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Psychometric Evaluation of the Spanish versions of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a Sample of Churchgoing Latinas

Sarah D. Mills^a, Elva M. Arredondo^{b,d}, Lilian G. Perez^{b,c}, Jessica Haughton^b, Scott C. Roesch^{a,d}, and Vanessa L. Malcarne^{a,d}

^aSan Diego State University/University of California, San Diego Joint Doctoral Program in Clinical Psychology

^bGraduate School of Public Health, San Diego State University, Institute for Behavioral and Community Health (IBACH)

^cSan Diego State University, University of California, San Diego Joint Doctoral Program in Public Health

^dSan Diego State University

Abstract

The present study evaluated the psychometric properties of the Spanish versions of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a sample of churchgoing Latina women ($N = 404$). For the Perceived Religious Influence on Health Behavior scale, confirmatory factor analysis provided support for the expected one-factor model, internal consistency reliability was good, and there was evidence of convergent validity. For the Illness as Punishment for Sin scale, confirmatory factor analysis provided support for the expected one-factor model, but on a revised, seven-item version of the measure. Internal consistency reliability and convergent validity for this revised version were good. It is recommended that future studies use the Perceived Religious Influence on Health Behavior scale and the revised Illness as Punishment for Sin scale when examining these constructs among Latina women.

Research examining the relationship between religion and health has grown recently in the health sciences. Reviews suggest that religion, defined as an organized system of faith and worship, often has a salutatory impact on mental and physical health; however, findings have been inconsistent (Chatters, 2000; Ellison & Levin, 1998; Koenig, 2012; Levin, 1994). Religion has been associated with several positive mental health outcomes such as optimism, hope, well-being, meaning and purpose, and lower levels of depression and anxiety (Koenig, 2012). In addition, studies suggest that religion is protective for several physical health outcomes including coronary heart disease, hypertension, immune function, and morbidity

and mortality (Ellison & Levin, 1998; Koenig, 2012). A minority of studies, however, have found that religion is associated with adverse mental (e.g., self-esteem, sense of control) and physical health outcomes (e.g., coronary heart disease, hypertension; Koenig, 2012).

In an attempt to disentangle inconsistent findings, theoretical models have been developed that propose mechanisms through which religion is believed to impact health. Several mechanisms, or mediators, of this relationship have been identified including psychological (e.g., self-esteem and positive affect) and social (e.g., social support and social integration) processes. In addition, religious beliefs have been identified as a potential mediator of the relationship between religious involvement and health. For example, religious beliefs concerning lifestyle choices (e.g., “Because of my religious/spiritual beliefs, I do not put harmful substances into my body”) and punishment from God (e.g., “God uses sickness to send a message to people”) have been suggested as potential mediators of this relationship (Ellison & Levin, 1998; Holt et al., 2009; Koenig, 2012). Studies show that religiosity is a part of daily culture among Latinos, and God is believed to be an active force in daily life (Campesino & Schwartz, 2006; Pew Research Center, 2007). In a study of Catholic Latino parishioners, participants identified several religious beliefs (e.g., engaging in activities in moderation, staying healthy to serve God) that affected their health (Allen et al., 2014). Participants believed God had an active role in health and was a healer of the sick and a giver of health (Allen et al., 2014). In Latino culture, God is also used to make meaning of illness. The phrase “si Dios quiere” which can be translated to “if it is God’s will” is a commonly used expression that demonstrates the important and widespread belief: about God’s role in health and illness in Latino culture (Santos, Hurtado-Ortiz, & Sneed, 2009). Although conceptual models have been developed linking religious beliefs to health, few studies have empirically tested whether different religious beliefs mediate the relationship between religious involvement and health (Holt et al., 2009). This may be due, in part, to the limited measures available to examine health-related religious beliefs. In response, Holt et al. (2009) developed the Perceived Religious Influence on Health Behavior scale, a measure of the extent to which an individual’s health behaviors are affected by his or her religion, and the Illness as Punishment for Sin scale, a measure of the extent to which illness is believed to be an act of retribution. Holt et al. originally developed these measures for use with African American men and women because of the high rate of religious involvement in this ethnic group.

Measure items were initially developed by project team members, and items were reviewed by an advisory panel of three African American pastors and two separate pilot groups of 15 African American men and women from the community. Items that received low ratings were excluded, and a final group of items for each measure were voted on by the project team (Holt et al., 2009). Psychometric evaluation of these items was conducted via telephone interviews among a national probability sample of 55 African American men and women. Study participants had a mean age of 50.93 years ($SD = 16.72$), and most were single ($n = 22$; 40%) and employed full time ($n = 22$; 40%). The seven-item Perceived Religious Influence on Health Behavior scale had acceptable internal consistency reliability ($\alpha = .74$) and test-retest reliability over a two-week time period ($r = .65, p < .001$). The eight-item Illness as Punishment for Sin scale had good internal consistency reliability ($\alpha = .91$) and acceptable test-retest reliability over a two-week time period ($r = .65, p < .001$). Holt et

al. reported that face validity was evidenced for both measures because the measure items were reviewed by African American pastors as part of the measure development process. In addition, for the Perceived Religious Influence on Health Behavior scale, convergent validity was evidenced by significant correlations with subscales of the Spiritual Health Locus of Control scale (Holt, Clark, & Klem, 2007). The authors stated that there were no measures available to examine the convergent validity of the Illness as Punishment for Sin scale. Discriminant validity was evidenced for both measures by nonsignificant correlations with the Self-efficacy scale (Chen et al., 2001).

To date, the two measures have been used in one other study of 2,370 African American men and women (Age: $M = 53.63$ years; $SD = 14.82$; Holt, Clark, & Roth, 2014). Confirmatory factor analysis provided support for a two-factor model, with the seven items from the Perceived Religious Influence on Health Behavior scale loading on one factor and the eight items from the Illness as Punishment for Sin scale loading on a separate factor. Internal consistency reliability was good in the large sample for both measures (Perceived Religious Influence on Health Behavior: $\alpha = .87$; Illness as Punishment for Sin: $\alpha = .89$).

Psychometric data available for these two measures is presently limited to two samples of African American men and women. Psychometric evaluation of these measures is needed for other ethnic groups that have high rates of religious affiliation and involvement, such as Latinos (Pew Research Center, 2014a). In the United States, Latinos report high rates (80%) of religious affiliation and religious practice (e.g., 59% of Latinos reporting praying at least daily; Pew Research Center, 2014a; Pew Research Center, 2014b). In addition, religion has been shown to play an important role in health for Latinos, although studies assessing this relationship are inconsistent; religion has been shown to have both a positive and negative impact on health (Ellison, Finch, Ryan, & Salinas, 2009; Ellison & Levin, 1998; Finch & Vega, 2003; Sanchez, Dillon, Ruffin, & De La Rosa, 2012). An evaluation of the psychometric properties of these measures among Latinos may provide justification for their use in future studies among this population. Examining religious beliefs as potential mediators of the relationship between religion and health using these measures may provide further insight into this complex relationship among Latinos. In addition, used together, these measures may help explain the inconsistent relationship between religion and health previously found, as the Perceived Religious Influence on Health Behavior scale could be expected to be associated with positive health outcomes, while the Influence as Punishment for Sin scale could be expected to be associated with negative health outcomes. The psychometric properties of the instruments, however, have not been evaluated in this population. Furthermore, to date, the measures have only been psychometrically evaluated in English. The majority of Latinos living in the United States speak Spanish, and more than one-quarter have a Spanish language preference as opposed to the English language (Taylor, Lopez, Martinez, & Velasco, 2012; United States Census Bureau, 2015). Valid and reliable measures in the Spanish language are needed for the growing Latino population. The sample in the present study consisted of Latina women only. Studies show that, among Latinos, women engage in more religious activity and prayer as compared to men (Pew Research Center, 2016). In Latino culture, a major role for women is to instill religious values and customs for the family (Campesino & Schwartz, 2006). Given the potential gender differences in the engagement with and role of religion among Latinos, the present study

focused on women only in an effort to better understand health-related religious beliefs among Latinas. Thus, the present study evaluated the psychometric properties of the Spanish versions of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a sample of Latina women to determine if these measures can be used in this population.

The first aim was to evaluate the factorial validity of the Spanish versions of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a sample of churchgoing Latinas. Based on previous studies (Holt et al. 2009; Holt et al., 2014), a one-factor structure was hypothesized for both measures. A significant, moderate correlation was expected between the two measures. Internal consistency reliability for a total score on each measure, assessed using Cronbach's coefficient alpha, was expected to be good. Convergent validity was evaluated using Spearman's correlation coefficients with a measure of God locus of health control. We expected that the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale would be significantly, moderately, positively associated with God locus of health control. Similar to the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale, the God Locus of Health Control scale also examines the extent to which one believes God exerts influence over one's health. In addition, Spearman's correlation coefficients and independent samples *t*-tests were used to evaluate the relationship of sociodemographic variables to scores on the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale. A priori hypotheses about these relationships were not proposed because of the limited literature available for these measures.

Methods

Participants and Procedures

Participants in this study were initially recruited to participate in the *Fe en Acción*/Faith in Action intervention, a study promoting physical activity and cancer screening among churchgoing Latinas in San Diego, California (Arredondo et al., 2015). Latinas were recruited from 16 churches that had at least one Spanish-speaking service and a minimum of 200 Latino families. To be eligible for inclusion, individuals had to self-identify as Latina, be between 18 and 65 years old, attend church at least four times a month for any reason, live within a 15-minute drive from their church, have reliable transportation to get to their church, have no barriers to attend their church, and plan to attend their church for the next 24 months. All study participants were Catholic. To recruit low active participants, who would potentially benefit the most from the intervention, women also had to report low levels of physical activity and engage in low levels of accelerometer-measured physical activity. Additional information on the design of the parent study can be found elsewhere (Arredondo et al., 2015). The present study used baseline data collected from May 2011 to September 2013 via self-report questionnaires completed by participants in their preferred language of either English ($n = 32$) or Spanish ($n = 404$). Only participants who completed study questionnaires in Spanish were included in the present study to provide psychometric data on the Spanish versions of the measures. Informed consent was provided by participants

prior to study participation. The institutional review board at San Diego State University approved study procedures and materials prior to human subject enrollment.

Measures

Sociodemographic data were collected at baseline as part of the *Fe en Acción*/Faith in Action study. All measures reported in the current study were translated into Spanish according to standard protocols (Harkness, 2003). The protocol used for the translation is described elsewhere (Arredondo, Mendelson, Holub, Espinoza, & Marshall, 2012). First, study measures in English were sent to a professional, certified translator who was a native Spanish speaker. Next, the translated surveys were back translated to English by one fluent bilingual/bicultural project team member. Discrepancies resulting from translation were then resolved by two other fluent bilingual team members. The three team members were familiar with the content of the measures because of their studies in public health.

Perceived Religious Influence on Health Behavior scale (Holt et al., 2009).

The seven-item Perceived Religious Influence on Health Behavior scale examines the degree to which an individual's health behaviors are affected by his or her religion. Response options are on a four-point scale and range from 1 = "Strongly disagree" to 4 = "Strongly agree." Total scores are calculated by summing individual items, and range from 7 to 28. Higher scores indicate greater endorsement that religion has an impact on an individual's health behaviors.

Illness as Punishment for Sin scale (Holt et al., 2009).—The eight-item Illness as Punishment for Sin scale examines the degree to which illness is believed to be an act of retribution. Response options are on a four-point scale and range from 1 = "Strongly disagree" to 4 = "Strongly agree." Total scores are calculated by summing individual items, and range from 8 to 32. Higher scores indicate greater belief that illness is a punishment for sin.

God Locus of Health Control scale (Wallston et al., 1999).—The six-item God Locus of Health Control scale assesses the degree to which an individual believes God has control over one's health. Response options are on a six-point scale ranging from 1 = "Strongly disagree" to 6 = "Strongly agree." Total scores are calculated by summing individual items, and range from 6 to 36. Higher scores indicate greater belief that God has control over one's health. Internal consistency reliability in the present study was good ($\alpha = .81$).

Data Analysis

Descriptive statistics for the sample were calculated in SPSS version 23 (IBM Corp, 2015). First, the factorial validity of the the two Holt et al. (2009) measures was evaluated using confirmatory factor analysis in Mplus version 7.2 (Muthen & Muthen, 2006). The Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale measure items were factor analyzed together. A two-factor model was hypothesized where items from the Perceived Religious Influence on Health behavior scale were expected to load on one factor and items from the Illness as Punishment for Sin scale were expected to

load on another factor. A significant, moderate correlation was expected between the two measures. As recommended by Bentler (2007), overall model fit was determined by consulting three descriptive fit indices: (a) the root mean square error of approximation (RMSEA; Steiger, 1990), (b) the standardized root mean residual (SRMR; Hu & Bentler, 1999), and (c) the robust comparative fit index (CFI; Bentler, 1990). For RMSEA and SRMR indices, values less than or equal to .08 were considered acceptable fit and values less than or equal to .05 were considered good fit. For CFI, values greater than or equal to .90 were considered acceptable fit and values greater than or equal to .95 were considered good fit. Models were determined to fit well if values for at least two of the descriptive fit indices indicated at least acceptable model fit. The chi square test of model fit was also reported for completeness, but not used as a primary indicator of model fit because it is sensitive to sample size and almost always significant, and thus not a good index of fit (Bentler, 1990). If the hypothesized two-factor model did not fit well, a review of factor loadings and modification indices was conducted. To maximize practical significance and diminish multi-vocality, items with low factor loadings were iteratively removed. Missing values were handled using the maximum likelihood robust estimation procedure in Mplus. Second, internal consistency reliability was examined using Cronbach's coefficient alpha. Third, convergent validity for both measures was evaluated using Spearman's correlation coefficients to examine the relationships of the two measures to the God Locus of Health Control scale. Last, we examined the relationships of the two measures with sociodemographic Spearman's correlation coefficients and independent samples *t*-tests. For missing data were handled using listwise deletion in SPSS.

Results

Descriptive Statistics

Participants had a mean age of 44.98 years ($SD = 8.96$). In addition, the majority of participants were married or living as married (78.2%), employed (65.1%), had less than a high school education (58.4%), and born in Mexico (93.8%). Table 1 provides additional descriptive information on the study sample. For the means and standard deviations of all measure items, see Tables 2 and 3. For the Perceived Religious Influence on Health Behavior, all items on the measure were negatively skewed except for items 1 ("Tiendo a evitar cosas perjudiciales para mi cuerpo debido a mis creencias religiosas/espirituales"/"I tend to avoid things harmful to my body because of my religious/spiritual beliefs") and 2 ("Las creencias religiosas/espirituales tienen una gran influencia en mi salud"/"Religious/spiritual beliefs have great influence on my health"). For item 1, 28.2% of participants strongly disagreed, 13.9% disagreed, 30.2% agreed, and 27.5% strongly agreed with the item. For item 2, 27.7% of participants strongly disagreed, 19.8% disagreed, 32.7% agreed, and 19.6% strongly agreed with the item. For the Illness as Punishment for Sin scale, all items were positively skewed, except for item 1 ("Dios usa la enfermedad para enviar un mensaje a la gente"/"God uses sickness to send a message to people"). For item 1, 30.4% of participants strongly disagreed, 28.7% disagreed, 26.5% agreed, and 13.1% strongly agreed with the item. Both measures were skewed according to the Shapiro-Wilk test (Perceived Religious Influence on Health Behavior scale: .96, $p < .01$; Illness as Punishment for Sin scale: .92, $p < .01$).

Factorial validity and Internal Consistency Reliability

Confirmatory factor analysis did not provide support for a two-factor model, with all seven items from the Perceived Religious Influence on Health Behavior measure loading on one factor and all eight items from the Illness as Punishment for Sin measure loading on another factor ($CFI = .84$; $SRMR = .11$; $RMSEA = .09$; $\chi^2 [89] = 407.85$; $p < .01$). Although all factor loadings for the Perceived Religious Influence on Health Behavior measure were significant, and ranged from .63 to .82, the factor loading for item 1 of the Illness as Punishment for Sin measure (“La enfermedad es el resultado de los pensamientos negativos de la persona”/ “Illness is the result of one’s negative thoughts”) was low (.19), and thus not practically significant.

Because the two-factor model did not fit well and item 1 did not practically load onto the Illness as Punishment for Sin measure, a second confirmatory factor analysis was run on the seven-item Perceived Religious Influence on Health Behavior measure and a seven-item version of the Illness as Punishment for Sin measure, excluding item 1. When error terms for items 3 (“Dios me ayuda a mantener un estilo de vida saludable”/ “God helps me to maintain a healthy lifestyle”) and 4 (“Dios me ayuda a evitar malos hábitos de salud”/ “God helps me to avoid bad health habits”) of the Perceived Religious Influence on Health Behavior measure were correlated, the confirmatory factor analysis showed support for a two-factor model ($CFI = .91$; $SRMR = .09$; $RMSEA = .08$; $\chi^2 [75] = 246.82$, $p < .01$). All seven items from the Perceived Religious Influence on Health Behavior measure loaded on one factor; these factor loadings were significant, and ranged from .65 to .78 (see Table 2). Internal consistency reliability for the Perceived Religious Influence on Health Behavior measure was good ($\alpha = .87$). All seven items of the revised Illness as Punishment for Sin measure loaded on another factor; these factor loadings were significant, and ranged from .39 to .88 (see Table 3). Internal consistency reliability of the seven-item Illness as Punishment for Sin measure was good ($\alpha = .82$). The seven-item Perceived Religious Influence on Health Behavior scale was moderately, positively associated with the seven-item Illness as Punishment for Sin scale ($r_s = .34$, $p < .01$).

Convergent Validity

The Perceived Religious Influence on Health Behavior scale and the seven-item Illness as Punishment for Sin scale were significantly, moderately, positively associated with the God Locus of Health Control scale (Perceived Religious Influence on Health Behavior: $r_s = .46$, $p < .01$; Illness as Punishment for Sin: $r_s = .39$, $p < .01$).

Sociodemographics

The Perceived Religious Influence on Health Behavior scale was significantly, positively associated with age ($r_s = .15$, $p < .01$), but not significantly associated with the number of years participants lived in the United States ($r_s = .06$, $p = .24$). In addition, there were significant differences in scores on the Perceived Religious Influence on Health Behavior scale between participants with less than a high school education ($(M = 20.01, SD = 5.54)$) and participants with a high school education or higher ($M = 18.85, SD = 5.35$; $t[393] = 2.07$, $p = .04$). Similarly, the seven-item Illness as Punishment for Sin scale was significantly, positively associated with age ($r_s = .10$, $p = .05$), but not significantly

associated with the number of years participants lived in the United States ($r_s = -.01$, $p = .88$). In addition, there were significant differences in scores on the seven-item Illness as Punishment for Sin scale between participants with less than a high school education ($M = 12.23$, $SD = 3.96$) and participants with a high school education or more ($M = 10.43$, $SD = 3.38$; $t[394] = 4.73$, $p < .01$). There were no significant differences ($p > .05$) in Perceived Religious Influence on Health Behavior scale scores or seven-item Illness as Punishment for Sin scale scores across marital status (married v. single), employment status (employed v. not employed), monthly household income (less than \$2,000 v. \$2,000 or more) and country of birth (United States v. foreign born).

Discussion

The present study evaluated the psychometric properties of the Spanish versions of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a sample of churchgoing Latinas. For the seven-item Perceived Religious Influence on Health Behavior Scale, as expected, confirmatory factor analysis provided support for a one-factor structure, and internal consistency reliability was good. A one-factor structure was not supported, however, for the eight-item Illness as Punishment for Sin scale. The factor loading for item 1 (“La enfermedad es el resultado de Dos pensamientos negativos de la persona”/ “Illness is the result of one’s negative thoughts”) was not practically significant. This is not surprising as this item had a relatively low correlation (.36) with the total score of the measure in the development sample of African American men and women (Holt et al., 2009), suggesting that this item was not strongly associated with the other measure items. In addition, item 1 is the only item of the measure to query about the impact of internal thoughts; the other measure items focus on the impact of external behaviors (“La enfermedad es un castigo/resultado de Dios por estilo de vida o comportamientos pecaminosos”/ “Illness is a punishment/result from God for sinful behaviors or lifestyle”). The disparate focus of item 1 on internal thoughts as opposed to external behaviors may have resulted in the poor fit. Also, since the measure was developed among African Americans, there may be cultural differences in religious beliefs about illness as a punishment for sin across Latinas and African Americans that impacted measure scores. For example, there may be differences in religious beliefs about illness as punishment for sin across Catholic and Protestant churches, the religious groups with whom Latinas and African Americans most commonly identify respectively (Pew Research, 2009; Pew Research Cent 2014a). Analysis of the measures, among other samples of Latinos is warranted; focus groups used to discuss the validity of measure items among Latinos may help support future psychometric analyses. A subsequent confirmatory factor analysis, with item 1 removed from the Illness as Punishment for Sin scale, provided support for a one-factor structure for the Illness as Punishment for Sin scale. In addition, internal consistency reliability for the seven-item measure was good ($\alpha = .82$). Error terms for items 3 and 4 of the Perceived Religious Influence on Health Behavior scale were correlated based on review of modification indices. This was justified given the similar vocabulary used in these items that can cause correlated measurement errors. Items from both measures were factor analyzed together to examine whether the measure items do in fact represent two distinct, but associated constructs. The support for the two-factor model, and the moderate

correlation between the two measures, provide further evidence of construct validity for the two measures.

The seven-item Perceived Religious Influence on Health Behavior scale was moderately, positively associated with the seven-item Illness as Punishment for Sin scale. Participants typically reported that they “agreed” or “strongly agreed” with items on the Perceived Religious Influence on Health Behavior scale. On the other hand, participants typically reported that they “disagreed” or “strongly disagreed” with items on the Illness as Punishment for Sin scale. The present study sample was Catholic, which is largely representative of the general Latino population in the United States (Pew Research Center, 2014a). Scores on the Illness as Punishment for Sin scale were expected to be higher because the participant sample reported high levels of religious involvement. The lower scores on the Illness as Punishment for Sin scale, representing disagreement with the belief that illness is a punishment for one’s sin, may be related to the Roman Catholic Church’s acceptance of many lifestyle behaviors that have historically been associated with sin (Garcia, Ellison, Sunil, & Hill, 2013). For example, the Roman Catholic Church accepts the consumption of alcohol by its members. Alcohol is even used in religious services, during the Eucharist, for example. This is in contrast other more conservative religious affiliations such as Evangelical and Fundamentalist Protestant churches that have strict norms regarding what is considered to be sinful behavior (Garcia et al., 2013). Recently, a growing percentage of Latinos in the United States under the age of 50 have shifted their religious identity from Catholic to a more conservative Evangelical Protestant affiliation (Garcia et al., 2013). Scores on the Illness as Punishment for Sin scale may be higher among Latinos who identify with these more conservative religious groups. Studies should compare the scores and psychometric properties of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale among individuals with different religious affiliations. Scores on both measures in the present study were lower than those reported by the 55 African American participants in the development study (Holt et al., 2009). This was expected because the majority of African Americans in the United States report a Protestant affiliation and attend a historically Black Protestant church (Pew Research Center, 2009). Based on several indicators, including religious observance and importance assigned to religion, members of historically Black Protestant churches have been considered similar to the highly religious and conservative Evangelical Protestant church (Pew Research Center, 2009). Future studies of general community populations should consider how measure scores may be impacted by the level of religious engagement in the study sample. Given the skewness of scores found in the present population of frequent church attenders, range in measure scores may be more limited in less religious populations. Measures examining these constructs may need to be developed among less religious populations to provide utile data for general community populations. In addition, the measures may not be appropriate for use among certain religions. For example, the measures may not be applicable for religions in which ther God, as the measure items often refer to a singular higher power. Convergent validity was evidenced for the Perceived Religious Influence on Health Behavior scale and the seven-item Illness as Punishment for Sin scale. The measures had significant correlations in the expected directions and magnitudes with a measure of God health locus of control. The authors of the Illness as Punishment for Sin scale did not evaluate the convergent

validity of the measure because they reported that there were no existing measures available that would be appropriate for the analysis (Holt et al., 2009). The present study provides further evidence for the convergent validity of both measures.

Older age was associated with higher scores on both scales. In contrast, higher levels of education (high school or higher) was associated with lower scores on both scales. These findings are consistent with epidemiological data that show higher levels of religious participation and importance assigned to religion among individuals of older age and with less education (Pew Research Center, 2016a; Pew Research Center, 2016b). There were no significant differences in measure scores across the other sociodemographic variables examined. Future studies should explore the relationships among the two measures and sociodemographic variables in diverse samples.

There were limitations to the present study. All participants were Catholic, frequently attended church, spoke Spanish, and resided in a metropolitan border city in the southwestern United States, limiting generalizability of the study findings. In addition, the present study examined the psychometric properties of only the Spanish translations of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale. There were not sufficient English speakers in the present study to examine the psychometric properties of the original English versions of the measures among the English-speaking participants.

In summary, the present study evaluated the psychometric properties of the Perceived Religious Influence on Health Behavior scale and the Illness as Punishment for Sin scale in a sample of churchgoing Latina women. The seven-item Perceived Religious Influence on Health Behavior scale and the revised seven-item Illness as Punishment for Sin scale are recommended for use in studies examining these constructs among Latina women. The present study findings are consistent with Holt et al.'s (2009) original psychometric evaluation of the measures, finding item 1 of the Illness as Punishment for Sin scale problematic. Despite this, Holt et al. retained the initial item of the measure. The present study suggests that the Spanish version of the Illness as Punishment for Sin scale is best used discarding this low-loading item. Further evaluation of the factorial validity of the measures is warranted.

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Table 1

Sample Characteristics (N = 404)

Age ^a	44.97 (8.96)
Education ^b	
Less than high school	236 (58.4%)
High school or higher completed	166 (41.1%)
Missing	2 (0.5%)
Employment status ^b	
Employed	263 (65.1%)
Unemployed	138 (34.2%)
Missing	3 (0.7%)
Marital status	
Married or living as married	316 (78.2%)
Single or non-partnered	84 (20.8%)
Missing	4 (1.0%)
Monthly Household Income ^b	
Less than \$2,000	226 (58.4%)
\$2,000 or more	166 (41.1%)
Don't Know	25 (6.2%)
Missing	1 (0.2%)
Country of birth ^b	
United States	16 (4.0%)
Mexico	379 (93.8%)
Another country	7 (1.7%)
Missing	2 (0.5%)
Years lived in the United States ^a	19.99 (9.35); range: 0.83 – 50
Study Measures	
Perceived Religious Influence on Health Behavior ^a	19.55 (5.49); range: 7 – 28
8-item Illness as Punishment for Sin ^a	14.05 (4.29); 8 – 30
7-item Illness as Punishment for Sin ^a	11.49 (3.82); 7 – 26
God Locus of Health Control ^a	15.92 (7.83); range: 6 – 36

Note.

^a $M(SD)$;^b $n(\%)$.

Table 2

Factor Loadings, Means, and Standard Deviations for the Perceived Religious Influence on Health Behavior scale

Item (Spanish and English)	Factor loadings	M (SD)
1. Tiendo a evitar cosas perjudiciales para mi cuerpo debido a mis creencias religiosas/espirituales <i>I tend to avoid things harmful to my body because of my religious/spiritual beliefs</i>	.66 *	2.57 (1.17)
2. Las creencias religiosas/espirituales tienen una gran influencia en mi salud <i>Religious/spiritual beliefs have great influence on my health</i>	.70 *	2.44 (1.09)
3. Dios me ayuda a mantener un estilo de vida saludable <i>God helps me to maintain a healthy lifestyle</i>	.69 *	2.94 (.96)
4. Dios me ayuda a evitar malos hábitos de salud <i>God helps me to avoid bad health habits</i>	.75 *	2.75 (1.00)
5. Debido a mis creencias religiosas/espirituales, no pongo sustancias perjudiciales en mi cuerpo <i>Because of my religious/spiritual beliefs, I do not put harmful substances into my body</i>	.78 *	2.86 (1.10)
6. Trato de llevar una “vida limpia” porque eso es lo que mi religión/espiritualidad enseña <i>I try to engage in “clean living” because this is what my religion/spirituality teaches</i>	.65 *	3.29 (.86)
7. Debido a mis creencias religiosas/espirituales, me abstengo del tabaco/fumar <i>Because of my religious/spiritual beliefs, I abstain from tobacco/smoking</i>	.66 *	2.72 (1.09)

Note.

*
 $p < .001$.

Table 3

Factor Loadings, Means, Standard Deviations for the Seven-item Illness as a Punishment for Sin Scale

Item (Spanish and <i>English</i>)	Factor loadings	<i>M (SD)</i>
1. Dios usa la enfermedad para enviar un mensaje a la gente <i>God uses sickness to send a message to people</i>	.39 *	2.23 (1.03)
2. La enfermedad llega porque una persona ha hecho algo malo en su vida <i>Illness comes because of something bad a person has done in their life</i>	.41 *	1.84 (.92)
3. Dios a veces usa la enfermedad física para castigar a la gente <i>God sometimes uses physical illnesses to punish people</i>	.81 *	1.34 (.58)
4. Dios usa la enfermedad como castigo por las cosas que la gente ha hecho mal en su vida <i>God uses sickness as punishment for the things people have done wrong in their lives</i>	.88 *	1.37 (.61)
5. La enfermedad es un castigo/resultado de Dios por estilo de vida o comportamientos pecaminosos <i>Illness is a punishment/result from God for sinful behaviors or lifestyle</i>	.83 *	1.44 (.70)
6. La enfermedad es causada por un estilo de vida pecaminoso <i>Illness is caused by a sinful lifestyle</i>	.45 *	1.89 (.97)
7. Dios usa la enfermedad como una manera de castigar a la gente por sus pecados <i>God uses sickness as a way to punish people for their sins</i>	.83 *	1.38 (.63)

Note.

*
 $p < .001$.