Published in final edited form as:

Hispanic J Behav Sci. 2012 August ; 34(3): 404–420. doi:10.1177/0739986312449426.

Psychometric Evaluation of the Demographic Index of Cultural Exposure (DICE) in Two Mexican-Origin Community Samples

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Abstract

Reliability and validity evidence is provided for the Demographic Index of Cultural Exposure (DICE), consisting of six demographic proxy indicators of acculturation, within two community samples of Mexican-origin adults ($N=497$ for each sample). Factor analytic procedures were used to examine the common variance shared between the six demographic indicators hypothesized to correlate with acculturation. The index was cross-validated across two samples by comparing fit indices. Finally, index criterion validity was assessed using correlations between index scores and five common behavioral/psychological domains of Latino cultural identity: language use (Spanish and English), cultural practices, folk health beliefs, and fatalism. Results indicated that the six demographic indicators loaded onto one latent factor and that this model had good fit across both samples. In addition, DICE scores correlated with four of the five behavioral/psychological measures. Future use of the DICE as an efficient way to approximate cultural exposure is discussed.

Keywords

Mexican American; acculturation; index; immigrant; health

Much research suggests that among immigrant groups in the United States (U.S.) acculturation is a risk factor for increased mental and physical health problems (Alegría et al., 2007; Gonzales, Knight, Morgan-Lopez, Saenz, & Siroli, 2002; Ortega, Rosenheck, Alegría, & Desai, 2000) as well as substance use and abuse (Abraído-Lanza, Chao, & Flórez, 2005; Caetano, Ramisetty-Mikler, & Rodriguez, 2009; Gonzales et al., 2002). Assessing acculturation in health research may facilitate our understanding of health risk and potentially lead to reductions in health disparities (National Research Council, 2004).

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Thus, acculturation provides a framework from which to examine changes in behavior that impact health outcomes and that occur as a function of immigration and exposure to nonnative cultures, such as occurs among the diverse Latino population in the U.S. (Cuellar, Arnold, & Maldonado, 1995; Padilla, 1995).

Early models of acculturation posited a unidimensional process in which individuals shed their heritage culture as they assimilated to the host culture (Gordon, 1964). More recently, Schwartz, Unger, Zamboanga, and Szapocznik (2010), building upon work by Berry (1997, 2003), suggested that acculturation is best understood as a multifaceted, bidimensional process. Currently, there are many scales designed to measure key constructs, including language use, preference, and proficiency (Cuellar, Arnold, & Maldonado, 1995; Marin & Gamba, 1996); behavioral preferences related to food, media, and friends (Mendoza, 1989); cultural values, such as a strong sense of family, respect for elders, and interdependence (Cauce & Domenech-Rodríguez, 2002; Cuellar, Arnold, & Gonzalez, 1995; Knight, et al., 2010); and cultural identifications, including ethnic or cultural identity (Tropp, Erkut, Garcia Coll, Alarcon, & Garcia, 1999). Frequently, multiple constructs are included in one scale (Cuellar, Arnold, & Gonzalez, 1995; Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987).

However, there are a number of limitations with these scales. First, it is difficult to operationalize bidimensional conceptual models as measures that will adequately capture orientation toward the host culture and culture of origin (Cabassa, 2003). This difficulty is in part due to the lack of precise definitions of culture and a failure to operationalize cultural attributes of both the host culture and culture of origin (Arcia, Skinner, Bailey, & Correa, 2001; Escobar & Vega, 2000; Hunt, Schneider, & Comer, 2004). As Escobar and Vega (2000, para. 7) state, “It is not clear which key features of one culture are truly distinctive from those of another culture, why they matter, or how a metric approach could or should detect meaningful differences.” Further, the format of some scales may lead to inherent measurement issues when using items that rely on frequency measures (Kang, 2006; Magaña et al., 1996). In addition, cultural orientation can be considered a “fluid” attribute, meaning that an individual’s responses to an acculturation measure may vary depending on situational characteristics (Lechuga, 2008), potentially leading to systematic measurement error. Finally, the use of acculturation scales, some of which include more than 60 items (e.g., Cuellar, Arnold, & Gonzalez, 1995), can be overly time-consuming and costly, which is especially problematic for large-scale epidemiological studies (Cruz, Marshall, Bowling, & Villaveces, 2008).

Alternatively, some researchers use demographic indicators as proxies of acculturation (Arcia et al., 2001; Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). These include characteristics such as primary language use, generational status or nativity status, number of years or proportion of life spent in the U.S., place of education, and/or age of arrival in the U.S. (Arcia et al., 2001; Escobar & Vega, 2000; Schwartz et al., 2006). Although proxy variables fail to directly measure constructs that are thought to change during the acculturation process (Betancourt & Lopez, 1993), demographic indicators are routinely collected in large and/or national health surveys (Cruz et al., 2008; for examples see Alegría et al., 2007; Harris et al., 2009). In addition and in contrast to many of the psychological

measures, these proxy variables are not group specific, which makes it possible to use these measures in large-scale population-based surveys that include multiple ethnic or cultural groups. Moreover, proxy measures are time and cost effective relative to scales.

However, researchers often do not compare the relative explanatory value of different indicators (for exceptions, see Balcazar & Krull, 1999; Phinney & Flores, 2002; Schwartz et al., 2006), and few have attempted to combine various indicators in a systematic way. One notable exception is the Proxy Acculturation Scale (PAS-4) (Cruz, Marshall, Bowling, & Villaveces, 2008), which includes two indicators of language preference (language used at home and during the interview), generational status, and proportion of life in the U.S. Using data from the 1984 National Alcohol Survey (NAS), Cruz and colleagues (2008) reported that the scale demonstrated adequate reliability (Cronbach's $\alpha = .84$), and correlated highly with the NAS acculturation scale ($r = .75$). Yet there are some methodological limitations of this study. First, virtually identical measures of language were used in the PAS-4 and the NAS validation scale, which may have led to spuriously high correlations between the criterion and scale. Second, the two language items included in the PAS-4 were given double weight during the scale scoring step (i.e., endorsing Spanish use was given a score of "0", while endorsing English use was given a score of "2"). While language use is a robust proxy measure of acculturation (Arends-Tóth & van de Vijver, 2006; Epstein, 1996), evidence from adolescents suggests that it is only modestly correlated with behavioral and values-based aspects of acculturation (Unger, Ritt-Olsen, Wagmer, Soto, & Baezconde-Garbanati, 2007). Accordingly, it may be more appropriate to weight items equally during the index/scale standardization step as to not arbitrarily inflate the contribution of particular items. Finally, the PAS-4 is based on a relatively limited number of demographic variables underscoring the possibility that other indicators could add value to an index or scale based on proxy variables by capturing additional variance associated with the acculturation process.

The current study seeks to build upon previous research using proxy measures to develop an index that assesses degree of cultural exposure, the Demographic Index of Cultural Exposure (DICE), within two community samples of Mexican-origin adults. The goal of this study is to examine the psychometric properties of an index composed of six commonly collected demographic variables, all theoretically linked to acculturation (Perez & Padilla, 2000), that can be easily and cost-effectively implemented in large-scale health surveys. These include country where highest level of education was completed, country lived in the longest, language in which participant completed the survey or interview, country of birth, as well as mother's and father's respective country of birth. As with individual demographic indicators, the valid use of the proposed index relies heavily on its relationship with actual measures of acculturation processes (Phinney, 2003). Thus, the three specific aims of this study are to (a) examine how demographic markers of acculturation map onto a latent construct of *cultural exposure* using confirmatory factor analysis, (b) cross-validate the index using two samples by comparing model fit and factor loadings, and (c) examine the validity of the index by examining correlations with four measures of cultural orientation: language use, cultural practices, folk health beliefs, and fatalism.

Method

The development of the DICE measure takes place within the context of two studies, the Mano a Mano Mexican American Cohort Study (MACS) and Project Risk Assessment for Mexican Americans (RAMA), which both focus on health behaviors of Mexican-origin adults in Houston, Texas. The overarching goal of the MACS is to increase our understanding of cancer-related risk factors as they emerge in a population undergoing dramatic social change due to recent immigration. Data collection for the cohort began in 2001 and is ongoing; details regarding the recruitment procedures are described elsewhere (Wilkinson et al., 2005). Project RAMA is a secondary study, for which three or four family members from multigenerational households enrolled in the MACS were recruited to participate in a longitudinal study examining the communication of health risk information within the family social network system. A detailed description of the recruitment procedures and study design is described elsewhere (Ashida, Wilkinson, & Koehly, 2010). RAMA data from baseline and 10-month follow-up are used in the current analyses, collected between 2008 and 2010.

Participants

In this study, participants were drawn from both the MACS and Project RAMA as a means to cross-validate the DICE and to examine the validity of the index using different measures of psychological/behavioral acculturation. Sample 1 was created by randomly drawing 497 Mexican-origin participants from the MACS dataset ($N=17,500$), matching the Project RAMA sample on gender and age, and enrolled between 2006 and 2009. The Project RAMA dataset (Sample 2) included 497 Mexican-origin adults between 18 and 72 years of age from 162 households in Houston, Texas. Table 1 presents the demographic characteristics of each sample.

Measures

Measures were completed in English or Spanish. Measures in Spanish used existing Spanish scales or were translated from existing English scales.

Demographic Index of Cultural Exposure—To create the DICE, a value of “1” was assigned to each of the following dichotomous indicators to reflect U.S. cultural exposure. These included (1) country where participant attained highest level of formal education, (2) country where participant lived the longest, (3) participant language of interview, (4) participant country of birth, (5) participant mother’s country of birth, and (6) participant father’s country of birth. The six items were then summed to obtain a DICE score for each participant.

Cultural indices—Five measures of psychological/behavioral acculturation were used to validate the DICE across the two samples.

Sample 1 (MACS)—Linguistic acculturation was measured using the English ($\alpha = .90$) and Spanish ($\alpha = .70$) subscales developed by Marin and Marin (1991). Higher values on these scales indicate greater English and Spanish language use respectively. In addition, the

Mendoza (1989) Cultural Lifestyles Inventory (CLSI) for Mexican Americans ($\alpha = .70$) was used to measure foods typically eaten at home, holidays celebrated, cultural heritage/identity, and ethnic affiliation as measured by ethnic background of friends, and people at social gatherings. Higher scores on the CLSI indicate greater U.S. cultural orientation.

Sample 2 (Project RAMA)—*Fatalism* and *folk illness* beliefs were assessed at baseline using the respective subscales of the Cuellar, Arnold, and Gonzalez (1995) measure of cognitive referents of acculturation. Fatalism is made up of eight items ($\alpha = .64$) assessing the degree to which individuals believe events in life are under their control. Sample items include “We must live for the present, who knows what the future may bring” and “It doesn’t do any good to try to change the future because the future is in the hands of God.” Nine items (out of the original 14) from the folk illness beliefs subscale ($\alpha = .67$) were used to tap into culturally based beliefs regarding health and health services. Sample items include “I have been treated for *empacho* (i.e., gastrointestinal disorder usually associated with dietary indiscretion; Weller et al., 1993)” and “Mental illness can be caused by witchcraft and evil spirits.” For both the *fatalism* and *folk illness beliefs* measures, items responses were trichotomized (−1= no, 0= choose not to answer, 1= yes); scale scores were obtained by calculating the mean. Higher scores indicate greater endorsement of *fatalism* and *folk illness beliefs*.

Using the same measures from the MACS, linguistic acculturation was assessed at 10-month follow-up using the English subscale ($\alpha = .90$) from the Marin and Marin (1991) measure. Higher values indicate greater English language use. Finally, the Mendoza (1989) CLSI for Mexican Americans ($\alpha = .57$) was used to measure cultural practices, identity, and affiliation.

Covariates—We controlled for gender, age, and socioeconomic status (home and car ownership considered as separate covariates) in both samples in all analyses.

Analysis Plan

All analyses were performed using Mplus Version 6 (Muthén & Muthén, 1998–2010). First, two unconstrained confirmatory factor analyses (CFAs) were conducted evaluating whether the demographic items loaded on a single latent factor; the first were based on the MACS sample, and results were cross-validated with the Project RAMA sample. The clustering of participants within households was accounted for in the Project RAMA sample using the cluster option available in Mplus. CFAs were run first with the mean and variance adjusted weighted least squares estimation (i.e., WLSMV estimation), specifically to obtain indices of model fit; the weighted least squares estimators have been shown to provide optimal results when dealing with categorical data, even when model assumptions are violated (Flora & Curran, 2004). In evaluating model fit we used the χ^2 statistics as a measure of exact fit, and several common relative fit indices, including the CFI, TLI, RMSEA, and WRMR. Conventions for fit indices from Hu and Bentler (1999) with the cautions of Marsh, Hau, and Wen (2004) were used to guide decisions about model fit. CFAs were then run using Maximum Likelihood with robust standard errors (MLR) estimation to examine factor loadings and communalities for each of the six items across the two CFAs and to obtain

variance explained by the factor (R^2). We also looked for convergence of the model parameters across estimators as an additional way to support the integrity of the models. Finally, to provide supplemental reliability information we computed Cronbach's alpha (α) and McDonald's omega (ω), which estimates true score variance by taking into account the variance explained by the factor (Zinbarg, Yovel, Revelle, & McDonald, 2006).

Validity of the DICE was examined by first computing DICE scores, which were calculated by summing the six demographic items to create a composite score with a possible range of zero to six. Seven separate ordinary least squares (OLS) regression equations were run to examine the relation between DICE score and mean ratings on each of the criterion validity measures across the two samples. For each regression analysis, control variables (i.e., age, gender, and home and car ownership) were entered in Step 1 and DICE scores were entered in Step 2 to examine the increase in predictive power using the DICE, as evidenced by the additional amount of variance explained in the criterion validity measure.

Results

Reliability

Two initial CFA models were run to examine unconstrained factor loadings and common variance. Overall fit with the one-factor CFA for sample 1 was excellent: $\chi^2(df=7)=22.02$, $p=.01$; CFI=1.00; TLI=1.00; RMSEA=.05; WRMR=.79. The magnitude of the structural relationship between the latent factor for cultural exposure and the six items was assessed using standardized factor loadings (Bollen, 1989). Standardized factor loadings ranged from .86 to .99. Based on the model fit indices and factor loadings, the data were shown to be represented well as a unidimensional factor. A CFA model was also assessed using the cross-validation sample, and results for the one-factor model were fair. Fit indices for the one-factor model were as follows: $\chi^2(df=7)=44.32$, $p<.001$; CFI=.99; TLI=.99; RMSEA=.10; WRMR=1.16. The standardized loadings ranged from .74 to .97. Standardized factor loadings, standard errors, and reliability estimates (i.e., squared multiple correlations or communality estimates) for the two unconstrained CFAs are displayed in Table 2.

We concluded that the items were functioning similarly across the two samples due to similar pattern of factor loadings and relatively similar model fit. After examining the CFA model for the initial and cross-validation samples the items were summed to create a single composite DICE score for each participant across the two samples (MACS: Cronbach's $\alpha=.89$; McDonald $\omega=.89$; Project RAMA: Cronbach's $\alpha=.83$; McDonald $\omega=.77$).

Criterion Validity

In the MACS sample, DICE scores significantly predicted linguistic acculturation with respect to English ($\beta = 0.76$, $p < .001$; $R^2 = 0.56$) and Spanish ($\beta = -0.69$, $p < .001$; $R^2 = 0.45$), as well as cultural practices ($\beta = 0.50$, $p < .001$; $R^2 = 0.24$). In the Project RAMA sample, DICE scores significantly predicted English linguistic acculturation ($\beta = 0.61$, $p < .001$; $R^2 = 0.38$), cultural practices ($\beta = 0.63$, $p < .001$; $R^2 = 0.37$), and folk illness beliefs ($\beta = -0.17$, $p < .01$; $R^2 = .04$). DICE score did not predict fatalistic beliefs ($\beta = 0.00$, $p = .97$; $R^2 = 0.01$), however, age ($\beta = .20$, $p < .001$) and car ownership ($\beta = -.13$, $p = .01$), a

proxy for greater socioeconomic status, were significant covariates in the model. As evidenced by the R^2 values, the DICE is a robust predictor of English and Spanish language use, cultural practices, and folk illness beliefs. Regression estimates, variance explained in Step 1 (with covariates only), and additional variance explained (R^2) in Step 2 are summarized in Table 3.

Discussion

Several key findings emerged from our psychometric evaluation of the DICE in two samples of Mexican-origin adults. First, separate CFA models for two samples of 497 Mexican-origin adults, matched on age and gender, showed moderate to good fit for our data and were comparable across samples. DICE scores were easily calculated by summing across the six dichotomous demographic items, and resulted in reliable index scores as indicated by Cronbach's alpha and McDonald's omega values. As hypothesized, DICE scores, intended as a measure of exposure to U.S. culture, predicted less Spanish use and less endorsement of folk illness beliefs, as well as greater English use and greater endorsement of U.S. cultural practices. Surprisingly, fatalistic beliefs were not correlated with the index score which suggests that beliefs about fate and destiny may be related less to cultural exposure and more to other demographic factors including age and socioeconomic status (which were significant covariates in our analysis). Overall, this initial evaluation of the DICE suggests that the index, made up of common proxy measures of acculturation, does reasonably well in differentiating individuals along a spectrum of cultural exposure, and that an individual's index score is associated with their cultural beliefs, behaviors, and preferences.

There are a number of potential limitations to this psychometric evaluation. We used linguistic acculturation as a validation measure of the index, and the high correlations with the index may be inflated by the inclusion of a language preference item (survey language) as an indicator for the index; however, the survey language item was not identical to any items on the linguistic acculturation scale. To address this potential bias we used multiple validity measures to ensure that interpretation of the relation between the DICE and cultural indices were based on several domains aside from linguistic acculturation. In addition, the reliabilities for several of the validity measures were somewhat low (below .70) leading to some concerns that measurement error may have attenuated the validity indices obtained from the regression analyses. Finally, the Project RAMA sample was composed of intergenerational families, in which three to four family members participated; despite attempting to statistically control for this in the analyses there may have been dependencies within the data that led to decreased model fit indices, particularly for parent nativity, relative to the MACS sample.

Theoretically speaking, the use of demographic indicators in the DICE inherently creates a unidimensional scale (Phinney, 2003). The acculturation process is generally thought to be a bidimensional process involving changes in both adoption of U.S. cultural preferences, behaviors, and values, and the selective retention or loss of culture of origin practices and preferences (Kang, 2006; Schwartz et al., 2010). Although this measure operationalizes cultural exposure along a continuum from low to high, theoretically we do believe that

variation exists with regard to an individual's exposure to U.S. and Mexican culture within different domains.

We labeled this index as a measure of cultural exposure, rather than acculturation per se, because we do not directly assess constructs (i.e., values, beliefs, behaviors, etc.) that are theorized to be part of the acculturative process. Our approach was one of caution: we did not assume that these demographic measures directly tap into acculturation levels. Acculturation is likely influenced by many contextual factors related to the immigration experience, such as the immigrant's legal/residence status (Cabassa, 2003), socioeconomic status (Arcia et al., 2001), age at immigration, whether one lives in an ethnic enclave versus a more diverse area, and other factors across multiple levels (e.g., the neighborhood, family, and individual; Schwartz et al., 2010) which are not captured within the DICE. Further, the DICE cannot capture the dynamic process inherent in the acculturation experience as it was tested using static demographic markers. Thus, this index is not assumed to be an exact measure of the acculturation construct or an effective marker of change over time.

Despite the methodological and theoretical limitations, there are a number of strengths to the DICE. First, this measure is one of two that systematically combine common proxy indicators of acculturation into an index of cultural exposure. In addition, the DICE is a simple and efficient way to combine acculturation proxy measures that are highly correlated (resulting in multicollinearity when trying to include in the same model), which is typically the case. Furthermore, our index shares significant variance with several common measures of acculturation (cultural beliefs, practices, and preferences, and language use). Moreover, indicators, whether used separately or in combination, are well-suited for large populations-based epidemiologic studies "because they identify subpopulations in a way that facilitates research and intervention" (Escobar & Vega, 2000, para. 14). In this psychometric evaluation we focused on individuals of Mexican heritage, who make up one subgroup of Latinos. Since these demographic measures are universal across immigrant groups and frequently assessed in large populations-based epidemiologic studies, validation of the DICE in other immigrant groups exposures feasible. Thus future application of the DICE in other groups may validate its use for a wide variety of populations.

Acknowledgments

We thank the Mano a Mano cohort and Project RAMA staff for work with participant recruitment and follow-up. We express our sincere gratitude to the participants of this study.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Project RAMA was supported by the Intramural Research Program of the National Human Genome Research Institute at the National Institutes of Health [Z01HG20335 to LMK]. Analyses for the current report was initiated during Rick Cruz's predoctoral research internship at the National Human Genome Research Institute jointly funded by the National Institutes of Health and the National Hispanic Science Network on Drug Abuse. The Mano a Mano cohort is funded by funds collected pursuant to the Comprehensive Tobacco Settlement of 1998 and appropriated by the 76th legislature to The University of Texas M. D. Anderson Cancer Center, by the Caroline W. Law Fund for Cancer Prevention, and the Dan Duncan Family Institute for Risk Assessment and Cancer Prevention. Dr. Wilkinson is funded by the National Cancer Institute [K07 CA126988].

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Biographies

Rick A. Cruz, M.S., is currently a doctoral candidate in clinical psychology at the University of Washington in Seattle, Washington. Rick's general research interests focus on the intersection of cultural and familial context with ethnic minority youth psychosocial adjustment. Specifically, Rick is interested in the influences of the acculturation process and familial dynamics in relation to ethnic minority youth substance use development and the emergence of substance use problems over time.

Anna V. Wilkinson, PhD, received her PhD in 1996 from the University of Texas at Austin in Community Psychology. Currently she is an assistant professor at the University of Texas School of Public Health, Austin Regional Campus. She is interested in relationships among nongenetic risk factors (including acculturation) and genetic risk factors on health-enhancing and health-compromising behaviors among youth. She is also interested in the role of culture on health including acculturation in general as well as participation in cultural activity.

Melissa L. Bondy, PhD, received her doctorate in Epidemiology from The University of Texas School of Public Health. She is currently Associate Director for Cancer Prevention and Population Sciences at the Dan. L. Duncan Cancer Center, Professor in the Department of Pediatrics, and Dan L. Duncan Endowed Professor and McNair Scholar at Baylor College of Medicine. Dr. Bondy's epidemiological research primarily focuses on understanding multiple risk factors—such as genetic susceptibility and heredity—associated with development of brain gliomas, breast cancer, and childhood cancers. She had previously been at the University of Texas MD Anderson Cancer Center where she directed the Mano a Mano Study, a Mexican American cohort based in Houston, Texas. The goal is to identify social, genetic, and behavioral risk factors associated with disease patterns in this understudied population.

Laura M. Koehly, PhD, completed her PhD in 1996 at University of Illinois, Urbana-Champaign in Quantitative Psychology. She is a Senior Investigator in the Social and Behavioral Research Branch, National Human Genome Institute, National Institutes of Health. Her expertise is in family network systems and the role of family social ties in

individual members' engagement in health behaviors. She is particularly interested in how genetic or genomic risk information can be used to activate network processes to improve health of families. Her recent endeavors have examined these processes in multigenerational, Mexican-origin households.

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Table 1

Sample Characteristics

Variable	Sample 1 (MACS)	Sample 2 (RAMA)
Age (mean)	40.83 (14.72)	40.80 (15.07)
	Range: 18–75	Range: 18–78
Sex	Female = 55%	Female = 55%
Survey language	English = 24%	English = 36%
Place of education	U.S. = 35%	U.S. = 48%
Country lived the longest	U.S. = 47%	U.S. = 75%
Nativity	U.S. = 25%	U.S. = 32%
Mother's nativity [†]	U.S. = 15%	U.S. = 16%
	Mexico = 84%	
Father's nativity [†]	U.S. = 11%	U.S. = 15%
	Mexico = 88%	
Socioeconomic status	Own car: 22%	Own car: 73%
	Own house: 56%	Own house: 62%

Note: $N=497$ in both samples.

[†]Both percentages are presented when values do not total 100%.

Table 2

Standardized Factor Loadings, Standard Errors, and Reliability Estimates for CFA Models

	Factor Loadings	Standard Errors	Reliability Estimates
Sample 1 (MACS)			
1. Country where education was completed	.98	.02	.96
2. Country where participant lived longest	.86	.03	.73
3. Language used to administer questionnaire	.96	.01	.93
4. Nativity status	.99	.01	.99
5. Maternal nativity status	.91	.03	.82
6. Paternal nativity status	.95	.02	.90
Sample 2 (Project RAMA)			
1. Country where education was completed	.96	.01	.92
2. Country where participant lived longest	.82	.03	.67
3. Language used to administer questionnaire	.97	.02	.93
4. Nativity status	.97	.02	.94
5. Maternal nativity status	.79	.06	.62
6. Paternal nativity status	.74	.06	.55

Note: Based on MLR estimator with standard errors. All factor loadings significantly different from zero. All $p < .001$; Sample 1 Fit indices: $\chi^2(df=7) = 22.02$, $p = .009$; CFI=1.00; TLI=1.00; RMSEA=.05; WRMR=.79; Sample 2 Fit Indices: $\chi^2(df=7) = 44.32$, $p < .001$; CFI=.99; TLI=.99; RMSEA=.10; WRMR=1.16.

Table 3

Regression Estimates for Criterion Validity Measures

Cultural Variable	β (SE)	R^2 (Step 1)	R^2 (Step 2)
Sample 1 (MACS)			
English use	0.76 (.02) ***	0.04 *	0.56
Spanish use	-0.69 (.01) ***	0.03 ^	0.45
Cultural practices (CLSI)	0.50 (.03) ***	0.02 ^	0.24
Sample 2 (Project RAMA)			
English use	0.61 (.03) ***	0.21 ***	0.38
Folk illness beliefs	-0.17 (.05) **	0.01	0.04
Cultural practices (CLSI)	0.63 (.03) ***	0.02	0.37
Fatalism	0.00 (.05)	0.04 *	0.01

Note:

*
 $p < .05$;**
 $p < .01$;***
 $p < .001$;

Cultural variables regressed on covariates and the DICE: Standardized regression estimates (β), R^2 (with only covariates) and R^2 at Step 2 (additional variance explained attributed to the DICE). CLSI = Cultural Lifestyles Inventory.