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Psychometric Validation of a Short Acculturation Scale for Korean Immigrants

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Abstract

Background—Acculturation has been identified as a determinant of health behavior and outcome among ethnic minorities. The high prevalence of lifestyle related chronic diseases and risk factors among Korean immigrants calls for a valid short acculturation scale to use in clinical practice and health research settings.

Objectives—To validate the psychometric properties of a Short Acculturation Scale originally developed for Hispanics (SASH) after translating the scale to Korean (SAS-K) to determine its suitability for use with Korean immigrants.

Method—A self-administered questionnaire was completed by 143 Korean immigrants with type 2 diabetes aged 30–80 years from a Korean community in Southern California. Confirmatory factor analysis, criterion validity, and internal reliability were utilized to evaluate the psychometric properties of the SAS-K.

Results—Using a second-order confirmatory factor analysis, a three-factor structure [χ^2 (51) = 121.49, $p < .001$, CFI = .950, SRMR = .055, RMSEA = .099] was confirmed. The SAS-K was associated positively with length of residence, age of arrival, and English proficiency. Reliability for the total SAS-K was .93. Cronbach's alpha coefficients for each subscale of the SAS-K ranged from .80 (social relations) to .95 (media).

Discussion—The 12-item, easy-to-use SAS-K demonstrated satisfactory reliability and validity and thus is an appropriate instrument for measuring acculturation in Korean immigrants. The short nature and ease of administration of the SAS-K makes it an ideal choice for healthcare providers and researchers to assess acculturation levels quickly and easily, and to further the development and use of more culture-appropriate interventions.

Keywords

short acculturation scale; psychometric validation; Korean immigrants

Acculturation refers to the process in which the attitudes and behaviors of persons from one culture are modified as a result of contact with a different culture (Moyerman & Forman, 1992). Studies have shown that acculturation is a determinant of health behaviors and risk factors in ethnic immigrant populations (Kandula, Kersey, & Lurie, 2004; Salant & Lauderdale, 2003; Singh & Miller, 2004). Acculturation has been associated with health risk

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factors such as smoking, obesity, lack of physical activity, and unhealthy diet among Latinos and Asians (Gomez, Kelsey, Glaser, Lee, & Sidney, 2004; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). The direction of association between acculturation and health, however, has not been consistent throughout these studies. For example, whereas less acculturation was related to a greater risk of diabetes among Mexican Americans and Arab Americans (Hazuda, Haffner, Stern, & Eifler, 1988; Jaber, Brown, Hammad, Zhu, & Herman, 2003), more acculturation was associated with increased risk of diabetes in Japanese Americans (Gomez et al., 2004; Huang, Rodriguez, Burchfiel, Chyou, & Curb, 1996). Acculturation was not related to diabetes self-care behaviors in elderly Mexican American and Chinese American patients with type 2 diabetes (Fisher et al., 2004; Wen, Shepherd, & Parchman, 2004).

Whereas the inconsistencies may reflect true differences in acculturation's impact on different health conditions in different ethnic groups, these mixed findings may be largely due to an overreliance on proxy (e.g., age of arrival, length of residence in the United States) and other acculturation measures that do not capture the domains relevant to health fully in a particular cultural group (Chun, Chesla, & Kwan, 2011; Perez-Escamilla & Putnik, 2007; Salant & Lauderdale, 2003). Acculturation is a multidimensional process involving multiple domains of behavioral, cognitive, and emotional adaptive functioning, and, therefore, proxy acculturation measures are inaccurate because they do not assess the nature of individual cultural adaptation experiences directly (Chun, Balls Organista, & Marin, 2003; Chun et al., 2011). To study acculturation and health in different ethnic groups, a valid measure specific to the study population is needed. The urgent need for a valid acculturation measure for health studies within Asian subgroups is reflected well in a recent statement from the American Heart Association that, despite the critical need to examine acculturation as a predictor of health behaviors in Asian Americans, there is a paucity of validated acculturation instruments for Asian American subpopulations (Palaniappan et al., 2010; Venkat Narayan et al., 2010).

Korean immigrants are the fourth largest Asian American subgroup among Asian adults over 18 years of age in the US (Barnes, Adams, & Powell-Griner, 2008); the majority (78%) of Korean immigrants are first-generation immigrants (US Census Bureau, 2001). Whereas Korean immigrants are reported to have a high prevalence of lifestyle-related chronic diseases such as diabetes and hypertension, and risk factors such as smoking and obesity (Cho & Juon, 2006; Kim, Juon, Hill, Post, & Kim, 2001; Lew et al. 2001), few researchers have examined the relationship between acculturation and health within Korean immigrants. One potential hindrance to closing this gap in knowledge is the lack of an appropriately validated short and easy-to-administer acculturation measure specific to Korean immigrants that can be used in clinical and research settings.

The Short Acculturations Scale for Hispanics (SASH; Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987), widely used among Hispanic populations in healthcare research, has sound psychometric properties. The scale has been validated also for Filipino Americans with individuals recruited from clinic settings (Dela Cruz, Padilla, & Butts, 1998) and a group of foreign-born Chinese Americans (Gupta & Yick, 2001). The SASH served as an appropriate starting point for the development of a short acculturation scale specific to Korean immigrants.

A potential concern during creation of this translated scale is that the process of translating an instrument for use in different ethnic groups has the possibility of introducing distortion in the semantic and conceptual meanings of items (Streiner & Norman, 1989). Even if linguistic equivalence is achieved through an appropriate translation technique, a translated instrument may not be functionally equivalent to the original due to cultural differences

(Hsueh, Phillips, Cheng, & Picot, 2005). Therefore, it is important that all translated instruments be validated for psychometric properties, regardless of the psychometric properties of the original scale (Byrne & Campbell, 1999). Pounonen and Ashton (1998) suggested that the following psychometric properties be assessed in a translated version of a measure to determine whether a scale is applicable and adequate in a new population: scale mean, variance, reliability, criterion validity, and construct validity. When the psychometric properties of a translated version are similar to those of the original, the translated instrument is regarded as a valid instrument (Paunonen & Ashton, 1998).

The purpose of this study was to validate the Korean translated SASH, a Short Acculturation Scale for Koreans (SAS-K). In following the guidelines proposed by Paunonen and Ashton (1998), the specific aims of this study were to (a) compare the mean and variance of scores on the three subscales between the SASH and the SAS-K; (b) compare the reliability of the SASH to the SAS-K; (c) examine the criterion validity of the SAS-K; and (d) examine the construct validity of the SAS-K. The goal in developing the SAS-K was to provide a tool for healthcare providers and researchers to determine varying acculturation levels within Korean immigrants.

Method

Design, Sample, and Setting

The data presented herein are part of a larger cross-sectional study of the perception of heart disease risk (Choi, Rankin, Stewart, & Oka, 2008). A convenience sample of 143 immigrant Korean men and women with type 2 diabetes participated in the study. Participants were recruited via flyers and posters from a variety of community sites in a West Coast Korean community. The participants were self-identified as Korean-born immigrants with a diagnosis of type 2 diabetes for at least a year and were able to speak, read, and write in Korean. The study was approved by a university institutional review board, and all participants provided written informed consent. After consenting, participants were asked to complete a series of questionnaires in Korean. A bilingual researcher was available throughout data collection to assist participants with any questions. All participants had complete data. Participants were compensated with a free finger stick blood test for glucose control and cholesterol, worth approximately $30.

Instruments

Of the questionnaires completed by participants, this study is focused on demographics, the SAS- K, and the English language proficiency scale. In addition to typical demographic questions such as age, gender, and income, participants were asked items that could be a proxy of acculturation, such as age of arrival and years lived in the US.

Similar to the translation technique used in creating the Spanish-language version of the SASH, double-translation (Brislin, 1986; Brislin, Lonner, & Thorndike, 1973) was used to translate the English version of the SASH into the Korean-language SAS-K. That is, the SASH was first translated into Korean by the bilingual lead author and then back-translated into English by a bilingual graduate student nurse. The two English versions were then checked for discrepancies. Any discrepancies in translations were resolved by the consensus of three bilingual Korean immigrants: two healthcare professionals and a volunteer translator at a medical center near the Korean community. The instrument was then pilot-tested with five diabetic patients (2 males and 3 females) from the same community that the main sample would be drawn to determine if there were any issues with the instrument, such as the wording of questions or instructions, or the Korean translation. Based on the feedback of the pilot-test participants, the Korean language version (SAS-K) underwent two

modifications by the bilingual Korean immigrant panel reviewers mentioned above prior to psychometric testing to ensure the equivalence of the English and Korean versions.

As in the original SASH, the SAS-K consists of 12 items that measure a person's acculturation level (Marin et al., 1987). It has three subscales: (a) language (5 items), (b) media (3 items), and (c) ethnic-social relations (4 items; Table 1). The responses are measured on a 5-point Likert-type scale, ranging from 1 point (only Spanish) to 5 points (only English). The responses provided by each respondent can be averaged across items (range of scores is 1 through 5). The mean score can be used as an interval scale, where scores close to 5 indicate high levels of acculturation and those close to 1 indicate little acculturation. According to guidelines presented on the website of the original authors (Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1995), an average of 2.99 can be used to differentiate the less acculturated respondents (average score between 1 and 2.99) and the more acculturated (average score above 2.99).

Marin et al. (1987) developed and tested the SASH in a multicultural, multigenerational immigrant sample (363 Hispanics and 228 non-Hispanic Whites ages 15 to 75 years). Both Hispanic and non-Hispanic samples shared similar sociodemographic characteristics: the mean age was 31.2 years for Hispanics and 38.8 years for non-Hispanics, and the mean level of education was 12.3 years for Hispanics and 14.7 years for non-Hispanics. The sample consisted of 62% and 57% females for the Hispanic and non-Hispanic groups, respectively. Seventy percent of the Hispanics were foreign-born and had lived in the US an average of 14.7 years. The original scale demonstrated good psychometric properties. The reliabilities of three subscales and overall scale for the SASH were adequate to good, with Cronbach's alpha coefficients ranging between .78 and .92. Using exploratory factor analysis, the developers identified three individually meaningful subscales--language use, media, and ethnic social relations. The scale has been used widely in healthcare research with Hispanic populations and has a reported reliability of .92 in that population (Marin et al., 1987). To the best of the researchers' knowledge, it has not been used in a Korean sample until the present study. Cronbach's alpha for the SAS-K for this study was .93.

Finally, the English Language Proficiency Scale consists of 4 items and measures how well one can speak, understand, read, and write in English on a 5-point Likert scale (not at all, poorly, fairly well, well, very well). Higher scores indicate a higher level of English language proficiency. This scale is based on the Interagency Language Roundtable (ILR) scale, a set of descriptions of abilities to communicate in a language (Clark & Clifford, 1988). Cronbach's alpha for this scale was .99 in this study.

Analysis of Data

There were no missing data, so analyses were performed on all 143 cases. To create subscale and total acculturation scores, respective means were calculated. Means and variations were calculated to examine descriptive statistics. Cronbach's alpha was used to measure internal validity. Generally, the larger coefficient alpha, the more reliable the measure (Cronbach, 1987).

Criterion validity was measured using correlations with $\alpha = .05$ (two-tailed). Criterion validity coefficients between SAS-K, length of residence, English proficiency, and age of arrival were assessed. As length of residence is proportional to a respondent's age, a ratio was calculated as length of residence in the US divided by the individual's age (similar to the strategy used in the validation of the SASH; Marin et al., 1987).

Exploratory factor analysis had been completed with the SAS-H (Marin et al., 1987), so construct validity was assessed via confirmatory factor analysis (CFA). A second-order CFA

was performed with three subscales as first-order factors. The two most popular methods for evaluating model fit are the χ^2 goodness of fit statistic and fit indices (Hu & Bentler, 1999). Because the χ^2 statistic is based on comparing the covariance structure of the ideal theoretical model with the observed covariance structure, other fit indexes are often used to aid in the evaluation of model fit. Common fit indexes include the root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean squared residual (SRMR), among others. As the traditional cutoff of .06 for the RMSEA is known to over-reject properly specified models in small sample sizes (Hu & Bentler, 1999), CFI and SRMR were used to evaluate model fit. A value of .95 or greater on the CFI, and a value of .08 or less on the SRMR suggest good fit (Hu & Bentler, 1999). Model identification was confirmed via the three-indicator rule (Bollen, 1989; a multifactor model is identified when each latent factor has three or more indicators, indicators load only on one factor, and no residual error terms are correlated).

Results

Sample Description

The sample consisted of 51.7% women and the mean age was 62.4 years (*SD* = 12.8; range = 30 to 80). More than half of the sample (62%) was married and over one half (57%) had a college education or better. The mean duration of living in the US was 21.7 years (*SD* = 9.2). More than half (52.4%) had annual household income of less than $20,000.

Using the guidelines presented above for the interpretation of acculturative level, on average, participants rated themselves below 2.99 on all three subscales and the total acculturation scale. Information about the variance of the original SASH was not available in the original publication and could not be obtained from the authors. However, a recently published study using the SASH in a community clinic sample of first generation Hispanic immigrants with depression (SASH-cc; Santiago-Rivera et al., 2010) presented similar subscale and total scale means and standard deviations to those of the SAS-K (Table 2). Whereas statistical significance of mean differences could not be tested, visual inspection shows that, relative to Hispanics in the original SASH validation study (Marin et al., 1987), Korean participants scored lower on the three acculturation subscales, as well as on total acculturation.

Reliability

A summary of reliability findings are shown in Table 3. The reliability coefficient for the media subscale was slightly larger in the SAS-K than in the SASH. Reliability coefficients for the language use and ethnic-social relations subscales are nearly identical in both the SASH and SAS-K. Cronbach's alpha coefficients for the total scales also were nearly identical in the SASH and SAS-K.

Criterion and Construct Validity

With regard to criterion validity, significant correlations between length of residence and age of arrival were found with all three subscales and total score of the SAS-K (Table 3). Specifically, age of arrival was correlated negatively overall and with all three subscales (language, media, and social relations). Older age of arrival predicted less acculturation overall and across all the three subscales in both the SASH and the SAS-K. Conversely, length of residence was associated positively with overall and subscale measures of acculturation on the SASH and SAS-K. That is, participants with higher scores on the SAS-K, who could be classified as more acculturated, had lived in the US longer and arrived at a younger age than those with lower scores on the SAS-K. These results were similar to findings with the SASH, though coefficients for length of residence were slightly smaller on

the SAS-K. Coefficients were roughly similar between age of arrival and both the SASH and the SAS-K. Additionally, English proficiency was associated positively with all three subscales and total score of the SAS-K. This means that participants who reported greater English proficiency scored higher on the SAS-K than those with lesser English proficiency. English proficiency was not reported in the validation of the SASH, preventing any comparisons between the two versions.

Regarding construct validity, a second-order confirmatory factor analysis showed adequate model fit [χ^2 (51) = 121.49, $p < .001$; CFI = .950, SRMR = .055, RMSEA = .099]. Whereas the RMSEA suggests inadequate model fit, as noted before, the RMSEA is known to over-reject properly specified models in small sample sizes (Hu & Bentler, 1999). As can be seen in Figure 1, all items loaded positively on the same factors as the SASH (all significant at $p < .001$), suggesting that both the SASH and SAS-K possess similar factor structures.

Discussion

The findings suggest that the SAS-K is an appropriate instrument to measure acculturation among Korean immigrants with diabetes. The mean scores on the three subscales and overall acculturation were lower in this sample than in the SASH. These differences in means in the SASH and SAS-K may be due in part to differences in sample characteristics. In the SAS-K, the sample consisted entirely of first-generation immigrants, compared to only 70% first-generation immigrants in the SASH validation sample. Unfortunately, it was not possible to compare the obtained ranges and standard deviations with those of the original SASH, because this information could not be retrieved through the original publication or from the authors. Significant correlations of the SAS-K with length of residence, age of arrival, and English proficiency provided sufficient criterion validity and suggested that the SAS-K measures acculturation as expected.

The SAS-K demonstrated good internal consistency, with alphas ranging from .80 to .95. When comparing overall and subscale alphas, internal consistency was comparable between SASH and SAS-K measures, with the sole exception being that the alpha was moderately larger on the SAS-K than on the SASH for the Media subscale. One possibility for this discrepancy is that Korean immigrants may view different types of media as more of a single source of information than Hispanic immigrants. A second, more likely, possibility of this difference may be due in part to the homogenous nature of the Korean immigrant sample. As noted before, whereas the SASH was validated with a sample consisting of only 70% first-generation immigrants, the SAS-K was validated on a sample consisting entirely of first-generation immigrants (Marin et al., 1987). Whereas both samples demonstrated adequate levels of internal consistency, this difference in sample composition may have resulted in lower agreement among the Media items for the Hispanic group, as well as the higher mean levels of acculturation.

A second-order CFA verified that the SAS-K had three subordinate subscales and that these subscales accurately measure acculturation as the original scale developers intended. The CFA confirmed the same factor structure found in the SASH and thus is appropriate for use in Korean immigrant populations as a valid measurement of acculturation.

Although this study confirmed that the SAS-K is a reliable and valid instrument to measure acculturation among Korean immigrants with diabetes, some limitations can be identified. The first concerns the representativeness of the sample, which was recruited from a single Korean immigrant community. Generalizability may be limited to Korean immigrants with similar characteristics to the study population and may not extend to Korean immigrants with diabetes living in other geographic locations in the US, or outside the ethnic enclave.

Second, the original SASH was validated with a younger multigenerational sample with greater variability in age and other socioeconomic status. Relative to the sample used to validate the SASH, this sample was older and consisted entirely of first-generation immigrants. Future studies should include validating the SAS-K with younger and healthy immigrant populations. Lastly, the original data and variances used to validate the SASH were not available to the authors, limiting the ability to statistically test for mean differences between the SASH and SAS-K, relying instead upon visual comparisons of means.

Conclusions

Acculturation is an important variable in health research among ethnic minorities. With urgent need for information on acculturation and health in Asian American subgroups and accompanying need for an appropriate acculturation instrument in this population, the findings of this study provide healthcare providers and researchers with information on a valid translated Short Acculturation Scale specific to use with Korean immigrant population. The SAS-K is a short and easy to use acculturation measure specifically validated for Korean immigrant population that can be used in clinical or research settings. Directions for future research should include exploring measurement equivalence across different Asian subgroups and other ethnic populations to support cross-cultural research. Further research should also work toward integrating acculturation levels with the development and implementation of more culture-appropriate interventions.

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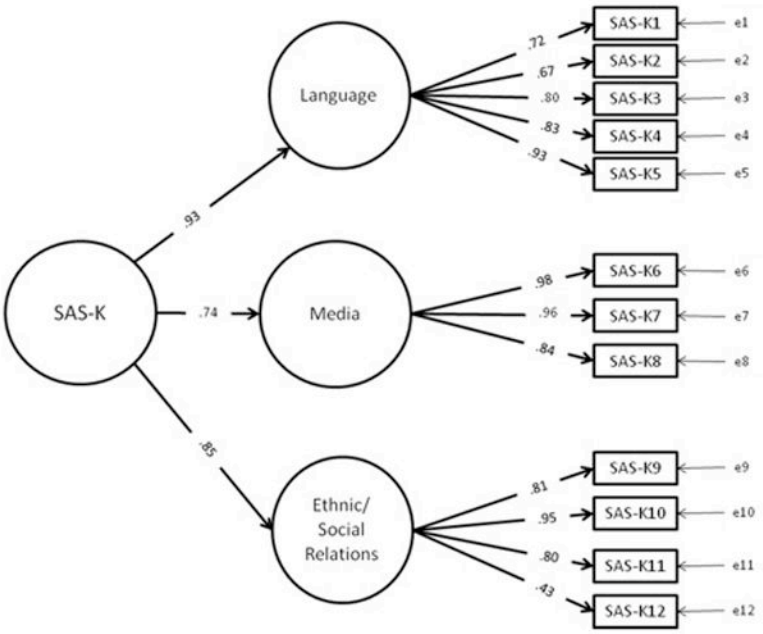

Figure 1. The Second-Order Confirmatory Factor Analysis for the SAS-K
SAS-K = Short Acculturation Scale – Korean version.

Table 1

Factor Loadings and Factor Structure for the SASH

	SASH Factors		
Items	**1**	**2**	**3**
Factor 1: Language Use/Ethnic Loyalty			
SASH 1: Language Spoken	0.70	0.50	0.18
SASH 2: Language as Child	0.71	0.12	0.13
SASH 3: Language at Home	0.66	0.36	0.10
SASH 4: Thinking Language	0.69	0.48	0.18
SASH 5: Language with Friends	0.68	0.49	0.22
Factor 2: Media			
SASH 6: Language TV	0.34	0.78	0.19
SASH 7: Language Radio	0.27	0.78	0.23
SASH 8: Preferred Media	0.21	0.81	0.25
Factor 3: Ethnic Social Relations			
SASH 9: Ethnicity Friends	0.53	0.22	0.61
SASH 10: Ethnicity Parties	0.36	0.22	0.69
SASH 11: Ethnicity Visitors	0.51	0.13	0.66
SASH 12: Ethnicity Children's Friends	−0.07	0.34	0.71

Notes. SASH = original version of the Short Acculturation Scale for Hispanics. Adapted from "Development of a Short Acculturation Scale for Hispanics," by G. Marin, F. Sabogal, B. Marin, R. Otero-Sabogal, and E. Perez-Stable, 1987, *Hispanic Journal of Behavioral Sciences, 9, pp. 183–205.*

Table 2

Mean and SD of Scores in the SASH and the SAS-K

	SASH[a]		SASH-cc[b]		SAS-K	
	M	***SD***	***M***	***SD***	***M***	***SD***
Language Subscale	2.35	--	1.38	0.45	1.41	0.58
Media Subscale	3.57	--	1.95	0.91	1.77	0.87
Ethnic Social Relations Subscale	2.62	--	2.19	0.57	1.60	0.53
Total	2.72	--	1.79	0.50	1.56	0.56

Notes. SASH = original version of the short acculturation scale for Hispanics; SASH-cc = SASH administered in a community clinic sample; SAS-K = SAS in Korean.

[a]Original SASH developed by Marin, Sabogal, Marin, & Perez-Stable, (1987).

[b]Original SASH administered with a community clinic sample of depressed first-generation Latino immigrants (Santiago-Rivera, Kanger, Busch, Rusch, Reyes, West, et al., 2010).

Table 3

Summary of Validity and Reliability Analyses in the SASH and the SAS-K

	SASH[a]				SAS-K			
Criterion	**Overall**	**Factor 1 "Language"**	**Factor 2 "Media"**	**Factor 3 "Social Relations"**	**Overall**	**Factor 1 "Language"**	**Factor 2 "Media"**	**Factor 3 "Social Relations"**
Reliability								
Alpha	0.92	0.90	0.86	0.78	0.93	0.89	0.95	0.80
Validity[b]								
Length of Residence	0.70	0.76	0.46	0.50	0.51	0.46	0.41	0.48
English Proficiency	--	--	--	--	0.74	0.64	0.67	0.67
Age of Arrival	−0.69	−0.72	−0.58	−0.46	−0.62	−0.56	−0.52	−0.58

Notes. SASH = original version of the short acculturation scale for Hispanics; SAS-K = SAS in Korean.

[a] Original SASH developed by Marin, Sabogal, Marin, & Perez-Stable, (1987).

[b] All correlations significant at $p < .001$.