

Exploratory Factor Analysis of the Sociocultural Adaptation Scale (SCAS) among International Students in Japan

在日留学生の間での社会文化的適応のスケールの探索的因子分析

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Introduction

In acculturation studies, sociocultural adaptation was found to be distinct from psychological adaptation. Psychological adaptation refers to well-being or satisfaction, and it is affected by personality, coping styles and social support. Sociocultural adaptation is defined in terms of behavioral skills, as an ability to “fit in” or effectively interact with members of the host culture (Ward & Kennedy, 1996). It has been associated with variables that influence culture learning and acquisition of social skills in the host culture, like language fluency, acculturation strategies, length of residence in a host culture and cultural distance (Searle & Ward, 1990; Ward & Kennedy, 1999).

To assess the levels of sociocultural adaptation, Ward and Kennedy (1999) offered the Sociocultural Adaptation Scale (SCAS). This scale measures the amount of behavioral and cognitive difficulties experienced by individuals when adjusting to a new culture and society. The scale is believed to be a “flexible instrument that can be modified according to the characteristics of the sojourning sample” (Ward & Kennedy, 1999, p. 662). Despite having many different variations, this scale has been highly reliable in numerous cultural contexts (Ward & Kennedy, 1993b, 1993c, 1994; Ward & Rana-Deuba, 1999).

At the heart of sociocultural adaptation are language ability and wider communication competence (Masgoret & Ward, 2006). They are necessary for successful social interaction, which is a part of broader construct of sociocultural adaptation. Many acculturation studies suggested that the communicational competence in the host-country language is positively related to adjustment (Searle & Ward, 1990; Ward & Kennedy, 1993a, 1994; Yang, Noels, & Saumure, 2006). It is linked to more frequent communication with host members and a decrease in sociocultural adaptation difficulties. Therefore, proficiency in the host-language is a tool that facilitates interpersonal relations, which eases cultural learning and sociocultural adaptation (Masgoret & Ward, 2006). Nevertheless, acculturation research in the Japanese context showed different patterns. Among foreign students in Japan, an increase in Japanese language competence was accompanied with a decrease in sociocultural adaptation (Takai, 1989) and acculturation satisfaction (Iwao and Hagiwara, 1987b). Tana-

ka, Takai, Kohyama and Fujihara (1994) found that Japanese proficiency is differently related to various types of adjustment. General adjustment and externally dependent adjustment were enhanced, while affiliation adjustment was diminished with increased competence in Japanese.

This study is a part of the series of surveys (Simic, Tanaka, & Hasegawa, 2006; Simic, Tanaka, & Yashima, 2007; Simic, & Tanaka 2008a; 2008b; 2008c) on language use patterns among international students in Japan, and its effect on their sociocultural adaptation. International students in Japan often learn Japanese as a third language, with English as a mediator second language. Thus, their language use pattern can be very complex. However, use of both English and Japanese is necessary for these students. They need to accomplish their academic obligations, which are generally required in English, and they need to manage their daily lives and socially interact with the native population in Japanese. How these language patterns affect their sociocultural adaptation to Japan is the main question of this study.

In our recent study (Simic, & Tanaka, 2009) we found that Japanese language competence and willingness to communicate in Japanese positively affect sociocultural adaptation. The above mentioned conflicting findings in acculturation research in Japan and other countries motivated us to look deeper into relations between Japanese language and sociocultural adaptation of international students in Japan. Results from the earlier studies demonstrated the significance of identifying and independently analysing the distinctive components of the sociocultural adaptation in order to precisely understand the actual degree of international students' adaptation.

Earlier attempts to reveal the underlying structure of the SCAS resulted in two-factor solution (Ward & Kennedy, 1999; Duronto, 2003) – cognitive and behavioral adaptation. Chen and Choi (2006) discovered that for Chinese immigrants in Singapore, three factors underlie sociocultural adaptation - social, physical and cultural adaptation. In order to understand the underlying structure of the SCAS for the sample of international students in Japan, we performed exploratory factor analysis. We attempted to explore the aspects of sociocultural adaptation that are affected by different demographic factors.

Research goals

1. To identify latent factors for SCAS for international students in Japan
2. To examine whether some demographic variables affect different types of adaptation

Method

Participants

450 international students from two national universities were asked for participation. 211 questionnaires were returned, which is a response rate of 46.7%. The target population needed to have satisfactory experience in using English and Japanese. They were required to have lived and studied in Japan for a minimum of six months, to have English as L2 and Japanese as L3, not to have Japanese language as their major of study and not to be native English speakers. Only students who fulfilled these conditions were included in the analysis. 13 questionnaires were not completed so they were not included in the analysis. The end result was a study of 198 completed questionnaires.

Of 198 participants, 97 (49%) were male and 101 (51%) female. The average age of participants was 27.2 years. As for the region of origin, 31.8% were from East Asia (China and Korea), 25.8% from South and Southeast Asia, 10.1% from the Middle East and Africa, 25.8% from Europe, 4.2% from Central and South America and 2.3% from Oceania.

Graduate students constituted 52% of the sample, research students 33.3%, undergraduates 6.6% and 8.1% were classified as others (including post-doctoral researchers and visiting professors). As for the major of study, there were an equal number of participants for both social and natural sciences (50% each). The length of residence in Japan at the time of performing this survey was between 6 months and 1 year for 35.4% of the sample, between 1 and 2 years for 33.8%, 2 to 3 years for 12.6%, 3 to 5 years for 11.1%, and over 5 years for 7.1% of participants.

Japanese was studied by 28.3% of participants for less than 1 year, 29.3% between 1 and 2 years, 11.1% between 2 and 3 years, 16.5% between 3 and 5 years, and 15.2% had taken classes for a period longer than 5 years. A self-estimation of English competence resulted in 5.6% of the sample classifying themselves as beginners, 17.7% as lower intermediate, 39.4% as higher intermediate and 37.4% as advanced.

A self-estimation of Japanese competence resulted in 20.2% of the sample classifying themselves as beginners, 28.3% as lower intermediate, 26.8% as higher intermediate and 24.7% as advanced.

Instrument

Sociocultural adaptation ($\alpha = .85$) was assessed with 25 items from the Sociocultural Adaptation Scale (SCAS). From the 40 items scale (Ward & Kennedy, 1999), we chose 25 culture-general items relevant for the international students in Japan. Participants rated each item by indicating the difficulty they experienced in various socio-cultural situations. Originally, high scores on this

scale were related to a higher level of difficulty (or weaker adjustments). However, for the sake of easier interpretation of the results, we reversed scores on the items, so that higher scores indicate better sociocultural adaptation.

Table 1. Content and descriptive statistics for the SCAS in 25 items

INSTRUCTION: For the items below, please circle a number from 1 to 5 that best describes the amount of difficulty that you have experienced in Japan (1= no difficulty; 5= extreme difficulty).

Item content	N	Min	Max	Mean	SD
1. Making friends	198	1	5	3.11	1.19
2. Using the transport system	198	1	5	3.96	0.96
3. Making yourself understood	198	1	5	3.09	1.07
4. Getting used to the pace of life	198	1	5	3.61	1.12
5. Going shopping	198	1	5	4.08	0.86
6. Worshipping in your usual way	198	1	5	3.77	1.08
7. Talking about yourself with others	198	1	5	3.49	1.05
8. Understanding jokes and humor	198	1	5	3.03	1.24
9. Dealing with someone who is unpleasant/aggressive	198	1	5	2.93	1.24
10. Getting used to the food you enjoy	198	1	5	3.96	1.22
11. Following rules and regulations	198	1	5	3.84	1.06
12. Dealing with the bureaucracy (administration)	198	1	5	3.12	1.22
13. Adapting to the local accommodation	198	1	5	3.90	0.98
14. Finding your way around	198	1	5	3.76	1.05
15. Dealing with the climate	198	1	5	3.54	1.22
16. Dealing with people staring at you	198	1	5	3.53	1.15
17. Going to coffee shops/restaurants	198	1	5	4.01	0.81
18. Understanding the local language	198	1	5	2.95	1.25
19. Living away from family members overseas	198	1	5	3.49	1.26
20. Adapting to local etiquette (manners, customs)	198	1	5	3.64	1.01
21. Getting used to the local density	198	1	5	3.92	1.03
22. Dealing with people of higher status	198	1	5	3.53	1.12
23. Understanding what is required from you at university	198	1	5	3.48	1.10
24. Coping with academic work	198	1	5	3.45	1.09
25. Expressing your ideas in class	198	1	5	3.28	1.18

Results

To verify whether the factor analysis is appropriate to perform on this data we applied the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett test of sphericity. The KMO indicates the ratio of the squared correlation between variables to the squared partial correlation between variables (Field, 2009). The KMO statistics varies from 0 to 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations; therefore, the factor analysis is likely to be inappropriate. A value close to 1 indicates that patterns of correlations are relatively compact and factor analysis should yield distinct and reliable factors (Field, 2009). KMO for this data was .821, which is very good (values over 0.5 are considered proper), indicating that the sample size for this analysis is suitable. All KMO values for individual items were larger than .75, which is well above the acceptable lowest limit of 0.5.

The Bartlett's test of sphericity examines the null hypothesis that variables in the population correlation matrix are uncorrelated. The approximate Chi-Square obtained was 1908.098 ($df = 300$), and it was statistically significant ($P < .001$), indicating that correlations between items were sufficiently large for the analysis. Therefore, these results suggest that we should carry on with a factor analysis for these data.

Exploratory factor analysis of the SCAS

Students' answers on the 25-items Sociocultural Adaptation Scale were subjected to an exploratory factor analysis (Principal Axis Factoring method, with oblique rotation - PROMAX). Oblique rotation is used when it is assumed that the underlying factors are correlated to each other. A loading of .40 was used as the cutoff for inclusion.

An initial analysis was run to obtain eigenvalues for each factor of the data. Five factors had eigenvalues over Kaiser's criterion of 1, and in combination explained 49.66% of the variance. However, factors 4 and 5 included only two items each, which is not satisfactory for retaining. The scree plot was ambiguous, and showed inflections that would justify retaining either two or three factors. Given the scree plot and the interpretability of factors, three factors were retained in the final analysis. The retained factors explain 43.58% of the variance. Factor loadings after rotation are presented in bold in Table 2.

Table 2 : Factor loadings for the sociocultural adaptation factors after PROMAX rotation

Items	Factor 1	Factor 2	Factor 3
<u>I. Academic adaptation ($\alpha = .80$)</u>			
23. Understanding what is required from you at university	.840	.048	-.118
24. Coping with academic work	.829	-.091	-.028
11. Following rules and regulations	.510	-.044	.102
25. Expressing your idea in class	.500	.044	.225
12. Dealing with bureaucracy (administration)	.446	.045	.215
<u>II. Survival ($\alpha = .80$)</u>			
05. Going shopping	.046	.712	-.188
18. Understanding the local language	.061	.661	-.152
03. Making yourself understood	-.123	.650	.209
17. Going to coffee shops/restaurants	-.288	.498	.313
04. Getting used to the pace of life	.255	.489	.027
02. Using the transport system	-.103	.460	.136
14. Finding your way around	.341	.446	-.167
19. Living away from the family overseas	.042	.405	.094
<u>III. Interpersonal adaptation ($\alpha = .70$)</u>			
16. Dealing with people staring at you	.014	-.234	.753
07. Talking about yourself with others	.004	.070	.567
01. Making friends	.128	.043	.499
08. Understanding jokes and humor	.072	.025	.495
22. Dealing with people of higher status	.173	.000	.422
Eigenvalues	7.28	1.78	1.75
Variance %	29.13	7.10	6.98
Accumulated variance %	29.13	36.23	43.21
Inter-correlations among extracted factors	Factor 1	1.00	0.53
	Factor 2	0.53	1.00
	Factor 3	0.49	0.53

Note: Due to oblique rotation the results of the pattern matrix are reported.

Results identified three components that explain 43.58% of the variance.

Factor 1 explains 29.13% of the variance. It consists of five items related to university life: coping with academic work; understanding what is required from you at university; expressing your idea in class; dealing with bureaucracy (administration); following rules and regulations; we named this factor "*academic adaptation*". Internal consistency of this factor was satisfactory (Cronbach $\alpha = .80$)

Factor 2 with 7.10% of the variance, consists of eight items related to organizing of daily life and habits. These items include: going shopping; understanding the local language; making yourself understood; going to coffee shops/restaurants; getting used to the pace of life; using the transport system; finding your way around; living away from the family overseas. We labeled this factor "*survival*" (Cronbach $\alpha = .80$).

Factor 3 explains 6.98% of the variance. Items clustered in this factor are related to different methods of communication, therefore, this factor was labeled "*interpersonal adaptation*" (Cronbach $\alpha = .70$). Five items representing interpersonal adaptation are: dealing with people staring at you; talking about yourself with others; making friends; understanding jokes and humor; and dealing with people of higher status.

We used these three factors as subscales of the sociocultural adaptation. They are employed in the following analysis of variance, together with "*overall adaptation*", which is sum of responses for all 25 items from the SCAS.

One-way Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) was conducted to examine whether some of the demographic variables affect extracted sociocultural adaptation types. ANOVAs were followed by a post hoc procedure using Hochberg's GT2 subtests to verify differences among groups. Post hoc procedures are used for exploring (mining) data, when the researcher doesn't have specific hypothesis about the data prior to the analysis. Hochberg's GT2 subtest is used when groups in the whole sample greatly vary in size (Field, 2009), which is the case in the present study.

Results revealed significant differences in adaptation with regards to region of origin and self-estimated Japanese proficiency.

As for regions of origin, four samples were included in the analysis – East Asians (N=63), South/Southeast Asians (N=51), Europeans (N=51) and Middle East and Africans (N=20). Due to small numbers of participants, other groups were omitted from the analysis. Results are presented

in Table 3.

Table 3. ANOVA for adaptation subtypes by regions of origin

		Sociocultural adaptation subscales - M(SD)			
		Academic Adaptation	Survival	Interpersonal Adaptation	Overall Adaptation
Region of origin	East Asia (N = 63)	M = 3.67 (SD = 0.64)	M = 3.93 (SD = 0.57)	M = 3.33 (SD = 0.72)	M = 3.73 (SD = 0.54)
	South & SE Asia (N = 51)	M = 3.49 (SD = 0.98)	M = 3.41 (SD = 0.80)	M = 3.26 (SD = 0.85)	M = 3.45 (SD = 0.73)
	Europe (N = 51)	M = 3.07 (SD = 0.83)	M = 3.69 (SD = 0.63)	M = 3.52 (SD = 0.76)	M = 3.53 (SD = 0.50)
	Middle East & Africa (N = 20)	M = 3.60 (SD = 0.78)	M = 3.33 (SD = 0.72)	M = 3.09 (SD = 0.86)	M = 3.34 (SD = 0.54)
One-way ANOVA F (5, 192) (sig.)		F = 3.61 (p < .004)	F = 4.41 (p < .001)	F = 2.16 (p < .019)	F = 2.65 (p < .024)

The ANOVA for adaptation subtypes revealed significant differences for *academic adaptation* ($F(5, 192) = 3.61, p < .01$), *survival* ($F(5, 192) = 4.41, p < .01$) and *overall adaptation* ($F(5, 192) = 2.65, p < .05$). Hochberg's GT2 test for academic adaptation revealed that East Asians are significantly better adapted, while Europeans are less adapted than other groups. As for survival, the most maladapted group is from the Middle East and Africa, followed by South/Southeast Asians, while East Asians are best adapted. Europeans showed best interpersonal adaptation compared to other groups.

ANOVA exposed significant mean differences for all four adaptation types when self-estimated Japanese competence was analyzed (see Table 4) : *academic adaptation* ($F(3, 194) = 3.13, p < .05$), *survival* ($F(3, 194) = 14.79, p < .01$), *interpersonal adaptation* ($F(3, 194) = 3.17, p < .05$), and *overall adaptation* ($F(3, 194) = 6.57, p < .01$). For all four types, intermediate and advanced level of competence was accompanied with higher level of adaptation than lower competence groups. However, a U-curve pattern was displayed for academic and interpersonal adaptation, while the survival adaptation change was linear.

In addition, we performed ANOVA for the length of Japanese study and the length of residence in Japan, however, no significant differences in the level of adaptation were found. This result is contrary to numerous earlier findings where sojourners adjustment was improved with the length of residence (Feldman & Rosenthal, 1990; Masgoret et al., 2000; Tanaka et al., 1994; Ward & Ken-

nedy, 1992, 1994; 1996; Ward, Okura, Kennedy, & Kojima, 1998).

Table 4. ANOVA for adaptation subtypes by self-estimated Japanese ability

		Sociocultural adaptation subscales - M(SD)			
		Academic Adaptation	Survival	Interpersonal Adaptation	Overall Adaptation
Japanese ability	Beginners (N = 56)	M = 3.48 (SD = 0.79)	M = 3.24 (SD = 0.72)	M = 3.31 (SD = 0.89)	M = 3.40 (SD = 0.61)
	Lower Intermediate (N=56)	M = 3.15 (SD = 0.74)	M = 3.42 (SD = 0.50)	M = 3.08 (SD = 0.72)	M = 3.33 (SD = 0.47)
	Higher Intermediate (N=53)	M = 3.54 (SD = 0.76)	M = 3.95 (SD = 0.52)	M = 3.51 (SD = 0.65)	M = 3.73 (SD = 0.53)
	Advanced (N = 49)	M = 3.59 (SD = 0.95)	M = 3.92 (SD = 0.81)	M = 3.38 (SD = 0.82)	M = 3.70 (SD = 0.67)
One-way ANOVA F (5,192) Significance		F = 3.13 (p<.027)	F = 14.79 (p<.001)	F = 3.17 (p<.026)	F = 6.57 (p<.001)

Discussion

The present study investigated the underlying structure of the sociocultural adaptation scale for international students in Japan. In addition, we investigated the effect of origin and Japanese competence on the sociocultural adaptation.

In some earlier studies (Ward & Kennedy, 1999; Duronto, 2003), analysis of the latent structure of the SCAS resulted in two factors - cognitive and behavioral adaptation. On the other hand, Chen and Choi (2006) discovered that for Chinese immigrants in Singapore, three factors underlie socio-cultural adaptation - social, physical and cultural adaptation. In the present study we revealed three components: academic, survival and interpersonal adaptation. Carefully comparing items from factor analysis in previous studies, we can say that "survival" has some similarities with physical adaptation in Chen and Choi (2006). They both include items related to the organization of daily life and habits. The difference is that our "survival" is also concerned with emotional needs of international students (such as "Living away from the family overseas"), while that is not the case with "physical adaptation" (Chen & Choi, 2006). "Interpersonal adaptation" is similar to social adaptation in Chen and Choi (2006) and Ward and Kennedy's behavioral adaptation. The factor that was not extracted in earlier studies is "academic adaptation". It consist of items related to university life. The fact that our participants are university students, and that their main purpose of living in Ja-

pan is academic, explains why this factor accounts for the largest amount of variance (28.49%).

ANOVA revealed that East Asians are best adapted on the survival and academic level. This can probably be explained by the culture distance hypothesis, because nations that belong to this group (Chinese, Korean, and Taiwanese) have the most similarities to Japanese, culturally and racially. In addition, usage of kanji in East Asian countries can account for successful academic adaptation of members of this group. However, the group that showed highest interpersonal adaptation were Europeans. Iwao and Hagiwara (1988) claimed that Westerners receive favored treatment and higher estimation by the Japanese compared to Asians. This suggests that Japanese people accept lower communication requirements for Westerners in Japanese language ability and cultural understanding. Possibly, for that reason, Europeans feel more relaxed in interpersonal relations than Asians, and thus, better adapted. Another possible explanation is that most European members belong to so-called individualistic cultures, where less importance is paid to group and interpersonal relations, compared to Asian collectivistic cultures. Thus, Europeans tend to rely less on interpersonal relations.

As for Japanese language competence, results from ANOVA are in line with previous research studies that suggested positive relations of the communicational competence in the host-country language to adaptation (Searle & Ward, 1990; Ward & Kennedy, 1993a, 1994; Yang, Noels, & Saumure, 2006). Some studies done in the Japanese context showed opposite results (Iwao and Hagiwara, 1987b; Takai, 1989), but in the present study, positive relation of language and acculturation is confirmed. Better communicational competence skills imply more communication with host members, which eases learning of culture and sociocultural adaptation (Masgoret & Ward, 2006).

There were some limitations to this study. Acceptable participants for this survey were restricted (see section Method - Participants) and the sample was fairly uniform, so we can expect that sample bias probably occurred. Therefore, we should restrict these results only on the sample of international students in Japan. Replicating this study for different samples (immigrants, different ethnic groups, students from different universities) would possibly confirm the results of this study. In addition, the number of participants for the Middle East and African sample is much smaller than for other cultural groups. It needs to be increased for more stable results.

In this research we focused only on exploratory factor analysis. According to Costello and Osborne (2005), "by nature and design, exploratory factor analysis is exploratory. There is no inferential statistics. It was designed and it is still most appropriate for use in exploring the data set. It is not designed to test hypothesis or theories". Therefore, we cannot evaluate the accuracy of this factor analysis. Thus that reason, we should continue with analysis and conduct a confirmatory factor

analysis, and that is one implication for future study. Furthermore, we plan to explore how various linguistic and context-specific factors identified in our earlier studies (i.e. willingness to communicate in English and Japanese, perception of English and Japanese usefulness, attitudes toward communication with Japanese, alienation by English, proficiency in English and Japanese) affect different types of sociocultural adaptation (i.e. overall, intellectual, survival and interpersonal adaptation) of international students in Japan. Also, we plan to explore whether there would be differences in factors that predict sociocultural adaptation among different cultural groups. We believe that our future studies will bring new information and deepen knowledge about language and adaptation.

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