**MASALA Study Analysis Proposal**

**Date of Submission:** December 4, 2019

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**Title of publication:**

“The Study on Stress, Spirituality, and Health (SSSH): Psychometric Evaluation and Initial Validation of the SSSH Baseline Spirituality Survey”

**Type of paper:** Research Report

**Introduction**

Scientific interest in the associations among religion, spirituality, and health are on the rise (e.g., Koenig, King, and Carson 2012), but despite increased research in the past 35 years on this topic RS continues to be under-studied and underdeveloped in the social and health sciences (Levin 2018). Recognizing the need to incorporate RS research more fully into large scale prospective health studies, the National Consortium on Psychosocial Stress, Spirituality, and Health was convened with funding from the John Templeton Foundation. Participants include the principal investigators (PIs) of several ongoing studies, including the Nurses’ Health Study II (NHSII), Black Women’s Health Study (BWHS), the Mediators of Atherosclerosis in South Asians Living in America (MASALA) study, the Hispanic Community Health Study/Study of Latinos (HCHS/SOL), and the Strong Heart Study (SHS). The aim of the Consortium is to prospectively assess the linkages between religion, spirituality, psychosocial stressors, and health across these cohorts, and to identify and recommend relevant RS constructs for use by medical, public health, and social scientific researchers.

The Consortium partnered with cohort PIs and religion and spirituality (R/S) experts to develop an 80+ item R/S questionnaire to be fielded in each cohort. Both established scales of R/S, as well as commonly assessed individual items were included in the survey. Further, several new scales and items were created to evaluate aspects of R/S currently underdeveloped in the research literature. The survey was developed in five stages: (1) systematic literature review; (2) focus groups and key informant interviews across ethnic communities to identify priority R/S measures; (3) evaluation of potential measures with R/S experts; (4) development of *de novo* items to address identified gaps; (5) pilot testing within five racially/ethnically diverse cohort studies; (5) final revisions to the SS-1. The final instrument included 82 R/S items that assess multiple facets of R/S.

The survey has now been fielded in NHSII, BWHS, MASALA, HCHS/SOL, and SHS. Given the racial/ethnic and religious diversity of these samples, which include Protestants, Catholics, agnostics, atheists, Buddhists, Hindus, Jains, American Indian Spiritualists, and more, an important next step is to psychometrically assess the survey instrument to test whether scales remain valid in these diverse samples.

**Objective**

The objective of this study is to psychometrically analyze the survey to examine scale validity in our diverse sample. We will test to see whether items from validated scales exhibit internal consistency in line with results from previous validation studies. We will identify scales that could be developed from the individual *de novo* survey items and also seek to identify any items that could be eliminated with little loss in explanatory power (since a goal of the larger project is to recommend a short list of items to health researchers for future use). Finally, we will test whether scales are meaningfully associated with a several R/S attitudes and a well-validated measure of mental health, the SF-12-MCS.

**Hypotheses**

R/S scales will evince internal consistency at alpha=0.70 or greater.

R/S scales will be associated with SF-12-MCS and PCS.

We will identify R/S items that can be eliminated without loss of internal consistency or external validity.

**Variables**

The variables to be used are entirely from the RS questionnaire (SS-1), with the addition of the SF-12-MCS from the personal update portion of the questionnaire. Nearly every RS item will be reported (RS1A-RS21D), with particular attention paid to a number of scales: religious dimensions, spirituality dimensions, religious activities, closeness to God, positive religious coping, negative religious coping, forgiveness, psychological well-being, and daily spiritual experiences.

**Analyses**

The goal of this paper will be to determine the psychometric properties of the SS-1, including reliability (internal consistency [α]), item adequacy (adjusted item-to-scale correlations), and the item-level factor structure, where appropriate. To accomplish this, each of the SS-1 domains will be treated as a stand-alone scale. For example, the first SS-1 domain “Spirituality” contains five-items; these five items will be analyzed as a continuous measure of the dimensionality of this concept among SSSH participants (e.g., some individuals understand the term “spirituality” to mean just one thing, while others simultaneously maintain multiple understandings of what this term means). Likewise, SS-1 domain 2 contains four items measuring “religiosity,” which will be treated as a continuous measure of the dimensionality of this concept as understood by individual survey respondents.

For sections containing multiple continuous items, we will report internal consistency, adjusted item-to-scale correlations, and where appropriate, item factor structure. Scale-level factor structure will be assessed using Principal Axis Exploratory Factor Analysis.

The SS-1 also contains several categorical and nominal items (e.g., “To what extent do you view organized religion as positive of negative?” that are answered on a 5-point scale (e.g., “very positive” to “very negative”). For categorical and nominal items, we will report the response distribution, as well as floor and ceiling effects.

We will seek to obtain initial evidence of validity for the SS-1 scales as predictors of respondents’ functional health status using the Short-Form 12 Health Survey (SF-12), a validated scale comprised of physical health (SF-12 PCS) and mental health (SF-12 MCS) components. First, we will calculate the zero-order correlations among the SS-1 sections identified as having adequate reliability (nine SS-1 sections or scales meet this requirement) and relevant nominal variables contained within the SS-1 (e.g., extent of being a religious or spiritual person; view of organized religion; being a member of a religious congregation or community) and the SF-12 PCS and SF-12 MCS. Given the size of our sample, trivial correlations will achieve statistically significance. To identify meaningful relationships, only correlations with an absolute value > 0.15 will be considered significant (95% Confidence Interval [CI] for r=0.15 in a sample of 4,000 is 0.12 to 0.18). The absolute value of r > 0.15 seemed an appropriate threshold as the 95% CI exceeds 0.10, Cohen’s small effect size lower boundary.

 To test group differentiation, the sample will be divided into groups based whether or not they reported being part of a religious congregation or community. This grouping variable produces an almost 50/50 split in our sample. Between groups *T*-tests will be conducted for the nine SS-1 domains / scales and the SF-12 component scales. The *T*-test results and effect size measure (Cohen’s *d*) will be presented. To assess predictive validity, we will conduct two stepwise multiple regression analyses exploring the extent to which the SS-1 domains / scales could predict scores on the SF-12-PCS and SF-12-MCS.

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**Publication**

This will be aimed at a social science religion journal as it contains information about religious beliefs and practices. Possibilities include *Journal for the Scientific Study of Religion, Journal of Religion and Health, Review of Religious Research,* or *Religions.* A draft of the paper is currently complete, since it was necessary for our recent Templeton grant application. If the proposal is accepted it will be sent to coauthors at each cohort with the aim of submission by January 31, 2020.