

PSYCHOLOGICAL ACCULTURATION:  
DEVELOPMENT OF A NEW MEASURE FOR  
PUERTO RICANS ON THE U.S. MAINLAND

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Most instruments designed to measure acculturation have relied on specific cultural behaviors and preferences as primary indicators of acculturation. In contrast, feelings of belonging and emotional attachment to cultural communities have not been widely used. The Psychological Acculturation Scale (PAS) was developed to assess acculturation from a phenomenological perspective, with items pertaining to the individual's sense of psychological attachment to and belonging within the Anglo-American and Latino/Hispanic cultures. Responses from samples of bilingual individuals and Puerto Rican adolescents and adults are used to establish a high degree of measurement equivalence across the Spanish and English versions of the scale along with high levels of internal consistency and construct validity. The usefulness of the PAS and the importance of studying acculturation from a phenomenological perspective are discussed.

Psychological acculturation refers to changes in individuals' psychocultural orientations that develop through involvement and interaction within



new cultural systems. Rather than conceptualizing acculturation as a process in which people lose connection to their original culture (Gordon, 1978), new research has emphasized the individual's negotiation of two cultural entities (Berry, Poortinga, Segall, & Dasen, 1992; Buriel, 1993). Responding to distinct sets of norms from the culture of origin and the host culture, acculturating individuals emerge with their own interpretation of appropriate values, customs, and practices as they negotiate between cultural contexts (Berry, 1980). People vary greatly in their abilities to function within new cultural environments (LaFromboise, Coleman, & Gerton, 1993) and may seek different levels of attachment to and involvement in a host culture or their culture(s) of origin (Padilla, 1980).

To study individuals' cultural orientations, measures of acculturation traditionally have focused on individuals' behaviors and behavioral preferences and have relied heavily on language use and other behaviors as indicators of acculturation (Marin, Sabogal, VanOss Marin, Otero-Sabogal, & Perez-Stable, 1987; Szapocznik, Kurtines, & Fernandez, 1980). For example, Szapocznik et al. (1980) described acculturation as based in two primary dimensions: cultural behaviors and values. Paralleling their conceptualization of acculturation, the Behavioral Acculturation Scale (Szapocznik, Scopetta, Kurtines, & Aranalde, 1978) includes items most closely related to cultural behaviors and preferences (e.g., "What language do you speak at home?" and "What language do you prefer to speak?").

Similarly, Cuellar, Harris, and Jasso (1980) measured acculturation with items pertaining primarily to cultural behaviors and values (e.g., "What language do you prefer?"). This measure also included several items concerning migration history (e.g., "Where were you raised?") and one item concerning ethnic self-identification (i.e., "How do you identify yourself?"). These factors can be important in interpreting individuals' acculturation experiences; however, rather than assessing personal acculturation factors and sociodemographic factors as separate concepts, Cuellar et al. (1980) combined these items within the same measure.

We feel that this approach may be problematic in two primary ways. First, such modes of measurement blur distinctions between factual histories of individuals (e.g., age of arrival on the U.S. mainland) and the assessment of individuals' acculturative change. Second, measures heavily based on cultural behaviors may not assess adequately individuals' acceptance and under-

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standing of the values from each culture (Betancourt & Lopez, 1993; Rogler, 1994) or grant sufficient attention to individuals' emotional attachments to each culture (Estrada, 1993).

Alternatively, new instruments can be designed to measure acculturation as it is psychologically experienced by the individual. Reviews of the acculturation literature have identified cultural loyalty, solidarity, identification, and comprehension as overlapping elements of psychological responses to cultural exposure (Berry, 1980; Betancourt & Lopez, 1993; Szapocznik & Kurtines, 1980). To assess these psychological components of acculturation, the 10-item Psychological Acculturation Scale (PAS) was developed. Unlike traditional measures, the PAS targets individuals' psychological negotiation of two cultural entities (in this case, Anglo-American culture and Latino/Hispanic culture), with particular attention to their sense of emotional attachment to and understanding of each culture. This set of studies was designed to assess the psychometric properties of the PAS. In particular, cross-language equivalence, internal consistency, and convergent and discriminant validity were examined.

#### CROSS-LANGUAGE EQUIVALENCE

Back translation and decentering are widely used methods for determining cross-language equivalence of a scale (Brislin, 1986). For example, to create a Spanish version of an English-language measure, one person translates from English to Spanish, and a different person translates the Spanish version back into English. Discrepancies in the translated versions are resolved through *decentering*, a process of several iterations whereby the measure is pulled away from the idiosyncrasies of the source language (i.e., the original English-language version).

We share the concerns of Bontempo (1993) and Olmedo (1981) about the validity of this accepted procedure. Even when original and back-translated versions are quite similar, measurement equivalence can still not be assumed or guaranteed for the two language versions because concepts and wordings for scale items originally were produced in only the source language (Bontempo, 1993; Olmedo, 1981). As an alternative, we have developed a dual-focus approach to creating bilingual measures, whereby the conceptual content of each item is developed and then words are generated to express that concept in each language (see Erkut, Alarcón, García Coll, Tropp, & Vázquez, in press, for details of this procedure). In developing the PAS, our goal has been to compose item wordings that express the relevant concepts with equal clarity, affect, and level of usage in both languages.

#### CONVERGENT AND DISCRIMINANT VALIDITY

Convergent and discriminant validity were assessed by examining the predicted relationships between respondents' psychological acculturation

scores and traditional validation measures of acculturation (e.g., place of birth, percentage of lifetime living on the U.S. mainland) as well as culture-specific behaviors and preferences that have been employed in other acculturation scales. Paralleling the results from previous studies of acculturation (e.g., Marin et al., 1987; Szapocznik et al., 1978; Triandis, Kashima, Hui, Lisansky, & Marin, 1982), we expected psychological acculturation scores to be higher among respondents with greater exposure to the new culture (i.e., Anglo-American culture) and greater exposure to English during childhood. Similarly, we predicted that respondents' language preferences for completing the questionnaires would be associated with their psychological acculturation scores, such that those who chose the Spanish version would tend to have lower psychological acculturation scores than those who chose the English version. Finally, we also predicted that psychological acculturation scores would be better predictors of individuals' cultural behaviors and preferences than would their degree of exposure to the new culture.

Three studies were conducted to document the psychometric properties of the PAS.

### Study 1

The first study was designed to examine internal consistency and cross-language equivalence with respect to respondents' scores on the PAS.

#### *Method*

##### SAMPLE AND PROCEDURES

Respondents were recruited through community centers and neighborhood contacts in several districts within the greater Boston area. Respondents received \$10 for their participation, which consisted of completing a questionnaire.

Participants in this study were 36 self-identified bilingual Latinos (10 men and 26 women). Respondents' ages ranged from 13 to 58 years ( $M = 28.6$  years). Of the respondents, 13 were born on the mainland of the United States and all others were born in Puerto Rico, Mexico, or other Spanish-speaking countries in Central and South America.

Percentage of lifetime in the United States was calculated by dividing the number of years living in the U.S. mainland by the age of the respondent (an index previously used in research by Marin et al. [1987] and Triandis et al. [1982]). Respondents' percentage of lifetime in the United States ranged from 4% to 100% ( $M = 75.2\%$ ).

All respondents responded to both Spanish and English versions of the questionnaire. Spanish and English versions were presented to each respondent in a random order.

Table 1  
*Mean Item Scores for Spanish and English Versions of  
 the Psychological Acculturation Scale (PAS) (N = 35)*

Item	Spanish		English	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. With which group(s) of people do you feel you share most of your beliefs and values?	4.17	1.52	4.11	1.91
2. With which group(s) of people do you feel you have the most in common?	3.83	1.62	3.94	1.86
3. With which group(s) of people do you feel the most comfortable?	4.51	1.04	4.37	1.21
4. In your opinion, which group(s) of people best understands your ideas (your way of thinking)?	4.60	1.54	4.26	1.69
5. Which culture(s) do you feel proud to be a part of?	3.46	1.77	3.34	1.85
6. In which culture(s) do you know how things are done and feel that you can do them easily?	4.86	1.12	4.94	1.11
7. In which culture(s) do you feel confident that you know how to act?	4.94	0.97	5.06	1.39
8. In your opinion, which group(s) of people do you understand best?	4.63	1.03	4.63	1.37
9. In which culture(s) do you know what is expected of a person in various situations?	4.69	1.47	4.51	1.62
10. Which culture(s) do you know the most about the history, traditions, and customs, and so forth?	5.14	1.97	5.06	2.26

#### MEASURE

*Psychological Acculturation Scale.* The PAS consists of 10 items concerning individuals' psychological responses to differing cultural contexts (see Table 1). Item wordings for the PAS were generated simultaneously in Spanish and English by a team of bilingual, bicultural, and monocultural researchers. No items were included in the scale which could not be directly and easily expressed with parallel wording in both languages.

Subsequently, all potential items were discussed in focus groups of Spanish/English bilingual adolescents and adults drawn in the greater Boston area. Items were continuously reworded, as suggested by feedback from successive focus groups and discussions among members of the research team. Altogether, six focus groups were conducted, at which time both focus group participants and research team members were satisfied with item wordings and felt no further revisions were necessary.

A readability analysis was conducted for items on the English version of the PAS, using the Microsoft Word 5.0 grammar program (no Spanish grammar program was available). The Flesch estimate of reading ease (74.7%)

indicated that the English version of the PAS is fairly readable, corresponding with a Grade 6 to 7 reading level.

Item responses for the PAS were scored on a 9-point Likert-type scale, ranging from 1 (*only Hispanic/Latino*) to 9 (*only Anglo/American*), with a bicultural orientation defining its midpoint. Thus, a bicultural orientation (equally Hispanic/Latino and Anglo/American) could be defined as a parallel sense of connection to both cultures (Cuellar et al., 1980).

In addition, items regarding migration history, language use, and other demographic variables were included in the questionnaires distributed to each respondent.

### *Results*

#### CROSS-LANGUAGE EQUIVALENCE

On a 9-point scale, mean PAS scores were 4.37 ( $SD = .86$ ) and 4.42 ( $SD = 1.06$ ) for the Spanish and English versions, respectively. Means and standard deviations for the Spanish and English versions of scale items are provided in Table 1. Mean item scores were nearly identical for each language version, showing a high degree of consistency in respondents' scores across the Spanish and English versions.

The correlation between individuals' total PAS scores from the Spanish and English versions was also extremely high,  $r(35) = .94$ , suggesting a high degree of cross-language measurement equivalence. Individual Spanish/English version item-to-item correlations ranged from .70 to .92, with the exception of two: (a) "In what culture(s) do you feel confident that you know how to act?"  $r(36) = .37$ ; and (b) "In what culture(s) do you know what is expected of a person in various situations?"  $r(36) = .64$ .

#### INTERNAL CONSISTENCY

Alpha coefficients of reliability for scores on the Spanish and English versions of the PAS were .83 and .85, respectively. Item total correlations ranged from .22 and .68 for scores on the Spanish version and from .27 and .71 for the English version, indicating highly similar patterns of item total correlations across individuals' responses to the two versions.

### Study 2

The results from the first study indicated that scores on each language version of the PAS were internally consistent and that individuals' responses to the PAS were highly comparable across the two language versions. Still, much research on Latinos has been criticized for treating members of different Latino subgroups as part of one homogeneous population (Marin & VanOss Marin, 1991). Therefore, a second study was designed to examine

psychometric properties of the PAS within a more specific subgroup of Latino respondents. To date, most acculturation measures have been validated using Mexican American respondents. In this study, Puerto Rican respondents were used for two reasons: (a) Puerto Ricans tend to be underrepresented in validation studies of acculturation measures, and (b) Puerto Ricans are the largest Latino subgroup in the northeast region of the United States.

### *Method*

#### SAMPLE AND PROCEDURES

Respondents were recruited for participation in the same manner as in Study 1. A total of 107 Puerto Ricans participated in this study, including 39 males and 64 females (4 respondents did not state their gender). Respondents' ages ranged from 12 to 58 years ( $M = 27.9$  years). Of the respondents, 85 were born in Puerto Rico and 21 were born on the U.S. mainland. Respondents' percentage of lifetime spent in the United States ranged from 77% to 100% ( $M = 92\%$ ).

#### MEASURES

The measures used in Study 2 were equivalent to those employed in the first study. However, in this study, respondents were asked to respond only to one questionnaire in the language of their choice (i.e., either the Spanish version or the English version).

*Cultural behaviors and preferences.* Items pertaining to cultural behaviors and preferences were adapted from traditional acculturation scales and included in each version of the questionnaire for validation purposes. Individual items concerning language use (both reading and speaking), cultural foods, music, holiday celebrations, and family celebrations were inspired by items on the Marin et al. (1987) and Szapocznik et al. (1978) scales. Parallel items were included to address actual cultural behaviors (e.g., How do you celebrate family events?) and individuals' preferences for cultural behaviors (e.g., How do you prefer to celebrate family events?), yielding a total of 12 items added to each questionnaire. Complementing the response format for the PAS items, these items were scored on a 9-point scale, ranging from 1 (*only Spanish*) to 9 (*only English*).

Items pertaining to language reading and speaking were combined to create composite measures of language use (behavior items) and preferred language use (preference items); alpha coefficients of reliability were .90 for scores on the language use measure and .80 for scores on the preferred language use measure. Scores on the remaining behavior and preference items

yielded low estimates of internal consistency and were examined individually in data analysis.

### *Results*

#### INTERNAL CONSISTENCY

Overall, the mean PAS score for this sample was 3.48 on the 9-point scale ( $SD = 1.38$ ). Of the respondents, 64 chose to complete the Spanish version of the PAS and 42 chose the English version. Item scores on both language versions of the PAS were shown to be internally consistent, with alpha coefficients of .90 and .83 for the Spanish and English versions, respectively. Item total correlations from this sample ranged from between .55 and .81 for the Spanish version of the PAS and from between .36 and .67 for the English version.

Because scores from this sample yielded high levels of internal consistency on both language versions of the PAS, responses to the Spanish and English versions of the scale were pooled for further data analysis.

#### FACTOR ANALYSIS

A principal components analysis yielded a single primary factor of psychological acculturation, which accounted for 51% of the variance. No additional factors were extracted beyond this factor because all other factors' eigenvalues were below 1.0. Structure coefficients on this factor ranged from between .64 and .79 (see Table 2).

#### CONVERGENT AND DISCRIMINANT VALIDITY

*Migration history.* Respondents born in Puerto Rico tended to have lower PAS scores ( $M = 3.3$ ) than did respondents born on the U.S. mainland,  $M = 4.2$ ,  $t(103) = -2.93$ ,  $p < .01$ . Thus, individuals born in Puerto Rico tended to be more Latino-oriented than bicultural. Furthermore, psychological acculturation (as measured by the PAS) was correlated positively with percentage of lifetime in the United States,  $r(103) = .43$ ,  $p < .01$ , such that greater time on the U.S. mainland corresponded with a more Anglo/American orientation.

*Language use.* Respondents who chose to complete the questionnaire in Spanish tended to have lower scores on the PAS ( $M = 3.1$ ) than did respondents who completed the questionnaire in English,  $M = 4.1$ ,  $t(104) = -4.22$ ,  $p < .001$ . That is, respondents who chose the Spanish version tended to be more Latino-oriented than were those who chose the English version. Psychological acculturation also correlated positively with use of English at home during the respondent's childhood,  $r(106) = .51$ ,  $p < .01$ , indicating a greater Anglo/American orientation with increased use of English in the home.



Table 2  
*Factor Structure Coefficients for PAS Scale Items From Three Puerto Rican Samples*

Item	Study 2	Study 3	
	All Respondents	Adolescents	Parents
1. Share most of your beliefs and values	.77	.71	.72
2. Have the most in common	.69	.80	.80
3. Feel the most comfortable	.79	.70	.70
4. Who understands your ideas (way of thinking)?	.73	.78	.78
5. Proud to be a part of	.65	.60	.61
6. Know how things are done, can do them easily	.64	.79	.78
7. Feel confident that you know how to act	.69	.67	.68
8. Who you understand best	.78	.83	.84
9. Know what is expected in various situations	.71	.70	.70
10. Know the most about	.69	.80	.81
<i>N</i>	106	248	228

#### COMPARING MEASURES OF MIGRATION AND ACCULTURATION

Individuals' migration histories traditionally have been used as validation measures for acculturation scales. Although these measures may be useful, it is also important to acknowledge a qualitative difference between time spent in a culture and one's sense of belonging and attachment to that culture. Multiple regression analyses were conducted to address this distinction using psychological acculturation (i.e., respondents' PAS scores) and percentage of lifetime in the United States as predictors of the adapted cultural behavior and preference items.

A separate correlational analysis indicated that the two predictor variables bore a substantial positive correlation,  $r(103) = .43, p < .01$ . Under such conditions, the standardized regression coefficients that are obtained from standard regression analyses may be biased and relatively unreliable, as compared to other indicators (Darlington, 1990). To promote the accurate interpretation of our findings, semipartial correlations and structure coefficients instead will be reported. Structure coefficients were computed by dividing the correlation between each predictor variable and the criterion variable by the multiple correlation (see Thompson & Borrello, 1985, for a more detailed discussion of this procedure).

Results indicated that, together, psychological acculturation and percentage of lifetime in the United States accounted for a substantial portion of the variance in scores on most of the cultural behavior and preference measures ( $R^2$  values ranging from .14 to .44). In particular, these variables were highly

Table 3  
*Summary of Standard Regression Analyses Using Psychological Acculturation and Percentage of Lifetime in the United States as Predictors for Cultural Behaviors and Preferences Among Puerto Rican Respondents (N = 107)*

Behavior and Preference Measures	Psychological Acculturation			Percentage of Lifetime in the United States	
	$R^2$	<i>sr</i>	<i>sc</i>	<i>sr</i>	<i>sc</i>
<b>Cultural behaviors</b>					
Language use	.44	.39**	.88	.31**	.80
Types of food	.15	.39**	.89	-.18	-.04
Music	.28	.49**	.99	-.03	.37
Holidays	.35	.45**	.96	.15	.65
Family events	.24	.43**	.99	.01	.46
<b>Cultural preferences</b>					
Language use	.36	.43**	.95	.19*	.70
Types of food	.14	.37**	.89	-.17	-.02
Music	.25	.49**	.99	-.08	.25
Holidays	.30	.42**	.97	.13	.64
Family events	.29	.47**	.99	.03	.48

*Note.* Behavior and preference measures of language use are each composed of two items regarding speaking and reading. *sc* = structure coefficients.

\* $p < .05$ . \*\* $p < .001$ .

effective as predictors for behaviors and preferences associated with language use, although they were somewhat less effective as predictors for behaviors and preferences associated with cultural foods (see Table 3).

Semipartial correlations and structure coefficients demonstrated high levels of association between psychological acculturation (i.e., respondents' PAS scores) and scores on all of the cultural behavior and preference items (see Table 3). In contrast, semipartial correlations and structure coefficients suggested that percentage of lifetime in the United States is related fairly strongly to behaviors and preferences associated with language use and holiday celebrations yet has relatively weak relationships with respondents' scores on the other cultural behavior and preferences items (see Table 3). Thus, the general pattern of results demonstrates that psychological acculturation served as a stronger and more consistent correlate of respondents' cultural behaviors and preferences than did their percentage of lifetime spent in the United States.

### Study 3

Study 2 replicated findings of high internal consistency and validity for respondents' scores on the PAS with a large sample of Puerto Rican respon-

dents. A third study was conducted to gather further validity evidence for PAS scores across two distinct age groups (adolescents and adults) and with two methodological modifications. First, an interview format was used rather than a self-administered questionnaire to examine the robustness of the scale across modalities of administration. Second, the response range was reduced to a 5-point scale because most respondents from Study 2 used only a portion of the response options from the 9-point scale.

### *Method*

#### SAMPLES AND PROCEDURES

Puerto Rican adolescents and their parents were recruited through door-to-door screening, media advertisements, and community networks within the greater Boston area. Prospective participants who identified themselves as Puerto Rican were contacted as part of a larger study on Puerto Rican adolescent development. Respondents were given \$10 for their participation, which consisted of face-to-face interviews in their homes. Respondents were interviewed in the language of their choice (i.e., either Spanish or English) by trained bilingual and bicultural interviewers. Informed consent was obtained from respondents prior to the interviews.

*Adolescent sample.* A total of 247 Puerto Rican 13- and 14-year-old adolescents participated in this study (118 males and 129 females). Of the participants, 98 were born in Puerto Rico and 146 were born on the U.S. mainland (3 were born in other places). Adolescents' percentage of lifetime in the United States ranged from less than 1% to 100% ( $M = 80\%$ ).

*Parent sample.* A total of 228 mothers of the adolescents also participated in this study, ranging in age from 27 to 57 years ( $M = 39$  years). Of these mothers, 201 were born in Puerto Rico and 21 were born on the U.S. mainland (6 were born in other places). Parents' percentage of lifetime in the United States ranged from 85% to 100% ( $M = 92\%$ ).

#### MEASURES

For both adolescents and parents, interview protocols included the same versions of the PAS and the items concerning migration history and demographic factors, which were used in Studies 1 and 2. However, we observed that 80% of the respondents from Study 2 did not use Scores 8, 6, 4, and 2 on the 9-point scale and essentially worked with a 5-point scale. Therefore, the original 9-point response scales were collapsed to 5-point scales.

*Cultural behaviors and preferences.* The same versions of the cultural behavior and preference items used in Studies 1 and 2 were included in the

interview protocols for this study. To match the format of the other items, item responses were scored on Likert-type scales ranging from 1 (*only Hispanic/Latino*) to 5 (*only Anglo/American*).

As in the previous studies, behavior and preference items pertaining to language reading and speaking were combined to create composite measures of language use (behavior items) and preferred language use (preference items). Alpha coefficients were .87 and .86 for adolescents' and parents' scores on the language use measure, respectively. Alpha coefficients were .77 for both adolescents' and parents' scores on the preferred language use measure.

In addition, items pertaining to cultural foods, music, holiday celebrations, and family celebrations were combined to create composite measures of cultural behaviors and cultural preferences. Alpha coefficients of reliability were .72 for both adolescents' and parents' scores on the cultural behaviors measure. Alpha coefficients of reliability were .75 and .76 for adolescents' and parents' scores on the cultural preferences measure, respectively.

## Results

### ADOLESCENT SAMPLE

Overall, the mean acculturation score for this sample was 1.57 on the 5-point scale ( $SD = .62$ ). Scores on the PAS were shown to be internally consistent, with an alpha coefficient of .91 and item total correlations ranging from between .52 and .78. A principal components analysis yielded a single primary factor of psychological acculturation, which accounted for 55% of the variance. No additional factors were extracted beyond this factor, considering that the eigenvalues for all other factors were below 1.0. Structure coefficients for items on this factor ranged from between .60 and .83 (see Table 2).

*Migration history.* Respondents born in Puerto Rico tended to have lower PAS scores ( $M = 1.33$ ) than did those born on the U.S. mainland,  $M = 1.72$ ,  $t(241) = 4.98$ ,  $p < .001$ . Psychological acculturation also was correlated positively with percentage of lifetime in the United States,  $r(247) = .25$ ,  $p < .01$ , indicating a stronger Anglo/American orientation with more time on the U.S. mainland.

*Language use.* Respondents who chose the Spanish version of the interview tended to have lower PAS scores ( $M = 1.52$ ) than did those who chose the English version,  $M = 1.99$ ,  $t(243) = -3.75$ ,  $p < .01$ . Psychological acculturation also correlated positively with use of English in the home during the respondents' childhood,  $r(247) = .40$ ,  $p < .01$ , indicating a stronger Anglo/American orientation with increased use of English in the home.

## PARENT SAMPLE

The overall mean for mothers' acculturation scores was 1.55 on the 5-point scale ( $SD = .61$ ). Their scores on the PAS were shown to be internally consistent, with an alpha coefficient of .91 and item total correlations ranging from between .53 and .79. A principal components analysis yielded a single primary factor of psychological acculturation, which accounted for 56% of the variance. No additional factors were extracted beyond this factor, and eigenvalues for all other factors were less than 1.0. Structure coefficients for the items on this factor ranged from between .61 and .84 (see Table 2).

*Migration history.* Paralleling the adolescent sample, respondents born in Puerto Rico tended to have lower PAS scores ( $M = 1.46$ ) than did respondents born on the U.S. mainland,  $M = 2.40$ ,  $t(219) = 7.53$ ,  $p < .001$ . Psychological acculturation also was correlated positively with percentage of lifetime in the United States,  $r(221) = .45$ ,  $p < .01$ , indicating a stronger Anglo/American orientation with more time on the U.S. mainland.

*Language use.* Respondents who chose the Spanish version of the interview tended to have lower PAS scores ( $M = 1.50$ ) than did those who chose the English version,  $M = 2.01$ ,  $t(224) = -4.00$ ,  $p < .001$ . Psychological acculturation also correlated positively with use of English in the home during the respondent's childhood,  $r(227) = .41$ ,  $p < .01$ , indicating an increased Anglo/American orientation with increased use of English in the home.

## COMPARING MEASURES OF MIGRATION AND ACCULTURATION

As in Study 2, analyses were conducted to address the distinction between time spent in a given culture and one's psychological attachment to that culture. Multiple regression analyses were performed using psychological acculturation (i.e., respondents' PAS scores) and percentage of lifetime in the United States as predictors of the cultural behavior and preference measures.

Correlational analyses indicated that the two predictor variables were correlated positively in the adolescent sample,  $r(246) = .25$ ,  $p < .01$ , and even more highly correlated in the parent sample,  $r(227) = .56$ ,  $p < .01$ . Semipartial correlations and structure coefficients, therefore, will be reported to aid in the accurate interpretation of our findings (see Table 4).

*Adolescent sample.* Overall, results from these analyses indicated that psychological acculturation and percentage of lifetime in the United States accounted for a substantial portion of the variance in adolescents' scores on the cultural behavior and preference measures ( $R^2$  values ranging from .30 to .44) and were particularly effective as predictors for behaviors and preferences associated with language use (see Table 4).

Table 4  
*Summary of Standard Regression Analyses Using Psychological Acculturation and Percentage of Lifetime in the United States as Predictors for Cultural Behaviors and Preferences Among Puerto Rican Adolescents (N = 247) and Parents (N = 228)*

Behavior and Preference Measures	Psychological Acculturation			Percentage of Lifetime in the United States	
	$R^2$	<i>sr</i>	<i>sc</i>	<i>sr</i>	<i>sc</i>
Adolescents					
Language use	.44	.53**	.92	.26**	.61
Other cultural behaviors	.31	.51**	.99	.07	.38
Preferred language use	.43	.60**	.99	.09	.38
Other cultural preferences	.30	.52**	.99	.06	.35
Parents					
Language use	.49	.40**	.93	.26**	.82
Other cultural behaviors	.31	.48**	.99	-.04	.49
Preferred language use	.43	.42**	.95	.23*	.80
Other cultural preferences	.30	.44**	.99	.03	.60

*Note.* Behavior and preference measures of language use are each composed of two items regarding speaking and reading. Cultural behaviors and cultural preferences are each composed of four items, regarding cultural foods, music, celebration of holidays, and celebration of family events. *sc* = structure coefficients.

\* $p < .05$ . \*\* $p < .001$ .

Semipartial correlations and structure coefficients demonstrated high levels of association between psychological acculturation scores and scores on the cultural behavior and preference measures (see Table 4). In contrast, semipartial correlations and structure coefficients suggested that percentage of lifetime in the United States is related fairly strongly to behaviors and preferences associated with language use yet is weakly related to respondents' scores on the other cultural behavior and preferences measures (see Table 3). Thus, the general pattern of results demonstrates that psychological acculturation served as a stronger correlate of respondents' cultural behaviors and preferences than did their percentage of lifetime in the United States.

*Parent sample.* Results from these analyses indicated that psychological acculturation and percentage of lifetime in the United States accounted for a substantial portion of the variance in parents' scores on the cultural behavior and preference measures ( $R^2$  values ranging from .30 to .49) and were particularly effective as predictors for behaviors and preferences associated with language use (see Table 4).

Semipartial correlations and structure coefficients demonstrated high levels of association between psychological acculturation scores and scores on all of the cultural behavior and preference measures (see Table 4). In contrast, semipartial correlations and structure coefficients suggested that percentage

of lifetime in the United States has fairly strong relationships with respondents' scores on the language use and preferred language use measures and relatively weaker relationships with respondents' scores on the other cultural behavior and preference measures (see Table 4). Once again, the general pattern of results demonstrates that overall, psychological acculturation served as a stronger correlate of respondents' cultural behaviors and preferences than did their percentage of lifetime spent on the U.S. mainland.

### Discussion

Unlike other scales, the PAS emphasizes psychological aspects of acculturation rather than behavioral or attitudinal manifestations of acculturation. These studies examined the psychometric properties of the PAS using samples of bilingual and Puerto Rican respondents. Together, these studies suggest that the PAS can be a useful instrument for understanding the psychological impact of exposure to different cultures. Results from these studies have shown that scores on the PAS are internally consistent and maintain similar factor structures across different samples and across two different modes of administration. In addition, respondents' scores on the PAS indicated a high degree of cross-language equivalence as well as equivalence across the Spanish and English versions of the scale. Our results, which show a correlation of .94 between scores on the Spanish and English versions, compare favorably with those reported by Szapocznik et al. (1978); these authors found correlations of .88 and .46 between scores on the two language versions of their behavioral and value acculturation scales, respectively.

Scores on the PAS also were correlated to a noteworthy degree with respondents' migration histories and patterns of Spanish and English language use, which have been used as validation indexes in previous studies. In particular, these results echo findings from Marin et al. (1987) and Triandis et al. (1982), who demonstrate significant positive correlations between acculturation and percentage of lifetime spent living on the U.S. mainland. In addition, these results parallel findings from Szapocznik et al. (1978), who found a positive correlation between levels of acculturation and years of residence on the U.S. mainland. Furthermore, this study's regression analyses yielded significant relationships between PAS scores and respondents' reported cultural behaviors and preferences. Indeed, these analyses indicated that psychological acculturation (as measured by the PAS) tends to be a better predictor of cultural behaviors and preferences than does percentage of lifetime in the United States.

These findings are important for (at least) two reasons. First, percentage of lifetime in the United States did not consistently predict the variance in traditional items used for measuring acculturation. Consequently, researchers need to qualify conclusions that treat migration-related factors as proxy measures of respondents' levels of acculturation. Second, the greater power

of the PAS for predicting culturally based behaviors and preferences demonstrates an important distinction between mere exposure to a culture and the psychological ramifications of that exposure. For example, some individuals may live on the U.S. mainland throughout their lives without feeling a strong connection to it and may, in turn, be less likely to embrace Anglo/American cultural norms and expectations. Conversely, some recent immigrants may identify strongly with the prevailing norms and standards of the U.S. mainland and may therefore attempt to integrate aspects of Anglo/American culture into their daily lives. Thus, in future acculturation research, more attention should be given to the individuals' psychological responses to cultural exposure rather than to more overt, behavioral measures. Measurement of the subjective, underlying dimension of psychological acculturation can provide researchers with a means of distinguishing between the differential impact of time spent within a culture and individuals' psychological responses to that cultural exposure.

### References

- Berry, J. W. (1980). Acculturation as varieties of adaptation. In A. M. Padilla (Ed.), *Acculturation: Theory, models, and some new findings* (pp. 9-24). Boulder, CO: Westview.
- Berry, J. W., Poortinga, Y. P., Segall, M. H., & Dasen, P. R. (1992). *Cross-cultural psychology: Research and applications*. Cambridge, UK: Cambridge University Press.
- Betancourt, H., & Lopez, S. R. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist, 48*, 627-637.
- Bontempo, R. (1993). Translation fidelity of psychological scales: An item-response theory analysis of an individualism-collectivism scale. *Journal of Cross-Cultural Psychology, 24*, 149-166.
- Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Cross-cultural research methodology series: Vol. 8. Field methods in cross-cultural psychology* (pp. 137-164). Beverly Hills, CA: Sage.
- Buriel, R. (1993). Acculturation, respect for cultural differences, and biculturalism among three generations of Mexican American and Euro-American school children. *Journal of Genetic Psychology, 154*, 531-543.
- Cuellar, I., Harris, L. C., & Jasso, R. (1980). An acculturation scale for Mexican American normal and clinical populations. *Hispanic Journal of Behavioral Sciences, 2*, 199-217.
- Darlington, R. B. (1990). *Regression and linear models*. New York: McGraw-Hill.
- Erkut, S., Alarcón, O., García Coll, C., Tropp, L. R., & Vázquez García, H. (in press). The dual focus approach to creating bilingual measures. *Journal of Cross-Cultural Psychology*.
- Estrada, L. F. (1993). Family influences on demographic trends in Hispanic ethnic identification and labeling. In M. E. Bernal & G. P. Knight (Eds.), *Ethnic identity: Formation and transmission among Hispanics and other minorities* (pp. 163-179). Albany: SUNY Press.
- Gordon, M. M. (1978). *Human nature, class, and ethnicity*. New York: Oxford University Press.
- LaFromboise, T., Coleman, H.L.K., & Gerton, J. (1993). Psychological impact of biculturalism: Evidence and theory. *Psychological Bulletin, 114*, 395-412.
- Marin, G., Sabogal, F., VanOss Marin, B., Otero-Sabogal, R., & Perez-Stable, E. J. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences, 9*, 183-205.
- Marin, G., & VanOss Marin, B. (1991). *Research with Hispanic populations* (Applied Social Research Methods Series Vol. 23). Newbury Park, CA: Sage.



- Olmedo, E. L. (1981). Testing linguistic minorities. *American Psychologist, 36*, 1078-1085.
- Padilla, A. M. (1980). The role of cultural awareness and ethnic loyalty in acculturation. In A. M. Padilla (Ed.), *Acculturation: Theory, models and some new findings* (pp. 47-84). Boulder, CO: Westview.
- Rogler, L. H. (1994). International migrations: A framework for directing research. *American Psychologist, 49*, 701-708.
- Szapocznik, J., & Kurtines, W. (1980). Acculturation, biculturalism and adjustment among Cuban Americans. In A. M. Padilla (Ed.), *Acculturation: Theory, models and some new findings* (pp. 139-157). Boulder, CO: Westview.
- Szapocznik, J., Kurtines, W. M., & Fernandez, T. (1980). Bicultural involvement and adjustment in Hispanic-American youths. *International Journal of Intercultural Relations, 4*, 353-365.
- Szapocznik, J., Scopetta, M. A., Kurtines, W., & Aranalde, M. A. (1978). Theory and measurement of acculturation. *Interamerican Journal of Psychology, 12*, 113-120.
- Thompson, B., & Borrello, G. M. (1985). The importance of structure coefficients in regression research. *Educational and Psychological Measurement, 45*, 203-209.
- Triandis, H. C., Kashima, Y., Hui, H., Lisansky, J., & Marin, G. (1982). Acculturation and biculturalism indices among relatively acculturated Hispanic young adults. *Interamerican Journal of Psychology, 16*, 140-149.