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Development and Validation of Instruments to Assess Potential Religion-Health Mechanisms in an African American Population

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Abstract

The health disparities that negatively affect African Americans are well-documented; however, there are also many sociocultural factors that may play a protective role in health outcomes. Religious involvement is noted to be important in the African American community and to have a positive association with health outcomes. However, few studies have explained why this relationship exists. This article reports on the development and validation of instruments to assess two proposed mediators of the relationship between religiosity and health for an African American population; perceived religious influence on health behaviors and illness as punishment from a higher power. We used a systematic iterative process, including interviews and questionnaire data from African Americans who provided feedback on item wording. We also solicited input from African American pastors. In a sample of 55 African Americans, the instruments appeared to have strong internal reliability ($\alpha = .74$ and .91, respectively) as well as test-retest reliability ($r = .65$, .84, respectively, $p < .001$). Evidence far construct validity is also discussed, as are recommendations for health disparities research using these instruments.

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Keywords

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A main theme dominating the health care and public health arena for the past several years has been health disparities. It is well documented that there are differences in health care access and outcomes along racial/ethnic and socioeconomic lines (U.S. Department of Health and Human Services, 2001). Specifically, African Americans suffer a disproportionate burden from major chronic diseases, including but not limited to asthma (Zoratti et al., 1998), heart disease (Kravitz, 1999), diabetes (Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999), HIV (Cunningham, Mosen, & Morales, 2000), cancer (American Cancer Society, 2007), and mental health (Williams & Williams-Morris, 2000). There are a variety of reasons for these disparities, and the nature of these relationships is complex and not fully understood. There has been an increased recognition of the important role of culture in health promotion interventions (Thomas, Fine, & Ibrahim, 2004). Use of community-based settings for health promotion activities has grown in utilization, particularly interventions serving African Americans (Campbell et al., 2007). As one of perhaps the more central aspects of African American culture (Lincoln & Mamiya, 1990), religious involvement and its relationship to health cognitions, behaviors, and outcomes has become an important area of study.

There is a broad multidisciplinary literature on the study of the association between religious involvement and health behaviors, outcomes, and mortality. While findings of such inquiries vary, most studies conclude that there is a positive association between religious involvement and health, with many studies measuring religiosity as basically as religious service attendance or denominational affiliation (Koenig, McCullough, & Larson, 2001; Levin, 2001). The field has recently become more studied and more sophisticated with multidimensional measures of religious involvement (Fetzer Institute, National Institute on Aging Working Group, 1999; Hill & Hood, 1999) and studies that control for potential confounding variables, such as age, ethnicity, gender, education, and health status (Powell, Shahabi, & Thoresen, 2003). While longitudinal work is needed to establish a causal role of religious involvement on health outcomes, much of the focus of the research in this area has shifted to potential mechanisms or factors that may mediate the relationship often observed between religious involvement and health.

Following the definition of Thoresen (1998), we operationalize religion as “an organized system of beliefs, practices, rituals, and symbols,” while spirituality involves “one’s transcendent relationship to some form of higher power” (p. 415). Religiosity of course involves *theological* beliefs specifically. In this definition, religiosity may be seen as a component of spirituality, as spirituality refers to a broader construct. The current study developed two instruments, one examining perceived religious influence on health behaviors, specifically focusing on religious beliefs, practices, and relationship with a higher power (e.g., God), and the other examining the notion of illness as a punishment from God. Therefore, the term *religious involvement* is more suitable than spirituality in this context.

RELIGIOUS INVOLVEMENT AMONG AFRICAN AMERICANS

The religion-health connection may be particularly salient for those who are high in religious involvement. In the United States, women tend to be more religiously involved than men (Levin, Taylor, & Chatters, 1994), and African Americans tend to be more involved than Whites (Ferraro & Koch, 1994; Levin et al., 1994; Taylor, Chatters, Jayakody, & Levin, 1996). The church has been a cultural and community cornerstone in the African American community, dating back to the period of slavery (Lincoln & Mamiya, 1990). African Americans

suffer a disproportionate burden of many chronic conditions and negative health outcomes, such as diabetes, heart disease, cancer, stroke, infant mortality, and general life expectancy (U.S. Department of Health and Human Services, 2001). Therefore, the study of the religion-health connection, while important for groups beyond African Americans, may be particularly relevant for this group.

MECHANISMS OF THE RELIGION-HEALTH CONNECTION

Conceptual models in the study of religion and health focus on the mechanisms (sometimes termed mediators) such as lifestyle, social support, and positive self-perceptions through which religious involvement is proposed to affect health (Chatters, 2000; Ellison & Levin, 1998; Levin & Vanderpool, 1989). It is acknowledged that religious involvement is a multidimensional construct and may have both positive and negative influences on health (Chatters, 2000). Oman and Thoresen (2002) propose a complex model of the religion-health association, based on the literature in this area. They discuss several mechanisms through which religious involvement may affect health, including social support, positive health behaviors, and positive psychological states. A strength of this model is that it is well-conceptualized and based on an extensive review of existing literature. In a review of the literature,Musick, Traphagan, Koenig, and Larson (2000) discuss the role of spirituality (as a broader construct than religious involvement, but with considerable overlap) in health among older adults. They suggest (and they switched to using the term *religiosity*) that religious involvement affects physical health through “mechanisms” (p. 77), including healthy lifestyle, social integration/support, comfort/religious coping to deal with stressors, and theodicy, which involves finding meaning in why things happen (though the authors acknowledge ambiguity over the meaning of this term). These investigators encourage research that focuses on new and additional religion-health mechanisms. Levin and Vanderpool (1989) proposed a series of 12 mechanisms through which religious involvement may affect health, specifically hypertension. These include mechanisms such as healthy behavior, positive affect, and superempirical influences, such as “presently immeasurable and ineffable healing force or energy” (p. 75).

In another review of research on the religion-health connection, three mechanisms are highlighted (George, Larson, Koenig, & McCullough, 2000). These include health-related behaviors, social support, and sense of meaning. Studies are highlighted that provide evidence for each of these mechanisms, and it is estimated that health-related behaviors account for about 10% of the covariance between religious involvement and health outcomes (these authors also changed terms to discuss religion rather than spirituality), social support accounts for 5% to 10%, and sense of meaning or coherence accounts for 20% to 30%. Priorities for future research were highlighted, including additional work in measurement, as well as studies of specific population subgroups. In another review, Ellison and Levin (1998) discussed variables viewed by the authors as the most promising mechanisms. The mechanisms include lifestyle/health behavior, social support, positive self-perceptions, coping, positive emotions, healthy beliefs, and healing bioenergy. Although a review of evidence is presented for each mechanism, there are few studies that have tested the actual mediating role of these factors in the religion-health association. The authors call for testing theoretical models, including the examination of both direct and indirect effects of several dimensions of religious involvement on health-related outcomes, and in population subgroups. The present study builds on what is known in this field, and attempts to answer some of these calls by developing new instruments where needed, to examine mechanisms of the religion-health connection among a population for whom it may be highly salient (African American men and women). Levin and Chatters (1998) cite the speculative nature of the research involving the mechanisms and called for prospective cohort studies with valid measures of each mechanism.

Perceived religious influence on health behavior

As illustrated by previous research, perhaps the most commonly proposed mechanism through which religious involvement affects health is that religiously involved people have healthier lifestyles and engage in fewer unhealthy behaviors such as drinking alcohol to excess, risky sexual practices, using illegal drugs, or tobacco use (Ellison & Levin, 1998; George, Ellison, & Larson, 2002; George et al., 2000; Levin & Vanderpool, 1989; Mullen, 1990; Musick et al., 2000; Strawbridge, Shema, Cohen, & Caplan, 2001). Religiously involved individuals may practice more moderation and engage in fewer risk-taking behaviors than others (Mechanic, 1990). This may be due to specific religious doctrine involving literal interpretation of the Bible or other religious text, or a more general belief that the body is a temple of God and should be respected (George et al., 2000). Religion discourages deviant or illegal behavior, and individuals who are religiously involved may have less exposure to those who conduct deviant behaviors or have unhealthy lifestyles (e.g., social circles that do not involve spending time in bars, exposed to alcohol, and tobacco). Church attendance was associated with abstinence from alcohol among African American but not White rural Baptists (Blazer, Hays, & Musick, 2002).

Illness as punishment for sin

A potentially negative effect that religious involvement may have on health involves the idea that illness may be interpreted as being one's fault because of having sinned or having poor character (Ellison, 1994), or the idea that illness is a punishment from God. Thoughts of violating religious norms may result in guilt or shame, or fear of punishment from God (Ellison & Levin, 1998). There is some empirical literature on this concept, mainly focusing on those with HIV or other serious illnesses (Crawford, Allison, Robinson, Hughes, Samaryk, 1992; Kaldjian, Jekel, & Friedman, 1998; Klonoff & Landrine, 1994; Neylan, Nelson, Schauf, & Schollard, 1988), particularly cancer (Burker, Evon, Sedway, & Egan, 2005; Degner, Hack, O'Neil, & Kristianson, 2003; Eidinger & Schapira, 1984; Luker, Beaver, Leinster, & Owens, 1996; Springer, 1994). However, of the literature identified, no full instruments were found to assess this construct.

In many of the aforementioned models, religious beliefs are salient and play a significant role. Religious beliefs including belief that one's religious involvement or framework affects one's health behaviors (perceived religious influence on health behavior) and that illness may be the result of sin are reflected in many of these models. However, when reviewing the scientific literature, instruments to operationalize and assess these constructs were not readily available, nor were conceptually similar instruments available that could be modified to suit this purpose. This illuminated the need for original instrument development to operationalize these constructs. Instruments are available for the other mechanisms (e.g., social support, positive affect), which will be included in subsequent research involving model testing.

THEORETICAL CONSIDERATIONS

As a result of recent increases in scientific inquiry in the area of religion and health, and the growing number of studies indicating that a (albeit unexplained) relationship exists, it is an appropriate time to formulate and test theories in this area. The development of theory in religion and health will strengthen the field as well as guide new research. The conspicuous dearth of theory in this area (Idler, 1987) is problematic in light of the growing interest in religion and health, and particularly in light of the potential in this area for application in health promotion and health disparities. The present study aims to contribute to theory through the operationalization of religion-health mechanisms, which will pave the way for the testing of theoretical models (as discussed in Holt, Lewellyn, & Rathweg, 2005).

THE PRESENT STUDY

The present examination reports on the operationalization of two religion-health mechanisms, perceived religious influence on health behavior, and illness as a punishment for sin, for use in testing theoretical religion-health models among African Americans. Instruments were developed using a systematic and iterative process, and reliability and validity data are reported. These instruments can be applied to studies of religious involvement and health, used in mediational model testing, and findings from these studies may have applied value for the development of more effective health promotion interventions for religiously involved African Americans.

METHOD

INSTRUMENT DEVELOPMENT AND PILOT TESTING

The measure identification and development phase involved a series of nine systematic steps (see Table 1). We used a process similar to that cited by Krause (2002), involving previous qualitative work, expert input, cognitive interviews, and iterative piloting. The process began with Step 1, in which comprehensive literature searches were conducted for the constructs. Search terms for perceived religious influence on health behavior included but were not limited to religious doctrine, stewardship, religiosity, religion, spirituality, scripture, influence, religious prescriptions, religious proscriptions, lifestyle, and health behaviors. Search terms for illness as punishment for sin included but were not limited to punishment, religion, religiosity, spirituality, self-blame, guilt, and shame. Systematic electronic literature searches were conducted in each of nine databases (Medline, Pubmed, PsycInfo, Cinahl, Sociofile, Health and Psychosocial Instruments [HAPI], American Theological Library Association [ATLA], Education Resources Information Center [ERIC], Google, and Google Scholar) for existing instruments to operationalize the constructs. Where needed, authors were contacted for access to instruments. Instruments were retrieved and reviewed by the project team with regard to a series of 16 criteria (e.g., items are written in plain language; instrument is not too long; instrument is able to be administered by telephone), as well as compliance with the Standards for Educational and Psychological Testing (American Psychological Association, 1999).

An existing suitable instrument to assess either of the current two constructs was not able to be identified and had to be developed by the project team (Step 2). Per the aforementioned guidelines and criteria, each investigator was assigned to and developed 10 items to assess each construct. These items were pooled for full team review (Step 3) on the basis of representativeness of the construct (face validity) and potential for variability in participant responses. At this time, an advisory panel of three African American pastors was recruited from the community to review the items for cultural appropriateness. This advisory panel also completed the item review task. Items below the mean group (investigator and advisory panel) ratings were eliminated from further consideration.

The remaining items were edited by the advisory panel and investigative team (Step 4), and submitted for Cognitive Response Testing (Step 5), in which they were reviewed by 15 African American male and female community members, to determine whether the items were understandable and appropriate. Cognitive response procedures involved intensive one-on-one interviews in which participants were asked to think aloud about the questions they have read, paraphrased the content, and responded to other inquiries and probes (Forsyth & Lessler, 1991; Jabine, Straf, Tanur, & Tourangeau, 1984; Sudman, Bradburn, & Schwartz, 1996). Following guidelines established by Research Triangle Institute (Caspar, 1997), notes from interviews were reviewed by multiple staff members. Based on the review of the interview data, recommendations were made to ask specifically about use of the terms *religion* versus

spirituality in the next round of testing, to ask participants about appropriateness of use of the term *God*, to make sure the final scales did not include too many redundant items (participants expressed frustration in feeling as though they were being asked the same thing over and over again), and to make sure that items were consistent within the scale regarding use of "people" versus "I" language. Step 6 involved making revisions to the items based on this testing. Suggestions were made to modify the wording of one of the items ("Following MY religious beliefs makes it easier to avoid unhealthy behaviors.") and to eliminate another item completely because of its complexity ("Sinning is not related to whether or not a person becomes ill."). A subsequent round of cognitive response testing (Step 7) with 15 African American men and women was conducted on modified items and those that performed adequately in the first round. Recommendations were made to retain certain items that were uniformly understood and appeared to have adequate variability in responses from the sample (Step 8). Several additional items were also recommended not to be considered further. Ten participants preferred the term *spirituality* over *religiosity*. Because the investigative team felt that the constructs being assessed were truly more reflective of religious involvement than spirituality, we opted to use the combined term *religion/spirituality* in the items, with the interviewer providing an explanation if needed. Eleven participants felt the term *God* was appropriate and none felt it was inappropriate, though two suggested use of "creator" and three suggested "higher power." Finally, in both rounds of testing, participants were asked whether they preferred a 4-point Likert-type scale or a 5-point scale (including a *neutral/neither* option). Findings were inconclusive so the investigative team chose to use the 4-point format, for ease of administration by telephone.

A final pool of items remained that performed well through investigator and pastor ratings and Cognitive Response Testing (N= 17 items for scriptural illness; N = 9 items for illness as punishment). The investigative team then voted on their top 10 final items to retain for the perceived religious influence construct and 8 for the illness as punishment for sin construct, based on the size of the item pool. These ratings were compared and final items were selected for inclusion in the final instruments (see Table 2). The finalist lists from the investigative team were remarkably similar across raters. The finalist items were then subject to psychometric testing by telephone administration to a national probability sample of 55 African Americans (Step 9).

TELEPHONE SURVEY FOR PSYCHOMETRIC DATA COLLECTION

Professional African American interviewers recruited participants by telephone by calling names from a purchased list. The call list was generated by a professional sampling firm, focusing on census tracts with at least 40% African American representation, for efficiency. When an individual answered the telephone, the interviewer introduced himself/herself and asked for the individual who lives at that address. When the interviewer was put into contact with an adult who lived at that address, he or she introduced the project. The project was framed as a study of health and wellness in the African American community, so as not to immediately be rejected by individuals who do not have a religious affiliation. Inclusion of both religious and nonreligious individuals was considered more representative of the general population and provided data that maximized variability in item responses for the analyses.

If interested, individuals were screened for eligibility criteria, including being an African American, aged 21 years or more, and having no previous diagnosis of cancer. Cancer history was an exclusion criteria because the next phase of the study will use these instruments as well as seven others (e.g., social support, positive affect) in testing a religion-health theoretical model to predict cancer risk, prevention, and screening behaviors, among African Americans aged 21 years and older who have not had cancer. If interested and eligible, participants were

then read the informed consent script and provided their assent to participate. A gift card of $15 was mailed to each participant on completing the study procedure.

Participants completed the telephone interview, which included these two new measures of the religion-health mechanisms, additional mechanisms measures (for the assessment of convergent and discriminant validity), and participant demographics. The survey was timed and took an average of 20 minutes to complete. Two weeks later, participants were recontacted for a readministration of study instruments. This survey took an average of 15 minutes, and participants were mailed a gift card in the amount of $ 15 for its completion.

RESULTS

PARTICIPANT CHARACTERISTICS

A total of 55 individuals (34 women and 21 men) completed the telephone interview and 115 refused, making for a response rate of 32% (55/170; accepted/[accepted + refused]). Another 125 were ineligible mainly because a non-African American was reached. Of the 55 participants who completed the initial interview, 53 (96%) of those also completed the follow-up survey that was used to assess test-retest reliability of the instruments. The 55 participants ranged in age from 23 to 87 years old (mean = 50.93; median = 49.60; standard deviation [*SD*] = 16.72). Most were either single (22; 40%) or married (18; 32.7%), 11 (20%) were separated or divorced, and 4 (7.3%) were widowed. Most (22; 40%) were employed full-time, 14 (25.5%) were retired, 8 (14.5%) reported receiving disability, 7 (12.7%) were not currently employed, 3 (5.5%) were employed part-time, and 1 (1.8%) did not respond to the question. Nearly half of the respondents (27; 49.1%) declined to respond to our question about annual income. The median household income before taxes of the remainder of the sample was in the more than $60,000 bracket, which was the highest bracket recorded. Years of education ranged from 3 to 18, with an average of a high school diploma (12.36 years; *SD* = 2.74). Participants from 23 U.S. states were interviewed through the random sampling process, with one to five per state being interviewed.

RELIABILITY AND VALIDITY

Perceived religious influence on health behavior—The Perceived Religious Influence of Health Behavior scale consisted of 10 items assessed in 4-point Likert-type format (*strongly disagree*, *disagree*, *agree*, *strongly agree*). Three items were eliminated based on psychometric testing, which had low test-retest reliabilities at the item level. This made for a final 7-item instrument with a possible range of 7 to 28, with higher scores indicating higher levels of these beliefs. Scores in this sample ranged from 16 to 28, with a mean of 21.88 and standard deviation of 3.66 (median score was 21). The internal consistency of the instrument was $\alpha = .74$. The average item-total correlation was .46 and ranged from .34 to .62. Test-retest reliability was modest during the 2-week interval, $r = .65$, $p < .001$.

Validity was evidenced through the instrument development process in terms of expert review of face validity involving the pastors, as well as significant correlations with a similar construct (convergent validity). Correlations with subscales from a spiritual health locus of control scale were significant. Spiritual health locus of control involves the extent to which individuals believe that a higher power (e.g., God) plays a role in one's health (Holt, Clark, & Klem, 2007). Correlations with the spiritual life and faith subscale were significant ($r = .33$, $p < .05$), as well as with the active spiritual ($r = .32$, $p < .05$), and God's grace ($r = .30$, $p < .05$) subscales. These correlations are suggestive of 10% to 12% shared variance, which is not enough to suggest that the instruments are assessing the same construct but are indeed unique (though related) constructs. Discriminant validity was evidenced by nonsignificant correlations with Self-efficacy scale (Chen, Gully, & Eden, 2001) scores ($r = .12$, $p = .40$).

Illness as punishment for sin—The Illness as Punishment for Sin scale consisted of eight items assessed in 4-point Likert-type format (*strongly disagree, disagree, agree, strongly agree*). This made for a possible range of 8 to 32, with higher scores indicating higher levels of these beliefs. Scores in this sample ranged from 8 to 29, with a mean of 17.41 and standard deviation of 5.23 (median score was 17). The internal consistency of the instrument was $\alpha = .91$. The average item-total correlation was .84 and ranged from .69 to .95. Test-retest reliability was acceptable during the 2-week interval, $r = .84$, $P < .001$.

Validity was evidenced through the instrument development process in terms of expert review of face validity involving the pastors. Because of the novel nature of this construct, there were no existing instruments assessing the same construct for the assessment of convergent validity. Discriminant validity was evidenced by nonsignificant correlations with Self-efficacy scale (Chen et al., 2001) scores ($r = .01$, $p = .93$).

DISCUSSION

The present study reports on a rigorous and systematic process of item and scale development of instruments to assess two complex constructs involving the religion-health connection. The result is two brief instruments that are appropriate for use with African American populations, which have modest to acceptable reliability and validity. Further predictive validity will be examined in a larger national sample of African American men and women in which the mediation role of these and seven other constructs (such as social support, sense of meaning, and positive affect) will be assessed to determine if the constructs account for the relationship between religious involvement and cancer risk, prevention, and screening behaviors.

The main challenge in this survey development process was to develop items that tapped the construct of illness as punishment from God. It was our experience that people of faith often become uncomfortable when discussing the possibility that God would punish someone or make them become ill. More acceptable was the thought that God might “let” illness happen to send a message to a person (Holt & McClure, 2006) rather than using it as punishment. This illustrates the importance of the advisory panel of pastors in evaluating items for this construct. At one point, when the investigative team was evaluating item feedback from the first wave of cognitive response participants, in which participants became somewhat hostile or uncomfortable when asked about this concept, the team considered not including the illness as punishment for sin concept in the menu of mechanisms to be examined in the study. However, the advisory panel of pastors indicated that this is indeed an important concept, however difficult to assess without offending people, and it should remain in the model. Therefore, attempts were made to make the items less threatening through avoiding use of “me” language, because people were more comfortable with the idea that illness may occur as punishment for the sins of someone else, but perhaps not for their own. Admittedly, we never attempted conceptually (e.g., through item development) to tap into the guilt component of this mechanism, focusing on the illness as punishment aspect; this mechanism is likely more complex than this initial instrument will capture. There is not very much written about this construct so it may operate in a number of ways, still to be determined. It may operate through the aforementioned negative emotions such as guilt, shame, or loss of self-worth; however, it may be that if people believe that illness is a punishment for sin, they may believe as long as they avoid sinful behaviors they will stay healthy, and therefore they do not need to take proactive health behaviors to prevent disease. Alternatively, if a person does have illness and he or she feels it is due to past sins, he or she may feel that it is his or her own fault and that it is too late to do anything to return to health. It is possible that if a mediating role is detected between the current instrument and religious involvement and health behaviors, then more work will need to be done in order to flesh out the nature of that mediating role. However, the

instrument developed in this study provides a significant step beyond what was currently available in the literature to assess this construct and can be viewed as a solid starting place.

As stated previously, research in this area is developing and instruments to assess these constructs were not available at the time this study was initiated. Therefore, comparison with previous literature is difficult. Generally, most studies that discuss the perceived religious influence on health behavior concept examine the association between religious involvement and health behaviors or outcomes but without a specific mediation analysis. Few previous studies have attempted to explore the illness as punishment for sin concept, and those have generally been limited to the literature on serious illness, such as HIV and cancer (previously discussed) and to a handful of usually single items. Thus, the current instruments provide the opportunity to expand the religion-health mechanisms literature, and we encourage their use in this type of endeavor.

LIMITATIONS

The findings of this study should be interpreted in the context of the data collected and are qualified by a few important limitations. First, as with all research in instrument development, we are relying on self-report data from our participants. Self-report is open to several response biases originating from a number of sources, including not understanding the question as the researchers intended, difficulty in recalling relevant behaviors related to the question, using inferences and estimations to answer the question, mapping the true participant responses on to the limited response alternatives provided by the Likert-type scales, and not being willing to report what they actually think (Streiner & Norman, 2003). In order to minimize these potential self-report biases, we took great care in using a multistep process to define the constructs, develop items with the help of people in our intended sample, as well as using input from a Pastor Advisory Board, to obtain some initial reliability and validity data. We were very aware from our previous research that answers to questions related to religious involvement can be sensitive, but participants and our Pastor Advisory Board helped us to craft items that would encourage understanding of the item and honest responding. We also put effort into making the scale applicable to any set of religious beliefs, not just Christianity. With limited modification (e.g., substitution of the word “God”), the instruments could be tested with populations other than Christian.

A second possible limitation of the present study is that our scales were developed specifically for an African American community sample. While this may be a limitation in one sense, it is also a strength. Much of the instrument development research overly relies not only on European American samples, but also on college students, and therefore the resulting instruments may not be valid for a mature, beyond-collegiate African American population. We encourage researchers to further examine these scales for use with African Americans as well as their applicability to other populations. Individual items can vary substantially in meaning across different ethnic and cultural groups, and this can lead to biases in interpretation if overall summary scores are compared without first examining the group-specific psychometric properties of the items (Stewart & Napoles-Springer, 2003). We are currently in the process of collecting data using these instruments in a larger national sample of African Americans that will also enable the use of techniques such as factor analysis and/or structural equation modeling to explore their factor structures. Multiple group confirmatory factor analysis procedures have also been developed that might also be used in future research to examine empirically the differential sensitivity of these items to the underlying constructs across multiple race or ethnicity groups (Bingenheimer, Raudenbush, Leventhal, & Brooks-Gunn, 2005; Stark, Chernyshenko, & Drasgow, 2006).

CONCLUSION

As previously noted, we are currently using these and additional scales to test a mediational model, explaining the relationship between religious involvement and health-related behaviors in a national sample of African Americans. The constructs assessed by these scales can be used in a variety of studies examining religious involvement and health. It is quite likely that different mechanisms will be important for different populations, types of health behaviors, and health outcomes. For example, while illness as punishment for sin may be more important than perceived religious influence on health behaviors in predicting risky, sexual behavior, the reverse may be true for illegal drug use. Furthermore, future research should also examine important moderating variables that may be related to these relationships. For example, certain mediating relationships may differ for those of higher income than those of lower income. Finally, as noted above, researchers may want to examine the usefulness of these scales, with appropriate modifications, for other populations.

We think the availability of valid and reliable scales for these constructs will help answer some of the questions posed by theorists about the religion-health connection and open up many avenues of health disparities research. More needs to be learned about the specific nature of the "protective effect" of religious involvement, to inform the development of interventions, particularly of faith-based interventions, which can capitalize on this potentially beneficial factor and reduce health disparities affecting African Americans.

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TABLE 1

Instrument Development and Testing Procedure

Step	Description
1	Literature search to identify existing scale
2	Original item development
3	Item review for face validity and cultural appropriateness
4	Revising and climinating items based on review; forming initial scales
5	Cognitive response testing among 15 African Americans
6	item revision based on testing results
7	Second wave of cognitive response testing among 15 African Americans
8	Final item revisions based on second wave of testing
9	Psychometric testing (test-retest reliability, item-total correlations, internal consistency and concurrent validity) of final scales among 55 African Americans

TABLE 2

Items With Item-Total Correlations

	Item-Total Correlation
Perceived religious influence on health behavior	
I tend to avoid things harmful to my body because of my religious/spiritual beliefs.	.62
Religious/spiritual beliefs have great influence on my health.	.45
God helps me to maintain a healthy lifestyle.	.41
God helps me to avoid bad health habits.	.61
Because of my religious/spiritual beliefs, I do not put harmful substances into my body.	.66
I try to engage in health practices that are consistent with my religious/spiritual guidelines[a]	.43
My body is a temple of the Spirit, so I have a responsibility to take good care of it.[a]	.53
I try to engage in “clean living” because this is what my religion/spirituality teaches.	.43
Following religious/spiritual beliefs makes it easier to avoid unhealthy behaviors.[a]	.69
Because of my religious/spiritual beliefs, I abstain from tobacco/smoking.	.42
Illness as punishment for sin	
Illness is the result of one’s negative thoughts.	.36
God uses sickness to send a message to people.	.71
Illness comes because of something bad a person as done in their life.	.63
God sometimes uses physical illnesses to punish people.	.87
God uses sickness as punishment for the things people have done wrong in their lives.	.83
Illness is a punishment/result from God for sinful behaviors or lifestyle.	.82
Illness is caused by a sinful lifestyle.	.50
God uses sickness as a way to punish people for their sins.	.89

[a]Items eliminated from final version during psychometric testing.