Published in final edited form as:

Psycholog Relig Spiritual. 2017 November ; 9(4): 337–347. doi:10.1037/rel0000071.

Validation of the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being-Expanded (FACIT-Sp-Ex) Across English and Spanish-Speaking Hispanics/Latinos: Results From the Hispanic Community Health Study/Study of Latinos Sociocultural Ancillary Study

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Abstract

The validity of the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-Sp) has been examined in primarily non-Hispanics/Latinos with chronic illness. This study assessed the psychometric properties of the non-illness, expanded FACIT-Sp (FACIT-Sp-Ex) in 5,163 U.S. Hispanic/Latino adults. Measures were interviewer-administered in English or Spanish. Confirmatory factor analyses indicated four factors: Meaning, Peace, Faith, and Relational. The scale demonstrated measurement invariance across English and Spanish. Subscales displayed adequate internal and test-retest reliability. Scores were positively associated with Duke Religion Index (DUREL) subscales. When all subscales were entered in a single model, Meaning and Peace were inversely associated with depressive symptoms and positively associated with HRQOL. Faith was positively associated with depressive symptoms and inversely associated with HRQOL. Relational was not associated with any outcome. FACIT-Sp-Ex subscales were generally

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more strongly associated than DUREL subscales with well-being. The FACIT-Sp-Ex appears to be a valid measure of spiritual well-being in U.S. Hispanics/Latinos.

Keywords

Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being; Expanded (FACIT-Sp-Ex); spirituality; Hispanics/Latinos; factorial invariance; psychometrics

Introduction

Religion and spiritual belief have been proposed as culturally salient processes that play a significant role in Hispanic/Latino mental and physical well-being (Campesino & Schwartz, 2006; Ellison, Finch, Ryan, & Salinas, 2009; Sanchez, Dillon, Ruffin, & De La Rosa, 2012). They have also factored into Hispanic/Latino explanatory models of health and illnesses including diabetes and cancer (Flórez et al., 2009; Hatcher & Whittemore, 2007). Although there is limited work focusing on religiosity and spirituality in Hispanics/Latinos, research has suggested that the role of spirituality and religion differs across racial/ethnic groups. For example, individuals of ethnic minority status in the U.S., including African Americans and Hispanics/Latinos report greater frequency of organized and non-organized religious practice and higher levels of spirituality (Cotton et al., 2006), and are more likely to use prayer for health reasons (Gillum & Griffith, 2010) compared with Non-Hispanic/Latino Whites. In addition, Hispanics/Latinos may have spiritual perspectives that are impacted by ethnic-specific cultural values, such as *familismo* (i.e., an enduring commitment and loyalty to family members) and *personalismo* (i.e., warmth, closeness, and empathy in interpersonal relationships), and that function outside of church-associated religious practice (Campesino & Schwartz, 2006). A conceptual distinction between religiosity and spirituality has been made, and some individuals consider themselves spiritual but do not adhere to a particular religion; yet few studies have examined spirituality as separate from religiosity in Hispanics/Latinos (Campesino & Schwartz, 2006), and the majority of instruments measuring spirituality lack psychometric validation among racial or ethnic minorities (Monod, Brennan, Rochat, Martin, & Rochat, 2011). In order to advance the understanding of the links between spirituality and health in Hispanics/Latinos, studies need valid and reliable measures of spirituality that can be used in large-scale population-based studies.

The Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (FACIT-Sp) has emerged as a valid instrument for the assessment of a patient's spiritual state (Monod et al., 2011). The FACIT-Sp was originally developed as a 12-item self-report instrument to assess spiritual well-being in cancer patients across a range of religious traditions and for individuals who identify themselves as spiritual but not religious (Brady, Peterman, Fitchett, Mo, & Cella, 1999; Peterman, Fitchett, Brady, Hernandez, & Cella, 2002). A two factor solution was proposed with two distinct domains of spiritual well-being assessing (a) a sense of meaning, peace, and purpose in life (i.e., Meaning/Peace subscale) and (b) the role of faith in illness (i.e., Faith subscale; Peterman el al., 2002). A strength of the FACIT-Sp is that it assesses both religious and non-religious spiritual well-being, with the Faith subscale generally having a moderate to strong association with religiosity measures, and the

Meaning/Peace subscale being weakly associated with religiosity (Peterman et al., 2002). A subsequent study of long-term cancer survivors composed of 240 primarily Caucasian (82%) females provided evidence for a 3-factor solution that separated Meaning and Peace into two related, but distinct factors (Canada, Murphy, Fitchett, Peterman, & Schover, 2008). In a recent, larger study of the psychometric properties of the English and Spanish versions of the FACIT-Sp in a sample of cancer survivors identifying themselves as White (n = 6,827), African American (n = 914), Hispanic (n = 664) or other (n = 400), the authors also provided evidence for a 3-factor solution rather than a 2-factor solution. Furthermore, results suggested that there were inequivalent path coefficients and factor variances/covariances across racial/ethnic groups. The authors speculated that the variability across groups might point to differences in religious worldview, item interpretation, or manner of responding to negatively worded items across ethnically diverse populations (Murphy et al., 2010).

The expanded version of the FACIT-Sp (FACIT-Sp-Ex) builds on the original 12-item FACIT-Sp with 11 additional items that address the following aspects of spiritual well-being: connectedness, love, gratitude, and forgiveness (FACIT.org, 2010). In unpublished analyses of the FACIT-Sp-Ex in 450 primarily White (45%) and African American (50%) HIV/AIDS patients (Cotton et al., 2011), some of these additional items were grouped into a fourth factor termed the “Relational” subscale, measuring relational aspects of spiritual well-being (see Bredle, Salsman, Debbs, Arnold, & Cella, 2011 for a review of the scale development). The internal consistency for the FACIT-Sp 12-item and expanded version has been reported in primarily non-Hispanic/Latino White and African American cancer survivors or HIV/AIDS patients, with Cronbach's alphas for the total scale and its subscales ranging from .81 to .95 (Bredle et al., 2011; Canada et al., 2008; Murphy et al., 2010; Szaflarski et al., 2006).

The original 12-item FACIT-Sp has been translated to Spanish and used with Hispanic/Latino populations (Brady et al., 1999; Dapueto, Servente, Francolino, & Hahn, 2005; Zavala, Maliski, Kwan, Fink, & Litwin, 2009). However, the instrumental validation of the FACIT-Sp has only been conducted in samples with Hispanics/Latinos representing less than 10% of the total sample (Cotton et al., 2006; Daugherty et al., 2005; Murphy et al., 2010; Nelson, Rosenfeld, Breitbart, & Galietta, 2002). Additionally, the studies were conducted with clinical populations with severe or life threatening illnesses such as cancer or HIV (Monod et al., 2011). To date, no validation study has been conducted using the non-illness version of the FACIT-Sp, although a non-illness version has been published on the FACIT.org website and used in a number of studies examining spiritual well-being in non-ill populations. Moreover, while the expanded version of the FACIT-Sp has not been widely used, perhaps due to the lack of validation studies and/or the additional time burden placed on respondents, the social/relational content of the items are particularly relevant to Hispanic/Latino culture and may provide additional depth of information regarding spiritual well-being and health outcomes in this population.

Furthermore, there have been no investigations of the structural construct validity (i.e., whether a measure reveals the same simple structure across groups; Reise, Waller, & Comrey, 2000) of the FACIT-Sp scales in Hispanics/Latinos. Measurement invariance is a prerequisite for conducting meaningful substantive comparisons between groups on the measured construct (Gregorich, 2006). Assessing measurement invariance of spirituality

measures in Hispanic/Latino populations across English and Spanish language respondents is warranted so that researchers can make valid judgments about differences in construct validity and differences in item interpretation according to language.

An additional conceptual issue that emerges in the study of spirituality is the fact that spirituality has often been used interchangeably with religiosity. While there is significant overlap between constructs, spirituality and religiosity are distinct and can have different associations with physical and mental health (Holt-Lunstad, Steffen, Sandberg, & Jensen, 2011; Nelson et al., 2002). While religion denotes an organized system of beliefs and practices, spirituality is viewed as more personal and related to transcendence and meaning (Monod et al., 2011; Peterman et al., 2002; Szaflarski et al., 2006). Spirituality can exist both within and outside a religious framework, and some individuals who consider themselves spiritual do not adhere to any particular religion (Nelson et al., 2002). This points to the importance of evaluating the validity of scales that measure dimensions of spirituality that have less overlap with existing religiosity measures. Differences between religiosity and spirituality have not been systematically delineated in Hispanics/Latinos. Therefore, it will be important to explore the difference in the relationship between domains of spirituality and measures of emotional and physical well-being as distinct from religiosity or religious practices in Hispanics/Latinos.

Assessing the psychometric properties of measures of spirituality in community samples is warranted to inform future studies evaluating the relationship between spirituality and health in Hispanics/Latinos. The current study evaluated the psychometric properties of the FACIT-Sp-Ex in a population-based sample of 5,163 Hispanics/Latinos from four U.S. metropolitan communities who participated in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) Sociocultural Ancillary Study. The aims were to (1) examine the factorial structure of the FACIT-Sp-Ex and test for measurement invariance (configural, metric, and scalar) of the best-fitting model across English and Spanish language respondents, comparing one-factor (i.e., total score), three-factor (i.e., Meaning/Peace, Faith, Relational Spiritual Well-being) and four-factor models (i.e., Meaning, Peace, Faith, Relational Spiritual Well-being), (2) examine the internal consistency of the items of the total scale and of each subscale within the full sample and across language, and assess test-retest reliability of the total score and subscale scores using a subset of 325 participants who completed a second assessment, (3) establish the convergent and/or discriminant validity of the full scale and subscales with measures of religiosity/religious practices, and examine the concurrent validity of the full scale and each subscale with measures of mental and physical health-related quality of life (HRQOL) and depressive symptoms and (4) examine whether the FACIT-Sp-Ex total scale and subscales are differentially associated with measures of HRQOL and depressive symptoms compared with measures of religiosity/religious practices.

Methods

Participants and Procedures

The sample was derived from the HCHS/SOL Sociocultural Ancillary Study with repeated data derived from a Psychometric Supplement study (n = 325). The HCHS/SOL is a

prospective study that aims to establish the prevalence and risk factors for major chronic diseases among 16,415 self-identified Hispanics/Latinos in the U.S. Participants were recruited from four U.S. field centers (Bronx, NY; Chicago, IL; Miami, FL; San Diego, CA). Recruitment was implemented through a two-stage area household probability design (Lavange et al., 2010). The HCHS/SOL Sociocultural Ancillary Study consisted of a separate assessment of socioeconomic, psychological, and cultural factors with hypothesized cardiovascular-metabolic health relevance among a subset of participants from the original cohort (see Gallo et al., 2014 for detailed information about the design and procedures). All HCHS/SOL participants were eligible for the Sociocultural Ancillary Study if they were able and willing to complete a second visit within 3-9 months of the parent study baseline clinic exam. A total of 5,313 (72.6%) of 7,321 parent study participants who were contacted agreed to participate. Interviews lasted approximately two hours and participants were compensated $60 for their time and effort. To accommodate the wide range of education and literacy levels, all self-report assessments were administered by trained interviewers using a standardized approach. Participants had the choice of completing the interview in English or Spanish. Because the Satorra-Bentler Chi-square test used in the factor analyses used list-wise deletion, participants with missing data on any of the 23 items of the FACIT-Sp-Ex were excluded from the present analyses. A total of 150 participants (.028%) were excluded, resulting in a total sample of 5,163 participants who completed the interview in English (n = 1,130) or Spanish (n = 4,033).

Participants who completed both the HCHS/SOL parent study and the Sociocultural Ancillary Study were eligible to enroll in a subsequent Psychometric Supplement study (aimed at providing preliminary evidence of reliability and validity of a subset of the measurement tools used in the Sociocultural Ancillary Study) if they were willing to return for a third visit within 1-3 weeks of the Sociocultural Ancillary assessment. With a target sample of 100 participants per field center in three of the four U.S. field centers (Chicago, IL; Miami, FL; San Diego, CA), the final sample subset consisted of 325 participants who completed the interview in English (n = 117) or Spanish (n = 208). To participate in the Psychometric Supplement, participants were re-administered a subset of selected questionnaires from the Sociocultural Ancillary Study. Interviews lasted approximately one hour and participants were compensated $25 for their time and effort. The HCHS/SOL parent study, Sociocultural Ancillary Study, and Psychometric Supplement study were conducted with Institutional Review Board approval from all sites.

Measures

Demographic Variables—Demographic variables were collected during the HCHS/SOL baseline clinic exam, and included age, sex, self-identified Hispanic/Latino background group, marital status, household income, education, religious identification, and interview language (English or Spanish).

Functional Assessment of Chronic Illness Therapy-Spiritual Well Being-Expanded Version—The FACIT-SP-Ex was administered during the Sociocultural Ancillary and Psychometric Supplement interviews and consists of 23 items which assess Meaning (items 2, 3, 5, 8 reverse-coded), Peace (items 1, 4 reverse-coded, 6, 7), Faith (items

9, 10, 11, 12), and Relational aspects of spirituality (items 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23) on a 5-point Likert-like scale ranging from 0 = *not at all* to 4 = *very much* (FACIT-SP-Ex; Peterman et al., 2002; FACIT.org, 2010). Sample items include: "I have a sense of purpose in my life" and "I feel connected to other people." The scale was originally developed for chronic illness populations, but has since been adapted for non-illness populations by re-wording two items from the original scale that refer to illness to refer instead to "difficult times" (available at FACIT.org). The FACIT-Sp-Ex was scored by summing the item scores in each subscale and then summing the subscale scores to yield the total score. Since participants with any missing FACIT-Sp-Ex items were excluded from the analyses, scoring procedures did not account for the possibility of missing data at the item level. Higher scores indicate higher levels of spiritual well-being.

The FACIT-Sp-Ex was originally developed in English, but was administered in either English or Spanish in the current study, based on the preference of each participant. Items 1-12 were available in Spanish (see FACIT.org) and therefore did not require translation. Items 13-23 were translated using forward and backward standard translation procedures (Bonomi et al., 1996). Pilot testing of the approved translated items (items 13-23) was conducted at the HCHS/SOL San Diego site. Focus groups and interviews were conducted with bilingual and monolingual participants of Hispanic/Latino descent as part of the piloting process. All translation and pilot testing procedures were conducted in conjunction with, and according to guidelines established by FACIT.org (see Webster, Cella & Yost, 2003 for more information regarding FACIT translation procedures).

Duke University Religion Index—(DUREL; Koenig, Parkerson, & Meador, 1997). The DUREL was administered during the Sociocultural Ancillary interview in either English or Spanish and was used to measure three domains of religiosity and religious practices. Organizational Religious Activity is measured with one item indicating frequency of attending religious services (six response options ranging from 1 = "never" to 6 = "more than once per week"). Non-organizational Religious Activity is measured with one item indicating frequency of praying, meditating, or studying religious text (six response options ranging from 1 = "rarely or never" to 6 = "more than once per day"). Intrinsic Religiosity, or the extent to which individuals live their lives in accordance with their religious beliefs, is measured with three items with 5 response options ranging from 1 = "definitely not true" to 5 = "definitely true"). For each subscale, higher scores indicate higher levels of religiosity. Internal consistency of the 3-item Intrinsic Religiosity subscale was acceptable in both English (α = .86) and Spanish (α = .88) respondents in the Sociocultural Ancillary sample.

Center for Epidemiologic Studies Depression Scale—(CES-D; Radloff, 1977) The CES D-10 was administered during the Sociocultural Ancillary and Psychometric Supplement interviews in either English or Spanish. This scale measures frequency of depressive symptoms experienced during the past week from 0 = "rarely or none of the time (< 1 day)" to 3 = "all the time (5-7 days)." An abbreviated 10-item version was used in the current study, with total scores ranging from 0 to 30 (Andresen, Malmgren, Carter, & Patrick, 1994). Higher scores represent greater frequency of depressive symptoms. Internal

consistency for the current sample was acceptable in both English (α = .82) and Spanish (α = .82) respondents in the Sociocultural Ancillary sample.

Short Form Health Survey—(SF-12; Ware, Kosinski, & Keller, 1996). The 12-item Medical Outcomes Study Short Form Health Survey was measured during the HCHS/SOL baseline interview in either English or Spanish and assessed HRQOL using the Physical Health Component Score (PCS) and the Mental Health Component Score (MCS). These summary scores are norm-based transformations of the standardized z-scores of the constituent items, with the norms representing the general U.S. population and scaled to a mean of 50 and a standard deviation of 10 (Ware, Kosinski, Turner-Bowker, & Gandek, 2002). Higher scores represent higher levels of HRQOL. Evaluating the internal consistency of the component scores is not appropriate due to the heterogeneity of scale items (Ware, Kosinsky, & Keller, 1994).

Statistical Analyses

Analyses were performed in IBM Statistics Version 21.0 (SPSS, Inc., Chicago IL) and Mplus Version 7.0 (Muthén & Muthén, 2006). Means and standard deviations for continuous variables and percentages for categorical variables were obtained in order to describe the study sample according to sociodemographic variables, religious affiliation, religiosity/spirituality scores, depressive symptoms, and HRQOL. Because the aim of the study was to establish psychometric properties rather than make inferences about the population, analyses did not account for the weights, stratification or clustering of the complex sampling design; therefore, the sample descriptive statistics presented are unweighted and may represent the current sample and possibly not the population from which the sample was drawn.

Confirmatory factor analysis (CFA) was used to test one, three, and four-factor models of the FACIT-Sp-Ex at the item level, in the entire Sociocultural Ancillary Study sample. To determine model fit in all CFAs, several descriptive fit indices and criteria were evaluated. The Satorra-Bentler chi-square likelihood ratio (S-Bχ^2) was reported instead of the χ^2 statistic because it adjusts for multivariate non-normality (Satorra & Bentler, 1994). However, as the S-Bχ^2 often rejects models with even slight data discrepancies in large samples,, other fit indices less impacted by sample size were used to determine acceptable model fit. Hu and Bentler (1999) recommend a comparative fit index (CFI) ≥ .95 or close, a root mean square error of approximation (RMSEA) ≤ .06 and a standardized root mean square residual (SRMR) ≤ .08. Modifications were made to improve model fit where strongly indicated and conceptually appropriate by removing items or moving items to a different factor than originally specified. Standardized factor loadings were evaluated for all models. The best-fitting model was carried forward throughout the remaining analyses.

After the factor structure of the FACIT-Sp-Ex was confirmed across the full sample, multi-group confirmatory factor analysis (MCFA; Dimitrov, 2010) was used to establish measurement invariance across English and Spanish responders. MCFA using the combined baseline model was conducted across language groups to assess if the same basic factor structure exists in both groups (i.e., configural invariance), with no equality constraints imposed on any of the model parameters other than the factor structure. Subsequently, the

model was subjected to increasingly stringent equality constraints, with the following parameters in the model constrained equal across the English and Spanish speaker groups: factor loadings (metric invariance), and intercepts (scalar invariance). To determine measurement invariance, nested MCFA models were compared using change in CFI, RMSEA, and SRMR fit indices. When comparing a less restrictive model to a more restrictive model, if the decrease in CFI was ≤ .01 (Cheung & Rensvold, 2002), and the increase in RMSEA was ≤ .015 and in SRMR was ≤ .01 (Chen, 2007), then invariance was declared.

The internal consistency of the FACIT-Sp-Ex was assessed with Cronbach's α by language and across the full sample for items within the total scale and individual subscales. Test-retest reliability was established in the Psychometric Supplement sample by correlating total scale and subscale scores between Sociocultural Ancillary and Psychometric Supplement study interviews to determine consistency and stability of the FACIT-Sp-Ex scores over a period of one to three weeks.

For the remaining analyses, FACIT-Sp-Ex total-scale and subscale scores were used, based on the factor structure the above analyses yielded. Convergent and/or discriminant validity was evaluated with Pearson's r correlations between the FACIT-Sp-Ex total score and subscale scores with the three subscales of religiosity from the DUREL. Concurrent validity was evaluated by conducting linear regressions associating each individual FACIT-Sp-Ex scale with mental and physical HRQOL (SF-12 mental health and physical health component scores) and depressive symptoms (CES-D), while adjusting for age and sex. Age and sex were adjusted for due to their possibility of being associated with HRQOL and/or depressive symptoms. Linear associations between each DUREL subscale and HRQOL and depressive symptoms were evaluated in order to examine how they relate to HRQOL and depressive symptoms compared with the FACIT-Sp-Ex scales. All FACIT-Sp-Ex and DUREL subscales were also included simultaneously in regression models, adjusting for age and sex, in order to determine the independent associations of each subscale, while adjusting for the other subscales. Significance was defined as $p \leq .05$.

Results

Sample characteristics and descriptive statistics for all study variables are shown in Table 1. Results of the CFA (see Table 2) indicated that a one-factor model of spirituality (i.e., all 23 items of the FACIT-Sp-Ex loading on one factor) did not have acceptable model fit. Three-factor (i.e., Meaning/Peace, Faith, Relational Spirituality) and four-factor models (i.e., Meaning, Peace, Faith, Relational Spirituality) had improved fit, but the CFI's and RMSEA's were not at acceptable levels. The changes in the SRMR (Δ = .001) and RMSEA (Δ = .002) fit indices between the three-factor and four-factor models were minor; however, the change in the CFI (Δ = .01) bordered on the recommended change of > .01 (Cheung & Rensvold, 2002), with the four-factor model having slightly better fit than the three-factor model. Because there has been empirical support in chronic illness samples for separating Meaning and Peace into two separate factors (see Bredle et al., 2011; Peterman et al., 2014), in addition to research in chronic illness samples showing that the Peace subscale tends to account for significantly more of the unique variance in HRQOL outcomes than the

Meaning subscale (Peterman et al., 2014), we decided to retain the four-factor model. This allowed us to examine whether the pattern found in chronic illness samples was comparable in a population-based sample. Modifications were subsequently made to the four-factor model to improve model fit. Modification indices indicated that item 12 ("even during difficult times, things will be ok"), an indicator of the Faith factor, cross-loaded on all other factors (standardized loadings = .58-.68); this item was therefore removed from the model. The modification indices also indicated that item 13 ("I feel connected to a higher power, e.g., God") loaded on the Faith factor rather than the Relational factor. When item 12 was removed from the model, item 13 was moved to the Faith factor, and several pairs of residual variances were correlated between conceptually similar items (items 4-reversed with 8-reversed, 9 with 10, 17 with 18, and 19 with 20), model fit was acceptable (see Table 2). This 4-factor model with modifications was carried forward throughout the remaining analyses, and subscale scores were obtained by summing the item scores within each subscale. Note that item 12 was excluded from the final model. Therefore, the FACIT-Sp-Ex subscale scores and total score excluded item 12.

A CFA with a second-order latent factor of overall spiritual well-being (i.e., each of the four first-order factors loading on a second-order factor in addition to each item loading on a first-order factor) was also evaluated in order to determine whether the use of an overall FACIT-Sp-Ex score would be appropriate. The model displayed acceptable fit (see Table 2). Standardized loadings for first order factors and for the second-order factor are displayed in Table 3.

Multi-group confirmatory factor analyses (MCFA) were conducted across English and Spanish language administration of the FACIT-Sp-Ex using the four-factor structure with modifications as described above. MCFAs indicated that the model showed acceptable levels of configural invariance (i.e., equal factor structure), metric invariance (i.e., equal item loadings), and scalar invariance (i.e., equal item intercepts), across the English and Spanish language versions of the FACIT-Sp-Ex. Goodness of fit statistics and change in the fit indices from less restrictive to more restrictive models are displayed in Table 4.

Internal consistency reliability of the FACIT-Sp-Ex total and subscale items was acceptable, with Cronbach's alpha (α) ranging from .67 for the Meaning subscale to .91 for the FACIT-Sp-Ex total scale. Test-retest reliability of the FACIT-Sp-Ex total scale and subscales within the Psychometric Supplement sample was also acceptable, with Pearson's r correlations ranging from .67 for the Meaning subscale to .83 for the total scale. Results for internal consistency and test-retest reliability are shown in Table 5.

Convergent and/or discriminant validity was assessed with Pearson's r correlations between the FACIT-Sp-Ex total and subscale scores and the religiosity subscales from the DUREL (see Table 6). All scales were significantly, positively correlated with each other. The Meaning, Peace, and Relational subscales of the FACIT-Sp-Ex were strongly correlated with each other (rs = .60 – .64) and weakly correlated with the three DUREL subscales (rs = .12 - .20). The Faith subscale was strongly correlated with Meaning, Relational and with the three DUREL subscales (rs = .41 – .60). The FACIT-Sp-Ex total scale was moderately

correlated with the DUREL subscales (*r*s = .29 – .39) and strongly correlated with the FACIT-Sp-Ex subscales (*r*s = .74 – .91).

Concurrent validity was examined with linear regressions associating FACIT-Sp-Ex and DUREL scales with each measure of physical and psychological well-being, while adjusting for age and sex (see results in Table 7). In separate regression analyses adjusting for age and sex, the FACIT-Sp-Ex total score and subscale scores were each significantly inversely associated with depressive symptoms and significantly positively associated with mental HRQOL and with physical HRQOL, with the exception of the Faith subscale, which was not significantly associated with physical HRQOL. The DUREL subscales (i.e., Organizational Religiosity, Non-organizational Religiosity, and Intrinsic Religiosity) were significantly inversely associated with depressive symptoms and significantly positively associated with mental HRQOL, but were not significantly associated with physical HRQOL.

When accounting for all four FACIT-Sp-Ex subscales and all three DUREL subscales in one model, greater Peace and Meaning remained significantly associated with fewer depressive symptoms, better mental HRQOL, and better physical HRQOL, whereas greater Faith was associated with more depressive symptoms, worse mental HRQOL, and worse physical HRQOL. Peace was more robustly associated than Meaning with depressive symptoms (r = -.45 vs. -.22) and with mental HRQOL (r = .29 vs. .16), whereas Meaning was slightly more robustly associated than Peace with physical HRQOL (r = .08 vs. .06). The significance of these differences was not tested, however. The Relational subscale was no longer significantly associated with depressive symptoms, mental HRQOL or physical HRQOL when accounting for all other FACIT-Sp-Ex and DUREL subscales. Only Organizational Religiosity remained significantly, inversely associated with depressive symptoms, and both Organizational and Intrinsic Religiosity remained significantly, positively associated with mental HRQOL. The FACIT-Sp-Ex subscales were generally more strongly associated with depressive symptoms and HRQOL than were DUREL subscales (see Table 7).

Discussion

The present study is the first to assess the validity of a FACIT-Sp-Ex non-illness version in a large, ethnically and geographically diverse sample of U.S. Hispanic/Latino adults interviewed in either English or Spanish. The psychometric properties, including the factor structure and measurement invariance across language, internal consistency and test-retest reliability, and convergent/discriminant and concurrent validity of the FACIT-Sp-Ex were evaluated.

Confirmatory factor analyses among the entire sample indicated that a four-factor structure with factors representing Meaning, Peace, Faith, and Relational Spirituality best fit the data, compared with a one-factor structure (i.e., all items loading on one factor), and a three-factor structure (i.e., Meaning/Peace, Faith, Relational). Additionally, a second-order latent factor of spiritual well-being with each subscale factor loading on an overall spiritual well-being factor fit the data well. Prior validation studies in chronically ill samples have found that the Meaning and Peace items are better represented in two separate subscales, possibly because the Meaning items measure a cognitive dimension of spiritual well-being, while the Peace

items measure an affective dimension of spiritual well-being (Canada et al., 2008; Murphy et al., 2010). Of note is that there may not have been a meaningful difference between the three-factor and four-factor models, although the change in the CFI fit index bordered on significant based on recommendations found in the literature, with the four-factor model having better fit than the three-factor model. In a study of four adult samples with various chronic health conditions, Peterman et al., (2014) found that although Meaning and Peace were empirically distinct factors, it was unclear whether Meaning and Peace were functionally different in their relationship to health outcomes. Future studies are needed in order to clarify this distinction in non-illness and Hispanic/Latino populations. There may not be additional functional utility in distinguishing the Meaning and Peace subscales.

Modifications were made to the four-factor model in the present study in order to improve model fit. Item 12 (“even during difficult times, things will be ok”) was removed from the Faith subscale and the Total scale because it cross-loaded on all factors, and item 13 (“I feel connected to a higher power, e.g. God”) was moved from the Relational subscale to the Faith subscale. These modifications are consistent with unpublished findings from a validation study of the FACIT-Sp-Ex in primarily non-Hispanic White and African American HIV/AIDS patients (Cotton et al., 2011). Our findings suggest it may be useful to re-evaluate the utility of retaining item 12 in the non-illness version of the FACIT-Sp-Ex, particularly when researchers are interested in examining distinct domains of spiritual well-being. However, it is important to note that item 12 is one of two items that were modified for use in a non-illness population; thus, these findings cannot be directly compared to findings from studies in chronic illness populations.

There was strong measurement invariance (i.e., configural, metric, and scalar invariance) across English and Spanish versions of the measure. This suggests that across language groups, not only do the same factors exist, but also that the relationships between the FACIT-Sp-Ex items and latent factors are the same, and that the item intercepts are the same as well. In our sample, the English and Spanish versions of the items appear to be functioning similarly. Thus, relationships between the FACIT-Sp-Ex subscales and other variables can be interpreted similarly across the groups.

The items within the FACIT-Sp-Ex total score (22 items after removing item 12) and the four subscales demonstrated adequate internal consistency, as well as adequate test-retest reliability when measured 1-3 weeks later. The Meaning and Peace subscales had the lowest internal consistency, but this may be a result of there being fewer items in these subscales in combination with these subscales containing negatively (reverse) worded items. The negatively worded items (i.e., items 4 and 8) had the poorest factor loadings and the largest error variances, a finding that has been similarly noted in other studies of FACIT-Sp validity (Canada et al., 2008; Murphy et al., 2010; Peterman et al., 2014). Studies have shown that negatively (or reverse) worded items within measures may result in response bias or form a separate factor (Marsh, 1996). No study to date has examined whether the negatively worded items in the FACIT-Sp result in response bias, and if so, if participant characteristics such as verbal ability, interview language, language preference, or other sociocultural factors predict more or less bias in responding.

The FACIT-Sp-Ex total scale and subscales were all significantly, positively associated with DUREL subscales (i.e., Organizational and Non-organizational Religious Activity and Intrinsic Religiosity). However, the Meaning, Peace, and Relational subscales were only weakly correlated with DUREL subscales in magnitude (*r*s < .30), whereas the Faith subscale was strongly correlated with DUREL subscales (*r*s> .40). This is not surprising, as three of the Faith items contain the term "faith," with faith in part denoting a strong belief in God or religious belief system. The fourth Faith item comes from the expanded version of the FACIT-Sp, and is about having a feeling of connection with a higher power such as God. The Meaning, Peace, and Relational subscales are likely capturing dimensions of spiritual well-being that both religious and non-religious individuals are likely to endorse. Due to the design of the overall study, it was not practical to administer additional measures of spirituality in the current sample. This would be useful to include in future studies in order to examine the convergent validity of the FACIT-Sp-Ex with other measures of spirituality.

When accounting for all FACIT-Sp-Ex and DUREL subscales simultaneously in regression models, only Meaning, Peace, Faith, Organizational Religious Activity, and Intrinsic Religiosity contributed significantly to depressive symptoms and/or HRQOL. This replicated past findings from samples with and without non-Hispanic respondents in which Meaning and Peace were each associated uniquely and favorably with emotional well-being and HRQOL (Canada et al., 2008; Murphy et al., 2010). It is noteworthy that the Relational subscale was not associated with depressive symptoms or HRQOL when accounting for all FACIT-Sp-Ex and DUREL subscales. Future research using the FACIT-Sp-Ex should determine if the Relational subscale uniquely predicts other outcomes in Hispanics/Latinos, such as acculturative stress, a construct that is particularly relevant to many U.S. Hispanics/Latinos.

Also replicating past findings in chronically ill samples with and without non-Hispanic respondents (Canada et al., 2008; Murphy et al., 2010), the Faith subscale was associated with greater depressive symptoms and worse mental and physical HRQOL after controlling for all other FACIT-Sp-Ex and DUREL subscales. There is some evidence that ethnic minority women in the U.S. (Hispanics/Latinos and African Americans) endorse more religious coping than non-Hispanic whites during treatment for breast cancer (Culver, Arena, Antoni, & Carver, 2002). It is possible that greater Faith was associated with poorer emotional well-being and HRQOL outcomes in the present sample because individuals who are in distress may be more likely to rely on their faith as a way of coping. In fact, the wording of the items themselves suggests this possibility (e.g., "difficult times have strengthened my faith or spiritual beliefs").

The FACIT-Sp-Ex was interviewer-administered, rather than self-administered in the current study. Although there are advantages and disadvantages to interview based administration of surveys (for a review see Bowling, 2005), this method was utilized in the overall SOL study to account for a wide range of literacy levels among respondents. Although this issue has rarely been evaluated among Hispanics/Latinos, at least one published study has demonstrated that interview- and self-administration modes do not yield significantly different results in English and Spanish-speaking cancer patients who completed the Functional Assessment of Cancer Therapy – General scale (Hahn, Rao, Cella, & Choi,

2008). Thus, it is unlikely that administration mode substantially influenced the study results.

There are some limitations to the current study that should be considered in interpreting the findings. First, the study design did not allow for testing the predictive validity of the FACIT-Sp-Ex, as the re-test measures were administered only 1-3 weeks after the first administration of the measures; therefore, only concurrent validity could be tested. In addition, the SF-12, which assessed mental and physical HRQOL, was administered at the HCHS/SOL baseline examination, which occurred 3-9 months prior to the examination at which the FACIT-Sp-Ex and DUREL were administered. However, the associations between the FACIT-Sp-Ex and the SF-12 mental and physical health component scores were replicated in the 325 participants who completed the re-testing of the measures concurrently. Lastly, although this was a population-based study, the sample may be representative of the 4 geographic regions from which it was obtained, and may or may not be completely representative of Hispanics/Latinos in the U.S. as a whole.

Despite these limitations, the current study has a number of strengths. It is the first study to examine the validity of a non-illness version of the FACIT-Sp-Ex. It also addresses the measurement of spiritual well-being and religiosity in both English and Spanish-speaking Hispanics/Latinos, the largest ethnic minority group in the U.S., yet, a group that has been understudied with regards to spirituality and religiosity. In addition, the study sample used was large and representative of Hispanics/Latinos of diverse demographics and ancestries in four major U.S. cities. The expanded, non-illness version of the FACIT-Sp-Ex appears to be a reliable and structurally valid measure of spiritual well-being in Hispanic/Latino adults living in the U.S., functioning similarly across English and Spanish respondents and relating to depressive symptoms and mental and physical health-related quality of life.

Acknowledgments

The Hispanic Community Health Study/Study of Latinos was carried out as a collaborative study supported by contracts from the National Heart, Lung, and Blood Institute (NHLBI) to the University of North Carolina (N01-HC65233), University of Miami (N01-HC65234), Albert Einstein College of Medicine (N01-HC65235), Northwestern University (N01-HC65236), and San Diego State University (N01-HC65237). The following institutes, centers, or offices contribute to the HCHS/SOL through a transfer of funds to the NHLBI: National Center on Minority Health and Health Disparities, the National Institute on Deafness and Other Communications Disorders, the National Institute of Dental and Craniofacial Research, the National Institute of Diabetes and Digestive and Kidney Diseases, the National Institute of Neurological Disorders and Stroke, and the Office of Dietary Supplements. The authors thank the staff and participants of HCHS/SOL for their important contributions. A complete list of staff and investigators is available on the study website, http://www.cscc.unc.edu/hchs/

The HCHS/SOL Sociocultural Ancillary Study was supported by grant 1 RC2 HL101649 from the NIH/NHLBI (Gallo/Penedo MPIs). The authors thank the staff and participants of HCHS/SOL and the HCHS/SOL Sociocultural Ancillary Study for their important contributions.

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Table 1
Unweighted Sample Characteristics (Total N = 5,163)

Characteristic	*N*	*M* (*SD*) or %
Age (18-75 years)	5,163	46.47 (13.64)
Women	5,163	62.1%
Spanish language interview	5,163	78.1%
Hispanic background	5,159	
Dominican		10.2%
Central or South American		17.0%
Cuban		14.3%
Mexican		39.2%
Puerto Rican		16.7%
More than one/other background		2.6%
Yearly household income	4,738	
≤ $20,000		52.1%
$20,001-$40,000		32.6%
>$40,000		15.3%
Completed high school education or beyond	5,154	63.9%
Married or cohabitating	5,154	49.9%
Religious Identification	5,148	
Roman Catholic		60.9%
Christian (non-specified)		17.6%
Pentecostal		5.7%
Jehovah's Witness		3.1%
None		7.6%
All other (< 2.5% in each group)		5.0%
FACIT-Sp-Ex total (9-88, excludes item 12)	5,163	68.01 (13.10)
Peace (0-16)		11.57 (3.22)
Meaning (0-16)		13.16 (2.66)
Faith (0-16)		12.06 (4.05)
Relational (0-40)		31.22 (6.16)
DUREL subscales		
Organizational religious activity (1-6)	5,157	3.77 (1.73)
Non-organizational religious activity (1-6)	5,158	3.65 (1.78)
Intrinsic Religiosity (3-15)	5,138	12.34 (3.09)
CES-Depression-10 (0-30)	5,098	7.79 (6.01)
Health-related quality of life (Short-form 12)		
Mental Health Norm-based (7.70-74.70)	5,123	48.41 (11.55)
Physical Health Norm-based (-1.05-74.57	5,123	48.64 (9.93)

Note. *N* = sample size. *M* = mean. *SD* = standard deviation. DUREL = Duke University Religion Index. Values in parentheses after variable name indicate minimum and maximum scores within the sample. FACIT-Sp-Ex total and subscales represent the final factor structure determined by the factor analyses.

Table 2

Goodness of Fit Statistics for FACIT-Sp-Ex Confirmatory Factor Analyses (N = 5,163)

Model	S-Bχ^2	*df*	CFI	SRMR	RMSEA (90% CI)
One-factor	12586.05*	230	.694	.077	.102 (.100-.104)
Three-factor	6191.80*	227	.852	.073	.071 (.070-.073)
Four-factor	5787.02*	224	.862	.072	.069 (.068-.071)
Four-factor (modified)[a]	2334.34*	199	.944	.037	.046 (.044-.047)
Second-order	2504.09*	201	.940	.042	.047 (.045-.049)

Note. S-Bχ^2 = Satorra-Bentler chi-square. *df* = degrees of freedom. CFI = comparative fit index. SRMR = standardized root mean square residual. RMSEA = root mean square error of approximation. CI = confidence interval.

[a]Modifications included removing item 12, moving item 13 to the faith factor, and correlating the residual variances of four pairs of items

*$p < .0001$

Table 3

Final FACIT-Sp-Ex Standardized Factor Loadings (β)

FACIT-Sp-Ex item or factor[a,b,c]	Peace	Meaning	Faith	Relational	2nd-Order
1. I feel peaceful	.62				
4. I have trouble feeling peace of mind (reversed)	.40				
6. I am able to reach down deep into myself for comfort	.77				
7. I feel a sense of harmony within myself	.79				
2. I have a reason for living		.67			
3. My life has been productive		.68			
5. I feel a sense of purpose in my life		.76			
8. My life lacks meaning and purpose (reversed)		.37			
9. I find comfort in my faith or spiritual beliefs			.85		
10. I find strength in my faith or spiritual beliefs			.89		
11. Difficult times have strengthened my faith or spiritual beliefs			.81		
13. I feel connected to a higher power (e.g. God)			.73		
14. I feel connected to other people				.56	
15. I feel loved				.66	
16. I feel love for others				.61	
17. I am able to forgive others for any harm they have ever caused me				.50	
18. I feel forgiven for any harm I may have ever caused				.52	
19. Throughout the course of my day, I feel a sense of thankfulness for my life				.72	
20. Throughout the course of my day, I feel a sense of thankfulness for what others bring to my life				.72	
21. I feel hopeful				.76	
22. I feel a sense of appreciation for the beauty of nature				.63	
23. I feel compassion for others in the difficulties they are facing				.54	
Peace					.86
Meaning					.90
Faith					.61
Relational					.92

Note. Item 12 was excluded from the final model because it cross-loaded on all four factors.

[a]The residual variances between the following conceptually similar pairs of items were correlated to improve model fit: Item 4 with 8, 9 with 10, 17 with 18, and 19 with 20.

[b] Item response options were on a 5-point Likert scale from 0 = *not at all* to 4 = *very much*.

[c] Possible scores for each subscale/total score were as follows: Meaning (0-16), Peace (0-16), Faith (0-16), Relational (0-40), Total Score (0-88).

Table 4

Goodness of Fit Statistics for Measurement Invariance Models Between English and Spanish Versions of the FACIT-Sp-Ex (N = 1,163)

Model	S-Bχ^2	*df*	CFI	SRMR	RMSEA	Reference Model #	ΔCFI	ΔSRMR	ΔRMSEA
1. Configural	2629.45 *	398	.943	.039	.047				
2. Metric	2683.84 *	416	.942	.041	.046	1	.001	.002	.001
3. Scalar	3002.25 *	434	.934	.043	.048	2	.008	.002	.002

Note. S-Bχ^2 = Satorra-Bentler chi-square. *df* = degrees of freedom. CFI = comparative fit index. SRMR = standardized root mean square residual. RMSEA = root mean square error of approximation.

* $p < .0001$

Table 5
Internal Consistency and Test-Retest Reliability of FACIT-Sp-Ex Items

FACIT-Sp-Ex Scale	English α (*n* = 1,130)	Spanish α (*n* = 4,033)	Full Sample α (*N* = 5,163)	Test-Retest Pearson's *r* (*N* = 325)
FACIT-Sp-Ex Total (22 items)	.91	.91	.91	.83
Peace (4 items)	.73	.72	.77	.70
Meaning (4 items)	.67	.68	.67	.67
Faith (4 items)	.90	.89	.90	.74
Relational (10 items)	.86	.87	.86	.77

Note. α = Cronbach's alpha

Table 6

Pearson's r Correlations Between FACIT-Sp-Ex Total/Subscales and DUREL Subscales

	1	2	3	4	5	6	7	8
1. FACIT-Sp-Ex Total	—							
2. Peace	.78	—						
3. Meaning	.75	.64	—					
4. Faith	.74	.41	.34	—				
5. Relational	.91	.60	.60	.55	—			
6. ORA	.29	.14	.12	.42	.22	—		
7. NORA	.34	.20	.15	.46	.26	.47	—	
8. IR	.39	.20	.13	.60	.28	.45	.48	—

Note. All correlations significant at $p < .001$. DUREL = Duke University Religion Index. ORA = Organized Religious Activity. NORA = Non-Organized Religious Activity. IR = Intrinsic Religiosity.

Table 7

Standardized Regression Estimates (β) for Associations between FACIT-Sp-Ex/DUREL Scales and Depressive Symptoms, Mental HRQOL, and Physical HRQOL

FACIT-Sp-Ex/DUREL Scales	CES-D-10		SF-12 MCS		SF-12 PCS	
	Model 1	Model 2 (*n*=5,069)	Model 1	Model 2 (*n*=5,091)	Model 1	Model 2 (*n*=5,091)
Peace	-.57***	-.45***	.35***	.29***	.09***	.06**
Meaning	-.49***	-.22***	.31***	.16***	.10***	.08***
Faith	-.21***	.10***	.10***	-.11***	.01	-.05**
Relational	-.37***	-.001	.22***	-.01	.06***	-.003
FACIT-Sp-Ex Total	-.48***		.29***		.07***	
ORA	-.13***	-.07***	.08***	.05**	.02	.02
NORA	-.13***	-.004	.07***	-.01	<.001	-.02
IR	-.11***	-.01	.07***	.04*	.01	.02

Note. DUREL = Duke University Religion Index. HRQOL = health-related quality of life. CES-D = Center for Epidemiologic Studies Depression Scale. SF-12 = Short-Form 12. MCS = Mental Health Component Score. PCS = Physical Health Component Score. ORA = organized religious activity. NORA = non-organized religious activity. IR = intrinsic religiosity. Model 1 includes the individual FACIT-Sp-Ex/DUREL subscale listed and adjusts for age and sex. Model 2 includes the four FACIT-Sp-Ex subscales and three DUREL subscales simultaneously and adjusts for age and sex. Analyses used list-wise deletion.

* $p < .05$.

** $p < .01$.

*** $p < .001$