147) = 16.221$, $p < 0.001$. Their CT scores were also 0.516 SD units above the norm mean, which was also highly significant, $t(1\,4\,7) = 5.212$, $p < 0.001$.

In order to test the notion that ER serves as a gatekeeper skill, we computed hierarchical regressions on the four outcome variables common to all participants in this study, entering ER on the first step and OP, FL, and CT on the second step. The latter set of skills added only a modest amount of variance in each analysis, $R^2_{\text{change}} =$ 0.052, 0.059, 0.074, and 0.072 for SA, GPA, working, and more money, respectively. None of the R^2_{change}s was statistically significant, indicating support for the contention that ER is a gatekeeper skill.

7. Study 6—Spanish speaking sojourners and immigrants

7.1. Method

Participants: The participants were 261 individuals born and raised in a Spanish speaking country. Forty-eight percent of them came from Mexico, 31% from Central America, and 5% from South America (the remainder were missing data). There were 135 females and 109 males (remainder missing data) (mean age 33.45, range 17–73). The vast majority were not students.

Instruments and translation: The instruments were exactly the same as those used in Study 5 and included the ICAPS-55 (alpha for English total score = 0.55; for Spanish 0.44), SA (alpha = 0.67), SWLS (alpha = 0.85), and a demographics questionnaire. The low alphas are less than desirable and the findings should be interpreted with this caution. Especially, the low alpha for the Spanish version of the ICAPS suggests the existence of unreliable items in the ICAPS, which will need to be addressed in future studies testing the validity reliability and validity of the items in the Spanish version. Two bilingual research assistants translated all English protocols into Spanish and two other bilingual assistants back-translated with no problems.

Procedures: Participants were recruited by research assistants who were instructed to collect data from non-American individuals born and raised in a Spanish-speaking country and who were fluent in both Spanish and English. Participants were provided with either the English or Spanish version of the ICAPS-55, and the Spanish versions of all remaining protocols. They were instructed to complete the protocols at their leisure and to return them the following week. One month later they were given the other version of the ICAPS-55; the order was counterbalanced.

This method of data collection was necessitated by the need to test for parallel forms reliability between the English and Spanish versions of the ICAPS. Because all of the outcome measures were collected in the first data collection, however, the predictive validity tested in this study is a combination of postdictive and concurrent validity, and the results should be interpreted with this caveat.

7.2. Results and discussion

Parallel forms reliability: Correlations were computed between the five ICAPS scores for the English and Spanish versions. The correlations demonstrated their parallel forms reliability (Table 1). Five paired *t*-tests comparing the five ICAPS mean scores between versions were all not significant.

Predictive validity: Product moment correlations were computed between the five Spanish ICAPS scores and SA (Table 1). ICAPS total and ER both predicted SA. To identify potential mediators of this effect we correlated the SA scores with all demographic variables. Two were statistically significant—how long the individual was in the US and how their wages in the US compared to their home country (better, same, worse). We then recomputed the correlations between the five Spanish ICAPS scores and SA partialling out the effects of both these demographics. The partial correlations for both ICAPS total and ER were still significant, $pr(1\,2\,4) = 0.27$, $p < 0.001$; and $pr(1\,2\,4) = 0.31$, $p < 0.001$, respectively.

Product moment correlations were also computed between the five English ICAPS scores and SA (Table 1). ICAPS total, ER, and FL predicted SA. We recomputed the correlations partialling out the effects of the two demographic variables identified above; the effects for ICAPS total and ER survived, $pr(1\,2\,4) = 0.18$, $p < 0.05$; $pr(1\,2\,4) = 0.28$, $p < 0.05$, respectively.

Finally, correlations were computed between the two versions of the ICAPS and the SWLS (Table 1). Both versions of the ICAPS total and ER predicted SWLS; ICAPS CT (English version) also predicted SWLS. None of the demographic variables correlated significantly with the SWLS and thus could not mediate these correlations. Collectively these findings provide strong support for the predictive validity of the ICAPS in this sample.

8. General discussion

The results of the 6 studies replicate and considerably extend those reported previously by Matsumoto et al. (2001). The ICAPS predicted adjustment in Japanese non-students samples using standardized measures of anxiety and depression, subjective indices of adjustment, satisfaction with life, and marital satisfaction. The ICAPS predicted culture shock and life satisfaction in Japanese student sojourners even when it was administered prior to their leaving Japan. The ICAPS predicted subjective adjustment in samples including individuals from India, Sweden, Central and South America, and a mix of other countries. The ICAPS predicted subjective adjustment and life satisfaction in Americans who had sojourned abroad as well. Coupled with the 8 studies originally reported by Matsumoto et al. (2001), these findings lend strong and consistent support to the psychometric reliability and validity of the ICAPS to predict intercultural adjustment potential.

The ICAPS is unique in that it does not focus on culture-specific knowledge or information. Instead it focuses on the psychological skills that are theoretically

considered to be important in managing intercultural conflict and stress that are inevitable during a sojourn. As such, the predictive validity of the ICAPS should be applicable not only for intercultural sojourns between countries but also for sojourns to sub-cultures within countries. It should predict adjustment success in going from Tokyo to Osaka, New York City to Omaha, or London to Birmingham as well as it does from Japan, Sweden, or India to the US.

Conceptually, we suggested that ER was a gatekeeper skill because it is necessary for people to manage inevitable intercultural conflict and because once emotions are regulated individuals can engage in critical thinking and assimilation of new cognitive schemas that aid in adjustment. Various findings now support this contention, including the number and strength of the bivariate correlations between it and the various outcomes across all studies reported and the number and strength of the betas in the various regression analyses reported, relative to the other ICAPS scales. The results of the hierarchical regressions reported in Study 5 are also supportive of these claims, and although we did not report it earlier, the correlation between ICAPS total and ER is always strong (e.g., in Study 5 $r(1\,1\,8) = 0.86$, $p < 0.0001$) despite the fact that the ICAPS total score was derived by an item by item analysis of their ability to predict adjustment independent of the factor analyses that generated the ER scale.

These findings do not argue against the importance of the other OP, FL, and CT. Theoretically these skills make sense in understanding intercultural adjustment. Thinking out of the box and examining rival hypotheses to understand uncommon behavior, which is necessary in intercultural adjustment, cannot occur without CT. Assimilation of new cognitive schemas of the world cannot occur without OP and FL. That the empirical relationships of these factors to adjustment indices are not as strong as that for ER may be related to their factor order and lower proportion of variance accounted for relative to ER. Despite this fact these scales still emerged with significant betas in a number of the regression analyses including ER. Also, their non-significance in the regressions reported in Study 5 may have been due more to sample size that effect size, because their effects do exist (albeit modestly). Future scale development improving on the reliability of these scales will be necessary to tease out exactly the nature of their contribution to adjustment.

The data reported here raise some interesting and important questions concerning what is measured by the ICAPS. For instance, although we suggest that the ICAPS measures adjustment potential, on one hand clearly many of the subjects in our studies have adjusted well to life in their host country. Thus the ICAPS may be measuring adjustment capacity instead of, or in addition to, potential. On the other hand, we report studies where the ICAPS was administered prior to the sojourn and it still predicted adjustment or reactions to intercultural training. While the ICAPS may indeed measure psychological capacity, we prefer the potential analogy because of the possibilities for improvement the concept of potential raises, which is clearly supported by the data.

The data presented here have far-reaching implications beyond the validity testing of a scale. That the ICAPS has predictive validity in a wide range of samples using a

wide range of adjustment measures suggests that the psychological skills assessed by the ICAPS consist of a universal core of constructs necessary for intercultural adjustment. That the ICAPS has been found to be positively correlated with extraversion, conscientiousness, openness, and agreeableness, and negatively with neuroticism (Matsumoto et al., 2001), a pattern of the big five personality constructs that is associated with adjustment in general, suggests that these skills are important to intracultural adjustment as well. Negative correlations between ICAPS and the vast majority of the psychopathology scales of the Millon Clinical Multiaxial Inventory (Matsumoto et al., 2001) further bolster this notion. If true, it suggests a pancultural menu of psychological ingredients necessary for conflict management. Identifying these ingredients helps to understand a possible psychological engine necessary for human growth in a multicultural and pluralistic world. The engine itself may not be a sufficient factor in producing positive personal change and adjustment outcomes; it needs to be coupled with the assimilation of new cognitive schemas and the accommodation of existing ones to facilitate growth and adaptation. Yet that psychological engine, comprised of ER, OP, FL, and CT, may indeed be a necessary ingredient in this mix.

One of the limitations of the current set of studies is that ICAPS was measured in a relative vacuum. Future studies will need to explore the ways in which these psychological skills interact with the drama of intercultural and interpersonal adaptation involving schemas, stereotypes, ethnocentrism, and other factors. Another limitation is the reliance on correlations between the ICAPS and paper-and-pencil measures (not exclusively, however). Common method variance may contribute to the correlations observed, and future studies will need to examine its relationship with actual adjustment-related behaviors. Future studies will need to investigate the possibility that the relative contribution of the ICAPS scales to adjustment may be different for immigrants opposed to sojourners, who have been lumped together in our studies to date. While we reported one study demonstrating future predictive validity, more studies like it are also necessary as the bulk of our studies have established concurrent predictive validity. Some of the low alphas for some scales reported above are problematic, especially 3 of the 34 alphas computed that were in the 0.3–0.4 range. Instead of eliminating those scales from the analysis, however, we opted to present them with the other findings, as these occurred on subscales of tests with other scales that had acceptable alphas. Also, the findings occurred consistently on all outcome scales regardless of alpha (which would have tended to decrease the correlations, an acceptable Type II error). Future studies will need to account better for those low reliabilities. Finally, future studies will also need to search for other possible psychological skills that may be part of this psychological engine, and to test the ability of this engine to predict adjustment in more disparate cultural samples. Given that the ICAPS is the only test of its kind in the field today, it represents a potentially major tool that can be useful in a variety of practical settings that deal with the interfacing of different cultures, including education, business, and everyday life.

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