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The Hispanic Stress Inventory Version 2: Improving the Assessment of Acculturation Stress

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Abstract

This paper reports on a two-phase study to revise the Hispanic Stress Inventory (HSI) (Cervantes, Padilla, & Salgado de Snyder, 1991). The necessity for a revised stress-assessment instrument was determined by demographic and political shifts affecting Latin American immigrants and later-generation Hispanics in the U.S. in the two decades since the development of the HSI. The data for the revision of the HSI (termed the HSI2) was collected in four sites: Los Angeles, El Paso, Miami, and Boston and included 941 immigrants and 575 US-born Hispanics and a diverse population of Hispanic subgroups. The immigrant version of the HSI2 includes 10 stress subscales, while the US-born version includes 6 stress subscales. Both versions of the HSI2 are shown to possess satisfactory Cronbach alpha reliabilities and demonstrate expert-based content validity, as well as concurrent validity when correlated with subscales of the Brief Symptom Inventory and the Patient Health Questionnaire. The new HSI2 instruments are recommended for use by clinicians and researchers interested in assessing psychosocial stress among diverse Hispanic populations of various ethnic subgroups, age groups, and geographic location.

Keywords

Hispanic Stress Inventory - Revised; immigrant stress; stress assessment; discrimination; family stress; parental stress

Hispanics, Stress and Psychological Assessment

According to the American Psychological Association, Presidential Task Force on Immigration (2012) report *Crossroads*, psychological acculturation refers to the process that immigrants undergo as they transition from their home culture to that of their new home.

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Since a sizable number of Hispanics are either immigrants themselves or descendants of immigrants, it is important to understand how psychological acculturation impacts the lives of Hispanics. The APA Task Force of *Crossroads* further states that the process of acculturation can also result in acculturation stress which is defined as the stressful life events associated with acculturation in much the same way as other stressful life events can result in mental health difficulties. Stress has been defined as the (changing) relationship between person and environment that can be evaluated as harmful (negative) or challenging (positive) (Lazarus & Folkman 1984).

Further, research has demonstrated that the intensity and chronicity of stress events can impact the stress response (Bloch, Neeleman, & Aleamoni, 2004). Exposure to chronic stress often results in poorer mental and physical health outcomes compared to those individuals who experience fewer stressors (Jackson, Knight, & Rafferty, 2010). Specific to Hispanics¹, immigration-related stress and acculturation stress is predictive of higher drug use (Martinez, 2006) and risky sexual behavior (Levy, Page-Shafer, Evans, Ruiz, Morrow, Reardon et al., 2005). These findings are important in the context of racial and ethnic disparities in health, given that minorities report more exposure to chronic and acute stress than do non-Hispanic Whites (Boardman & Alexander, 2011). Further, the effect of acculturation on Hispanic health is complex and not well understood. In one review of acculturation health research, in certain areas—substance abuse, dietary practices, and birth outcomes—there is evidence that acculturation has a negative effect and that it is associated with worse health outcomes, behaviors, or perceptions. In other research—health care use and self-perceptions of health—the effect is mostly in the positive direction (Lara, Gamboa, Kahramanian, Morales & Hayes-Bautista, 2005). Several studies have extended the stress-illness paradigm to racial/ethnic minority youth (Berzin & De Marco, 2010; Carter, 2007; Cervantes, Goldbach, & Padilla, 2011).

Yet, there is a lack of culturally informed mental health assessments, procedures, and tools to facilitate detection and accurate diagnosis for Hispanics seeking mental health care (Cervantes, Berger Cardoso, & Goldbach, in press; Cervantes, Cordova, Fisher, & Napper, 2011; Malgady & Zayas, 2001). Many psychological assessment tools for Hispanics today are limited to translation of existing objective measures that are not normed on appropriate Hispanic populations (Cervantes & Acosta, 1992; Yamada, Valle, Barrio, & Jeste, 2006). To date, few measures have been developed and disseminated that are specifically tailored to the contexts of the Hispanic population (Paniagua & Yamada, 2013). In addition, research has made it evident that Hispanics, in response to stressful events, may manifest symptoms that are culturally bound, for example, *ataque de nervios* (Guarnacia, Canino, Rubio-Stipeck, & Bravo, 1993; Guarnacia, Lewis-Fernandez, & Rivera-Marano, 2003).

One instrument developed specifically for Hispanic adults is the Hispanic Stress Inventory (HSI; Cervantes, Padilla, & Salgado de Synder, 1991). The HSI has been used to examine relationships between psychosocial stress and contextual factors (e.g., Alva & de Los Reyes, 1999; Dwight-Johnson, Ell, & Lee, 2005; Finch, Hummer, Kolody, & Vega, 2001; Madrid MacMurray, Lee, Anderson, & Comings, 2001; Salgado de Snyder, Cervantes, & Padilla,

¹The terms Hispanic and Latino will be used interchangeably through this article.

1990; Thoman & Suris, 2004; Vega et al., 1998). In addition, the HSI has been used to study the correlation between psychosocial stress and neuroticism (Mangold, Veraza, Kinkler, & Kinney, 2007), violence risk and outcomes with Mexican Americans (Cervantes, Duenas, Valdez, & Kaplan, 2006), family acculturation and Hispanic substance abuse (Martinez, 2006), and the interaction of country of origin, gender roles, and acculturation on intimate partner violence (Harris, Firestone, & Vega, 2005). Significant social, cultural, and political issues have changed the contexts within which Hispanics now live and work. For this reason, item content found in the original version of the HSI, developed nearly thirty years ago, no longer captures the full range of stressful life events among both US-born and immigrant Hispanics (Cordova & Cervantes, 2010). In addition, criticisms of the original HSI for being too long pressed the need of an abbreviated version of the Hispanic Stress Inventory (Cavazos-Rehg, Zayas, Walker, & Fisher, 2006). In their study Cavazos-Rehg et al. utilized an immigrant sample and concluded that the original HSI needed to be re-standardized to have more utility with recent immigrant populations.

More recently, a Hispanic Stress Inventory for Adolescents (HSIA) was developed (Cervantes, Fisher, Cordova, & Napper, 2011) because of the need for a similar instrument capable of tapping into the psychological stressors experienced by Hispanic teens. The HSIA has subsequently been used in analyses to predict self-harm and suicidal behavior (Cervantes, Goldbach, Varela, & Santisteban, in press), and to distinguish clinical versus non-clinical group membership (Cervantes, Berger Cardoso, & Goldbach, in press). The HSIA taps into seven distinct domains of stress events common among Hispanic youth, and can be used in both research and clinical settings.

Sociodemographic and Sociopolitical Shifts Warranting Updated Assessment Tools

Since the development of the original Hispanic Stress Inventory, Immigrant and Non-Immigrant Versions (HSI-I/NI) (Cervantes et al., 1991), there have been significant sociodemographic and sociopolitical shifts within the greater U.S. population and among Hispanics that warrant re-standardization of the HSI-I/NI versions. Dramatic population increases among Latin American immigrants, the 9/11 bombing of the World Trade Center, intense partisan disagreement regarding immigration reforms, anti-immigrant legislation in numerous states, the economic recession beginning in 2008, and an increased health-disparity burden, have all impacted individuals and families and have significantly altered the nature, frequency and intensity of culturally based acute and chronic stress events among Hispanic immigrants (APA Presidential Task Force on Immigration, 2012).

In 1970 there were just 9.1 million persons of Hispanic origin living in the U.S. By 1980, the Hispanic population had increased to 14.6 million, and in 1990 Hispanics grew to 22.4 million representing 9% of the total U.S. population (U.S. Census, 1992). This was the time frame in which Cervantes et al. (1991) developed the original HSI inventory. However, just over 20 years later according to the 2010 Census there were 50.5 million persons of Hispanic origin (Ennis, Rios-Vargas, & Albert, 2011). Furthermore, in 1990, approximately 90% of Hispanics lived in just 10 states. By 2010, there were 16 states with at least a half

million Hispanic residents and 22 states reported that Hispanics were the largest minority group. This included states that historically had never had a significant population of Hispanics. For example, Arkansas, Georgia, North Carolina, Pennsylvania, South Carolina and Tennessee's rate of increase in the Hispanic population has quadrupled from 1990 to 2010 (Ennis et al., 2011). In addition, there has been a proliferation of anti-immigrant legislation in recent years. For instance, a total of 164 anti-immigration laws were passed by state legislatures just between 2010 and 2011 (Gordon & Raja, 2012). This social condition has been magnified by large numbers of family separations caused by deportations of family members beginning in 2001 and continuing to the present with the largest number (438,421) of deportations occurring in 2013 (Gonzalez-Barrera & Krogstad, 2014). Considering the present contextual challenges, along with the growth of the Hispanic population in the U.S., the assessment of acculturation stress and related risk for mental health problems has become even a more critical issue than was true in the late 1980s when the original HSI was developed. This also warrants research to update and standardize the HSI using a broader sampling of Latinos than was done in the original development of the HSI. Taken together, significant social, economic, health, and international events have altered the nature and experience of stressful life events among Hispanics in the United States (APA Presidential Task Force on Immigration, 2012). To the extent that these stress-related events are dynamic and changing from one decade to the next, we believe that a newly standardized HSI2 is needed by researchers and mental health and health care professionals alike.

The purpose of this two-phase study was to develop and determine the psychometric properties of the Hispanic Stress Inventory—Version 2, a culturally informed, acculturation stress assessment instrument. Informed by previous research conducted on Hispanic stress (Cervantes et al., 1991), our specific aims in this study were to: (a) create and test item content in specific domains of life-event stress among a diverse population of Hispanic adults living in varied geographic settings in the United States, (b) assess both life-event stress exposure (i.e., event incidence) and the degree to which Hispanics appraise items for their degree of subjective distress, and (c) use this information to develop an instrument to assess acculturation stress among Hispanics. By including immigrant and Spanish speaking adults throughout the study and in each step of the sampling, we expected to find unique immigration stressors, as well as stressors specific to US-born Hispanics who, while not immigrant, may have parents or grandparents who were immigrants.

We hypothesized that different internal factor structures in immigrant and second- and later-generation Hispanics would be found. Earlier evidence for these differences was supported in the study to develop the original HSI tool (Cervantes, Padilla & Salgado de Snyder, 1991). The support of this hypothesis would justify the production of two distinct versions of the inventory as was found in the development of the original HSI. We also hypothesized that a set of criterion measures of valid psychological symptom clusters of depression, anxiety, somatization and interpersonal sensitivity as measured by the Brief Symptom Inventory and depressive symptoms as measured by the PHQ-9 would be strongly associated with the HSI2 subscales in both the immigrant and US-born Hispanic samples. Similar criterion measures were found to be highly correlated with scores on the original Hispanic Stress Inventory (Cervantes, Padilla, Salgado de Snyder, 1991).

Methods Phase I: Generation of Item Pool

A qualitative study using expert interviews and community-based focus group methods was used to verify and adapt conceptual stress categories in the HSI. Initially, several key theoretical issues related to Hispanic adult stress were identified in a literature search and through interviews with recognized expert researchers in the field of Hispanic mental health and acculturation stress. The expansion of core theoretical concepts related to psychosocial stressors from the constructs in the original HSI development study was an important starting point for the current study.

Expert Panel

Three well-published experts in Hispanic mental health were engaged in the initial restandardization process. All experts had also been directly involved in similar instrument development work with the authors. The three experts were mailed a pre-interview package and were instructed to: (a) review the original HSI content and study procedures (Cervantes, Padilla, & Salgado de Snyder, 1991), (b) review the definitions of each original stressor domain, (c) review all original content within each stress domain, (d) provide comments and critiques on the original definitions and item content, (e) provide other information on contemporary stressors that Hispanics experience in the U.S., and (f) provide additional themes and probes for the development of a focus-group interview protocol.

Each expert was then interviewed by a research assistant using a semi-structured protocol. The purpose of the interview was to modify the conceptual acculturation stress domains for Hispanic adults, to explore other contemporary stressor domains that could be discussed in the community-based focus groups, and to finalize the focus group interview protocol. The interview findings resulted in modified stress domains from the original HSI, including the separation of family stress and cultural conflict into separate domains, and the addition of a new domain of stress related to accessing healthcare. The final seven conceptual domains were: (1) Immigration Stress, (2) Family Stress, (3) Marital Stress, (4) Cultural Conflict, (5) Healthcare Stress, (6) Parental Stress, and (7) Economic/Occupational Stress, and were then used as a structure for developing open-ended focus group questions used in the subsequent step of Phase I item development.

Phase I: Sample

A total of 16 focus groups consisting of 93 participants were conducted. A limited number of focus-group participants were selected from two sites with large Hispanic populations in southern California and the northeastern United States. Study sites were selected on the basis of the large concentration of Hispanics residing in these regions of the country and relative ease of recruitment. Focus group participants were recruited in collaboration with community-based organizations that have strong ties to Hispanic communities in both California and Massachusetts. A mixed stratified sampling strategy was designed to elicit information about stress events relevant to a wide range of Hispanic adults from diverse cultural origins, including immigrant, non-immigrant, and racially diverse groups. This sampling frame had the advantage of including a more heterogeneous and diverse sample of Hispanics when compared with the original HSI development study sample that was based

only in Southern California. Convenience sampling occurred in adult education centers, adult skills centers, homeless outreach facilities, and local behavioral health service clinics. The research team collaborated closely with site coordinators who acted as liaisons in the target communities. Potential participants were identified by agency liaisons and given a choice to attend either a Spanish or English language group based on their own language preference.

Inclusion criteria for participation in the study were: (1) self-described Hispanic ethnic identity (including Caribbean, Puerto Rican, Cuban, Dominican, Central American, and Mexican backgrounds), (2) age 18 and older, and (3) willing to provide consent indicating their interest in participating in the study. Exclusion criterion included: (1) self-described non-Hispanic ethnic identity, and (2) presence of a mental-health disorder such as acute psychosis, dementia, or active suicidal ideation as determined by recruitment staff. Agency staff that assisted in the recruitment was provided training by the first author on asking potential participants about the presence of an acute psychological disorder. No formal psychiatric screening tools or any formal interviews were used to exclude participants.

A total of 93 adults participated in the focus groups. Fifty-one percent of the focus group participants were recruited from Los Angeles and 49% from Boston. More men (52%) than women (48%) participated in the focus groups. The mean age of the sample was 41.76 ($SD = 15.43$) years, with a range of 18 to 67 years of age. A majority of the sample (57%) reported the country of origin of their family to be Mexico, followed by Puerto Rico (14%). The “other” category (e.g., Cuban, Dominican) was named by 19%, which is representative of the US Hispanic population. Fifty-eight percent of the participants were born outside the US, and primarily spoke Spanish (58%). The majority of respondents (71%) reported having children. Further, 38% of participants reported being employed either full or part time, followed by unemployed (36%), disabled (21%), and retired (5%). Thirty percent of the participants reported living below poverty, with an annual household income of \$10,000 or less.

Procedure

Potential participants gathered in a reserved room in each data collection site where the focus groups were conducted. Groups were organized so that they were conducted in either English or Spanish. Participants were told the purpose of the study and were given informed consent forms. Those participants who provided consent were given a \$10 gift card and asked to complete a sociodemographic questionnaire that included measures of immigrant status (e.g., where they were born; how long in the U.S., etc.). Two bilingual doctoral-level staff with extensive interviewing experience moderated the focus groups, which were audio recorded for later transcription. Additionally, a bilingual staff member took extensive notes while observing the group to enhance the quality of data collected.

On the basis of the expert panel interviews and the existing literature, a semi-structured, open-ended focus group interview guide was developed. This guide included seven sections corresponding to a priori conceptual domains. Each section began with a general and open-ended question within each of the stress domains identified by the expert panel, as well as specific, focused probes. Each domain was first explored in the group by raising a general

question “What are the most difficult things that Hispanic adult parents have to deal with?” The group was then asked to respond with specific information based on their personal experience (e.g., “What are the most difficult things you had to deal with in your relationship with your child?”).

Next, the group was asked how they coped with each of the elicited stressors. At least three different behavioral responses were elicited from the group for each question. The aim was to collect situation-specific stress reactions to specific events rather than accounts of general reactivity and coping styles. Special attention was placed on immigration stress as experienced by immigrant adults and perceived by their non-immigrant peers. A more detailed report on Phase I study methods is provided in Cervantes, Goldbach and Padilla (2012).

Item Development

First, all focus group sessions were transcribed into either English or Spanish based on language used in the focus group. These transcripts were then analyzed by two doctoral-level research staff. Analysis of data was completed using grounded theory and the constant comparison method with a triadic process of open, axial, and selective coding (Strauss & Corbin, 1998). Open coding consists of a line-by-line analysis to break down data into discrete parts or units of analysis, labeling different units as concepts, and analyzing the phenomena embedded in the data (LaRossa, 2005). Concepts were labeled using the words expressed by participants, a procedure known as *in vivo* coding (Strauss & Corbin, 1998).

Subsequent to open coding, categories were created to reach a higher level of conceptualization, a process referred to as axial coding. This process facilitates the identification of relationships among categories based on their properties and dimensions. Employing similar methods used in the development of the original HSI for adults (Cervantes et al., 1991), the first author, along with trained research assistants, identified salient life-event stressors and appraisal-coded text segments from the focus-group data. From the original Spanish or English language text segments, a series of short statements that captured the meaning of the longer coded segments were developed in English, into an easily comprehensible format. The salient and high frequency stress experience statements and appraisals elicited were then reworded for inclusion in the HSI2 draft. Two doctoral-level researchers conducted the content analysis separately. Subsequently, the two coders reviewed all extracted themes and reached consensus on these coded themes. This approach to the coding of focus-group data is consistent with content analytic procedures (Krippendorff, 2004). The focus-group data resulted in the generation of 187 item statements capturing specific stress events within each a-priori defined domain. After a comparison between the original HSI and the new item content, 32 items were eliminated. Those items removed were found to be nearly identical to original HSI items or duplicated other new items. The largest number of newly generated stress items was for the domain “Parent Stress” (28 items), followed by “Access to Healthcare Stress” (27 items), “Immigration Stress” (27 items), “Cultural Conflict Stress” (21 items), “Occupational and Economic Stress” (19 items), “Marital Stress” (17 items), and, lastly, “Family Stress” (16 items).

The content validity approach involved asking two expert clinicians to assign each of the 155 items to one of seven conceptual domains by filling in a content-validity rating form. The experts were instructed to assign each item to the one domain they thought the item best fit under. Cohen's kappa index of inter-rater agreement (Cohen, 1960) was used to measure the extent of consensus. The Kappa index coefficient ($\kappa = .55$) was statistically significant ($p < .001$). In addition, Pearson correlation analysis indicated a significant correlation between Expert 1 and 2 ($r = .65$; $p < .01$) in terms of item ratings across all domains for the 155 new HSI2 items. While higher Kappa and Pearson estimates were desirable at this stage in revising the HSI, our goal was to have general consensus on item placement within any one sub-category, knowing that further psychometric testing, including factor analysis, would yield a more refined set of categories and item placement within categories (factors) as in previous work with the HSI and HSIA. On the basis of the Kappa and Pearson correlation analysis of the two experts, all of the scale items were retained. As this set of items was generated from Hispanic adults themselves in a first phase of scale development, the researchers concluded that the kappa value was sufficient to not warrant further item exclusion.

Methods Phase II: Multisite Sampling

The cross sectional research design included data collection in four research sites that represent the diversity of the national Hispanic adult population: Los Angeles, CA; Miami, FL; El Paso, TX; and Boston (Lawrence), MA. A quota-based sampling design was used in three developmentally distinct target samples, including: (a) young adults 18–25 years of age, (b) parent-aged adults aged 26–55, and (c) persons over 56 years of age. The research sites for the proposed investigation were carefully selected to afford a sample that was representative of the heterogeneity of U.S. Hispanics and national geography. These included urban centers that are heavily populated by Hispanics, and the U.S.-Mexico border region that included a more rural sample. For example, Miami is one of the fastest growing metropolitan areas in the United States. The city's population is predominantly Hispanic (65%) and is comprised largely of persons of Cuban (34%) and "Other Hispanic" origin (25%, which includes 9% from Central America and 11% from South America) (U.S. Census Bureau, 2010). The Hispanic population in El Paso, Texas comprises 81% of the total population. In addition, 26% report being foreign-born, and 74% speak a language other than English at home (U.S. Census, 2010) and experience unique bi-national cultural conditions. For the Northeast region, data collection took place in Lawrence, Massachusetts which is a suburb 20 miles north of Boston. Lawrence is predominantly Hispanic with 74% of its population of 76,377 originating mainly from Puerto Rico and the Dominican Republic.

Within each developmental age strata, our sampling design called for nested equivalent samples of male and female respondents. Non-probability sampling for this study was selected over probability sampling as we intended to collect survey data from a wide array of Hispanic adults who may otherwise not be reached in traditional randomized stratified random sampling. In addition, we anticipated a lower rate of non-response using this quota sampling method. A balance of early-adult group (age 18–25), middle-aged parenting adults (age 26–55), and older adults (age 56 and up) in each site were required in the sampling

design. The research aimed to be inclusive of a wide age range. The categories were used as a guide for recruitment and data collection and to ensure sufficient samples of younger, middle age and older adults. Further, given that approximately 36% of the U.S. Hispanic population is foreign born (Brown & Patten, 2014), we attempted to approximate this proportion to be sampled in each site. Language use (Spanish preference) was used as a proxy for immigrant status in our recruitment phase. However, demographic data specific to immigrant status, nativity, length of time in the U.S. and preferred language use in the home were collected to more accurately describe the final sample.

Procedures and Consent

Site coordinators worked directly with staff at community colleges, local Parent Teacher Association (PTA) groups, and senior centers to: (1) Obtain necessary Institutional Review Board (IRB) approval for the study, (2) develop recruitment flyers in English and Spanish, (3) develop an appropriate recruitment strategy and plan that ensured equal numbers of English and Spanish speakers, and male and female respondents, and (4) establish appropriate classroom-based survey administration. At each of the four data-collection sites, and for the three age groupings, group administration of the HSI2 research survey protocol was carried out by trained site coordinators and trained proctors. Following completion of the HSI2 protocol, the coordinator and proctors held a question and answer period. Lastly, a financial incentive of \$15 was presented to participants in each group in the form of a gift card.

Participants

The HSI2 was completed by $N = 1,808$ participants. Data from participants who did not identify as Hispanic ($n = 25$) or who did not complete 11 or more (>5%) HSI2 appraisal items ($n = 267$) were excluded from the analysis. The final sample consisted of 575 US-born participants and 941 immigrant participants ($N = 1,516$). The demographics of the US-born and immigrant samples are presented in Table 1. The majority of the final sample was female (57%) and represented individuals from at least ten Latin American national origins. Immigrant participants ($M = 48.06$ years, $SD = 18.60$) were significantly older than US-born participants ($M = 29.03$ years, $SD = 13.93$), $t(1,503) = 21.07$, $p < .001$. Further, immigrants were more likely to report having children (80%) than US-born participants (40%), $\chi^2(1, N = 1,513) = 249.86$, $p < .001$. US-born participants reported completing more years of education ($M = 12.54$ years, $SD = 2.34$) than immigrants ($M = 10.90$ years, $SD = 4.07$), $t(1,483) = 8.71$, $p < .001$.

Measures

Both the US-born and Immigrant participants completed 242 items assessing different dimensions of Hispanic stress. Items included all original HSI items and new HSI2 item content developed in Phase I. Four bilingual, and multi-ethnic research staff, including the first author, translated all new HSI2 items into Spanish. A translation and back-translation process was used (Brislin, 1970). All attempts were made to develop a universal Spanish language translation that avoids the use of colloquial and more informal phrases that vary from country to country.

For each item, participants indicated whether they had experienced the stressor (*Yes/No*). If participants reported experiencing a stressor, then he or she rated how stressful the event was on a 5-point Likert scale (1= *Not at all worried / tense*; 2 = *A little worried / tense*; 3 = *Moderately worried / tense*; 4 = *Very worried/ tense*; 5 = *Extremely worried/ tense*). For items where participants reported they had not experienced a stressor, the appraisal score was coded to 1 (*not at all worried/ tense*). Participants were given the choice to complete the HSI2 in either Spanish or English, and 63% of participants elected to complete the measure in Spanish. Given the unique stressors faced by immigrants and following the procedures used during the development of the original HSI (Cervantes et al., 1991), exploratory factor analyses were performed separately for US-born and immigrant participants using the appraisal scores.

To examine the construct validity of the HSI2, participants completed two measures of psychological distress: the Brief Symptom Inventory (BSI; Derogatis, 1993) and the Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001). The BSI assesses how distressing participants found 53 psychological symptoms in the past seven days (*not at all* = 0 to *extremely* = 4). Responses were used to calculate the Global Severity Index (GSI) and the somatization, depression, anxiety, phobic anxiety and interpersonal sensitivity dimensions. The PHQ-9 was used to assess the severity of depression symptoms. Using a scale ranging from 0 (*not at all*) to 3 (*nearly every day*), participants indicated how often they were bothered by nine symptoms of depression. A sum composite was calculated with higher scores indicating more severe symptoms of depression. Standardized Spanish language versions of the BSI and PHQ-9 were obtained from the publishers of those measures.

Analysis Plan

Data analysis closely followed the approach used in developing other versions of stress measures including the original Hispanic Stress Inventory (Cervantes, Padilla, & Salgado de Snyder, 1991) as well as the Hispanic Stress Inventory-Adolescent Version (Cervantes et al., 2011).

Item relevance—Prior to conducting the factor analyses, items were examined for item relevance. If less than 5% of the sample reported having experienced a stress item, that item was excluded from the analyses. Based on this criterion, 13 items were excluded from the immigrant analyses and 81 items were dropped from the US-born analyses. Most of the items removed from the US-born analysis pertained to immigration-related stress events.

Exploratory factor analysis—Exploratory principal factor analyses were performed on a correlation matrix of complete-item pairs. The square of the multiple correlation coefficient (SMC) was used to obtain preliminary estimates of communalities. The HSI2 items were examined for normality, and all items were found to be positively skewed, therefore, factor analysis was performed using the principal factors extraction method, which does not assume normality. Both orthogonal and oblique rotations were examined, and factor solutions were compared for interpretability (Pett, Lackey, & Sullivan, 2003). The final analyses for both immigrant and US born samples were performed using promax rotations.

When conducting the factor analysis, the decision to delete items was based on item loadings, cross-loadings, internal consistency and item content. First, items with factor loadings less than .32 across all factors were removed (Tabachnick & Fidell, 2001). After several iterations of deleting items with low factor loadings, items with loadings greater than .32 on multiple factors were deleted (Costello & Osborne, 2005). Item content was also examined. One item with a factor loading less than .32 was retained in the US born (“I had arguments with my child about cultural values, customs, and morals”) and immigrant (“My spouse has been drinking too much alcohol”) factor analyses. Both items had content that was not adequately captured by other items in the measure. Further, the US-born item had a factor loading greater than .32 in the immigrant analysis, and the immigrant item had a factor loading greater than .32 on the US-born factor analysis. The final number of factors extracted was based on the Scree test, eigenvalues greater than one, Velicer's Minimum Average Partial (MAP) Test, and interpretability (Costello & Osborne, 2005). Finally, coefficient alphas and item-total correlations were examined to determine whether removing items from each subscale would improve the internal consistency and interpretability.

Results

Immigrant HSI2 Factor Analysis

For the immigrant sample, factor analysis yielded 10 factors that accounted for 85% of item variance (Table 2). The first factor, Parental Stress (13 items), included items assessing stress related to delinquent child behavior, parental discipline, and disagreements between parents and their children related to cultural practices and traditions. The second factor, Occupation and Economic Stress (12 items) reflects challenges at work and problems with work / life balance. The third factor, Marital Stress (12 items), reflects problems in marital relationships including infidelity, conflict, and lack of respect. Factor 4, Discrimination Stress (11 items), includes items assessing perceived discrimination due to both immigration status and Hispanic ethnicity. Factor 5, Immigration-Related Stress (9 items), includes items assessing exposure to traumatic events during the immigration sojourn, fear of being deported, problems finding work, family separations, and limited contact with family. Factor 6, Marital Acculturation Gap Stress (9 items), reflects conflict between spouses due to cultural differences. Factor 7, Health Stress (8 items), includes items assessing stress related to lack of health insurance, problems paying medical bills, and lack of quality health care. Factor 8, Language-Related Stress (6 items), reflects problems communicating in English. Factor 9, Pre-Migration Stress (9 items), reflects stressors experienced in one's home country, including poverty, lack of quality health care, and limited educational opportunities. The final factor, Family-Related Stress (5 items), includes items assessing conflict among family members, as well as isolation from family members.

Immigrant HSI2 Reliability

Four items were removed from the Immigrant HSI2 based on poor interpretability and low internal consistency. For example, the item “I could not pay for mental health care” was dropped from the Discrimination Stress subscale. Deletion of this item did not change the Cronbach's alpha for the Discrimination Stress subscale ($\alpha = .87$). The final three items of the Pre-migration Stress subscale were also removed based on poor interpretability (see

Table 2). Removing these items slightly improved the Cronbach's alpha for this subscale ($\alpha = .85$). After removing the four items, the final version of the immigrant HSI2 consisted of 90 items. The total HSI2 Immigrant Version Scale had a very high Cronbach's alpha of ($\alpha = .97$). The mean, standard deviations, and Cronbach's alphas for the final scale and the subscales are presented in Table 3. The subscales of the immigrant version of the HSI2 were moderately correlated ($.32 < r < .62$).

US-Born Factor Analysis

The US-born factor analysis yielded eight factors that accounted for 86% of item variance (Table 4). The majority of the factors resembled those that emerged in the immigrant analyses. For example, the first six factors reflected Discrimination Stress (11 items), Marital Stress (10 items), Health Stress (6 items), Family-Related Stress (8 items), Parental Stress (8 items), and Occupation Stress (6 items). Unlike the immigrant version, the US-born Discrimination-Stress factor reflected discrimination based on ethnicity and did not include items related to immigrant-based discrimination. The US-born Family-Related Stress factor included items reflecting physical violence and not isolation from family. In addition to the Occupation-Stress factor that assessed problems at work, in the US-born sample an additional Unemployment and Economic Stress factor emerged (4 items). This factor reflected experience of job loss and problems providing financially for one's family. The final factor on Family and Religion included three items related to family members divorcing or losing their religion and religious traditions being ignored.

US-Born HSI2 Reliability

The US-Born HSI2 subscales demonstrated respectable to very good reliability (DeVellis, 2012), with the exception of the final subscale related to Family Divorce and Religion ($\alpha = .57$). The items in this subscale had relatively low item-total correlations ($.28 < r < .45$), and this subscale was dropped from the final US-born measure. In addition, although the item "I have thought that my children were not receiving a good education" loaded onto the Occupation Stress factor (item-total correlation $r = .33$), it had a stronger item-total correlation with the Parental Stress subscale ($r = .45$). Given these item-total correlations and the item content, this item was included in the Parent Stress subscale in the final measure. Removing the item from the Occupation Stress subscale and adding it to the Parent Stress subscale improved the internal consistency of both subscales. The final version of the US-born HSI2 consisted of 53 items. The total HSI2 US-born Version Scale had a very high Cronbach's alpha of ($\alpha = .93$). The descriptive statistics for the final US-born HSI2 scale and the seven subscales are presented in Table 5. The subscales of the US-born version of the HSI2 were moderately correlated ($.23 < r < .57$).

Concurrent Validity

Pearson correlation coefficients were calculated to examine the relationship between the HSI2 total appraisal scores (the mean of all HSI2 items), HSI2 appraisal subscales, and scores on the BSI and PHQ (Table 6). The Immigrant HSI2 total appraisal score was strongly positively correlated with all of the indices for psychological distress on both the BSI and the PHQ ($.40 < r < .58$). Participants who reported higher levels of stress on the Immigrant HSI2 also reported higher levels of depression, anxiety, somatization, and

interpersonal sensitivity. Similarly, the Immigrant version of the HSI2 subscales also demonstrated strong-to-moderate positive correlations with psychological distress. The Discrimination Stress, Family Stress, and Occupation and Economic Stress HSI2 immigrant subscales were most strongly positively associated with the depression and anxiety dimensions of the BSI (.41 < r < .49). Marital Stress, Discrimination Stress, and Pre-migration Stress were most strongly related with feelings of inadequacy and interpersonal discomfort assessed by the BSI interpersonal sensitivity dimension (.40 < r < .45).

The US-born version of the HSI2 also demonstrated evidence of concurrent validity (Table 6). The total appraisal score was moderately-to-strongly correlated with all the measures of psychological distress. The Family Stress subscale and the Occupation and Economic Stress subscale were consistently most strongly associated with measures of depression, anxiety, somatization, and interpersonal sensitivity (.28 < r < .39). In addition, consistent with the immigrant sample, Discrimination Stress was among the HSI2 dimensions most strongly associated with interpersonal sensitivity ($r = .38$).

Discussion

This study reports on the development of the revised Hispanic Stress Inventory (HSI2). The original HSI has proven to be a useful tool for both researchers and practitioners, although it was published more than two decades ago. While the HSI scale is still in use today, there have been dramatic changes in the growth of the Hispanic population over this time, prompted by continued immigration, which has been met by an increasing anti-immigrant sentiment in many communities across the United States (APA Presidential Task Force on Immigration, 2012; Gordon & Raja, 2012). Further, events surrounding 9/11, including an increased sensitivity to U.S. Mexico border security, has also fueled anti-immigrant sentiment and associated fears of deportation in some immigrant communities. Our determination to revise the HSI was also based on the belief that the types and nature of stressors experienced by Hispanics due to their immigrant and minority status have changed over the course of time. For example, Cavazos-Rehg and colleagues (2006) recognized the need to revise the HSI because of societal changes that have recently impacted Hispanic immigrants and which the original HSI may no longer be sensitive to. Accurate clinical assessment, as well as valid research studies, depends on the availability of culturally sensitive tools and measures such as the HSI2.

The processes followed in the development of the new revised HSI2 paralleled the procedures in the development of the original HSI scale. The revised scale overcomes many of the limitations of the original scale that was developed in a single community (Los Angeles) and included primarily Mexican-origin individuals. In the revision leading to the HSI2, research was conducted in four large and diverse Latino communities across the US – Los Angeles, El Paso, Miami, and Boston/Lawrence.

Like the original HSI development, in the HSI2 revision separate scales were identified for immigrants and for US-born later generation Hispanics. Although there was some overlap in items from the original scales, the revised HSI2 scales are distinct from the original scales. In the original immigrant version of the HSI five stress factors emerged: Occupational/

Economic, Parental, Marital, Immigrant, and Cultural/Family Conflict. However, in the revised HSI2, ten stress factors emerged: Parental, Occupational/Economic, Marital, Discrimination, Immigrant-related, Marital Acculturation Gap, Health, Language-related, Pre-Migration, and Family Related. The revised scale highlights many of the changes that have occurred since the development of the original HSI, and offers a deeper and more refined assessment of the subtle areas in which cultural stressors appear and impact wide cross sections of Hispanic adults. For example, there has been an almost constant barrage of anti-immigrant sentiment since the late 1990s that we believe contributed to the Discrimination Stress scale with items such as “I was called names and treated badly because I am an immigrant,” “I experienced discrimination because of the color of my skin.” Many immigrants have experienced racial profiling by police, the passage of local and state anti-immigrant laws in housing and employment, and harassment and violence at the hands of majority-group members (APA Presidential Task Force on Immigration, 2012). Also much more salient in the current scale was stress reported by informants caused by possible differences in the process of acculturation between men and women (e.g., “My spouse and I disagree about going back to our home country,” “My spouse has not been adapting to American life,” and “My spouse has expected me to be more traditional in our relationship”). It is important to emphasize that married Hispanic couples experience the full range of psychosocial stressors that all married couples irrespective of ethnicity or culture experience (e.g., conflicts in relationship dynamics, financial difficulties, etc.). However, acculturation stress may impact Hispanic married couples in unique ways that make coping more difficult because the usual cultural and social supports (e.g., extended family, Catholic Church) that are available to couples in the home country may not be readily available in the adopted country. Thus, the added emotional burden of acculturation stress on less acculturated – to the U.S. culture - Hispanics may significantly disrupt their family life and further fracture their connection with the home culture (Padilla & Borrero, 2006).

Interestingly, in the focus groups leading to the item development for the original HSI there was little mention of the conditions in the home country that motivated immigration, however, in the revision, a scale for Pre-Migration stress emerged that addresses issues of poverty, poor health care, and lack of educational opportunities. Another difference between the original and the revised HSI is the stress scale around issues of adequate health care (e.g., “I could not pay for my medical care,” and “I had to wait a long time before I received health treatment”). Two possibilities may explain the importance of health care for immigrants. First, since the development of the original HSI, public medical care for undocumented immigrants has become virtually impossible except in the case of emergency care. Denial of medical care for the uninsured and undocumented has been a part of much anti-immigrant legislation in the past two decades. Secondly, since the passage of the Affordable Care Act in 2010 which offers health care coverage for all Americans, immigrants may have been sensitized to their own lack of quality health care because of the cost of health insurance (Krogstad & Lopez, 2014; Sanchez, Medeiros, & Sanchez-Youngman, 2012). Subsequently, health care issues emerged as a major stressor for immigrants.

The original US-born version of the HSI was composed of four factors: Marital, Occupational/Economic, Parental, and Cultural/Family Conflict stress. In the revised HSI

scale seven factors emerged including new scales for Discrimination and Health likely due to the same reasons as their appearance in the Immigrant version of the HSI. Another new scale that resulted from the revision was stress related to Unemployment and Economic Stress (e.g., “I lost my job,” and “I could not find a job”). Hispanics have long had higher rates of unemployment than non-Hispanic Whites, however, the economic recession that began in 2007 had a devastating impact on Latinos (immigrants and later generation Hispanics) in the workforce with the collapse of the construction industry and other service-sector jobs (Kochhar, 2009). The recession likely had an impact on participants of our focus groups, and as a consequence unemployment became a salient theme resulting in items related to unemployment stress.

The results of the factor analyses that resulted in new versions of the HSI2 for immigrants and US-born Hispanics point strongly to the need to continually revise stress assessment and diagnostic instruments that reflect changes in the socio-cultural-political climate of Hispanics and members of other ethnic minority groups that are targets of frequent negative profiling and anti-immigrant policies. Items that capture this type of stress experience include: “I was called names and treated badly because I am an immigrant.” and “Because of my poor English people treat me badly.”

Both versions of the HSI2 were shown to possess more than adequate estimates of both reliability and validity. The importance of this from a psychometric perspective was that reliability and validity were achieved with a much more diverse Hispanic sample than was true of the original scale which was developed in a single location (Los Angeles) and primarily with a Mexican-heritage population. The HSI2 has greater utility and generalizability because it can be used with diverse Hispanic populations with both community and clinical samples for research and/or diagnostic purposes.

The current study is not without limitations. For the qualitative item development study, focus groups were only recruited on the east and west coasts in major urban centers. Items in the HSI2 may not reflect stressors common to Hispanics who reside in other regions of the country, or stressors common to more rural Hispanic populations. Additionally, the US-born and foreign-born samples were found to significantly differ on key demographic variables. For example, in comparison to the US-born sample, the immigrant participants were older, had fewer years of education, and were more likely to be married and have children. These demographic differences may have contributed to differences in factor structures of the two versions of the HSI2. Further, while the final version of the US-born HSI2 includes subscales related to both marital and parental stress, it is possible that a more diverse US-born sample (e.g. more married participants) would have yielded different item content for these two subscales. For example, consistent with prior research, in one study conducted with Latino families (Barrett & Turner, 2005) findings reveal higher levels of depressive symptoms among those from stepfamilies, single parent families, and single parent families with other relatives present, compared with mother-father families. As a result of low reliability found one of our research scales, Divorce and Religion stress, it was eliminated from the final factor solution. Culturally sensitive measures of stress related to divorce, separation and then interplay of these events with acculturation differences within marital couples are still needed despite the poor psychometrics for this factor which we found in our

study. Finally, while the original HSI immigrant version consisted of 73 items, the HSI2 immigrant scale has been increased to 90 items. While the new version covers a broader range of stressors, the increased administration time could be prohibitive in some contexts. Research is needed to explore the utility of short-form versions of both the immigrant and US-born measures. Further research is also needed to determine the utility of the HSI2 when used with individuals who may be considered 1.5 generation immigrants who have lived most all of their lives in the U.S.

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Table 1

Participant Demographics

Variable	Immigrants (<i>n</i> = 941)	US Born (<i>n</i> = 575)
Mean Age (SD)	48.1yrs (18.6)	29.0yrs (13.9)
Sex of Subject (%)		
Male	36.1	53.6
Female	63.9	46.4
Data collection site (%)		
Los Angeles, CA	19.0	37.2
El Paso, TX	26.9	21.4
Miami, FL	29.4	16.4
Lawrence, MA	26.9	25.0
National origin (%)		
Mexican / Mexican American	36.3	53.6
Central American	8.7	4.5
South American	6.2	2.3
Cuban	18.5	8.4
Puerto Rican	3.6	19.8
Dominican Republican	18.8	5.4
Primary language spoken at home (%)		
English	3.4	29.0
Spanish	73.2	26.1
Both English and Spanish	23.2	44.8
Marital Status (%)		
Single	27.7	66.8
Married	47.5	18.3
Divorced	8.3	3.5
Separated	5.6	2.8
Living with someone	3.7	5.6
Widowed	7.1	2.3
Have Children (%)		
Yes	80.1	40.1
Mean Years of Education (SD)	10.9yrs (4.1)	12.5yrs (2.3)
Work Situation (%)		
Employed, full time	33.3	33.6
Employed, part time	11.6	19.0
Unemployed, looking for work	11.0	12.9
Student	10.8	23.2
Disabled	10.5	4.7
Retired	18.0	4.5
Other	4.9	2.1
Household income (%)		

Variable	Immigrants (<i>n</i> = 941)	US Born (<i>n</i> = 575)
\$0–\$15,000	42.7	33.8
\$15,001–\$25,000	24.5	19.5
\$25,001–\$35,000	13.5	15.4
\$35,001–\$45,000	9.9	14.2
Over \$45,001	9.4	17.2
Generation (%)		
1 st	100	--
2 nd	--	75.8
3 rd	--	7.5
Unsure or Other	--	16.8

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Table 2

Factor Loadings of Immigrant Version of the Hispanic Stress Inventory-2

	1	2	3	4	5	6	7	8	9	10
1. Parental Stress										
a. My children have not respected my authority the way they should.	.71	.13	-.09	.03	-.03	-.10	-.05	.03	-.03	.24
b. I have thought that my children used illegal drugs.	.71	-.14	-.02	.00	.00	-.02	.05	-.13	.05	.19
c. My children have been influenced by bad friends.	.71	.09	.00	-.04	-.01	-.03	.02	-.13	.09	.00
d. My children have talked about leaving home.	.69	.09	-.12	-.09	.01	.18	-.11	.01	.06	.13
e. My children have received bad school reports (or bad grades).	.63	.10	-.01	-.05	.15	.05	-.15	.08	-.13	.12
f. I had difficulties talking about drugs with my child.	.62	-.13	.05	.01	-.03	-.03	.07	.02	.05	-.06
g. I had problems with discipline or setting rules for my child.	.62	.05	.18	.01	.04	-.10	-.02	.07	.02	-.07
h. I have seen my son/daughter behave delinquently.	.61	-.06	.01	.11	.02	-.07	-.03	.00	-.15	.26
i. I had difficulties motivating my child about school.	.56	-.04	-.01	.06	.01	.05	.08	.00	.09	.04
j. My child broke our rules about being out at night or dating.	.53	.00	.07	.15	-.03	.05	-.12	.03	.07	-.06
k. I have thought that my children wanted their independence before they are ready.	.52	.00	.08	-.07	.04	-.04	.17	.05	.15	-.16
2. Occupation and Economic Stress										
a. Because I am Hispanic/Latino it has been hard to get promotions or salary raises.	.05	.70	.02	.17	-.02	-.13	.00	.06	-.06	-.10
b. Because I am Hispanic/Latino I have been expected to work harder.	-.04	.69	-.02	.24	.01	-.04	-.04	.04	-.07	-.10
c. Because I am Hispanic/Latino, I have been paid less than others.	.05	.67	-.03	.24	.07	-.09	-.05	.01	-.07	-.11
d. I have felt that due to work, the rhythm of my life has changed.	-.07	.67	-.04	-.03	-.07	.10	-.02	-.13	.19	.16
e. I have been forced to accept low paying jobs.	.00	.65	-.02	-.01	.05	-.13	.06	.07	.02	.22
f. I have put pressure on myself to provide more things for my family.	.02	.61	.05	-.13	-.02	.06	.03	.01	.04	.24
g. Because of the importance of getting ahead in my job I had to compete with others.	.05	.57	-.03	-.01	-.05	.11	.06	-.04	-.05	.15
h. I did not get the job I wanted because I did not have the proper skills.	.04	.49	.05	-.05	.03	-.03	.12	.18	-.01	-.05
i. Both my spouse and I have had to work.	.02	.47	.09	-.12	.04	.23	.07	-.02	-.06	.05
j. I have been criticized about my work.	.01	.45	.00	.17	.06	.06	.01	-.12	-.07	.14
k. The pressures to achieve economic success have made me stop going to church.	.00	.45	.00	.00	-.02	.27	-.15	-.13	.16	.21
3. Marital Stress										
l. Others have been too worried about the amount and quality of work I do.	.03	.43	.04	.12	-.06	.07	.14	-.12	-.07	.02

	1	2	3	4	5	6	7	8	9	10
a. There was a lack of respect in our marital relationship.	.05	-.06	.76	.02	.04	-.14	.03	.00	.05	.05
b. My spouse and I talked about divorce.	-.02	.06	.75	-.04	.08	.05	-.05	-.04	-.03	-.04
c. My spouse acted too Machista.	-.01	-.06	.73	.08	.01	-.03	.02	.02	-.02	.01
d. There is a lack of trust between my spouse and me.	.00	.03	.73	-.02	-.03	.08	.03	-.03	-.06	.00
e. My spouse and I experienced infidelity.	.06	-.06	.65	-.07	.07	.02	-.05	-.06	.08	.02
f. I have felt that my spouse and I have not been able to communicate.	.05	.22	.53	-.01	-.04	.15	.03	-.10	-.08	-.01
g. My spouse and I have different personalities.	.00	.14	.53	-.03	-.05	.10	-.03	.10	.03	.01
h. My spouse and I disagreed about choosing our friends.	-.08	.02	.49	.12	-.02	.25	.02	.05	-.02	.03
i. Men in our family are too macho (jealous of women's accomplishments).	.03	-.10	.38	.02	-.07	-.01	.09	.00	.28	.14
j. I have questioned the idea that "marriage is forever"	-.01	.23	.35	-.05	-.03	.15	.04	.04	.07	.10
k. There was domestic violence in our home.	.13	.02	.34	.18	-.07	-.14	.08	-.09	.16	.12
l. My spouse has been drinking too much alcohol.	.16	-.14	.29	.06	.06	.27	-.14	.00	-.04	.18
4. Discrimination Stress										
a. I was called names and treated badly because I am an immigrant.	.05	-.01	.02	.68	-.02	-.01	.00	-.12	.07	.02
b. Because I am Hispanic/Latino, I was treated like a slave.	-.01	.06	.01	.65	.05	.02	-.04	-.01	.01	-.04
c. I have been discriminated against.	-.02	.13	.00	.65	.01	.01	-.10	-.02	-.01	.03
d. I have felt unaccepted by others due to my Hispanic culture.	.05	-.08	.02	.64	.02	.12	-.05	.01	.01	.07
e. I was treated "less than" other Americans because I am Hispanic/Latino.	-.10	.09	.07	.58	.02	-.02	.06	.11	-.02	-.06
f. I experienced discrimination because of the color of my skin.	.06	.02	-.02	.57	-.02	.09	.04	-.10	.00	.01
g. Because I am Hispanic/Latino, I was given the lowest position at work.	.03	.07	.02	.51	.13	-.04	-.02	.09	.05	-.03
h. Members of my family have experienced discrimination.	-.01	.06	-.11	.48	-.02	.07	.11	-.07	.22	.06
i. Because of my poor English people treat me badly.	-.09	.10	.05	.46	.00	-.06	.02	.24	.06	.04
j. I could not pay for mental health care. ^a	.13	-.22	.01	.44	-.03	.10	.30	-.04	-.09	.17
k. I have seen friends treated badly because they are Hispanics/Latinos.	.10	.23	.02	.35	-.08	-.08	-.02	.13	-.01	.10
5. Immigration-Related Stress										
a. My legal status has been a problem in getting a good job.	-.01	.03	.02	.02	.02	.86	.00	-.05	-.03	.07
b. I feared the consequences of deportation.	.10	-.06	.00	-.06	.77	.02	-.04	.03	.01	.01
c. I have thought that if I went to a social or government agency I would be deported.	.04	-.06	-.04	.04	.75	-.05	.03	.04	-.04	.01
d. Because I did not have a SSN, I could not apply for or find good employment.	.00	.00	-.01	-.06	.72	.01	.07	-.01	.06	-.07
e. My legal status has limited my contact with family and friends.	.03	-.09	.02	-.02	.63	.06	-.01	.03	.01	.14
f. I have been questioned about my legal status.	.02	.03	.12	.05	.51	-.01	.05	.03	-.04	.07

	1	2	3	4	5	6	7	8	9	10
g. Since I did not have legal documentation, I was overworked at my job.	-.05	.13	-.08	.28	.50	.06	.00	-.10	.04	-.07
h. Because of the lack of legal documentation, I could not get quality health care.	-.03	-.02	.04	.04	.49	.00	.18	-.09	.08	-.03
i. Because I did not have a driver's license, it was difficult to get to and from work.	-.13	.24	-.04	.04	.42	.03	.06	.04	.12	-.03
6. Marital Acculturation Gap Stress										
a. My spouse and I disagreed about going back to our home country.	.07	-.01	.04	.01	.09	.63	.01	.06	.06	-.10
b. It has been difficult for me to understand why my spouse wishes to be more Americanized.	.01	-.11	-.09	.06	.06	.59	.04	.16	-.10	.09
c. It has been difficult for my spouse and me to combine Hispanic/Latino and American culture.	.08	.03	-.04	-.01	-.06	.57	.03	.11	.04	.04
d. There has been cultural conflict in my marriage.	-.05	.03	.11	.07	.01	.56	-.13	.01	.02	.20
e. My spouse and I disagreed on where we should live.	-.01	.04	.13	.00	-.04	.54	.07	.04	-.01	-.09
f. My spouse has not been adapting to American life.	-.02	.10	.01	-.02	.02	.53	-.08	.03	-.04	.08
g. My spouse and I have disagreed on which language is spoken by our children at home.	.00	-.01	-.02	.00	.11	.53	.08	-.05	.06	.08
h. My spouse and I disagreed about having children.	-.12	-.04	.23	.05	-.03	.50	.00	.07	.04	.01
i. My spouse has expected me to be more traditional in our relationship.	.21	.12	.09	.02	-.05	.40	.00	-.10	-.01	-.08
7. Health Stress										
a. I did not have health insurance to cover my illness.	-.01	.08	.01	-.04	.01	-.09	.81	.05	-.12	.11
b. I had to wait for a long time before I received health treatment.	-.02	.03	-.04	-.02	.00	-.05	.75	-.02	.04	.11
c. I could not pay for my medical care.	-.01	.05	.11	-.06	.07	-.02	.67	-.03	.06	-.01
d. I could not get dental insurance.	-.02	.07	.09	.01	.10	-.06	.62	.02	-.12	.14
e. We did not have health insurance to cover family medical emergencies.	-.01	.03	.00	-.05	.00	.01	.60	.06	.16	-.01
f. I did not have access to high quality health care.	-.03	-.02	-.04	.11	.01	.09	.55	.00	.11	-.04
g. I had to use home remedies to take care of myself.	-.04	.01	-.05	.03	.08	.10	.45	.02	.26	-.01
h. Because of language differences, I did not get the medical care I needed.	.02	.00	-.08	.21	-.06	.13	.44	.13	-.04	.01
8. Language-Related Stress										
a. Because of language barriers, I could not communicate with others.	-.02	-.03	-.01	.01	-.04	.05	-.01	.81	.02	.04
b. Because I do not know enough English, it has been difficult for me to deal with day to day situations.	-.04	-.16	-.04	.01	.01	.14	.00	.77	-.06	.04
c. Because I do not know enough English, it has been difficult for me to interact with others.	.07	.00	-.05	.00	.01	.03	.03	.76	-.03	-.02
d. I have felt pressured to learn English.	-.03	.00	.07	-.12	.05	-.01	.03	.61	.12	.02
e. Members of my family cannot communicate in public places because of language differences.	.00	.11	-.08	-.02	-.11	.06	.10	.48	.22	.08
f. Not knowing English made it difficult to find a job.	-.02	.19	-.03	.00	.15	.03	.11	.38	.08	.02
9. Pre-Migration Stress										
a. My family was exposed to poverty in my home country.	-.02	.04	.08	.09	.04	-.17	-.15	.20	.67	.06

	1	2	3	4	5	6	7	8	9	10
b. I did not get good health care in my home country.	.02	-.05	.00	-.03	.01	.09	.10	-.05	.66	-.15
c. I was forced to leave my home country due to poverty.	-.03	.02	.07	.00	.03	-.05	-.11	.23	.62	.05
d. Members of my family could not get good health care in my home country.	.04	-.07	.01	.04	.11	.06	-.04	-.03	.62	-.10
e. There was not enough money for basic things like food or clothing in my home country.	.06	.01	.05	.01	-.05	-.04	-.01	.28	.54	.06
f. I lacked educational opportunities in my home country.	.05	-.04	.00	.20	.03	-.03	-.01	.17	.52	-.02
g. A member of my family had a major health problem. ^a	.05	.00	.02	-.04	-.04	-.02	.10	-.05	.50	.10
h. Members of my family were divorced. ^a	-.01	-.01	-.01	.00	-.05	.15	.07	-.10	.42	.21
i. I moved from a small town to the city after coming to the US. ^a	-.04	.04	-.08	.11	.10	.12	.14	-.11	.35	.00
10. Family-Related Stress										
a. My personal goals have been in conflict with family goals.	.11	.15	.06	.08	.05	.04	.15	.02	-.10	.46
b. Because of the lack of family unity, c. I have felt lonely and isolated.	.09	.10	.03	.11	-.01	.07	.04	.27	-.04	.44
d. I had serious arguments with family members.	.21	.09	.12	-.03	.04	.04	.06	-.08	.06	.43
e. The need for members of my family to achieve economically has caused my family to drift apart.	-.05	.24	.03	-.08	-.02	.18	.08	.06	.12	.37
f. I have felt as though I would never see some family members ever again.	.09	.15	-.08	-.03	.11	.05	.08	.05	.24	.32

^aThese items were deleted from the scale. Factor loading greater than .31 in boldface type.

Table 3
 Summary of Coefficient Alphas, Means, Standard Deviations and Inter-correlations for Scores on the Immigrant Version of Hispanic Stress Inventory-2 Subscales

Scale	α	Items	Sum (SD)	M (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
HSI2 Total Stress-Appraisal Score	.97	90	121.61 (40.98)	1.35 (0.46)										
1. Parental	.91	13	16.23 (7.19)	1.25 (0.55)	--									
2. Occupation and Economic	.89	12	17.47 (7.87)	1.46 (0.66)	.56	--								
3. Marital	.89	12	12.48 (5.07)	1.25 (0.51)	.48	.59	--							
4. Discrimination	.87	10	15.70 (7.10)	1.32 (0.63)	.60	.56	.45	--						
5. Immigration	.88	9	11.47 (5.58)	1.27 (0.62)	.38	.42	.48	.33	--					
6. Marital Acculturation Gap	.84	9	10.48 (3.70)	1.16 (0.41)	.53	.55	.44	.62	.37	--				
7. Health	.87	8	11.63 (6.13)	1.45 (0.77)	.42	.55	.48	.45	.49	.50	--			
8. Language	.85	6	9.01 (4.94)	1.50 (0.82)	.44	.45	.51	.47	.44	.45	.50	--		
9. Pre-migration	.85	6	9.71 (5.14)	1.62 (0.86)	.32	.44	.42	.33	.38	.37	.48	.57	--	
10. Family	.74	5	7.36 (3.54)	1.49 (0.73)	.52	.57	.43	.52	.36	.53	.48	.43	.37	--

Note. All correlations significant at $p < .001$.

Table 4

Factor Loadings of US-Born Version of the Hispanic Stress Inventory-2

	1	2	3	4	5	6	7	8
1. Discrimination Stress								
a. I have been discriminated against.	.83	.02	-.05	.08	-.05	-.07	-.02	-.11
b. I experienced discrimination because of the color of my skin.	.79	-.02	-.02	.01	.02	-.08	.07	-.06
c. I was treated "less than" other Americans because I am Hispanic/Latino.	.71	.01	-.12	-.06	-.04	.05	.13	.06
d. I was discriminated against because of my customs and cultural celebrations.	.65	.02	-.04	.14	-.04	.01	-.07	-.07
e. I have felt unaccepted by others due to my Hispanic culture.	.62	-.09	.07	-.11	.00	.04	-.01	.21
f. Members of my family have experienced discrimination.	.55	.00	.18	.13	.06	-.05	-.02	.09
g. I was discriminated against in the health clinic or hospital.	.53	.06	.12	-.15	-.05	-.04	.20	-.16
h. I have seen friends treated badly because they are Hispanics/Latinos	.52	-.02	.06	.06	.00	.06	-.04	.20
i. Because I am Hispanic/Latino, I have been paid less than others.	.49	.00	.10	-.02	.03	.09	.21	.09
j. Because I am Hispanic/Latino I was not expected to go to college.	.44	.08	.00	.05	.02	.06	-.14	.27
k. I was arrested.	.35	.09	-.11	.06	-.03	.03	.13	-.01
2. Marital Stress								
a. I have felt that my spouse and I have not been able to communicate.	.05	.79	-.04	-.06	.08	.10	.01	-.03
b. There is a lack of trust between my spouse and me.	.01	.76	.02	-.06	.01	.04	.03	-.04
c. There was a lack of respect in our marital relationship.	.02	.70	.06	.02	-.06	-.17	-.14	.11
d. My spouse and I have different personalities.	-.02	.68	-.01	.05	-.11	.19	-.12	-.02
e. My spouse and I talked about divorce.	-.07	.65	.05	.07	-.04	-.02	-.01	.07
f. My spouse and I experienced infidelity.	.05	.55	.06	.00	.18	-.27	.02	.14
g. My spouse and I disagreed about choosing our friends.	.13	.50	-.17	-.03	-.07	.09	.14	.09
h. My spouse has been drinking too much alcohol.	-.12	.48	-.01	.15	.01	.09	.08	-.13
i. My spouse and I disagreed on where we should live.	.23	.45	-.04	-.05	-.03	.03	.06	-.17
j. My spouse and I have disagreed on how to bring up our children.	-.08	.38	.00	.10	.20	.00	.15	-.16
3. Health Stress								
a. I could not pay for my medical care.	.05	-.05	.79	.08	-.04	-.05	.00	.02
b. We did not have health insurance to cover family insurance.	.16	.04	.72	.04	.01	-.10	-.05	-.08
c. I did not have access to high quality health care.	.13	-.05	.71	.02	-.02	.01	-.07	.01
d. I did not have health insurance to cover my illness.	.00	-.01	.71	-.05	-.04	.01	.16	.11

	1	2	3	4	5	6	7	8
e. I had to wait for a long time before I received health treatment.	-.14	-.01	.59	.05	-.07	.12	.13	.13
f. I could not get dental insurance.	-.21	.08	.58	.00	-.07	.07	.26	.12
4. Family-Related Stress								
a. I had serious arguments with family members.	.02	-.04	-.01	.78	-.06	.04	.04	-.11
b. There have been conflicts among members of my family.	-.02	.08	.05	.66	.07	.12	-.04	.09
c. There has been physical violence among members of my family.	.04	-.02	-.04	.65	.11	-.11	.08	.13
d. There was domestic violence in our home.	-.01	.12	.03	.58	.02	-.22	.07	.00
e. I have been around too much violence.	.01	.00	-.09	.52	-.07	.18	.18	-.02
f. My personal goals have been in conflict with family goals.	.19	-.13	.03	.51	.02	.18	-.04	-.06
g. Men in our family are too macho (jealous of women's accomplishments).	.02	.10	.21	.40	-.06	-.03	-.22	.18
h. There was no positive male figure in our family.	-.03	.05	.15	.33	-.03	.14	-.02	.19
5. Parental Stress								
a. I have thought that my children used illegal drugs.	.02	.02	-.24	.07	.71	.08	.06	.07
b. My children have been drinking alcohol.	-.07	.08	-.13	.11	.67	-.11	-.03	.24
c. My children have talked about leaving home.	-.03	-.14	-.16	.10	.65	.03	-.01	.10
d. My son or daughter became sexually active.	-.08	.04	.06	-.05	.65	-.17	.07	.13
e. I have thought that my children wanted their independence before they are ready.	.06	.04	.14	-.10	.65	-.07	.03	.06
f. I had difficulties motivating my child about school.	.03	-.07	.22	-.13	.50	.09	.02	-.14
g. My children have received bad school reports (or bad grades).	-.03	.02	.08	.06	.48	.31	.01	-.26
h. I had arguments with my child about cultural values, customs, and morals.	.13	.20	.23	-.12	.31	.23	-.11	-.07
6. Occupation Stress								
a. Others have been too worried about the amount and quality of work I do.	.01	-.01	.00	-.07	-.07	.70	.01	.28
b. I have been criticized about my work.	.00	.14	-.03	.01	-.07	.67	.07	.16
c. I have had to watch the quality of my work so others do not think I am lazy.	.07	-.05	-.03	.15	-.02	.55	-.02	.08
d. My boss has thought of me as being too passive.	-.02	.02	-.01	.02	-.01	.55	-.09	.05
e. I have thought that my children were not receiving a good education. ^a	-.04	-.02	.24	-.01	.26	.42	-.13	-.18
f. Because of the importance of getting ahead in my job I had to compete with others.	.16	.00	.15	-.08	.05	.36	.05	.28
7. Unemployment and Economic Stress								
a. I lost my job.	.11	.01	.04	.00	.12	-.05	.68	-.02
b. I could not find a job.	.16	-.04	.23	.11	-.03	-.19	.62	-.02
c. I have been forced to accept low paying jobs.	.21	.02	.05	-.01	.01	.19	.39	.15

	1	2	3	4	5	6	7	8
d. My income has not been sufficient to support my family or myself.	.12	.04	.12	.20	-.01	.14	.36	-.07
8. Family and Religion								
a. I have seen that traditional religious customs are ignored. ^a	.06	-.03	.01	-.02	.08	.19	-.03	.47
b. Members of my family were divorced. ^a	-.03	.02	.09	.11	.05	.04	.01	.46
c. I have felt that members of my family are losing their religion. ^a	.07	-.05	.09	.02	.14	.18	.05	.46

^aThese items were deleted from the scale. Factor loading greater than .31 in boldface type.

Summary of Coefficient Alphas, Means and Standard Deviations for Scores on the US-Born Version of Hispanic Stress Inventory-2

Table 5

Scale	α	Items	Sum (SD)	M (SD)	1.	2.	3.	4.	5.	6.	7.
HSI2 Total Stress-Appraisal Score	.93	53	68.72 (20.91)	1.30 (0.39)							
1. Discrimination	.87	11	14.53 (6.57)	1.32 (0.60)	--						
2. Marital	.85	10	11.91 (4.83)	1.19 (0.48)	.30	--					
3. Health	.86	6	7.75 (4.23)	1.29 (0.71)	.49	.31	--				
4. Family	.82	8	11.78 (5.38)	1.47 (0.67)	.39	.33	.36	--			
5. Parental	.82	9	10.01 (3.15)	1.11 (0.35)	.23	.42	.32	.23	--		
6. Occupation	.74	5	6.34 (2.65)	1.27 (0.53)	.43	.29	.40	.37	.31	--	
7. Unemployment and Economic	.76	4	6.42 (3.75)	1.61 (0.94)	.57	.33	.50	.43	.29	.43	--

Note. All correlations significant at $p < .001$.

Summary of Intercorrelations of the Hispanic Stress Inventory-2, the Brief Symptom Inventory (BSI) and the Patient Health Questionnaire (PHQ9)

Table 6

Scale	BSI GSI	BSI DEP	BSI ANX	BSI SOM	BSI I-S	BSI PHOB	PHQ9
Immigrant Sample							
HSI2 Total stress – Appraisal score	.58	.54	.51	.43	.50	.40	.54
Parental	.45	.41	.40	.30	.37	.30	.39
Occupation and Economic	.47	.45	.42	.30	.40	.31	.43
Marital	.47	.42	.39	.32	.45	.38	.42
Discrimination	.51	.49	.43	.38	.43	.31	.45
Immigration	.28	.27	.24	.19	.24	.22	.27
Marital Acculturation Gap	.37	.34	.32	.29	.29	.25	.36
Health	.41	.39	.38	.35	.31	.30	.38
Language	.34	.29	.31	.30	.28	.25	.34
Pre-migration	.39	.37	.34	.30	.40	.25	.43
Family	.47	.47	.41	.36	.37	.32	.43
US-Born Sample							
HSI2 Total stress – Appraisal score	.44	.34	.39	.39	.45	.31	.38
Discrimination	.28	.22	.24	.26	.38	.20	.22
Marital	.28	.20	.25	.25	.26	.20	.25
Health	.25	.16	.21	.26	.26	.16	.21
Family	.42	.36	.39	.33	.38	.31	.37
Parental	.20	.14	.18	.23	.15	.16	.21
Occupation	.39	.28	.37	.32	.35	.28	.32
Unemployment and Economic	.28	.26	.25	.21	.28	.16	.25

Note. Correlations above an absolute value of .14 are significant at $p < .001$. Correlations with an absolute value of .14 are significant at $p < .01$.

BSI = Brief Symptom Inventory; GSI = Global Severity Index; DEP = Depression; ANX = Anxiety; SOM = Somatization; I-S = Interpersonal Sensitivity; PHOB = Phobic Anxiety; PHQ9 = Patient Health Questionnaire-9.