

# Validating a measure of religiousness/spirituality for Native Hawaiians

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## Abstract

Religiousness and spirituality are integral to the human experience. There is emerging literature that shows that religiousness and spirituality are associated with various mental and physical health outcomes. Yet, the development of measures to accurately assess these phenomena in health settings is still in its early stages. The difficulties in developing standardized definitions and measures relate to varying interpretations of religiousness and spirituality, a reluctance to utilize a scientific approach to understand an existential and personal experience, and multi-cultural distinctions. The potential for designing health interventions in which religiousness and spirituality are integrated rests upon the development of measures that are psychometrically sound. This paper reports on preliminary research that empirically assesses one measure of religiousness and spirituality for Native Hawaiians—a group besieged with an array of health problems. The measure is the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) developed by the National Institute on Aging and the Fetzer Institute. This instrument has shown to have appropriate

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reliability and validity scores. A modified BMMRS was administered to 15 Native Hawaiians who underwent a cultural intervention of exercise, diet, and education in a program called Uli'eo Koa (warrior fitness). The BMMRS was slightly modified based on the literature and earlier research to be more specific to Native Hawaiians. Overall, measures of internal consistency supported the reliability of the BMMRS. The strongest subscales included the domains of "daily spiritual experiences," "religious and spiritual coping," and "religious support." Low internal consistency estimates for the items, "watches/listens to religious programs," "family makes demands," and "significant loss in faith," suggest that these items do not measure the same concept for participants. Although the intercorrelations among the subscales were generally low and with wide variability, 10 of the 17 subscales/single items were moderately to highly correlated with one another, indicating concurrent validity. These subscales, some of which assessed, "daily spiritual experiences," "religious and spiritual coping," and "organizational religiousness," suggest that core ideas on spirituality and religiousness for these participants, broadly reflect both "personal" and "organizational" viewpoints. Caution should be used in interpreting the results of the study because of limitations in the

study's design. However, despite these limitations in design, this study provides empirical support for future research on religiousness and spirituality for Native Hawaiians.

## Introduction

Religiousness and spirituality are integral to the human experience. The search for religious and spiritual well-being is a quest that is recognized as a common human need<sup>1</sup> that influences the choices and commitments that people make in their lives. There is emerging literature that shows that religiousness and spirituality are associated with various mental and physical health outcomes<sup>2,4</sup>. In particular, the literature shows that religiousness and spirituality are associated with a health-promoting attitude<sup>5</sup>, with positive adjustments in coping with breast cancer<sup>6</sup>, and with reduced morbidity and mortality<sup>4</sup>.

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Despite this growing body of literature, the development of operational definitions and standardized measures to assess religiousness and spirituality in health settings are still in its early stages<sup>7</sup>. The difficulties in definition and measurement reflect various interpretations of religiousness and spirituality. For some people, religiousness and spirituality are synonymous, and for other people, these two concepts are distinctive phenomena that are connected. The latter interpretation is based on the idea that:

"... religiousness has specific behavioral, social, doctrinal, and denominational characteristics because it involves a system of worship and doctrine that is shared within a group. Spirituality [on the other hand] is concerned with the transcendent, addressing ultimate questions about life's meaning ..."<sup>4</sup> (p.2)

Spirituality, in this regard, can exist within and outside the context of religious doctrine and institutions<sup>8-9</sup>. The difficulties in definition have led to research efforts that have been compromised by a lack of precision and clarity<sup>6-7</sup>.

In addition, difficulties in developing clinically useful definitions and classifications may derive from a general reluctance to operationalize such powerful human experiences of religiousness and spirituality, and a disbelief that such experiences can be reduced to what is "observable" and "measurable." The act of imposing scientific standards to phenomena that are highly subjective, intensely personal, and sometimes controversial, may be objectionable for some people.

Difficulties in defining and measuring religiousness and spirituality are compounded when viewed across cultures. Although there is a universal presence of religiousness and spirituality across different cultures, the conceptualization and expression of such phenomena may vary for different groups. For example, concepts and ideas on spirituality vary across ethnic/cultural groups such as Hispanics and Native Americans<sup>10</sup>. There may also be variation within ethnic/cultural groups, with parameters of spirituality being different for Native Americans such as the Tewa, Pueblo or Hopi<sup>11-12</sup>.

Although it is important to address such difficulties, it is also important that they not obstruct the examination of the relationship of religiousness and spirituality with health. The increasing recognition of the relationship of religion and spirituality with mental and physical health outcomes concomitantly increases the urgency to de-

velop standardized definitions and measures. The development of measures that are psychometrically sound and appropriate for different populations will have great potential in the design of health interventions in which religiousness and spirituality are important.

Examining ways to define and measure religiousness and spirituality seems to be particularly important for ethnic/cultural populations for whom these phenomena are significant and for whom health disparities are a grim reality<sup>13</sup>. The purpose of this paper is to conduct a small-scale pilot study that empirically assesses one measure of religiousness and spirituality for one specific cultural group—Native Hawaiians. This is a cultural group besieged with an array of health problems<sup>14-16</sup>. The measure is the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) recently developed by the National Institute on Aging and the Fetzer Institute<sup>4</sup>. Utilized in a national survey, the BMMRS showed appropriate reliability and validity scores<sup>4</sup>. However, the appropriateness of this measure for Native Hawaiians is not known. This paper begins to explore the psychometric properties (reliability, validity) of the BMMRS for Native Hawaiian adults.

## Religiousness and spirituality in Native Hawaiian culture

Religiousness and spirituality are defining characteristics of Native Hawaiian culture. They are evident in creation chants and described in ancient civilization<sup>17-19</sup>. In one creation chant, the *Kumulipo*, the world and everything in it unfolds in genealogical sequence linking the royal family of Ka li Mamao<sup>20</sup> to the stars in the heavens, gods, chiefs, people, land, animals, and other creatures on earth<sup>21</sup>. The *Kumulipo* emphasizes that all people and phenomena are elaborately connected and related by birth. In another creation epic, Papa, the earth mother and Wākea, the sky father, had a daughter Ho'ohōkūkalanī. The mating of Wākea and Ho'ohōkūkalanī led to the births of Hāloa-naka, an unformed fetus, which when buried in the earth became the first kalo plant, and Hāloa, the ancestor of all the Hawaiian people<sup>22</sup>. The connections of the gods, chiefs, people, and land are again emphasized. These creation tales with their emphases on connections contributed to a worldview and behaviors that supported rituals and reverence to all forms of life.

The importance of religiousness and spirituality extends into contemporary life for many Native Hawaiians. However, traditional creation epics are no longer the sole guides to religious and spiritual worldviews and behaviors.

**The act of imposing scientific standards to phenomena that are highly subjective, intensely personal, and sometimes controversial, may be objectionable for some people.**

Present viewpoints are diverse and reflect an influence of traditional Hawaiian cosmography as well as doctrines of Christian religion that were introduced with the arrival of the missionaries in the 1820s. In contemporary society, Native Hawaiians may share dominant religious thinking and behavior as that of other persons in the United States, and thus, subscribe to Catholic and Protestant denominations as well as a variety of other sects that have developed over time<sup>23</sup>.

Although there has been no large-scale empirical assessment of religiousness and spirituality among Native Hawaiians in contemporary society, preliminary research reveals certain perspectives. One perspective reflects a subscription to both traditional cosmography and Christian canons as some Native Hawaiians appear to comfortably accept 'aumakua (family gods) and a Christian God, and worship in places such as the mountains, ocean, or church<sup>24</sup>. Another perspective reflects a stronger subscription to Christianity with other Native Hawaiians adhering primarily to the doctrines and practices of a Christian denomination<sup>25</sup>. Given the strength and potential variation of perspectives on religiousness and spirituality among Native Hawaiians, this research focuses on the search for a measure that may help to assess these phenomena for this population. Finding such a measure would yield important implications for the future examination of religiousness and spirituality with health. For example, such a measure could be useful in the design of health care interventions that would be more holistic in its inclusion of religiousness and spirituality, and ideally lead to improved overall quality of life for Native Hawaiians dealing with health problems.

## Method

### Participants

Of the 17<sup>\*</sup> Native Hawaiian participants of the Uli'eo Koa program, 15 completed a pre- and post-test assessment of religiousness/spirituality using the BMMRS. The Uli'eo Koa program is a traditional Hawaiian fitness program, which incorporates a holistic approach to study and demonstrate the combined effects of a cultural-appropriate, physical-activity regimen and traditional Hawaiian diet on strength, endurance, and flexibility. All partici-

pants of the Uli'eo Koa program were associated with Pa Kui-A-Holo, an organization dedicated to the Hawaiian fighting art of spiritual guardians such as Kui-A-Lua and Kui-A-Holo.

Participants were of mixed Native Hawaiian ancestry, including Caucasian, Chinese, Filipino, Japanese, Korean, Hispanic/Latino, and Tahitian extractions. Native Hawaiian blood quantum ranged from 3/4 ( $n = 2$ ), 1/2 to 5/8 ( $n = 4$ ), 1/4 to 3/8 ( $n = 7$ ), to 1/8 or less ( $n = 2$ ). The majority of participants were male (73%;  $n = 11$ ) and ranged in age from 23 to 64 years. The educational status for the majority of participants included exposure to or completion of some level of college (53%;  $n = 8$ ), with 20% ( $n = 3$ ) having post-graduate degrees. Although the majority of participants were employed in professional or executive/managerial positions (53%;  $n = 8$ ), others (a) had occupations in production, craft, repair, and the service field; (b) worked as operators and laborers; or (c) were students attending school full-time.

**Given the strength and potential variation of perspectives on religiousness and spirituality among Native Hawaiians, this research focuses on the search for a measure that may help to assess these phenomena for this population.**

### Instrument

There is a history of attempts to conceptualize and measure religiousness/spirituality; however, there is currently no widely used and validated set of standard measures for key religious and spiritual domains. The BMMRS is a new measure that has been used in a national survey, the 1997-1998 General Social Survey, with results that show promise. Although there is recognition that some people may interpret religiousness and spirituality as different constructs, the BMMRS views them as distinct, but related, and does not attempt to measure them separately:

"... while religions aim to foster and nourish the spiritual life—and spirituality is often a salient aspect of religious participation—it is possible to adopt the outward forms of religious worship without having a strong relationship to the transcendent [spirituality]. Combining the two areas—religiousness and spirituality—in one instrument ... realizes this distinction [and relatedness]<sup>4</sup>." (p. 2)

The BMMRS shows reliability and validity to facilitate further research<sup>4</sup>.

"The domains were endorsed by substantial numbers of respondents, the items formed reliable indices within the domains, and the indices were moderately, but not highly correlated with each other<sup>4</sup>" (p. 89).

*\*Sample size of 17 reflects different criteria and start-end points as compared to the articles by Hughes (this issue) and Leslie (this issue).*

The BMMRS consists of 38 items within the following domains:

- ☐ Daily Spiritual Experiences
- ☐ Values and Beliefs
- ☐ Forgiveness
- ☐ Private Religious Practices
- ☐ Religious/Spiritual Coping
- ☐ Religious Support
- ☐ Religious/Spiritual History
- ☐ Commitment
- ☐ Organizational Religiousness
- ☐ Religious Preference
- ☐ Overall Ranking

The BMMRS was selected for this research because of:

(1) the emerging evidence of its psychometric properties, (2) the dual focus on religious and spiritual beliefs and practices, and (3) the explication of multiple domains that capture diverse and complex features of religiousness and spirituality. However, modifications were made to the BMMRS for face validity reasons in line with the literature, preliminary research on Hawaiian spirituality<sup>24</sup>, and the results of a pilot test. Specifically, these modifications were based on preliminary research of 5 focus groups of 28 Native Hawaiians regarding conceptualizations of spirituality, and a pilot test of the BMMRS with 8 Native Hawaiians.

The BMMRS was modified to incorporate Hawaiian ideas on spirituality. Native words such as *Akua* (God) were added throughout the instrument. Two items that did not seem to have relevance for Hawaiians were eliminated. One item in the BMMRS, under the "Religious and Spiritual Coping" domain, stated that a respondent would work with God as a partner. In traditional Hawaiian cosmography, God or *Akua* is viewed as a source of power; people are viewed only as instruments of that power and not equivalent sources of power<sup>26</sup>. In another domain called "Commitment," the item on financial contributions to a congregation was also eliminated.

Other items that emphasized Hawaiian cosmography were added. For example, six items, which emphasized the importance of relationships with family and other social groups, became an added domain (Other Support). One item was also added to the "Religious/Spiritual History" domain to identify a significant person who influenced religious or spiritual faith. Finally, three items that were specific to Uli'eo Koa, in nutrition and lua (fighting art), were also added. Thus, the Uli'eo Koa instrument ended with 47 items assessing religiousness and spirituality.

A Background Information Sheet focusing on demographic variables such as age, gender, ethnicity, educational status, and occupation was developed and included with the BMMRS.

## Procedures

The BMMRS was administered as a pre- and post-test assessment with a two-week interval for the Uli'eo Koa intervention, which consisted of exercise, diet, and education. The pre- and post-test administration assessed whether the intervention influenced participants' levels of religiousness and spirituality. In addition, these data allowed for reliability estimates (i.e., test-retest correlations). The inventory was distributed to the participants at the beginning of their evening meal. Completed surveys were collected at the end of the meal. An overview describing the instrument was provided prior to the pre-test at which time questions were answered. Participants also raised questions and offered verbal feedback during and after the administration of the BMMRS.

The same person administered the BMMRS on both occasions.

## Data analysis

Tests of reliability were performed with measures of internal consistency (Cronbach alpha, item-total correlation) and stability (test-retest correlation). Concurrent validity was evaluated by examining the intercorrelations among the subscales and selected single items.

## Results

The modified BMMRS consisted of a total of 47 items (see Table 1). During analyses, three items were not used because they represented open-ended questions (Items 38, 41, 42). Two of the three items (Items 41, 42) were the only items under the domain called "Religious Preference." The other open-ended item came from the domain "Commitment," and thereby left that domain with only one item. In addition, the domain of nutrition had only one item and was not considered a subscale, but was assessed as a stand-alone item. In the end, the 44 items were in the following subscales:

- ☐ Daily Spiritual Experiences
- ☐ Values and Beliefs
- ☐ Forgiveness
- ☐ Private Religious Practices
- ☐ Religious/Spiritual Coping
- ☐ Religious Support
- ☐ Other Support
- ☐ Religious/Spiritual History

**However, modifications were made to the BMMRS for face validity reasons in line with the literature, preliminary research on Hawaiian spirituality, and the results of a pilot test.**

**Table 1. Item-total correlations, subtest Cronbach alphas, and item-test-retest for the brief multidimensional measure of religiousness/spirituality**

Item or Subtest	Pre		Post		Test-Retest			Pre Inter-Item Correlations				
	<i>r</i> <sup>a</sup>	<i>N</i>	<i>r</i> <sup>a</sup>	<i>N</i>	<i>r</i>		<i>N</i>	1	2	3	4	5
Daily Spiritual Experiences	.89	15	.94	15	.93	****	15	.52	.63	.44	.33	.42
6. Spiritually connected to nature	.56		.87		.57	*	15	.47				
8. Responsibility for pain & suffering	.47		.55		.57	*	15	.44	.02			
11. God/ <i>Akua</i> forgives me	.24		.48		.57	*	14	.50	.41	.18		
15. How often read Bible	.48		.46		.62	*	15					
16. Pray before/after meals in home					.97	****	15					
22. Use religion with stressful events	.68		.55		.57	*	13	.60	.62			
19. Feel God/ <i>Akua</i> punishing me					.79	***	15					
20. God/ <i>Akua</i> abandoned me					.16		15					
21. Do things without God/ <i>Akua</i>					.19		15					
32. Congregation critical of you	.85		.51		1.00	****	11	.83	.79	.76		
31. Social groups make demands	.17		.36		.60	*	15	.42	-.09	.39	-.31	.46
36. Anyone special influenced faith	.16		.26		.56	*	14	.15	.34	-.19		
37. Carry beliefs into life	na		na		.38		15					
40. Other activities of worship	.31		.30		.32		14	.31				
44. Consider self spiritual person	.39		.33		.85	****	15	.39				
45. Kinolau associated with food	na		na		.44		14					
47. <i>Lua</i> contributes to identity as Hawaiian	(no variability in scores)											

<sup>a</sup> *r* = item-total correlations for individual items; *r* = Cronbach alpha for subtests.

Note: Items have been abbreviated.

- ☐ Organizational Religiousness
- ☐ Overall Ranking
- ☐ *Lua*

After analyses, there were two subscales that consisted of six items, three subscales contained four items, two subscales consisted of three items, four subscales were made up of two items, and there were six individual items. Although it is somewhat unusual to assess individual items, four items utilized rating scales that were inconsistent with their respective subscale items (and thus, inappropriate to use the mean as a composite score), or involved negatively worded statements (e.g., God/Akua abandoned me). A fifth item within the domain of "Commitment" and a sixth item related to food/nutrition were not directly associated with any other items on a face validity basis. All six items were analyzed separately.

Reliability is the consistency in which psychological constructs such as religiousness and spirituality are measured. There are two types of reliability. First, internal consistency is the degree to which one single psychological construct is being measured. Second, stability or test-retest reliability is the degree to which the same psycho-

logical construct is measured across time. For both types of reliability measures, the higher the value up to 1.00, the greater the reliability.

To examine the internal consistency of the subscales, Cronbach alpha was calculated for 10 of the 11 subscales. These 10 subscales had at least 2 items allowing for the calculation of Cronbach alpha. Cronbach alpha was not calculated for the 6 stand-alone items and the last subscale (Items 46 and 47) because the latter had no variability for at least one pair of scores as all participants selected "1" indicating "strongly agree" (scores ranging from 1 = strongly agree to 4 = strongly disagree) for the pre- and post-test separately. Cronbach alphas for the remaining 10 subscales prior to the Uli'eo Koa cultural intervention (i.e., pre scores) had a median of .66 (range = .45 to .89) indicating moderate to high levels of internal consistency. Similar results were found for the scores after the Uli'eo Koa cultural intervention (i.e., post scores; median = .69; range = .42 to .94).

In addition to Cronbach alphas, item-total correlations were calculated for each item in order to measure the individual item's internal consistency. An item-total cor-

relation is the association between an individual item within a subscale and the total subscale score. The median for the item-total correlations of the pre-test scores was .52 (range = .03 to .93) indicating a moderate level of item consistency. However, the wide range of values indicated variability in the reliability of item consistency. Six pre-test item correlations were lower than .25 (i.e., Items 11, 14, 30, 31, 35, 36). Similar results were found for the post-test item correlations (median = .55; range = .00 to .93). Only three post-test item-total correlations were lower than .25 (i.e., Items 14, 30, and 35).

The median test-retest value for the 10 subscales was .76 (range = .52 to .93). The median test-retest correlation for the individual items was .67 (range = .16 to 1.00). Items 46 and 47 were not included within the test-retest value due to lack of variability in scores.

Overall, the subscales' stability was adequate, whereas greater variability in test-retest scores were found for individual items. Only seven test-retest values were non-significant and lower than .45 (i.e., Items 20, 21, 23, 37, 40, 43, 45).

Intercorrelations among the pre-BMMRS subscales were calculated in order to determine the association among the subscales as an indicator of concurrent validity. The greater the association among the subscales, the more likely the subscales are measuring what they purport to measure, namely religiousness and spirituality. The median for the intercorrelations of the pre-test subscales was .31 (range = -.64 to .88) and for the post-test subscales was .18 (range = -.81 to .95; see Table 2). These values were based on Subscale 8 (Religious/Spiritual History) being reverse scored given the nature of the rating scale. Although these values suggested high variability in concurrent validity, in examining the pattern of correlations, Subscales 1 (Daily Spiritual Experiences), 2 (Values/Beliefs), 3 (Forgiveness), 4 (Private Religious Practices), 5 (Religious and Spiritual Coping), 7 (Other Support), 8 (Religious/Spiritual History), 9 (Organizational Religiousness), and 10 (Overall Self-Ranking), and individual Item 37 ("Carry beliefs into life") appeared to cluster together. Similar results were indicated for the post-test subscales (see Table 3), with the exception of Subscale 8 (Religious/Spiritual History).

In addition, participants gave verbal feedback regarding their reverence and worship of several Hawaiian gods, including their family gods (*'aumakua*), and indicated that the BMMRS did not address this.

## Discussion

Despite the growing literature associating religiousness and spirituality with mental and physical health out-

comes, there is no widely accepted definition and measure of religiousness and spirituality. As such, research efforts are often compromised by the multiple definitions and standards of measurement. A new measure, however, the BMMRS, embedded in a national survey, shows promise for assessing religiousness and spirituality<sup>4</sup>. It is a measure that assumes a comprehensive approach that assesses several complex domains focusing on values, beliefs, and experiences. Furthermore, it is a measure that captures information on both religiousness and spirituality.

The emerging information on the BMMRS is encouraging. However, the appropriateness of such a measure for a specific population such as Native Hawaiians is not known. It is important to empirically examine such a measure for Native Hawaiians for whom religiousness and spirituality are culturally central, and for whom health disparities are clearly evident. In an effort to lay the groundwork for future research on the relationship of religiousness and spirituality with health outcomes, this research conducted a preliminary empirical assessment of the BMMRS with 15 Native Hawaiians who underwent a cultural intervention in a program called Uli'eo Koa. The BMMRS had been slightly modified based on the literature and earlier pilot research to be more specific to Native Hawaiians.

## Reliability

Overall, measures of internal consistency supported the reliability of the BMMRS. Internal consistency values were calculated for subscales at pre- and post-test, and item-total correlations were computed for individual items within a subscale. On both pre- and post-test administrations of the BMMRS, subscale scores showed moderate to high levels of internal consistency, suggesting that each of the subscales were generally measuring one construct by Uli'eo Koa participants. In particular, the strongest subscales included the domains of "Daily Spiritual Experiences," "Religious and Spiritual Coping," and "Religious Support."

For the item-total correlations, there was a wide range of values indicating variability in the items. Low internal consistency estimates at both pre- and post-tests occurred for the following items: "watches/listens to religious programs," (.03 and .00), "family makes demands" (.20 and .24), and "significant loss in faith" (.11 and .11). These results suggested that these items do not measure the same concept for the participants of Uli'eo Koa. In addition, single items such as "God/Akua abandoned me," (.16) and "do things without God/Akua" (.19) also had low scores. In one way, it appears that ideas in which there are negative connotations of God or family are not clear to participants or are interpreted differently by participants. For example, the phrase, "making de-

Table 2. Intercorrelations among pre-BMMRS subtests (N=12-15)

Subtests	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Daily Spiritual Experiences															
2. Values/Beliefs	.65 **														
3. Forgiveness	.75 **	.70 **													
4. Private Religious Practices	.88 ***	.57 *	.49												
5. Pray before/after meals in home (#16)	.13	.15	.40	-.04											
6. Religious and Spiritual Coping	.84 ***	.76 ***	.76 **	.73 **	.08										
7. Feel God/Akua punishing me (#19)	.24	.10	.23	.29	.23	.23									
8. God/Akua abandoned me (#20)	-.11	-.10	-.17	-.05	-.38	.16	.26								
9. Do things without God/Akua (#21)	-.17	-.30	-.51	.03	-.64 **	-.27	-.38	-.01							
10. Religious Support	.20	.51	.44	.16	.08	.53	-.09	.24	-.53						
11. Other Support (Items Added)	.66 **	.37	.34	.76 **	-.32	.75 **	.18	.34	.07	.36					
12. Religious/Spiritual History	-.49	-.48	-.50	-.43	-.33	-.65 **	-.40	-.37	.44	-.61 *	-.44				
13. Carry beliefs into life (#37)	.62 *	.45	.50	.53 *	.08	.58 *	-.04	-.33	-.05	.10	.46	-.20			
14. Organizational Religiousness	.55 *	.42	.53 *	.62 *	.25	.50	.41	.15	-.25	.23	.38	-.48	.46		
15. Overall Self-Ranking	.71 **	.53 *	.44	.75 **	-.07	.79 ***	.08	.30	.05	.53	.73 **	-.70 **	.30	.43	
16. Kinolau associated with food	.32	.34	.02	.44	-.07	.09	-.27	-.30	.43	-.07	.04	.17	.05	.10	.39
17. Lua															

Table 3. Intercorrelations among post-BMMRS subtests (N=12-15)

Subtests	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Daily Spiritual Experiences																
2. Values/Beliefs	.75 **															
3. Forgiveness	.62 *	.76 **														
4. Private Religious Practices	.74 **	.50	.51													
5. Pray before/after meals in home (#16)	.26	.40	.48	.10												
6. Religious and Spiritual Coping	.95 ****	.75 **	.61 *	.74 **	.23											
7. Feel God/Akua punishing me (#19)	.19	.46	.14	.19	.47	.28										
8. God/Akua abandoned me (#20)	-.29	.01	-.34	-.52 *	.16	-.23	.31									
9. Do things without God/Akua (#21)	-.48	-.30	-.17	-.22	.00	-.33	.38	.01								
10. Religious Support	.19	.21	.17	-.13	.07	.17	-.11	.34	-.35							
11. Other Support (Items Added)	.59 *	.48	.57 *	.56 *	-.10	.49	-.31	-.27	-.48	.41						
12. Religious/Spiritual History	-.04	.05	-.32	-.13	-.31	.07	.08	.09	-.15	-.26	-.33					
13. Carry beliefs into life (#37)	.86 ****	.69 **	.67 **	.47	.44	.76 ***	.18	-.31	-.36	.19	.44	-.09				
14. Organizational Religiousness	.37	.37	.59 *	.43	.51	.41	.15	-.03	-.15	.26	.39	-.44	.22			
15. Overall Self Ranking	.75 **	.57 *	.36	.45	.18	.62 *	.13	-.22	-.43	.16	.46	-.23	.64 *	.14		
16. Kinolau associated with food	.17	.33	.44	-.01	-.11	.18	-.42	.06	-.20	.24	.47	-.20	.19	-.01	.15	
17. Lua	.38	.18	.36	.56 *	-.38	.33	-.18	-.81 ***	-.07	-.12	.43	-.16	.32	-.07	.39	.19

mands" on the part of family may be unclear to participants who emphasize cultural values of "mutuality" of family members. In addition, an activity such as "watching/listening to religious programs," may not be familiar to these participants who may not know that TV and radio regularly broadcast religious programs. Alternatively, participants simply may not care to watch religious programs on TV.

In general, the BMMRS is reliable in regards to its stability across time for the subscales (median = .76) and for individual items (median = .67).

Although some variability was indicated for individual items, only seven of the test-retest scores were not significant. Some of these non-significant items, such as "God/Akua abandoned me," "help from people in a congregation," and "do things without God/Akua," suggest that these concepts were not viewed consistently over time.

### Concurrent validity

The intercorrelations among the subscales were generally low and exhibited wide variability, suggesting inconsistent concurrent validity (i.e., the subscales were not measuring the same religious/spiritual construct). However, several of the subscales were moderately to highly correlated with one another (i.e., Subscales 1, 2, 3, 4, 5, 7, 8, 9, 10, and the item on "carry beliefs into life"). The associations among these subscales suggest that they measure core religious and spiritual beliefs, values, and experiences for this group of Native Hawaiians. For example, Subscale 7, which included newly added items on family and other social group support, appears to be valid for the participants of Uli'eo Koa, and in line with literature that emphasizes the importance of 'ohana and community in any conceptualization of religiousness and spirituality. In another example, the association of Subscale 1, which emphasizes daily spiritual experiences, and Subscale 9, which emphasizes organizational religiousness, suggest that both "personal" and "organizational" viewpoints on spirituality and religiousness are valid. These subscales may prove to be useful in future studies on Native Hawaiian religiousness and spirituality.

Caution should be noted in interpreting the results of the present study because of limitations in the study's design. The small and select nature of the sample precludes generalization of results to a broader population. In addition, measures of religiousness and spirituality in the BMMRS reflect a strong Judeo-Christian influence, and as such, did not fully capture other "views" experienced by Native Hawaiians (i.e., family gods). Despite these limitations, this study provides empirical support

for future research that examines modifications to the BMMRS for Native Hawaiians.

### Concluding remarks

The increasing recognition of the relationship of religion and spirituality with health magnifies the importance of the inclusion of such constructs in healthcare interventions. However, before this can occur, standardized definitions and measures need to be developed and tested to assure that they are psychometrically sound.

For a unique group such as Native Hawaiians, for whom health disparities are well-documented, and for whom religiousness and spirituality are important, this step would seem to be extremely critical. An empirical assessment of the BMMRS indicates that

this is one measure of religiousness and spirituality that may be appropriate for Native Hawaiians. Future research is warranted.

**Despite the growing literature as sociating religiousness and spirituality with mental and physical health outcomes, there is no widely accepted definition and measure of religiousness and spirituality.**

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**It is important to empirically examine such a measure for Native Hawaiians for whom religiousness and spirituality are culturally central, and for whom health disparities are clearly evident.**

*Ka ulua kāpapa o ke kai loa*  
The powerful ulua of the deep sea  
*A strong warrior, the ulua fish is a strong fighter*