Development and Validation of the Stephenson Multigroup Acculturation Scale (SMAS)

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This article describes the development and psychometric evaluation of the Stephenson Multigroup Acculturation Scale (SMAS). Three studies were conducted to describe its development and refinement, examine its psychometric properties with 436 participants from 5 ethnic groups, and examine the robustness of the factor structure with a new sample. Exploratory factor analyses generated a 2-factor solution: ethnic society immersion and dominant society immersion. Item refinement resulted in a 32-item version of the SMAS. Findings indicated a robust factor structure across groups. Confirmatory factor analysis indicated that the 2-factor model provided a close approximation to the observed data. Studies indicated high reliability and validity indexes. Findings support the role of acculturation as a mediator between ethnic group affiliation and standardized assessment results.

As U.S. demographics continue to change, acculturation is increasingly being viewed as an important variable that provides a framework for understanding between- and within-ethnic group differences. The importance of acculturation has not been evidenced in the psychological literature at large for a number of reasons. First, the complexity of the construct of acculturation has historically not been well understood. Second, this construct has been applied only to selected ethnic minority groups, suggesting that the process of acculturation applies to some groups and not to others. Third, research across racial and ethnic groups in the United States has historically focused on defining difference as deficit. Thus, the focus of much research has been on the origins of deficits rather than on questions pertaining to the roles of experiences, environment, and culture in distinguishing pathology from distinctiveness (Watts, 1994).

Conceptualization of Acculturation

The theoretical conceptualization of acculturation has shifted from a simplified bipolar model (unacculturated to acculturated or assimilated) to the recognition that acculturation is a complex, multidimensional process of learning that occurs when individuals and groups come into continuous contact with different societies. This process appears to be common across many kinds of cultural groups (immigrants, migrants, indigenous people, sojourners, and refugees), and voluntary as well as involuntary groups (Berry & Sam, 1997). What varies is the course, level of difficulty, and to some extent, the outcome of this process (Berry, 1996). Involvement in one society does not necessitate a decrease in involvement in another; therefore, individuals can assume a number of acculturation positions (Berry, 1980). On the basis of this theoretical conceptualization, assessment of acculturation entails measurement of identification with the society of origin as well as with the dominant society.

A widely accepted and cited framework proposed by Berry and his colleagues conceptualized individual-level acculturation as a multidimensional process of change that occurs when individuals of differing cultural groups come into continuous contact (Berry, 1980; Berry, 1992; Berry, 1996; Berry & Kim, 1988; Berry & Sam, 1997). These changes result in a variety of acculturation positions determined according to how individuals deal with two central issues. The first issue addresses retention of, or immersion in, an ethnic society other than the dominant society. The second addresses adoption of, or immersion in, the dominant society. The negotiation of these two central issues results in four distinct acculturation positions or modes of acculturation: assimilation, integration, separation, or marginalization. Assimilation entails moving away from one's ethnic society and immersing fully in the dominant society. Integration entails immersion in both ethnic and dominant societies. Separation entails withdrawal from dominant society and complete immersion in ethnic society, a process that may be self-imposed or societally imposed (e.g., segregation). Marginalization entails a lack of meaningful immersion in either ethnic or dominant societies. Viewed from this framework, an independent assessment of degree of immersion in dominant and ethnic societies is needed.

Importance of Acculturation

The importance of measuring acculturation lies first in the ability to provide an index of the degree of confidence that can be assumed in interpreting standard assessment procedures. Measurement of acculturation also serves as a tool to delineate the relative contributions of dominant and ethnic society experiences in observed differences between groups in research, assessment, and clinical presentation (Dana, 1993). One can assume that many traditional psychological theories are particularistic rather than universal and that most traditional instruments were normed on dominant group participants, reflecting a particular world view as
well as a particular social context (Trickett, Watts, & Birman, 1994). It stands to reason that those individuals who more closely fit particular demographics will perform differently than those who deviate from them.

Numerous research findings have supported the assumption that acculturation level impacts assessment results. For example, significant differences have been noted on the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) profiles of ethnic minority group members compared with members of ethnic majority groups (Dana, 1993; Dana, 1995; Montgomery & Orozco, 1985). Montgomery, Arnold, and Orozco (1990) reported that, when acculturation level was statistically controlled, differences in MMPI scores between ethnic minority and ethnic majority individuals were reduced. This finding indicates the importance of acculturation level in the interpretation of standardized tests. Greene (1987) has emphasized that conclusions about real differences between groups must be carefully considered if relevant variables are not controlled and analyzed. He also stated that moderator variables are more important determinants of performance than ethnic group status. It appears that assessing the role of moderator–mediator variables in observed differences between groups and clarifying an individual’s identification with a particular ethnic group are imperative (Greene, 1987; Zalewski & Greene, 1996).

Similarly, numerous researchers have begun to address the impact of acculturation on the concept of illness, expression of symptoms, mental health functioning, entry into the mental health system, and the therapeutic process (Atkinson, Casas, & Abreu, 1992; Atkinson, Thompson, & Grant, 1993; Marin, Gamba, & Marin, 1992; Montgomery, 1992). These researchers have collectively pointed to the importance of assessing the strength of identification with a particular ethnic group in the recognition and interpretation of clinical symptoms (Dinges & Cherry, 1995; Grieger & Portorotto, 1995; Keitel, Kopola, & Adamson, 1995). Moreland (1996) suggested that individuals who are immersed in dominant American society can be safely assessed with standard interpretive procedures, whereas individuals who are not immersed in dominant American society require alternative assessment procedures that are more culturally sensitive.

Second, acculturation is an important construct for making sense of differences within ethnic groups. In the United States, the process of acculturation has been applied exclusively to racial and ethnic minorities and is assumed to be relevant only to those groups. The assumption is that Whites and ethnic majority individuals are assimilated, whereas non-Whites and ethnic minority individuals are unacculturated. Keeping in mind that the attitudes of the dominant society toward particular groups will determine, in part, the acculturation experience, process, and ultimate adaptation of those groups (Berry, 1980), acculturation is likely not a process relevant only to racial and ethnic minority individuals. In each ethnic group there exists a wide array of within-group differences that result from differing experiences in dominant American society. The fact that an individual appears to be of a particular ethnic or racial group does not mean that the individual is immersed in one society rather than another (Dana, 1993). For example, a racial minority individual may be more immersed in dominant American society than a first-generation White European immigrant. It would seem that all individuals, regardless of race or ethnic group affiliation, should undergo some process of change in order to adapt to a society different from their society of origin. Research indicates that the process of adaptation is common across many cultural groups (Berry & Sam, 1997). It would stand to reason that testing a first-generation immigrant would be very different than testing a third- or fourth-generation individual (Suzuki, Vranjak, & Kugler, 1996), regardless of race or ethnic group affiliation.

Despite the documented importance of acculturation, research studies have not examined common aspects of this process across ethnic groups. Furthermore, the gap in the available assessment instruments has limited research and has made widespread assessment of this important variable impossible. There are currently available a number of acculturation instruments designed for use with specific Asian American groups (Matsumoto, Meredith, & Masuda, 1970; Sodowsky & Carey, 1988; Suinn, Rickard-Figueroa, Lew, & Vigil, 1987; Yao, 1979), specific Hispanic American groups (Cuellar, Arnold, & Maldonado, 1995; Marin & Gamba, 1996; Marin, Sabogal, VanOss Marin, Otero-Sabogal, & Perez-Stable, 1987; Mendoza, 1989; Olmedo, Martinez, & Martinez, 1978; Padilla, 1980; Szapocznik & Kurtines, 1993), and African Americans (Landrine & Klomoff, 1996). However, most of these instruments do not measure acculturation as bidimensional, and none are recommended for use with other groups. Some researchers suggest that specific groups require individualized attention in order to attend to the particular cultural elements specific to those groups (Rogler, Cortes, & Malgady, 1991). It is indisputable that diverse groups will have differing experiences rooted in their respective cultures; however, it is also likely that there will be common experiences across acculturating groups. Marin (1992) suggested that the acculturation process may be perceived as occurring on three levels: the superficial, the intermediate, and the significant. The superficial level involves, for example, the learning and forgetting of historical facts and traditions, and changing diet to include foods from the dominant society. The intermediate includes more central behaviors such as language use and preference, degree of interaction within ethnic and dominant societies, and environmental preferences such as media. The significant level involves beliefs, values, and norms. As Rogler et al. have noted, current assessment of acculturation has not tapped this process on the significant level.

Although behavioral and attitudinal indices of acculturation are not proxy variables for norms, values, and beliefs, Marin et al. (1987) found a significant association between a behavioral index of acculturation and familism (family collectivism or interdependence) in Hispanics. Research with the MMPI (Montgomery et al., 1990), the Halstead–Reitan Neurological Battery (Arnold, Montgomery, Castaneda, & Longoria, 1994), and the Psychological Screening Inventory (Negy & Woods, 1993), for example, indicates that the measurement of acculturation on the superficial and intermediate levels has been useful in interpreting the results of standardized tests. Given the complexity of the process of acculturation and the multiple levels on which it can be understood, the purpose of a particular research study should inform the level of analysis.

Although the importance of understanding the correlates and consequences of acculturation is being increasingly recognized, the lack of an assessment tool to measure common processes has limited research. Because of increasing mandates from funding agencies and professional organizations to include representative samples of the U.S. population in research, and the recognition that
responsible clinical practice requires the assessment of accultura-
tion, researchers and practitioners are sorely in need of a tool to
measure the process of acculturation across ethnic groups. The
purpose of this research was the development and psychometric
evaluation of an acculturation instrument to assess some behav-
ioral and attitudinal aspects of acculturation on superficial and
intermediate levels across five ethnic groups.

Overview

Three studies were conducted to describe the development and
evaluate the psychometric properties of the Stephenson Multi-
group Acculturation Scale (SMAS). Study 1 describes the develop-
ment and refinement of the initial item pool of the SMAS using a
multiple-method process. Study 2 examined the factor structure
with exploratory factor analysis (EFA) and the internal consistency
and validity of the instrument. Study 3 examined whether the
factor structure obtained in Study 2 provided a good fit with an
independent sample using both confirmatory factor analysis (CFA)
and EFA, and it assessed convergent and discriminant validity of
the SMAS.

The construct acculturation has been plagued by conceptual
vagueness. Numerous definitions of acculturation have been pre-
sented in the literature, most of which have been adaptations of
the most frequently used definition proposed by Redfield, Linton, and
Herskovits (1936): "Acculturation comprehends those phenomena
which result when groups of individuals having different cultures
come into first-hand contact, with subsequent changes in the
original cultural patterns of either or both groups" (p. 149). There
are a number of discrepancies between this frequently used defi-
nition and the way in which acculturation has been actually mea-
sured. To begin with, the measurement of this construct has
focused on acculturation as an individual-level phenomenon (psy-
chological acculturation), not as a group-level or societal-level
phenomenon. Second, this definition implies the measurement of
cultural change, whereas few if any acculturation instruments
measure changes in cultural patterns. As noted earlier, accultura-
tion instruments have not tapped this process on the significant
level that involves beliefs, norms, and values that are at the heart
of culture. Although acculturation may occur at the individual,
group, and societal levels, and in the behavioral, affective, cogni-
tive, and spiritual domains, no published instrument has included
all of these levels or domains. Acculturation instruments do mea-
sure superficial-level and intermediate-level behaviors of immer-
sion or involvement in a particular society. They reflect degrees of
access of new experiences, not acquisition of the content of cul-
tural beliefs and values (Betancourt & Lopez, 1993).

In this study, acculturation is defined as degree of immersion in
dominant and ethnic societies. Degree of immersion is measured as
superficial and intermediate behaviors at the individual level in the
domains of language, interaction, food, and media. This way of
operationalizing acculturation is conducive to its application
across ethnic groups because it does not presume to measure
cultural change or the acquisition of new beliefs and values, nor to
capture the meaning of change among acculturating individuals.
As noted by Rogler (1994), acculturation, as psychologists have
been able to measure it thus far, cannot capture the meaning of
cultural change among acculturating individuals.

Study 1

The goal of Study 1 was to develop an initial item pool that was
relevant and representative of the construct acculturation. Consis-
tent with the recommendations of Haynes, Richard, and Kubany
(1995), content validation of the SMAS was a multiple-method
process in which items were derived after a review of the accul-
turation literature and previously published instruments, reviews
by expert consultants and a multiethnic research team, and field
tests with two small samples.

Method

Item development and refinement. Review of the acculturation lit-
erature and published instruments revealed common domains across instru-
ments that included language knowledge, language use, and preference;
interaction with ethnic and dominant societies; and use and preference for
foods and media (Berry & Kim, 1988; Berry & Sam, 1997; Choney,
Berryhill-Paapke, & Robbins, 1995; Cuellar et al., 1995; Landrine &
Klonoff, 1996; Marin, 1992; Marin & Gamba, 1996; Marin et al., 1987;
Mendoza, 1989; Mendoza & Martinez, 1981; Oetting & Beauvais, 1991;
Olmedo, 1979; Padilla, 1980; Rogler et al., 1991; Suinn et al., 1987;
Szapocznik, Scopetta, Kurtines, & Aranalda, 1978; Taft, 1986; Trandis,
Kashima, Shimada, & Villareal, 1986).

After the review of the literature and previously published instruments,
an initial item pool was generated by an ethnically diverse research team
that included community professionals and consultants (N = 10). The
items were generated to reflect two independent dimensions as proposed by
Berry and Kim (1988). Scores on each of the two dimensions were
expected to measure immersion in each society. Within each dimension,
items were generated to reflect the domains of language, interaction,
media, and food. Furthermore, each domain reflected knowledge, behav-
iors, and attitudes (e.g., language knowledge, language behavior, and
language attitude). Each domain consisted of at least 30 items. The initial
pool of 195 items was then reviewed for relevance, representativeness,
specificity, accuracy, clarity, wording, and ambiguity. Item refinement
resulted in a pool of 145 items. A Likert response format was chosen with
four response options: false, partly false, partly true, and true.

Two small-scale field tests were conducted to obtain participant feed-
back and assess for completeness, clarity, suitability of format, timing,
clarity of statements, and scoring.

Participants. Participants for each phase were recruited to represent
diverse and major groups in the United States. Phase 1 included African
Americans (n = 6), participants of African descent (n = 18), Asian
Americans (n = 4), European Americans (n = 10), and Hispanic Ameri-
cans (n = 12). Phase 2 included African Americans (n = 4), participants
of African descent (n = 18), Asian Americans (n = 4), European Ameri-
cans (n = 14), and Hispanic Americans (n = 10). Snowball sampling was
used because of the difficulty in identifying and recruiting some groups.
Participants were recruited from the New York City, Boston, and Spring-
field, MA areas.

Procedure. Participants were administered the SMAS individually and
in English. After completion of the questionnaire, the participants were
debriefed and invited to comment on each item regarding relevance,
clarity, offensiveness or appearance of bias, and confusion about particular
items. In addition, they were invited to offer suggestions for possible
improvement.

On the basis of the small-scale field tests, redundant items and overall
faulty items were excluded, resulting in a pool of 115 items. These items
were then reviewed in their final form by the consultants and research
team. The final review resulted in the 95-item SMAS.
Results

The multiple-method procedure outlined above resulted in a 95-item preliminary version of SMAS. These items were expected to reflect two independent dimensions: dominant society immersion (DSI), which consisted of 47 items and measured immersion in dominant society, and ethnic society immersion (ESI), which consisted of 48 items and measured immersion in one's ethnic society. Within each dimension, items were expected to measure the domains of language, interaction, media, and food.

Study 2

The goal of Study 2 was to examine the factor structure, internal consistency, and construct validity of the SMAS.

Method

Participants. Participants were recruited from diverse ethnic groups, generational statuses, ages, socioeconomic statuses (SES), and education levels. Snowball sampling was used. The sample consisted of 436 participants recruited from communities in the New York City area, the Boston and Springfield areas of Massachusetts, and a large public northeastern university. Of the sample, 62% (n = 270) were nonstudent community participants, and 38% (n = 166) were students recruited either within these communities or from a university setting. The age of participants ranged from 18 to 73 years, with a mean of 29.98 years (SD = 13.3). Of the sample, 30% (n = 132) were men and 70% women (n = 304). SES ranged from 1 (upper middle class) to 6 (lower class), with a mean of 4.24 (SD = 1.22), as assessed by the Hollingshead (1975) index of social status. Years of education ranged from less than seventh grade to graduate education, with a mean of 13 years (SD = 1.5). The sample was ethnically diverse and consisted of a number of distinct ethnic groups that were combined to form five major groups: African Americans (n = 35, 8%); Asian Americans (n = 33, 8%; countries of origin: Cambodia, China, Hong Kong, India, Japan, Korea, Philippines, Thailand, Vietnam); European Americans (n = 125, 29%; countries of origin: Austria, England, Germany, Greece, Hungary, Ireland, Italy, Poland, Portugal, Russia, Sweden); Hispanic Americans (n = 85, 19%; countries of origin: Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Mexico, Peru, Puerto Rico); and participants of African descent (n = 158, 36%; countries of origin: Guyana, Haiti, Jamaica, Liberia, Trinidad). Some of the participants who self-identified as being American of fourth generation or more did not respond to the question pertaining to country of origin because they did not know the country from which their ancestors came. In terms of generational status, the sample was composed of 47.25% (n = 206) first or immigrant generation; 19.04% (n = 83) second generation; 13.3% (n = 58) third generation; and 20.41% (n = 89) fourth generation or more. The majority of participants identified as single (n = 271, 62%); next were married participants (n = 108, 25%).

Measures. In addition to the SMAS, all of the participants completed a demographic questionnaire and the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994). The SCL-90-R consists of ratings of 90 symptoms on a 5-point scale indicating how frequently individuals report having experienced these symptoms in the last week. There are nine clinical subscales and three global scores. The SCL-90-R consists of ratings of 90 symptoms on a 5-point scale indicating how frequently individuals report having experienced these symptoms in the last week. The SCL-90-R was administered to all of the participants to assess demographic characteristics including questions about age, sex, marital status, generational status, country of origin, ethnic-racial identification, and SES (education and occupation).

The SCL-90-R (Derogatis, 1994), a frequently used standardized assessment instrument, was administered to evaluate construct validity, not as an indicator of psychopathology. Previous research studies have used similar instruments such as the MMPI to evaluate the influence of acculturation on standardized test performance.

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Results

Exploratory factor analysis. A principal-components analysis with varimax rotation conducted on the 95-item SMAS with the entire sample yielded a two-factor solution. The number of factors retained was determined by the scree test plot and eigenvalues greater than 1.00. The two factors and their respective eigenvalues were ESI (10.32) and DSI (5.87). Three criteria were used in the selection of items to retain: (a) a factor loading of at least .5 on the primary factor, (b) a difference of at least .3 between loadings on the primary factor and loadings on the secondary factor, and (c) correlations of less than .9 with all other items loading on the same factor (to eliminate item redundancy). A total of 32 items were retained that accounted for 50.6% of the scale variance; Factor 1 accounted for 27.4% and Factor 2 for 23.2%. Factor 1 included 17 items related to ESI, and Factor 2 included 15 items related to DSI. Factor loadings and items contributing to the factors are presented in Table 1. A large number of language items loaded heavily on Factor 1, ESI. This is consistent with most published acculturation scales in which items dealing with language tend to account for much of the variance. Previous research on group-specific scales has demonstrated a high predictive value of items dealing with language use and preference (Martin, 1992).
Table 1
Items Contributing to Factors and EFA Loadings (N = 436)

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know how to speak my native language.</td>
<td>.881</td>
<td>-.116</td>
</tr>
<tr>
<td>2. I like to speak my native language.</td>
<td>.834</td>
<td>-.129</td>
</tr>
<tr>
<td>3. I speak my native language with my friends and acquaintances from my country of origin.</td>
<td>.827</td>
<td>-.134</td>
</tr>
<tr>
<td>4. I know how to read and write in my native language.</td>
<td>.813</td>
<td>-.013</td>
</tr>
<tr>
<td>5. I feel comfortable speaking my native language.</td>
<td>.789</td>
<td>-.106</td>
</tr>
<tr>
<td>6. I speak my native language at home.</td>
<td>.786</td>
<td>-.197</td>
</tr>
<tr>
<td>7. I like to listen to music of my ethnic group.</td>
<td>.707</td>
<td>-.078</td>
</tr>
<tr>
<td>8. I speak my native language with my spouse or partner.</td>
<td>.692</td>
<td>-.183</td>
</tr>
<tr>
<td>9. When I pray, I use my native language.</td>
<td>.678</td>
<td>-.225</td>
</tr>
<tr>
<td>10. I have never learned to speak the language of my native country.</td>
<td>.677</td>
<td>.072</td>
</tr>
<tr>
<td>11. I am informed about current affairs in my native country.</td>
<td>.636</td>
<td>-.080</td>
</tr>
<tr>
<td>12. I attend social functions with people from my native country.</td>
<td>.631</td>
<td>-.102</td>
</tr>
<tr>
<td>13. I am familiar with the history of my native country.</td>
<td>.624</td>
<td>.022</td>
</tr>
<tr>
<td>14. I think in my native language.</td>
<td>.616</td>
<td>.063</td>
</tr>
<tr>
<td>15. I stay in close contact with family members and relatives in my native country.</td>
<td>.607</td>
<td>-.299</td>
</tr>
<tr>
<td>16. I regularly read magazines of my ethnic group.</td>
<td>.581</td>
<td>-.104</td>
</tr>
<tr>
<td>17. I eat traditional foods from my native culture.</td>
<td>.519</td>
<td>-.017</td>
</tr>
<tr>
<td>18. I attend social functions with (Anglo) American people.</td>
<td>-.046</td>
<td>.812</td>
</tr>
<tr>
<td>19. I have many (Anglo) American acquaintances.</td>
<td>-.142</td>
<td>.789</td>
</tr>
<tr>
<td>20. I speak English at home.</td>
<td>-.236</td>
<td>.797</td>
</tr>
<tr>
<td>21. I know how to prepare (Anglo) American foods.</td>
<td>-.046</td>
<td>.783</td>
</tr>
<tr>
<td>22. I am familiar with important people in American history.</td>
<td>.004</td>
<td>.754</td>
</tr>
<tr>
<td>23. I think in English.</td>
<td>-.197</td>
<td>.751</td>
</tr>
<tr>
<td>24. I speak English with my spouse or partner.</td>
<td>-.230</td>
<td>.712</td>
</tr>
<tr>
<td>25. I feel totally comfortable with (Anglo) American people.</td>
<td>-.085</td>
<td>.659</td>
</tr>
<tr>
<td>26. I understand English, but I'm not fluent in English.</td>
<td>-.180</td>
<td>.632</td>
</tr>
<tr>
<td>27. I am informed about current affairs in the United States.</td>
<td>.122</td>
<td>.610</td>
</tr>
<tr>
<td>28. I like to eat American foods.</td>
<td>-.023</td>
<td>.601</td>
</tr>
<tr>
<td>29. I regularly read an American newspaper.</td>
<td>.042</td>
<td>.596</td>
</tr>
<tr>
<td>30. I feel comfortable speaking English.</td>
<td>-.117</td>
<td>.591</td>
</tr>
<tr>
<td>31. I feel at home in the United States.</td>
<td>-.085</td>
<td>.586</td>
</tr>
<tr>
<td>32. I feel accepted by (Anglo) Americans.</td>
<td>-.114</td>
<td>.554</td>
</tr>
</tbody>
</table>

Note. Decimals in boldface are primary factor loadings. EFA = exploratory factor analysis.

Reliability. Coefficient alphas were .86 for the entire scale (Factors 1 and 2 combined) and .97 and .90 for Factors 1 and 2, respectively. Item total correlations ranged from .51 to .87 on Factor 1 and .57 to .83 on Factor 2.

Validity. There is a strong theoretical basis for predicting a relationship between generational status and performance on the DSI and ESI scales (Magana et al., 1996). Previous research on individual groups suggests that, with successive generations, certain customs of the dominant society are acquired and certain ethnic customs are relinquished (Cuellar et al., 1995; Keitel, Kopola, & Adamson, 1995; Marin et al., 1987; Mendoza, 1989; Szapocznik et al., 1978). Means were computed for each item by generation. A consistent pattern supported previous research findings. With each of the first three successive generations, DSI increased and ESI decreased. Item means and standard deviations are presented in Table 2.

Two one-way between-groups analyses of variance indicated that the mean differences between generations were significant on both the DSI, F(3, 432) = 73.644, p < .001, and the ESI, F(3, 432) = 31.476, p < .001. Tukey post hoc tests indicated that all pairwise comparisons were significant at p < .05, except for the third and fourth generations on both the DSI and ESI, suggesting that the greatest amount of difference occurred from the first through the third generations. The consistent pattern of means observed among the first, second, and third generations did not hold for the fourth generation. Rather, the fourth generation means were in the opposite direction than expected. The fourth generation scored higher on the ESI and lower on the DSI than the third generation; however, these differences were not statistically significant.

Previous research findings suggested that acculturation level impacts assessment results (Dana, 1993; Montgomery et al., 1990). Montgomery et al. reported that when acculturation was covaried, significant group differences between ethnic minority and ethnic majority groups were reduced on the MMPI. Thus, similar patterns would be expected on the SMAS, with acculturation serving as an explanatory mechanism in the relation between ethnic group and the GSI scores of the SCL–90–R. To evaluate this prediction, the current sample was divided into two groups. Group 1 consisted of participants who self-identified as ethnic minority group individuals (n = 265), and Group 2 consisted of those who self-identified as ethnic majority group individuals (n = 125). In all, 46 cases were deleted because of missing data, yielding a sample of 390. Both ESI and DSI were significantly correlated with ethnic group affiliation (r = .46, p < .001; DSI) and (r = .39, p < .001; ESI). Path analytic techniques were used to determine whether ESI and DSI were possible mediators of the relation between ethnic group and GSI scores following the procedure presented by Baron and
Kenny (1986). DSI scores were regressed on ethnic group, \( F(1, 388) = 118.68, p < .001 \); GSI scores were regressed on ethnic group, \( F(1, 388) = 8.637, p = .003 \); and GSI scores were regressed on both ethnic group and DSI. Results indicated that DSI mediated the effects of ethnic group on GSI scores when ethnic group and DSI were controlled. The previously significant relation between ethnic group and GSI scores was no longer significant. The resulting weights presented in Figure 1 provide estimates of the effects of the variables. The same procedure was followed with the ESI scores. ESI scores were regressed on ethnic group, \( F(1, 388) = 87.66, p \leq .001 \). Regression of GSI scores on both ethnic group and ESI indicated that ESI did not mediate the effects of ethnic group on GSI scores. Consistent with previous research, DSI mediated the effects of ethnic group affiliation and assessment results.

### Study 3

The goal of Study 3 was to evaluate whether the factor structure obtained in the Study 2 EFA was robust across samples and provided a good fit with a new sample and to evaluate the convergent and discriminant validity of the SMAS in relation to two other acculturation instruments.

#### Method

Participants. The sample for the second study consisted of 208 undergraduate students enrolled at a large northeastern university. The age of participants ranged from 18 to 60 years, with a mean of 22.8 years (SD = 7.32). Of the participants, 21% (n = 43) were men and 79% (n = 165) women. In terms of generational status, 14% (n = 29) were first generation, 17% (n = 36) were second generation, 18% (n = 38) were third generation, and 51% (n = 105) were fourth generation or more. SES
Figure 1. Regression coefficients estimating the mediating effect of dominant society immersion (DSI) on the relation between ethnic group affiliation and Global Severity Index (GSI) scores. *p < .001.

The BAS is a 24-item scale developed for use with Mexican Americans and Central Americans. The development sample included 254 adults, most of whom were first-generation participants born outside the United States (80%), with a mean of 10.4 years of formal education. The BAS measures language-related aspects of acculturation in both ethnic (Hispanic) and dominant (non-Hispanic) societies. The instrument has high internal consistency, with an alpha of .94 for the Non-Hispanic domain and .87 for the Hispanic domain (Marín & Gamba, 1996). Sample Hispanic domain and Non-Hispanic domain BAS items are "How often do you speak Spanish?" and "How often do you speak English?"

The same criteria were used for participant selection as in Study 2. Potential participants were recruited from a general university population. Participants were screened prior to instrument administration and completed informed consent forms. All of the participants were given extra credit toward a university course. Questionnaires were administered at the university.

Confirmatory factor analysis. On the basis of the factor structure obtained in Study 2 with EFA, a model was generated and tested with CFA to evaluate its validity given the Study 3 data. The CFA model was estimated with the personal computer version of LISREL 8 (Jöreskog & Sörbom, 1993). An independence model hypothesized a priori that (a) responses on the SMAS could be explained by two factors, ESI and DSI, (b) variables would have a nonzero loading on the factor it was designed to measure and a zero loading on the other factor, (c) the two factors would be uncorrelated, and (d) measurement error terms would be uncorrelated.

The recommended indexes and criteria used to determine the fit of the CFA model were based on the recommendations of Hoyle and Panter (1995) and included two absolute indexes (chi-square and the goodness of fit index [GFI]), one Type-2 index, (the incremental fit index [IFI]), and one Type-3 index (the comparative fit index [CFI]). Criteria included a chi-square to degree of freedom ratio of about 2:1; CFI (Bentler, 1990), GFI (Jöreskog & Sörbom, 1989), and IFI (Boelen, 1989) of .90 or greater. The .90 cutoff stands as the agreed upon cutoff for overall fit indexes (Hoyle, 1995; Hoyle & Panter, 1995).

Because of the categorical nature of the data, the large number of individual items, and the general nonnormality of the data, as indicated by skewness and kurtosis statistics, several steps were taken before the data was submitted for analysis. A method of reexpression was used to produce item parcels with fewer parameters that would eliminate redundancies and produce a distribution that more closely approximated normality (Floyd & Widaman, 1995; West, Finch, & Curran, 1995). The 32 individual items of the SMAS were combined to create parcels that reflected specific theory-driven domains. Thus, 10 parcels were created and 5 parcels specified to load on each of the two factors. Language 1 = 10 items, Interaction 1 = 2 items, Knowledge 1 = 2 items, Media 1 = 2 items, and Food 1 = 1 item were specified to load on Factor 1. Language 2 = 5 items, Interaction 2 = 5 items, Knowledge 2 = 2 items, Media 2 = 1 item, and Food 2 = 2 items were specified to load on Factor 2. In addition, Prentice 2 (Jöreskog & Sörbom, 1993) was used to structure a polyserial correlation matrix recommended for ordered categorical variables (Jöreskog & Sörbom, 1993; Wothke, 1995) from the raw data and listwise deletion of missing data (Wothke, 1995; N = 187). The entire correlation matrix for the SMAS variables is available from the author upon request.

Results of the confirmatory factor analysis. Results of the CFA suggest inconsistent findings. In terms of the chi-square GFI test, the model did not prove consistent with the observed data; χ²(34, N = 187) = 89.89, p < .001. In terms of adjacent fit statistics, the model provided a close approximation to the observed data; GFI = .91, IFI = .90, and CFI = .90.
Examination of the standardized residuals indicated a poor fit in the prespecified uncorrelated error terms between the following parcels: Language 1 and Media 1: 4.29, Media 2 and Knowledge 1: 4.20, and Knowledge 1 and Knowledge 2: 3.22. The large positive standardized residuals indicated that the model underestimated the covariance between these sets of variables and that two of the correlated error terms occurred across two different factors. West et al. (1995) reported that results of simulation studies indicated that as categorized variables become increasingly skewed, the chi-square values become inflated, and correlations may be spuriously obtained between error variances associated with items having similar degrees of skewness. An item with similar agreement rates, for example, can give rise to spurious correlations reflecting only the common degree of skewness among items. The measures taken before data submission may not have been sufficient to remediate the degree of nonnormality in the data and meet the stringent criteria for obtaining a reasonable fit based on chi-square statistics. However, inspection of the CFI and the IFI recommended for smaller sample sizes (<200) and that produce only a small downward bias even under severely nonnormal condition (West et al., 1995) indicated that both CFI and IFI reached the agreed upon cutoff of .90 or greater.

The parcels loaded positively on their corresponding prespecified factors, indicating that the two-factor structure does explain the observed interrelations among the SMAS items. The findings also suggested that the two factors are correlated, with an interfactor correlation of —.32. As reported by West et al. (1995), the underestimated standard errors, as indicated by the large positive residuals, may have produced correlations between factors even if they do not exist in the population.

Exploratory factor analysis with Study Sample 3. Because it was difficult to determine whether the CFA model provided a plausible representation of the structure of the observed data, EFA was conducted with the Study 3 sample and the EFA solutions from Studies 2 and 3 were compared to assess for similarity of factor loadings across samples.

A principal-components analysis using a varimax rotation was performed to examine the factor structure of the items with the second sample. Analysis yielded a two-factor solution with eigenvalues of 10.05 for the ESI and 4.34 for the DSI. Every item loaded on the same factor as in Study 2. However, the criterion of loadings of at least .5, was not met on eight items. Three items on the ESI did not meet this retention criterion; their loadings ranged from .34 to .49. Similarly, five items failed to meet this same criterion on the DSI and ranged from .34 to .49. Also, three items failed to meet the criterion of a difference of at least .3 between loadings on the primary factor and loadings on the secondary factor. Factor 1 (ESI) accounted for 28% of the variance, and Factor 2 (DSI) accounted for 17% (total 45%). Factor loadings with the Study 3 sample were not as strong as those found in Study 2, and the variance accounted for by the factors was comparable for Factor 1 (ESI: 27% and 28%) and somewhat less for Factor 2 (DSI: 23% and 17%). The difference in the variance accounted for by Factor 1 (DSI) may reflect the restricted range on the DSI scores of the sample in Study 3. Of the Study 3 sample, 51% was composed of participants from the fourth generation, compared with 20% in the Study 2 sample, indicating either that the DSI items were functioning as intended or that the items were not sensitive enough to discriminate differences in later generations, or both. Table 3 presents the results of the factor analysis.

Assessment of similarity of factor loadings across samples. The salient variable similarity (s) index (Cattell, Balcar, Horn, & Nesselroade, 1969) was used to determine whether factor structure was similar across the two samples. This involved generating matrices of interfactorial similarity, placing these comparisons into a 3 X 3 contingency table depending on positive salience, hyperplane, or negative salience, and calculating the index using the formula presented by Cattell et al. In previous research, hyperplane cutoff levels have been set from 10 to 40 (Cattell et al., 1969; McCormick, Green, & Walkey, 1987). Hyperplane cutoff level was specified at a conservative level of .10. Results indicated a similarity index .82 for the ESI and .78 for the DSI. Significance of the s values was calculated using probability tables generated by Cattell et al. Results indicated that the factor structure was highly similar across samples.

Reliability. Coefficient alphas were .94 and .75 for Factors 1 and 2, respectively.

Validity analysis. Correlational studies were conducted to evaluate the validity of the SMAS by examining the relation between the two SMAS subscales and those of two other acculturation instruments; the ARSMA-II and the BAS. Results suggest that the ESI subscale of the SMAS was strongly correlated with the MOS of the ARSMA-II (r = .87, p = < .01) and negatively correlated with the AOS (r = —.28, p < .01). The ESI was positively correlated with the Hispanic Domain scale of the BAS (r = .83, p < .01) and negatively correlated with the Non-Hispanic Domain scale (r = —.25, p < .01).

The DSI subscale of the SMAS was positively correlated with the AOS (r = .49, p < .01) and negatively correlated, although not significantly, with the MOS (r = —.15, p = ns). With the BAS, the DSI was positively correlated with the Non-Hispanic scale (r = .48, p < .01) and negatively correlated, although not significantly, with the Hispanic scale (r = —.17, p = ns). The ESI was significantly correlated in the expected direction with both the ARSMA-II and the BAS. Similarly, the DSI was correlated in the expected direction with both instruments.

General Discussion

The SMAS is the first acculturation scale developed for use across ethnic groups. The catalyst for the development of this scale was the observation, during the course of a large-scale project, that the previously available scales did not provide the necessary breadth of items to assess the acculturation process among both Hispanic and non-Hispanic ethnic groups.

Table 3
EFA Loadings for Study Sample 3 (N = 208)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>.887</td>
<td>—1.05</td>
</tr>
<tr>
<td>2</td>
<td>.872</td>
<td>—.062</td>
</tr>
<tr>
<td>1</td>
<td>.870</td>
<td>—.134</td>
</tr>
<tr>
<td>3</td>
<td>.849</td>
<td>—.098</td>
</tr>
<tr>
<td>14</td>
<td>.848</td>
<td>.017</td>
</tr>
<tr>
<td>5</td>
<td>.828</td>
<td>—.087</td>
</tr>
<tr>
<td>4</td>
<td>.827</td>
<td>—.138</td>
</tr>
<tr>
<td>9</td>
<td>.809</td>
<td>.047</td>
</tr>
<tr>
<td>8</td>
<td>.773</td>
<td>—.027</td>
</tr>
<tr>
<td>10</td>
<td>.747</td>
<td>—.121</td>
</tr>
<tr>
<td>16</td>
<td>.636</td>
<td>—.095</td>
</tr>
<tr>
<td>7</td>
<td>.598</td>
<td>—.148</td>
</tr>
<tr>
<td>12</td>
<td>.541</td>
<td>—.134</td>
</tr>
<tr>
<td>11</td>
<td>.502</td>
<td>—.115</td>
</tr>
<tr>
<td>15</td>
<td>.486</td>
<td>—.245</td>
</tr>
<tr>
<td>13</td>
<td>.435</td>
<td>—.135</td>
</tr>
<tr>
<td>17</td>
<td>.335</td>
<td>—.129</td>
</tr>
<tr>
<td>20</td>
<td>—.165</td>
<td>.772</td>
</tr>
<tr>
<td>23</td>
<td>—.256</td>
<td>.717</td>
</tr>
<tr>
<td>18</td>
<td>—.116</td>
<td>.705</td>
</tr>
<tr>
<td>21</td>
<td>—.123</td>
<td>.650</td>
</tr>
<tr>
<td>25</td>
<td>—.105</td>
<td>.603</td>
</tr>
<tr>
<td>30</td>
<td>—.014</td>
<td>.594</td>
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<td>19</td>
<td>—.064</td>
<td>.587</td>
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<td>32</td>
<td>—.208</td>
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<td>31</td>
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<td>28</td>
<td>.131</td>
<td>.537</td>
</tr>
<tr>
<td>24</td>
<td>—.100</td>
<td>.494</td>
</tr>
<tr>
<td>27</td>
<td>.001</td>
<td>.480</td>
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<tr>
<td>22</td>
<td>—.076</td>
<td>.467</td>
</tr>
<tr>
<td>29</td>
<td>.046</td>
<td>.449</td>
</tr>
<tr>
<td>26</td>
<td>—.210</td>
<td>.335</td>
</tr>
</tbody>
</table>

Note. Items are numbered to reflect item numbers of original factor loadings with the entire sample. Decimals in boldface are primary factor loadings. EFA = exploratory factor analysis.
The fact that previous research has found that fourth-generation minority individuals (e.g., African Americans) perform differently than their nonminority (e.g., European Americans) counterparts on some standardized instruments indicates that attention to acculturation experiences beyond the third generation should be an important area of future research. Future research might assess acculturation in subsequent generations on the more significant level involving beliefs, norms, and values rather than superficial and intermediate involvement and acquisition of new experiences in a given society. Superficial and intermediate levels of involvement and acquisition of experiences in dominant society would have already occurred in the fourth generation. Research might further investigate language and country of origin items that tend to account for much of the variance in acculturation instruments. For example, in some cases, English is considered the language of origin because later generation immigrants do not know the country from which their family came. Language items could include participants' knowledge and use of other forms of English, such as nonstandard American English and dialects for European Americans, dialects and creoles for individuals whose ancestors immigrated from former English colonies, or ebonics for African Americans. Interaction items might include contact and interactions with their respective ethnic groups in the United States rather than in the country of origin.

Many conceptual and methodological issues remain in the measurement of this important and complex construct that merit research attention. The findings of these present studies have underlined the importance of assessing acculturation and its usefulness as a tool for understanding between-group differences. The overall robust outcome of these studies indicated that the SMAS does provide an initial index of degree of immersion in both dominant and ethnic societies that can serve as a valuable tool in facilitating interpretation of research, assessment data, and clinical presentation, particularly with more recent immigrants to the United States.

References


MULTIGROUP ACCULTURATION SCALE


(Appendix follows)
Appendix

Stephenson Multigroup Acculturation Scale (SMAS)

Below are a number of statements that evaluate changes that occur when people interact with others of different cultures or ethnic groups. For questions that refer to "COUNTRY OF ORIGIN" or "NATIVE COUNTRY," please refer to the country from which your family originally came. For questions referring to "NATIVE LANGUAGE," please refer to the language spoken where your family originally came.

Circle the answer that best matches your response to each statement.

<table>
<thead>
<tr>
<th>False</th>
<th>Partly false</th>
<th>Partly true</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I understand English, but I'm not fluent in English.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I am informed about current affairs in the United States.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I speak my native language with my friends and acquaintances from my country of origin.</td>
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<tr>
<td>4. I have never learned to speak the language of my native country.</td>
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<td></td>
</tr>
<tr>
<td>5. I feel totally comfortable with (Anglo) American people.</td>
<td></td>
<td></td>
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<tr>
<td>6. I eat traditional foods from my native culture.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7. I have many (Anglo) American acquaintances.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. I feel comfortable speaking my native language.</td>
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<td></td>
<td></td>
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<tr>
<td>9. I am informed about current affairs in my native country.</td>
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</tr>
<tr>
<td>10. I know how to read and write in my native language.</td>
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<tr>
<td>11. I feel at home in the United States.</td>
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<tr>
<td>12. I attend social functions with people from my native country.</td>
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<tr>
<td>13. I feel accepted by (Anglo) Americans.</td>
<td></td>
<td></td>
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<tr>
<td>15. I regularly read magazines of my ethnic group.</td>
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<td></td>
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<tr>
<td>16. I know how to speak my native language.</td>
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<td></td>
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<tr>
<td>17. I know how to prepare (Anglo) American foods.</td>
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<tr>
<td>18. I am familiar with the history of my native country.</td>
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<tr>
<td>19. I regularly read an American newspaper.</td>
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<tr>
<td>20. I listen to music of my ethnic group.</td>
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</tr>
<tr>
<td>21. I like to speak my native language.</td>
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<td></td>
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<tr>
<td>22. I feel comfortable speaking English.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>23. I speak English at home.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. I speak my native language with my spouse or partner.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>25. When I pray, I use my native language.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>27. I think in my native language.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>28. I stay in close contact with family members and relatives in my native country.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. I am familiar with important people in American history.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. I think in English.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. I speak English with my spouse or partner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. I like to eat American foods.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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