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To: HCHS/SOL Steering Committee, Publications Committee, and Statistical Committee

From: Psychosocial/Sociocultural Committee (Linda Gallo & Frank Penedo, Chairs);
Measurement/Psychometrics Working Group (William Arguelles, John Elder, Patricia Gonzalez, Carmen Isasi, Maria Llabre, Vanessa Malcarne, Krista Perreira, Scott Roesch, Daniela Sotres-Alvarez)

Re: Recommendation regarding use of the modified 10-item Short Acculturation Scale for Hispanics (SASH)

Psychometric analyses were performed by San Diego (Analyses: Patricia Gonzalez and Alicia Nunez, with input concerning recommendations for use by Scott Roesch and Linda Gallo) to evaluate the internal consistency and underlying factor structure of the modified 10-item Short Acculturation Scale for Hispanics (SASH) administered in the HCHS/SOL Study (n=16,415). In addition, multiple group confirmatory factor analysis (CFA) was conducted to examine the invariance of this measure between English and Spanish responders. Note that remaining psychometric analyses (e.g., invariance across ethnic ancestry groups) will be performed by Navas-Nacher from Chicago.

Given that the SASH was modified from the original 12-item version by excluding two media items from the questionnaire, an exploratory factor analysis (EFA) was performed with the modified 10-item measure. Results revealed the presence of two components [SASH Language Use subscale (items sceal-scea6) and SASH Ethnic Social Relations subscale (scea7-scea10)] with eigenvalues exceeding 1, explaining 53.1% and 13.8% of the variance respectively. Both components showed strong factor standardized loadings (.62-.89) and all items loaded on only one component. The single media item (scea6: "In general, what language(s) are the movies, T.V. and radio programs you prefer to watch and listen to?") loaded (.73) on the SASH Language Use subscale.

Internal consistency for the two SASH subscales (SASH Language Use subscale and SASH Ethnic Social Relations subscale) was estimated. The SASH Language Use subscale was found to be acceptable in the overall sample ($\alpha = .92$) and across both language versions ($\alpha_{\text{English}} = .80$; $\alpha_{\text{Spanish}} = .85$). Internal consistency for the SASH Ethnic Social Relations subscale was acceptable for the total sample ($\alpha = .73$) and for the Spanish version ($\alpha = .71$); however, it fell below the generally recommended alpha of .70 for the English version ($\alpha = .65$).

Following the test of internal consistency, a 2-factor CFA was performed. This 2-factor model fit well descriptively (CFI =.973; SRMR = .032; RMSEA =.063). Once we established the factorial structure of the SASH, multiple-group analyses were performed to assess configural invariance by comparing the 2-factor structure across language. Configural invariance is established when the number of factors and the items that load on each factor are the same across language. Based on guidelines set by the Psychosocial/Sociocultural committee configural invariance is declared

when the model with the same number of factors, each with the same items in both English and Spanish fits the data according to descriptive criteria for approximate fit (i.e., $CFI \geq .90$, $RMSEA \leq .08$ and $SRMR \leq .08$; Hu & Bentler). The 2-factor model exhibited adequate model fit in both the English ($CFI=.947$, $SRMR= .036$, $RMSEA=.056$) and Spanish version ($CFI=.961$, $SRMR =.034$, $RMSEA =.056$).

Given that investigators may desire to use a total score, psychometric analyses were performed to test the acceptability of using a total SASH score, with a 1-factor solution model fitted to the 10-item SASH responses. The 1-factor CFA model did not meet the criteria set by the Psychosocial/Sociocultural committee ($CFI =.895$; $SRMR = .077$; $RMSEA =.122$). Next, we examined the configural invariance by fitting the baseline model to the data across language. Similarly, the 1-factor model did not meet the criteria set by the Psychosocial/Sociocultural committee in the English ($CFI=.752$; $SRMR =.094$, $RMSEA =.120$) and Spanish version ($CFI=.846$; $SRMR =.074$, $RMSEA =.110$).

Conclusions and Recommendation: CFA results support the structural validity of a 2-factor solution and configural invariance across language. A single total SASH summary score does not fit the HCHS/SOL data well, and does not meet the criteria established for evidence of invariance across Spanish and English versions. We recommend that both SASH subscales, SASH Language Use subscale and SASH Ethnic Social Relations subscale be used to fully represent acculturation. Further, since the media item fits with the Language Use subscale both conceptually and empirically, we recommend that the scoring of this subscale be revised to include this item.