Psychological Assessment:
A Journal of Consulting and Clinical Psychology
1991, Vol. 3, No. 3, 438-447

1040-3590/91/$3.00

The Hispanic Stress Inventory: A Culturally Relevant Approach To Psychosocial Assessment

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A 4-phase project was conducted to develop a culturally appropriate measure of psychosocial stress, the Hispanic Stress Inventory (HSI). Phase 1 involved the collection of open-ended interview data ($N = 105$) to generate a set of meaningful psychosocial stress items. Phase 2 examined the construct validity of the HSI items by means of consensus ratings of expert judges along 6 conceptual categories. Phase 3 ($N = 493$) involved the use of factor analytic procedures to determine the underlying scale structure of the HSI, both for a Latin American immigrant and a U.S.-born (Mexican American) sample. This procedure resulted in an Immigrant Version of the HSI comprised of 73 items and 5 distinct sub-scales, as well as a U.S.-born version of the HSI comprised 59 items and 4 distinct subscales. In Phase 4, reliability estimates for the HSI were conducted by means of both internal consistency and a small test–retest study ($N = 35$). Both procedures yielded high reliability coefficients.

Clinical research and service delivery conducted with Hispanic Americans has long suffered from the lack of adequate assessment instruments (Cervantes & Castro, 1985). The lack of normative baseline information for this growing population has raised concern regarding the use of current assessment tools for use with Hispanics. The *Diagnostic and Statistical Manual of Mental Disorders*–Revised (*DSM–III–R*; American Psychiatric Association, 1987) provides a succinct description of stress-related disorders within the classification of Adjustment Disorder. Clinical experience with Hispanic adults suggests that this description may be useful in conceptualizing and assessing various forms of psychopathology among ethnic minority clients. This disorder is described as a "maladaptive reaction to an identifiable psychosocial stressor, or stressors, that occurs within three months after the onset of the stressor and has persisted no longer than six months" (p. 329). Interestingly, an adjustment disorder is seen as a partial syndrome of more major psychological disturbances and can be the result of stressors which are continuous and which may affect "a group or community" (p. 329). For these reasons, it is essential to begin to understand the stressful life experiences of Hispanics within the context of well-accepted nosologic systems. It appears that the *DSM–III–R* may provide an acceptable framework for viewing psychosocial stress in the Hispanic community and the effect that these stress experiences have on the individual's mental health.

Hispanic researchers and clinicians have long held that ethnic minority status is associated with psychosocial distress (Padilla & Ruiz, 1973). Also, impressionistic and clinical reports (e.g., Vargas-Willis & Cervantes, 1987) have identified problems associated with linguistic differences, changing personal and familial values, changing role expectations, lowered socioeconomic conditions, immigrant status, and perceived discrimination as stressful events. Although these psychosocial stressors often become the focus of effective provision of clinical services for Hispanics, there remains a lack of empirically based information that documents the presence of these culturally relevant stressors (Cervantes & Castro, 1985). Without such information, it is difficult for nonHispanic professionals who may not be familiar with stresses found in the Hispanic community to accurately assess etiologic factors in their Hispanic clients.

Whether we can be more comprehensive in the assessment and research study of ethnic minority clients is dependent to a large degree on the availability of specialized instruments that are capable of assessing the psychosocial stress processes of the Hispanic individual.

This research project was supported by the National Institute of Mental Health, Division of Biometry and Applied Sciences, Minority Research Resources Branch, Grant No. MH 24854 to the second author. This work was conducted while each of us was previously affiliated with the UCLA Spanish Speaking Mental Health Research Center.

We extend special thanks to Frank Acosta, Esteban Olmedo, and Matthew Schall for their helpful comments on earlier versions of this article. We also thank the support staff of the UCLA Spanish Speaking Mental Health Research Center, as well as the staff and administration of Evans Community Adult School, East Los Angeles College, and Santa Monica College for help in the conduct of the research.

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Table 1
Demographic Characteristics of Immigrant and U.S.-Born Subjects

Variable	Groups		
	Total (n = 493)	Immigrants (n = 305)	U.S.-Born (n = 188)
Mean age (years)	23.2	24.3	21.6
Mean education (years)	12.9	13.0	12.9
Mean income (Per capita household)	$464.11	$447.96	$448.56
Mean number of persons living in home	4.9	4.9	4.8
Sex of subject			
Male	51.7% (n = 255)	58.0% (n = 177)	41.5% (n = 78)
Female	48.3% (n = 238)	42.0% (n = 128)	58.5% (n = 110)
Marital status			
Married	13.6% (n = 67)	15.1% (n = 46)	11.3% (n = 21)
Single	79.6% (n = 391)	78.4% (n = 239)	81.2% (n = 152)
Divorced	2.2% (n = 11)	2.3% (n = 7)	2.2% (n = 4)
Separated	1.8% (n = 9)	2.0% (n = 6)	1.6% (n = 3)
Widowed	0.4% (n = 2)	0.3% (n = 1)	0.3% (n = 1)
Living with other	2.2% (n = 11)	2.0% (n = 6)	2.7% (n = 5)
Employed	40.9% (n = 209)	39.8% (n = 121)	42.8% (n = 80)
Mean number of children (Based only on those who do have children)	1.9	2.1	1.7

This article describes a 4-phase study designed to develop an instrument that would provide information on the psychosocial stress experience of Hispanics. We envisioned a scale that could be easily administered in either English or Spanish and that would capture a relatively wide band of psychosocial stressors of either recent immigrants from Mexico, Central America, or U.S.-born Hispanics, given that these are distinct population groups with differing experiences. The Hispanic Stress Inventory (HSI) is proposed to serve as an important addition to the current battery of research and clinical assessment instruments available for use with Hispanics.

Phase 1. Item Development

Method

In line with a methodology suggested by Dohrenwend, Krasnoff, Askenasy, and Dohrenwend (1978), potentially stressful events, both of an acute and chronic nature, were sampled from the population of interest. To generate a meaningful set of items, tapping potential stress events in adult Hispanics, a community sampling method was devised whereby semistructured interviews were used to elicit stressors across six specific life domains: marital stress, family stress, occupational stress, economic stress, discrimination stress, and the stress associated with changing one's cultural orientation, or *acculturation stress*, as some investigators have termed it (Berry, 1980). With the exception of acculturative stress and discrimination stress, there is consensus that the other stress domains are indeed salient and necessary in any systematic study of psychosocial stress process (Pearlin, Menaghan, Lieberman, & Mullan, 1981).

Subjects

To capture the range of salient stressor events for the adult Hispanic population, 105 subjects were interviewed. These semistructured interviews were conducted with two different groups, the first consisting of a convenience sample of 43 Hispanic adults all living in the Los Angeles area. Subjects were community residents, including members of a local church organization who responded to requests to be interviewed. This initial sample consisted of 19 male and 24 female adults ranging in age from 20 to 64 years, the mean age being 39 years (SD = 9.7). Twenty-three of these subjects were born in Mexico and had resided in the U.S. for a mean length of over 13 years. The remaining 20 subjects were U.S.-born and identified themselves as Mexican American.

A second series of interviews were conducted with a group of 62 Mexican and Central American adults who were more recent immigrants to the U.S. (Padilla, Cervantes, Maldonado, & Garcia, 1988). A total of 244 eligible persons were approached, using a stratified random sampling approach within three predesignated areas of high Hispanic immigrant density. The issue of undocumented legal status likely contributed to a rather low rate of participation (25%). Thirty-two respondents were of Mexican descent with the remaining subjects representing a Central American subsample (El Salvador, n = 17; Guatemala, n = 11; Honduras, n = 1; Nicaragua, n = 1). There were 31 male and 31 female subjects, the mean age being 33.8 years (SD = 5.6). Respondents had over 5 years of residence in the U.S. (M = 5.5).

Instruments

The interview schedule was developed and structured around each of the six previously discussed psychosocial stress domains; a total of 33 open-ended items were included. Within each of the six stress domain sections the respondent was first asked to indicate events or situations that they considered to be generally stressful for Hispanic adults (e.g., *What are the most difficult changes made by Hispanic families in adapting to American life?*). The respondent was then asked to reply to a similar question, but from his or her own personal experience (e.g., *What were the most difficult changes made by your family during your first year in the U.S.?*). Respondents were then asked to indicate how they adapted to or coped with each of the elicited psychosocial stressors. For the purpose of this project, only elicited stress responses were used in the development of the Hispanic Stress Inventory. For a more detailed description of methods related to these interviews, see Padilla, Cervantes, Maldonado, and Garcia (1988).

Procedures

All interviews were conducted in the home of the respondent by three Hispanic advanced psychology graduate students and one Hispanic clinical psychologist. Each of the bilingual interviewers had previous experience in conducting clinical interviews. Following informed-consent procedures, interviews were conducted in the respondent's language of choice and lasted approximately 1 to 1½ hr. Interviews were audio recorded to facilitate later analyses.

Results

All audio recorded interviews were transcribed and then analyzed by four independent raters (research assistants) who were trained in the process of content analysis by a clinical psychologist. A team approach was then used in which raters, in group

Table 2
Hispanic Stress Inventory Immigrant Version Factor Analysis With Oblique Rotation

Item	Factor				
	1. OCC/EC	2. PAR1	3. MAR1	4. IMM1	5. CON1
Since I'm Latino I'm expected to work harder.	.790				
Legal status problem in getting good job.	.785				
I've been forced to accept low paying jobs.	.772				
Since I'm Latino it's hard to get promotions/raises.	.767				
My income insufficient to support family or myself.	.757				
Watched work quality so others don't think I'm lazy.	.736				
Due to money problems, had to work away from family.	.646				
Others worried about amount/quality of work I do.	.629				
Didn't get job I wanted because lacked proper skills.	.621				
I've been criticized about my work.	.604				
Economic pressures made me stop going to church.	.516				
Boss thought I was too passive.	.503				
I've felt I might lose job to arriving immigrants.	.457				
Thought children want independence before ready.		.734			
Felt my children's ideas about sexuality too liberal.		.723			
My children have been drinking alcohol.		.712			
My children have seen too much sex on TV/movies.		.693			
I thought my children not receiving good education.		.672			
My children haven't respected my authority as should.		.662			
My children have gotten bad school reports/grades.		.632			
Thought about son/daughter living independently.		.632			
My children have talked about leaving home.		.615			
I thought my children used illegal drugs.		.553			
My children influenced by bad friends.		.543			
Difficult to decide how strict to be with children.		.536			
I've seen son/daughter behave delinquently.		.465			
Both spouse and I have had to work.			.790		
Spouse hasn't helped with household chores.			.701		
Spouse and I disagreed on how to bring up children.			.662		
Spouse and I disagreed on language spoken at home.			.614		
Spouse and I disagreed about who controls money.			.599		
I questioned idea that "marriage is forever."			.558		
There've been cultural conflicts in my marriage.			.556		
I felt spouse and I haven't communicated.			.546		
Spouse expected me more traditional in relationship.			.526		
Spouse hasn't been adapting to American life.			.519		
Hard to see why spouse wants to be more Americanized.			.499		
Spouse has been drinking too much alcohol.			.485		
Hard for spouse/I to combine Latino/American culture.			.475		
Spouse and I disagreed on use of contraceptives.			.414		
Spouse expected me less traditional in relationship.			.379		
Spouse/I disagreed on importance of religion in family.			.328		
Since I don't know English, hard interacting with others.				.649	
I felt pressured to learn English.				.639	
Since I'm Latino, difficult to find work I want.				.619	
Thought I'd be deported if went to social/govt. agency.				.590	
Due to poor English people treated me badly.				.572	
Due to poor English, hard dealing with daily situations.				.565	
I feared consequences of deportation.				.565	
I avoided immigration officials.				.514	
Due to poor English, have had difficulties in school.				.481	
I had difficulty finding legal services.				.465	
I felt guilty leaving family/friends in home country.				.454	
Legal status limited contact with family or friends.				.449	
Felt never regain status/respect I had in home country.				.437	
Felt unaccepted by others due to my Latino culture.				.416	
I've been discriminated against.				.402	
I've been questioned about my legal status.				.381	
Haven't forgotten war deaths of friends/family.				.332	
Haven't forgotten last few months in my home country.				.329	
There have been conflicts among family members.					.761

Table 2 (*continued*)

Item	Factor				
	1. OCC/EC	2. PAR1	3. MAR1	4. IMM1	5. CON1
I had serious arguments with family members.					.729
There's been physical violence among family members.					.596
Felt family members are losing their religion.					.470
Personal goals conflicted with family goals.					.419
Some family members have become too individualistic.					.412
Family considered divorce for marital problems.					.396
Due to different customs, had arguments with family.					.389
Due to lack of family unity, felt lonely and isolated.					.377
I noticed religion less important to me than before.					.349
Being too close to family interfered with own goals.					.344
Felt family relations less important for those close to.					.318
I've been around too much violence.					.305

Note. OCC/EC = Occupational/Economic Stress; PAR1 = Parental Stress; MAR1 = Marital Stress; IMM1 = Immigration Stress; CON1 = Cultural/Family Conflict.

format, selected stressor events that were commonly reported by most respondents. Irrelevant events or themes were not included in the initial set of HSI items. This procedure allowed for the identification of commonly reported psychosocial stressors that were then developed into a series of short statements capturing the longer open ended responses of the 105 respondents.

An initial set of 176 short statements capturing both chronic difficulties and more acute stressors that encompassed events for both immigrant and U.S.-born Hispanics composed the first version of the Hispanic Stress Inventory (HSI). All items were initially developed in English and were worded in an easily comprehensible format. The first approach toward item development was seen as an attempt to capture the range of events for immigrants *and* U.S. born Hispanics, whereas later item and scale analyses attempted to examine the specificity of items for either immigrant *or* U.S.-born Hispanics.

Two methodological caveats, both expressed by stress researchers in the development of life-events questionnaires, guided the wording of individual items and the questionnaire format of the HSI. First, Dohrenwend and Shrout (1985) have cautioned about the problems inherent in confounding stressor events with individual reactions to these events (i.e., symptoms). Care was taken to ensure that items on the HSI were reflective of stressor events or situations (e.g., *I have been ridiculed because of my accent*) and not psychological symptomatology. An additional methodologic concern has been raised by Lazarus and his colleagues. These investigators have cautioned about a strict evaluation of environmental events without inquiry into the interaction of individual cognitive appraisal processes that mediate the experience of stress (Lazarus & Folkman, 1984). To capture the existence of individual appraisal processes, items for the HSI were formatted in a fashion that allows respondents to provide information on both the occurrence of a particular event and the cognitive stress appraisal of that event.

Phase 2. Content Validity

Method

A method for establishing the initial content validity for HSI conceptual scales was used (Allen & Yen, 1982; Thorndike, 1978). It was important to first ensure that the content of the original items was relevant for future use with Hispanic adults in clinical and research settings. Five Hispanic judges, two women and three men, were included in this procedure. All judges were very familiar with Hispanic mental health issues either from ongoing clinical work or through extensive experience in the conduct of research with Hispanics. Three judges were doctoral-level psychologists and two were advanced graduate students in the clinical area. Judges were given an instruction sheet that was used to standardize all rating procedures. Judges were told that the purpose of the task was to categorize each of the 176 stressor items into one of six conceptually meaningful categories. Consistent with the stressor domains included in the open-ended interviews (i.e., Acculturation Stress, Marital Stress, Family Stress, Economic Stress, Occupational Stress, and Discrimination) a brief description of each conceptual category was given to the judges. After reading the conceptual stressor domain descriptions, each judge was asked to assign each item into the most conceptually relevant category. Items could be assigned to as many categories as needed in order to allow for overlapping content. Finally, judges were asked to make note of any item that appeared awkward in wording or irrelevant for the population.

Results

Rating sheets for each of the judges were quantified and item categorizations were then compared. Complete agreement on the assignment of a total of 79 items or 45% of the items was reached (5 out of 5 judges). Four of five judges were in agreement on the assignment of an additional 52 items (30%), and three of five judges assigned 28 items (16%) as belonging to the same conceptual category. For 17 of the original items, there was little agreement on the categorization of those items into any one conceptual domain.

For the purpose of shortening and refining the draft version of the HSI, only those items that were judged to be conceptually clean and relevant to the population were retained. If an item was not categorized equivalently by at least four of the five judges, it was discarded unless the item was seen as very clinically important despite the conceptual overlap. Two additional items were retained for this reason. Individual items were also deleted for further use if three or more judges thought them unrelated to the stress construct or to the stress experienced in

Table 3
Hispanic Stress Inventory U.S.-Born Version Factor Analysis With Oblique Rotation

Item	Factor			
	1. MAR2	2. OCC/EC2	3. PAR2	4. CON2
Spouse and I disagreed about who controls money.	.884			
Spouse expected me more traditional in relationship.	.865			
Spouse and I disagreed on how to bring up children.	.811			
I questioned idea that "marriage is forever."	.780			
There've been cultural conflicts in marriage.	.692			
I felt spouse and I haven't communicated.	.652			
Spouse/I disagreed on importance of religion in family.	.649			
Spouse and I disagreed on language spoken at home.	.600			
Both spouse and I have had to work.	.556			
Spouse hasn't been adapting to American life.	.531			
Hard for spouse/I to combine Latino/American culture.	.492			
Spouse hasn't helped with household chores.	.466			
Spouse has been drinking too much alcohol.	.461			
Hard to see why spouse wants to be more Americanized.	.324			
Felt that due to work the rhythm of my life has changed.		.731		
Watched work quality so others don't think I'm lazy.		.692		
My income insufficient to support family or myself.		.678		
To get ahead in job, had to compete with others.		.661		
Since I'm Latino I'm expected to work harder.		.640		
Since I'm Latino, felt isolated at work.		.595		
Since I'm Latino it's hard to get promotions/raises.		.587		
I've been criticized about my work.		.586		
Boss thought I was too passive.		.585		
Didn't get job I wanted because lacked proper skills.		.553		
Forced to accept low paying jobs.		.548		
Others worried about amount/quality of work I do.		.543		
Economic pressures made me stop going to church.		.484		
Since I'm Latino I'm paid less than others.		.418		
I've seen son/daughter behave delinquently.			.807	
I thought children used illegal drugs.			.735	
My children have been drinking alcohol.			.699	
My children influenced by bad friends.			.662	
My children have less school opportunities than others.			.645	
My children received bad school reports/grades.			.617	
My children haven't respected my authority as should.			.598	
Felt my children's ideas about sexuality too liberal.			.524	
My children have talked about leaving home.			.489	
Family drifted apart due to economic achievement.				.611
There have been conflicts among family members.				.562
There's been physical violence among family members.				.559
Family relations less important for those I'm close to.				.545
I've been around too much violence.				.541
Personal goals conflicted with family goals.				.529
People close to me less concerned about morals.				.462
I had serious arguments with family members.				.451
Thought I'd never see some family members again.				.445
I've missed close relationships with others.				.445
Haven't forgotten war deaths of friends/family.				.439
Couldn't decide how liberal to be in sexual conduct.				.438
Some family members have become too individualistic.				.435
Due to lack of family unity, felt lonely and isolated.				.429
Family considered divorce for marital problems.				.425
My doctor didn't spend enough time with me.				.419
I've seen friends treated badly because they're Latinos.				.389
Felt family members are losing their religion.				.376
I had difficulty finding legal services.				.373
I've seen traditional religious customs ignored.				.359
I pressured myself to provide more for my family.				.354
I felt guilty leaving family/friends in home country.				.319

Note. MAR2 = Marital Stress; OCC/EC2 = Occupational/Economic Stress; PAR2 = Parental Stress; CON2 = Cultural/Family Conflict.

Table 4
Pearson Correlations of Hispanic Stress Inventory Subscales With Criterion Measures

	Symptomatology scales					
		SCL–90–R				
Subscales	CES–D	Depression	Anxiety	Somatization	RSI	PCI
Immigrant version (n = 305)						
Occupation/Econ	.23*	.26	.17	.21*	−.15	.11
Parental	.12	.11	.06	.04	−.07	−.04
Marital	.25*	.20*	.17	.16	−.06	−.02
Immigration	.27*	.26*	.17	.20*	−.10	.06
Family/Cult	.45*	.36*	.31*	.30*	−.18*	−.04
U.S.-born version (n = 188)						
Marital	.17	.19	.19	.12	−.06	.14
Occupation/Econ	.31*	.22	.17	.11	−.07	.03
Parental	.10	.07	.04	.05	−.01	−.03
Family/Cult	.40*	.38*	.34*	.29*	−.17	−.03

Note. CES–D = Center for Epidemiological Studies Depression Scale (Radloff, 1977); SCL–90–R = Symptom Checklist–90–Revised (Derogatis, 1977); RSI = Rosenberg Self-Esteem Inventory (Rosenberg, 1965); PCI = Campbell Personal Competence Inventory (Campbell, Converse, Miller, & Stokes, 1960).

the Hispanic population. The remaining 133 items were randomly ordered, producing a refined first version of the HSI comprised of five *conceptual* subscales. Two of the originally conceived subscales were combined (Occupational and Economic Stress) because of the relatively small number of items in each scale. The Acculturation subscale and the Family Stress subscale each contained 40 items. This was followed by Perceived Discrimination (19 items), Occupational/Economic Stress (18 items), and Marital Stress (16 items).

Following this initial item refinement, Spanish translation and back translation procedures as suggested by Brislin (1986) were conducted. Five fully bilingual members of the research team participated in these translation procedures until a conceptually equivalent Spanish version of the HSI was completed. A committee approach was used in which two members initially translated items into Spanish. These translated items were then back-translated to English by two independent team members. Discrepancies in content of translated items were then resolved by the committee as whole.

Phase 3. Construct Validity

Method

Subjects

Participants in this phase of the HSI development project included 493 volunteers from two adult community schools, one located in the Central Downtown area of Los Angeles, and the second in East Los Angeles. These two data collection sites were chosen specifically to sample both an Hispanic immigrant group (Downtown site) and a U.S.-born Hispanic group (East Los Angeles site). Two hundred of the subjects, 255 men and 238 women were recruited through announcements made in the school bulletin as well as by instructor announcements made in individual classes. A total of 305 Hispanic immigrants (Mexican = 138; Central American = 120; Other Latin American = 47) averaging 2.2 years of residence in the U.S. and 188 second-generation or later Hispanics (Mexican American) participated in this data collection effort. Subjects ranged in age from 17 to 56 years. The overall sample had a mean age of 23 years (SD = 6.9). Subjects reported a mean level of education of 13 years (SD = 13.4) and reported a per-capita monthly income of $464. Of the total sample, 13.6% were married, although the majority reported being single (79.6%). Of the sample, 4% reported being either divorced or separated; 41% reported being employed at the time of the study.

Separate demographic characteristics of the immigrant and U.S.-born subsamples are presented in Table 1. For those familiar with the Hispanic population, it is apparent that the current sample is not totally representative in terms of educational and marital status characteristics. It was not feasible to conduct a random probability sample of Hispanics for HSI development purposes. However, we believed that sampling from local community adult schools would provide a large number of Hispanic subjects with stress experiences quite similar to those in the general Hispanic population. Low levels of household income and illegal residence status among the overwhelming majority of immigrant subjects are sociodemographic characteristics shared by both the current sample and the general Hispanic population.

Instruments

When administering the HSI, subjects were first asked to read directions along with the experimenter. Instructions asked subjects to read each of the 133 psychosocial stress items and to indicate whether that situation had occurred to them in the past three months. This three month cut off was used in an effort to be consistent with the *DSM–III–R* criteria related to adjustment disorders. A 3-month cutoff also helped to minimize problems inherent in responding to items that require longer term recall. If the subject responded affirmatively to a particular item he or she was then asked to rate, the appraised stressfulness of that event on a 5-point Likert scale (1 = *not at all stressful;* 2 = *somewhat stressful;* 3 = *moderately stressful,* 4 = *very stressful;* 5 = *extremely stressful*). For the purpose of statistical item and scale analyses, items that were reported as not occurring by subjects were coded a 1 (*not at all stressful*). Following one example item, the HSI items were group-administered by projecting each item in both English and Spanish onto a screen at the front of the room. In addition to this visual presentation, the experimenter read aloud each of the 133 items in either English or Spanish, depending on the group's linguistic composition.

With respect to the criterion measures, both the CES–D and SCL–90–R have been shown to possess good psychometric properties when used with Hispanic groups (Evans, Acosta, Yamamoto, & Skilbeck, 1984; Roberts, 1980), and were therefore selected as relevant measures of both generalized distress and psychopathology. Symptoms of psychological distress are generally thought to be related to chronic or enduring psychosocial stress and were therefore included as criterion measures. Two additional criterion measures, the RSI and PCI were used in a previous study with Hispanic community respondents (Padilla, Cervantes, Maldonado, & Garcia, 1988) and have been found to have adequate psychometric properties when used with this population. Although an existing Spanish translation of the CES–D (National Center for Health Statistics, 1985) was available and used in the current study, translation procedures as suggested by Brislin (1986) were conducted in the translation of the SCL–90–R subscales, the Rosenberg Self-Esteem Inventory (RSI; Rosenberg, 1965), and the Campbell Personal Competence Inventory (PCI; Campbell, Converse, Miller, & Stokes, 1960).

Estimates of internal consistency were computed for each of the symptom-related criterion measures before conducting any formal item or scale analysis. Coefficients alpha of .85, .91, and .90 were found for the Depression, Anxiety, and Somatization subscales of the SCL–90–R, respectively. An alpha coefficient of .87 was obtained for the CES–D.

Procedure

On volunteering to participate in the validation study, subjects reported to a predesignated classroom where they were given information about the study and told they would receive $5 on completion of a series of questionnaires. Subjects were then administered the battery of instruments in either English or Spanish, including a demographic checklist, the HSI, the Center for Epidemiological Studies Depression Scale (CES–D; Radloff, 1977), the Anxiety, Depression, and Somatization subscales of the (SCL–90–R), the RSI, and the PCI. Group administration procedures were used, with group sizes ranging from 10 to 25.

Results

Item Relevance

A first step in the analysis was to further refine the HSI, with particular focus on the identification of items that were specific to either the immigrant group or the U.S.-born group. Separate item analyses were conducted with immigrant protocols followed by item analyses with U.S.-born protocols. In a procedure similar to that used by Dohrenwend et al. (1978) in the development of the PERI Life Event Scale, items were first evaluated with respect to the percentage of subjects reporting the experience of a particular item. Using Exclusion Rule 1, for example, if a particular marital stress item was reported to be experienced by less than 5% of the married immigrant subsample, that particular item was deleted and not included in any further analyses. A second exclusion rule was used where items were evaluated with respect to appraised stress ratings. Using mean stress appraisal scores taken from the 5-point Likert scale, items with means of less than 2.0 (*somewhat stressful*) were also deleted. These procedures were conducted separately for both the immigrant and U.S.-born subsamples, and resulted in two versions of the HSI of varying length that were then further subjected to psychometric analysis.

Construct Validity

Following the initial approach toward item exclusion, two separate general-principal factor solutions followed by an oblique factor rotation were performed to examine scale structure and to further refine the two versions of the HSI. Given the quite distinct life experiences of immigrants compared with U.S.-born Hispanics, separated item and scale analyses were seen as essential to the purpose of this study.

The resulting factor matrices yielded a five-factor solution for the immigrant subsample and a four-factor solution for the U.S.-born subsample. These separate factor solutions were seen as the most meaningful, particularly as the scree test asymptoted at five factors for the immigrant subsample and asymptoted at four factors for the U.S.-born Hispanic subsample (Cattell, 1978).

Using the rules of simple structure, (Cattell, 1973; Kim & Mueller, 1978) items were retained for further analyses if the particular item had a factor loading of greater than .30, in the absolute value, and was not found to load on more than one factor. Using all retained items, two oblique factor-analytic solutions were used separately for each of the two subsamples. Oblique factor analyses were selected given some initial small correlation among the general-principal factors of the HSI. The goal was to use a rotation method that best fit the initial structure of the data rather than to assume totally orthogonal or independent factors.

On the basis of the selection of factors with eigenvalues of greater than 1.00 and on the scree-test procedure, a final and refined five-factor solution for the immigrant subsample and a final and refined four-factor solution for the U.S.-born subsample were obtained. As can be seen from Tables 2 and 3, the average factor loading for the immigrant sample was .550, and for the U.S.-born sample it was .555.

Table 5
Descriptive Data for Hispanic Stress Inventory (HSI) and Criterion Measures

	Immigrant (n = 305)		U.S.-Born (n = 188)	
Measure	*M*	*SD*	*M*	*SD*
HSI Total Stress	122.06	35.59	96.22	28.19
Marital Stress	21.41	7.82	19.06	6.93
Occ/Econ Stress	24.98	9.78	21.42	8.21
Parental Stress	17.07	7.08	11.77	5.38
Fam/Cul Conflict	25.57	9.33	43.97	14.59
Immigration Stress	33.02	12.76	—	—
CES–D	16.54	9.32	15.49	9.47
SCL–90–R				
Depression	15.35	9.28	15.13	9.63
Anxiety	8.50	8.51	8.44	8.10
Somatization	8.65	9.14	8.58	8.62
RSI	31.04	4.11	31.42	4.45
PCI	22.18	2.80	21.77	2.58

Note. CES–D = Center for Epidemiological Studies Depression Scale (Radloff, 1977); SCL–90–R = Symptoms Checklist–90–Revised (Derogatis, 1977); RSI = Rosenberg Self-Esteem Inventory (Rosenberg, 1965); PCI = Campbell Personal Competence Inventory (Campbell, Converse, Miller, & Stokes, 1960).

Table 6
Hispanic Stress Inventory Subscale Internal Consistency and Test–Retest Reliabilities

Subscales	Coefficient alpha	Test–retest coefficient
Immigrant-version subscales		
Occupational/Economic Stress	.91	.79
Parental Stress	.88	.73
Marital Stress	.86	.61
Immigration Stress	.85	.80
Family/Culture Stress	.77	.86
U.S.-born version subscales		
Marital Stress	.90	—
Occupational/Economic Stress	.88	—
Parental Stress	.85	—
Family/Culture Stress	.85	—

Final factor loadings for the Immigrant Version are presented in Table 2. Factor 1 of the Immigrant Version of the HSI was an Occupational/Economic Stress factor (OCC/EC1), which accounted for 13% of the total explained variance. Factor 2 was a Parental Stress factor (PAR1), which accounted for 8% of the total explained variance. Factors 3 and 4 were Marital Stress (MAR1) and Immigration Stress (IMM1) factors, accounting for 6% and 5% of the total explained variance, respectively. The final factor in this solution was a Cultural/Family Conflict factor (CON1), which accounted for 3% of the total explained variance.

A final four-factor solution was obtained for the U.S.-born version of the HSI and is presented in Table 3. Factor 1 was Marital Stress (MAR2), which accounted for 13% of the total explained variance. Factor 2 was Occupational/Economic Stress (OCC/EC2), which accounted for 10% of the total explained variance. Finally, Factors 3 and 4 were Parental Stress (PAR2) and Cultural/Family Conflict (CON2), which accounted for 7% and 6% of the total explained variance, respectively.

Cultural Relevance of the HSI Factor Structure

Method

To ascertain the cultural specificity of the HSI for those of Hispanic culture, items common to both the Immigrant and U.S.-Born Versions were administered to a non-Hispanic sample. If these common items do measure the psychosocial stress associated with the Hispanic experience, the previously reported pattern of factor loadings would not be expected to be replicated with the non-Hispanic sample. Preparatory to this analysis, the items common to both versions of the HSI were factor analyzed to create a "baseline" pattern of factor loadings. It is against this Hispanic "baseline" that the non-Hispanics were compared.

Subjects

Subjects were 141 self-identified Anglo-American adults attending a community college in West Los Angeles, including 63 men and 78 women. Subjects ranged in age from 17 to 40 years and had a mean age of 22 years ($SD = 4.7$). Of the sample, 11% were married, and 66% were employed at the time of the study. Per-capita monthly income for this sample was calculated at $1,147.

Procedure

Subjects were recruited and informed about the nature of the study in a manner identical to that described for previous samples. Administration of instruments was also identical, and the English versions of both the HSI and other criterion measures were used.

Results

Baseline Analysis

First, an initial factor-analytic procedure was used to establish the existence of an underlying factor structure of the HSI for all Hispanic subjects. Using items that were shared (i.e., any item that was retained for both the immigrant version of the HSI as well as the U.S.-born version), a general-principal factor solution followed by an oblique rotation yielded a five-factor solution. Using the rules of simple structure, items were retained if they had a factor loading of greater than .30 and if the item did not load on any other factor. Retained items were again entered into an oblique factor solution that resulted in five distinct factors, each with eigenvalues of greater than 1. Factor 1 was Marital Stress, which accounted for 12% of the total explained variance. Factor 2 was Economic/Occupational Stress, which accounted for 8% of the total explained variance. Factor 3 was Parental Stress, which accounted for 6% of the total explained variance. Factors 4 and 5 were Discrimination Stress and Cultural/Family Conflict, respectively, and accounted for 4% and 3% of the total explained variance.

Comparative Analysis

To determine the cultural relevancy of the Hispanic factor structure, an initial general principal factor solution followed by an oblique rotation was conducted for the data obtained from the Anglo-American sample. This resulted in a factor matrix that produced 12 factors with eigenvalues of greater than 1. Setting a five-factor extraction and rotating the factor solution resulted in a first factor that accounted for a very large percentage of the total explained variance (29%), with the remaining four factors accounting for an additional 17% of the total explained variance. The factor matrix did not yield a simple structure solution, and none of the factors were interpretable. In summary, the five-factor solution that was obtained for the combined Hispanic sample was not confirmed when analyzing the HSI using non-Hispanic data.

Criterion-Related Validity

Using the two refined versions of the HSI frequency data, group means and standard deviations were computed for each of the subscale scores. Table 4 presents information on the criterion-related validity of the two versions of the HSI. Table 5 presents descriptive data for the two versions of the HSI, as well as for the criterion measures. Pearson correlations were computed to examine the strength of the relationship between each of the HSI subscales scores and the preselected criterion measures. Scheffé's procedure for reducing experimentwise error was used in cases in which alpha was set at .001. As can be seen from Table 4, the strongest relationship for the immigrant version of the HSI occurred between Family/Cultural Conflict and the CES–D score ($r = .45$, $p > .001$). For the immigrant version

of the HSI, each of the subscale scores was found to be significantly related to at least one of the preselected criterion measures, with the exception of Parental Stress, which was not correlated with any of the criterion measures. Significant positive correlations between HSI immigrant version subscales and criterion measures ranged from .20 to .45. A significant negative correlation between the Family/Cultural Conflict subscale and the RSI was found ($r = -.18$, $p < .001$).

In examining correlations for the U.S.-born version of the HSI, it can be seen that, again, the strongest relationship between HSI subscales and criterion measures was found between Family/Cultural Conflict and CES–D scores ($r = .40$, $p < .001$). Again, the Parental subscale was not correlated with any of the criterion measures. Significant positive correlations ranged from .29 to .40 between the HSI U.S.-born version subscales, and criterion measures ranged from .40 to .19. As with the HSI immigrant version, the Family/Cultural Conflict subscale was found to be negatively correlated with the RSI ($r = -.17$), although this was not significant when using corrected alpha. In sum, it appears that many of the HSI subscales show moderate relationships with preselected criterion measures.

Phase 4. Reliability

Method

Reliability estimates for the HSI were obtained in two ways, including estimates of internal consistency as well as reliability estimates based on a test–retest procedure. Two approaches toward obtaining reliability data were used given previous concerns with the reliance on estimates of internal consistency when developing life event scales (Neugebauer, 1981). Although it is beyond the scope of the article to critique current thinking with respect to the best approach toward estimating reliability for life event measures, the current study attempted to include two distinct methods of obtaining such estimates, in an effort to present a range of the psychometric properties of the HSI.

Procedure

Data used to compute estimates of internal consistency were obtained from subjects described in the preceding section and included 305 immigrants from various Latin American countries, along with 188 U.S.-born Mexican Americans.

Results

Coefficients alpha were first computed for the appraisal scores for each of the two forms of the HSI. Results are presented in Table 6. For Version I, the Occupational/Economic Stress scale exhibited the highest degree of internal consistency ($\alpha = .91$), whereas the Family/Cultural Conflict scale was found to have the lowest degree of internal consistency ($\alpha = .77$). The Marital Stress scale was found to have the highest degree of internal consistency for the U.S.-born version ($\alpha = .90$), whereas Parental Stress and Family/Cultural Conflict scales were found to possess the lowest estimates of internal consistency ($\alpha = .85$). Overall, HSI subscale-appraised stress scores were found to possess moderate to high estimates of internal consistency reliability.

Test–Retest Reliability

Method

A final step toward estimating reliability for the HSI involved administration of the instrument on two separate occasions. This test–retest method of obtaining reliability estimates is widely used when the time between each test administration should not exceed 1 month (Anastasi, 1984). This is particularly true for life-event measures that are sensitive to and actually elicit reporting of changes in stressful life circumstances among subjects. Here, an attempt was made to select immigrant subjects who were distinctly older than the original reliability sample in order to examine the generalizability of the HSI subscales.

Subjects

Thirty five adult members of a local church group participated in the test–retest study. This sample was selected in efforts to assess the reliability of the HSI with a quite distinct group of Hispanic adults. Subjects had an average of 9.3 ($SD = 4.4$) years of education, were middle aged ($M = 40$, $SD = 14.7$), and were born in either Mexico (15.6%) or Central America (84.4%). Of the sample, 73% were married with the additional 27% being single or divorced. Average monthly household income was calculated at $1,281.

Procedure

Subjects volunteered to participate in the study after being notified through the church bulletin. All potential subjects gathered in a large classroom at the church facility and were informed about the study, with particular emphasis on the importance of returning in 2 weeks for a second session. Potential subjects were then told that they would receive $10.00 at the end of the second session. This resulted in a total of 35 subjects who were administered the immigrant version of the HSI on two separate occasions.

Results

Table 6 presents the results of the correlation analyses based on the two testing sessions. Pearson correlations were computed for subscale scores and found the Family/Cultural Conflict scale to possess the highest test–retest coefficient ($r = .86$, $p < .0001$). The Immigration Stress scale was also found to have a high degree of test–retest reliability ($r = .80$, $p < .0001$), as did the Occupational/Economic Stress scale ($r = .79$, $p < .0001$). The Parental Stress subscale was found to possess a moderately high level of test–retest reliability ($r = .73$, $p < .0001$), whereas the Marital Stress scale was found to exhibit the lowest test–retest reliability coefficient ($r = .61$, $p < .0001$).

Discussion

This study aimed to systematically develop a tool that would be useful to those professionals and researchers who work with Latin American immigrants as well as U.S.-born Mexican Americans. The development of the Hispanic Stress Inventory draws heavily on previous work in the area of stress and mental illness (e.g., Dohrenwend et al., 1978).

Using a methodology that relied extensively on the responses of community members, it became possible to generate a list of objective statements that captured the psychosocial stress–event experiences of both immigrant and U.S.-born Mexican Americans. These items were generally found to be conceptually relevant to the study of stress among our targeted populations, as evaluated by an experienced group of clinical researchers and mental health practitioners. The analysis of the relevancy of the items was an important first step in the current study and provided a firm basis for the more quantitative analy-

sis of the psychometric properties of the HSI. As part of the preliminary analysis, it was also important to establish the need for two separate versions of the HSI, one for immigrants and one for native born Hispanics (Mexican Americans). Later factor-analytic procedures confirmed the need for including a separate scale to assess the stressful life events of immigrants from Mexico and Central America.

From a psychometric perspective, both versions of the HSI were found to comprise similar, yet quite distinct, factor structures. Although conceptual factors were replicated across the two samples (with the exception of Immigration Stress), the items comprising these factors were often different for the immigrant sample when compared with the U.S.-born sample. For example, although some of the HSI items reflect experiences in the area of family life that are similar for immigrants and U.S.-born Mexican Americans (e.g., *My personal goals were in conflict with the family goals*) other items are specific to native born Hispanics, reflecting psychosocial stress that is associated with the demands for increased social integration (e.g., *The need to achieve economically caused the family to drift apart*).

Each version of the HSI was found to possess more than adequate estimates of both reliability and validity. Although efforts at establishing the criterion-related validity of the scale were not without some low-level correlations, it can be argued that the HSI is in fact measuring constructs related more to psychosocial stress that is culturally relevant than to symptoms of anxiety, depression, somatization, or generalized distress. Further validational studies of the HSI in clinical settings are expected to result in stronger relationships between HSI scores and measures of psychological symptomatology, as opposed to those found in our nonclinical sample.

One limitation of this study is related to the possible restricted applicability of the Parental Stress subscale of the HSI. Because only a small number of married respondents with children were included in the present community sample, this may have yielded a restricted distribution of Parental Stress scores, thereby accounting for the apparent lack of relationship between this subscale and measures of emotional distress. Clearly, a larger sample of similar parents might yield different results.

It is clear from the growing body of research that the development of psychological dysfunction is a complicated process that involves not only the experience of psychosocial stress but also the interaction of these stressors with other vulnerability factors, both internal and external to the individual. From a cross-cultural point of view, the nature of psychosocial stress has been difficult to evaluate, given the lack of assessment tools that provide relevant information. Furthermore, the clinician who is unfamiliar with Hispanic culture is often at a loss as to which psychosocial domains are etiologic in nature. From both a rational and psychometric perspective, the newly developed HSI can serve to bridge the gap that currently exists in the treatment and research of recent immigrants from Mexico and Central America as well as native-born Hispanics.

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Received August 2, 1990
Revision received December 17, 1990
Accepted January 28, 1991 ■