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Conceptualizing Spirituality and Religion as Psychological Processes: Validation of the
Factor Structure of the BMMRS

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Abstract

This study validated previous principal component analyses of the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) that have been conducted with persons with diverse medical conditions and traumatic brain injuries from diverse cultures (India, U.S.), ethnicities (African American, Caucasian, South Asian), and religions (Christian, Hindu, Muslim). Participants included 398 healthy undergraduate students who completed the BMMRS online. A principal components factor analysis identified a five factor solution accounting for 64.00% of the variance in scores, labeled as: 1) Positive Spiritual Experience; 2) Negative Spiritual Experience/Congregational Support; 3) Forgiveness; 4) Religious Practices; and 5) Positive Congregational Support. The current analysis is supportive of a conceptual framework in which the BMMRS spiritual and religious variables are best conceptualized in terms of positive/negative psychological processes including: a) emotional connection with the divine (i.e., *spirituality*); b) behavioral rituals/beliefs (i.e., *religiosity*); and c) social support (i.e., *congregationally based*). Implications for psychoneuroimmunological research are discussed.

Introduction

A primary weakness in the scientific study of religion and spirituality continues to be the lack of a coherent taxonomical framework by which to conceptualize these distinct but related constructs. A major problem is the continued use of the terms “religious” and “spiritual” to define the different parameters associated with individuals’ emotional experiences, cognitive beliefs, behavioral practices, and social support systems related to their comprehension of the cosmos or the divine. Although the terms religion and spirituality were initially often used interchangeably, there are ongoing efforts to distinguish between them both theoretically and empirically (Harris, Howell, & Spurgeon, 2018). Although several studies have suggested that religious and spiritual variables are best conceptualized as a single construct (Handal, Creech, Schwendeman, Pashak, Perez, & Caver, 2017), other research has consistently distinguished between them in statistical analyses (Cappana, Stratta, Collazzoni, & Rossi, 2013; Idler et al., 2003; Johnstone, Yoon, Franklin, Schopp, & Hinkebein, 2009; Piedmont, Mapa, & Williams, 2007; Stewart & Koeske, 2006). However, a review of the literature indicates that the labels used to describe these statistically distinct constructs continue to be ambiguous (e.g., spiritual cognition, non-spiritual religious cognition, religious belief, paranormal belief, daily spiritual experience, value/belief, meaning, religious/spiritual coping, intrinsic religiosity, extrinsic religiosity) making it difficult to determine specific causal mechanisms among religious, spiritual, health, and other outcome variables (Hackney & Sanders, 2003). Rather than defining spiritual and religious terms on individual preferences, there is a need for objective factor analyses to identify the statistically consistent factors that may best explain the nature of these constructs, and

particularly if these identified constructs can be best described using common psychological terms. The identification of these empirically sound constructs is particularly important for psychoneuroimmunological research which investigates how psychological processes (i.e., thoughts, emotions, and behaviors, including “spiritual” and “religious” constructs) affect neurological and immunological functioning and ultimately health.

In addition, the study of the impact of religious and spiritual variables on health and wellness outcomes is complicated by the growth of the “nones,” those individuals who do not ascribe to any religion but who do report being spiritual (i.e., 23% of the U.S. population; Pew, 2012). Although these individuals lack conventional religious beliefs, do not engage in religious practices, and may deny the existence of God or higher powers, many report having spiritual experiences that relate to an emotional connection to the universe/nature. Given their spiritual but non-religious perspective, it is clear that a more workable taxonomical framework for spiritual and religious terms for all individuals, believers and skeptics, is lacking but could be developed.

The *Brief Multidimensional Measure of Spirituality/Religiousness* (BMMRS; Fetzer, 1999) was one of the first measures developed to differentiate between specific religious and spiritual dimensions. A specific goal was to identify those specific religious and spiritual variables that influenced health so that appropriate interventions could be developed, with a particular focus on spiritual dimensions (i.e., daily spiritual experiences, beliefs, meaning, forgiveness, values), private rituals (e.g., prayer), organized practices (e.g., service attendance), and religiously-based social support. To date, although several factor analyses have suggested that religious and spiritual variables

are best represented by a singular factor (i.e., an overall religious/spiritual construct), numerous other factor analyses have supported the statistical distinction between religious and spiritual constructs (Idler et al., 2003; Johnstone et al., 2009; Neff, 2006; Piedmont et al., 2007; Stewart & Koeske, 2006). However, in general these factor analyses have failed to provide a taxonomy of constructs that is both theoretically sound and statistically distinct. Moreover, the existing factor analyses have also suggested the need for individual subscales of the BMMRS to conceive of spirituality and religion in terms of negative and positive valences, generally identified as belief in a loving versus a punishing God, as well as supportive and non-supportive interactions with religious congregations (Capanna et al., 2013; Idler et al., 2003; Johnstone, Bhushan, Hanks, Yoon, & Cohen, 2016; Johnstone et al., 2009; Piedmont et al., 2007; Stewart & Koeske, 2006). In fact, many of these earlier studies identified factors that were ascribed vague religious/spiritual terms to identify positive and negative spiritual constructs (e.g., “Guilt vs. God’s Grace,” “Loving/Forgiving God,” and “Spiritual Distress,” Stewart & Koeske, 2006; Piedmont et al., 2007). Although these analyses were important in distinguishing between religious and spiritual constructs, as well as identifying the positive and negative aspects of religious beliefs (i.e., loving versus punishing God), they also illustrated some of the problems inherent in continuing to use the terms “spiritual” and “religious” as definitive constructs, suggesting the need for further refinement.

Given these shortcomings, a series of more recent principal component analyses (PCAs) of the BMMRS suggest that within biopsychosocial research, it may be best to conceptualize spiritual and religious constructs in terms of underlying psychological processes, de-emphasizing the categorical use of the terms “spiritual” and “religious.”

For example, analysis of the BMMRS based on 168 individuals with various health conditions (e.g., neurologic injury, cancer, physical disabilities) indicated the presence of six components labeled as: positive spirituality, negative spirituality, forgiveness, religious practices, positive congregational support, and negative congregational support (Johnstone et al., 2009). It was noted that 4 of the 5 BMMRS spirituality subscales (i.e., Daily Spiritual Experiences, Meaning, Values/Beliefs, Religious/Spiritual Coping) were best considered as measures of a general spiritual experience (i.e., emotional closeness to the divine), but could be further conceptualized in terms of positive (i.e., feeling loved by God) and negative valences (i.e., feeling abandoned/punished by God).

Furthermore, whereas the original BMMRS proposed a general Religious Support Scale (i.e., perceived social support from fellow congregants), several factor analyses indicated that it was best to differentiate between positively (i.e., feeling supported by one's congregation) and negatively perceived social support (i.e., feeling unsupported by one's congregation; Idler et al., 2003; Johnstone et al., 2009; Johnstone et al., 2016). Similarly, whereas the original BMMRS differentiated between frequency of private religious practices (e.g., prayer) and organized religion (e.g., attendance at organized services), several subsequent factor analyses indicated that these scales tend to load on one general religiosity scale (Capanna et al., 2013; Idler et al., 2003; Johnstone et al., 2009; Johnstone et al., 2016; Piedmont et al., 2007; Stewart & Koeske, 2006) which reduced their strength as analytical constructs.

Of additional importance, several studies indicated that the BMMRS Forgiveness scale was the only scale that had both theoretical and statistical support as a unique spiritual construct, suggesting it may deserve special attention as an important "spiritual"

process (Pargament, McCullough, & Thoresen, 2000; Johnstone et al., 2009; Johnstone et al., 2016). Other studies suggest that forgiveness may operate as a unique personality trait (Berry, Everett, & Worthington, 2001) and it appears to limit destructive behavior when promoted in small religious groups (Wuthnow, 2000).

Based on these studies, it was suggested that rather than conceiving of the BMMRS Scales in terms of “spirituality” and “religiosity,” it may be best to conceive of them in terms of related underlying psychological processes such as affective, behavioral, cognitive, and social processing considered in the context of one’s belief in the divine/cosmos. When considered in this manner, spirituality could be considered as primarily relating to affective processes (i.e., emotional connection to the divine, nature, or the cosmos) and religion as primarily relating to behavioral (i.e., culturally based practices/rituals), cognitive (i.e., specific beliefs), and social processes (i.e., perceived support from congregants). The conceptualization of religious and spiritual variables in terms of psychological processes allows for a clearer investigation of the role of religious and spiritual variables in psychoneuroimmunological models of health (Ray, 2004a). Specifically, it is easier to understand the role of affective, behavioral, cognitive, and social variables in the influence and maintenance of health outcomes, as opposed to vague religious and spiritual terms (e.g., spiritual/religious cognition, spiritual/religious experience).

To address the broad use of the BMMRS, a recent factor analysis of the BMMRS (Johnstone et al., 2016) was conducted to validate this taxonomical framework with individuals from different cultures and religions. Based on a sample of 109 persons with traumatic brain injury from different cultures (i.e., India, U.S.), ethnicities (i.e., African

American, Caucasian, South Asian) and religious backgrounds (i.e., Christian, Hindu, Muslim), this study identified 5 factors that were labeled as follows: 1) positive spirituality/religious practices; 2) negative spirituality/negative congregational support; 3) positive congregational support; 4) organizational religiousness; and 5) forgiveness. It was concluded that the results generally supported the original factor analysis, with the exception of several minor differences. Specifically, for this culturally diverse sample, positive and negative spirituality factors were identified, although positive spirituality loaded with religious practices. Similarly, negative spirituality loaded with negative congregational support. Consistent with the original study (Johnstone et al., 2009), forgiveness and positive congregational support were identified as distinct factors. However, private religious practices loaded with positive spirituality rather than with organizational religiousness in the India/U.S. study, whereas the two religious scales loaded on a singular religious factor in the first study.

Overall it is suggested that the BMMRS may be best conceptualized as measuring affective, behavioral, and social constructs (which can be described in terms of spiritual and religious terms), but that for different cultures and religions these constructs may cohere differently (e.g., South Asians with positive spiritual beliefs may engage more frequently in religious practices; South Asians with negative spiritual beliefs may also have concomitant negative congregational interactions). However, consistent with the first factor analysis, the results also indicated that forgiveness is the one spiritual construct that is distinct from the other BMMRS spiritual scales for individuals from all cultures, ethnicities, and religions.

Purpose and Rationale for the Current Study

The current study was conducted to validate previous studies that indicate that the BMMRS may be best conceptualized as measuring affective, behavioral, and social processes in a large, non-clinical sample. In order to increase generalizability of the findings from previous studies with clinical populations, the current study was conducted with healthy undergraduate students from private and public universities.

Methods

It is noted that this study received IRB approval at each of the five respective universities at which the authors were based.

Participants

The participants were part of a study evaluating relationships among spirituality, religion, personality, virtues, and health for a population of undergraduate students. It is noted that students first completed the measures of interest (i.e., spirituality, virtues) on the website, and then were asked to provide demographic characteristics. As many as 77 of the participants finished the measures but did not provide demographic information. As a result, information related to various demographic characteristics is missing for up to 77 participants.

The total sample from which the participants was drawn included 402 individuals who were undergraduate students from one public university (University of Missouri; n = 79) and four private universities from the Coalition of Christian Colleges and Universities (CCCU; California Baptist, n = 26; Northwestern College, n = 56; Northwestern Nazarene, n = 33; Whitworth, n = 135). Seventy-three students did not list their college affiliation.

To identify participants who were considered to be multivariate outliers, Mahalanobis distance was evaluated as a chi-square statistic with degrees of freedom equal to the number of variables in the analysis (Tabachnick & Fidell, 2013). According to criterion for outliers, the data of four participants were dropped from the analysis, so the total number of participants included in the study was 398. A scatterplot matrix revealed fairly normal distribution and linear relationship among variables.

The gender characteristics of the sample were as follows: 245 females (61%); 78 males (19%); 2 non-conforming (1%); 77 with missing data (19%). The mean age of the respondents was 20.70 years (SD = 3.87; range = 17 – 57; n = 325). It is noted that 96% of the sample was between the ages of 18 and 25, consistent with the typical undergraduate population of the participating universities. The ethnic characteristics were as follows: 258 Caucasians (64%); 32 Multi-racial (8%); 15 Hispanics (4%); 9 Asians (2%); 8 African Americans (2%); 3 American Indians (1%); 1 Middle Easterner (<1%); 1 Hawaiian (<1%); 2 other (<1%); 73 missing (18%). Participants self-reported the following religious affiliations: 134 Protestant (33%); 85 Christian (21%); 25 Catholic (6%); 1 Mormon (<1%); 1 Jewish (<1%); 3 Buddhist (1%); 19 other world religions (5%); 58 atheist/agnostic/nothing (14%); 1 preferred not to answer (<1%); 74 missing (18%).

Procedures

All participants were informed of the study in classes by faculty collaborating in the study. The participants were informed of the nature of the research and subsequently given an instruction sheet directing them to a website where they could answer the study's questionnaires and provide basic demographic information. All participants

completed the questionnaires after reading the study description and waiver of informed consent process. Participants did not receive any compensation for completing the measures. However, one institution entered students' names into a raffle in which a small gift certificate was offered as an incentive, and another university offered a course credit for completing these surveys.

Measures

Religiousness/Spirituality

To measure various aspects of spirituality and religion, the *Brief Multidimensional Measures of Religiousness/Spirituality* (BMMRS; Fetzer/NIA, 1999) was used. For this study, eight subscales of the BMMRS were included in the factor analysis, including: Daily Spiritual Experiences, Meaning, Values/Beliefs, Forgiveness, Private Religious Practice, Religious/Spiritual Coping, Religious Support, and Organizational Religiousness. For all scale scores, lower scores are indicative of higher levels of spirituality and religious practices. To make the BMMRS appropriate for all religions, the term "God" was replaced with "higher power."

Daily Spiritual Experience measures the individual's experience of transcendence (e.g., God, the divine, higher power) in daily life and experience of interaction with a higher power (e.g., "I feel the presence of a higher power;" "I feel deeper peace or harmony."). This subscale consists of six items rated on a six-point response format, ranging from one (many times a day) to six (never).

Meaning measures a sense of meaning in life (i.e., "The events in my life unfold according to a divine or greater plan;" "I have a sense of mission or calling in my own life.").

This subscale was composed of two items with a four-point response format, which ranged from one (strongly agree) to four (strongly disagree).

Values/Beliefs measures spiritual values and beliefs (i.e., “I feel a deep sense of responsibility for reducing pain and suffering in the world;” “I believe in a higher power who watches over me.”). This subscale was composed of two items with a four-point response format, which ranged from one (strongly agree) to four (strongly disagree).

Forgiveness measures the degree of forgiveness of self, others, and belief in the forgiveness by a higher power (e.g., “I have forgiven myself for things that I have done wrong,” “I have forgiven those who hurt me;” “I know that I am forgiven by a higher power.”). These three items were rated on a four-point response format, ranging from one (always) to four (never).

Private Religious Practice measures religious behaviors (e.g., “Within your religious or spiritual tradition, how often do you meditate?” “How often do you watch or listen to religious programs on TV or radio?”). This subscale was composed of five items, four of which used an eight-point response format and one which used a five-point format. Scores ranged from one (greater frequency) to five or eight (never), depending on the item.

Religious and Spiritual Coping measures additional religious/spiritual practices and beliefs specifically related to coping with life’s problems (e.g., “I work together with a higher power as partners;” “I try to make sense of the situation and decide what to do without relying on a higher power.”). This subscale consisted of seven items with a point-point response format, ranging from one (a great deal) to four (not at all).

Religious Support measures the degree to which local congregations provide help, support, and comfort (e.g., “If you had a problem or were faced with a difficult situation,

how much comfort would the people in your congregation be willing to give you?”). This subscale was composed of four items and a four-point response format was used, which ranged from one (very often) to four (never).

Organizational Religiousness measures involvement in a formal public religious institution (e.g., “How often do you go to religious service?” “Besides religious services, how often do you take part in other activities at a place of worship?”). This subscale consisted of two items with a six-point response format, ranging from one (more than once a week) to six (never).

Given that the BMMRS items do not have the same range of scores for each subscale, in the current study all subscale items were standardized so that their scaling was equivalent (i.e., each item was scaled based on a range of zero to three). Specifically, the five subscales which consisted of a four-point answer format (i.e., Meaning, Values/Beliefs, Forgiveness, Religious and Spiritual Coping, and Religious Support) had their scores transformed from a one to four range to the zero to three range (i.e., 1.0 was subtracted from the actual score for each item). For the Daily Spiritual Experience and Organizational Religiousness subscales, which were composed of a six-point response format, 1.0 was subtracted from the actual score, which was then multiplied by $3/5$. For the four items which used an eight point range on the Private Religious Practices (RPP) scale, 1.0 was subtracted from the actual score which was then multiplied by $3/7$. In addition, for one item with a five point range on RPP, 1.0 was subtracted from the actual score, which was then multiplied by $3/4$.

T-tests indicated that the students from the private Christian colleges reported significantly higher scores ($p < .001$) than the public university students on all BMMRS subscales, other than for the Religious Support subscale.

Data Analysis

SPSS was used to analyze the data. For the study, exploratory PCA with varimax rotation and Kaiser normalization was conducted to assess the component structure of the BMMRS. PCA was used given that this study replicated two previous PCA studies of the BMMRS, both of which were conducted with populations with significant medical conditions and traumatic brain injury, including one conducted in the U.S. (Johnstone et al., 2009) and one conducted in the U.S. and India (Johnstone et al., 2016). Exploratory analysis was used for this sample given that it significantly differed from the previous studies in that the current sample included healthy individuals who were undergraduate students. It was postulated that if the current study produced generally similar components as the previous exploratory studies, then future PCA studies of the BMMRS for all samples (e.g., healthy, neurologic, patients, students) would benefit from confirmatory analyses.

Results

The scree plot (see Figure 1) was examined to establish the appropriate number of components. An examination of the plot revealed six components with Eigen values greater than 1.0. The sixth component was not interpreted as it included only one item (Values/Belief: "I feel a deep sense of responsibility for reducing pain and suffering in the world"). Items were determined to load on a component if the loading was at least 0.32 (as per the recommendations of Tabachnick & Fidell, 2013). Each item was identified as

loading on only one primary component, although several items had loadings that suggested that they could be considered as items on multiple components (i.e., items that assessed frequency of service attendance, reading religious literature, and praying).

The first five components had extraction Eigen values of 9.25, 2.94, 2.67, 2.00, and 1.91, respectively, explaining a cumulative total of 62.55% of the variance in the scores (Table 1). The five components were labeled according to the face validity of the items that loaded on each component (see Table 1). These five components were generally consistent with those identified in the previous BMMRS PCAs (Johnstone et al., 2009; Johnstone et al., 2016), and as a result they were labeled with similar names to reflect the general nature of the constructs, including: Positive Spiritual Experience (16 items, $\alpha = .96$), Religious Practices (4 items, $\alpha = .77$), Positive Congregational Support (3 items, $\alpha = .78$), Forgiveness (3 items, $\alpha = .70$), and Negative Spiritual/Congregational Support (3 items, $\alpha = .61$).

Pearson product-moment correlations were conducted for the five obtained components (see Table 2). All of the first four components were positively and significantly associated. Component 5 (Negative Spirituality/Congregational Support) was only significantly associated (negatively) with Component 2 such that those who experienced the most negative spiritual experiences and congregational support engaged less frequently in religious practices.

Discussion

The main findings of the study based on a healthy undergraduate population were generally consistent with previous PCAs of the BMMRS based on U.S. and Indian samples with medical conditions/TBI and may be summarized as follows:

- Religion and spirituality can be statistically differentiated, with religion conceptualized as behavioral practices associated with culturally-specific beliefs, and spirituality conceptualized as individual's emotional connection with the divine, however it is conceived.
- four of five BMMRS spiritual scales (i.e., Daily Spiritual Experiences, Meaning, Values/Beliefs, Religious/Spiritual Coping) generally load on a component best conceptualized as positive spirituality.
- Forgiveness is the one original BMMRS spiritual scale that has both theoretical and statistical support as an individual spiritual construct.
- Private Religious Practices and Organizational Religion statistically measure the same general "religion" construct (i.e., frequency of culturally-based practices, whether private or public).
- Religious Support (i.e., perceived social support from congregants) is a statistically distinct construct, distinguished in terms of positive (i.e., supportive) and negative (i.e., unsupportive) social support from congregants.
- Negative spirituality was not identified as a statistically distinct construct as it was in a previous PCA (Johnstone et al., 2009), although one of the negative spirituality items ("I feel I am being punished by a higher power for my sins or lack of spirituality") loaded on the negative congregational support factor, consistent with findings from the U.S./Indian sample (Johnstone et al., 2016).

Overall, the current results support the same general structure that was identified in previous BMMRS PCAs (Johnstone et al., 2009; Johnstone et al., 2016). The only major difference was that the negative spirituality and negative congregational support factors

identified as separate factors in the first PCA loaded together on one general negative spirituality/congregational support component in the current study (consistent with the U.S./India BMMRS factor analysis; Johnstone et al., 2016). Despite this minor difference, it is concluded that religious and spiritual constructs may be best conceptualized in terms of affective, behavioral, and social processes, and in terms of positive and negative valences.

This general taxonomy of religious/spiritual constructs conceptualized as common psychological processes has now been demonstrated for multiple and diverse cultures (i.e., U.S., India), religions (i.e., Christian, Hindu, Muslim), and ethnicities (i.e., African Americans, Caucasians, South Asians), including both adults with significant health conditions (Johnstone et al., 2009; Johnstone et al., 2016) and healthy undergraduate college students (current study). These generally consistent results suggest that this may be an appropriate taxonomical framework by which to conceptualize, define, and measure spiritual and religious constructs across diverse groups. Re-conceptualizing the BMMRS in this manner (as well as other measures of religiosity and spirituality) will allow for it to be more readily used to evaluate and expand psychoneuroimmunological models of health outcomes which investigate the impact of affective experiences (i.e., spiritual and non-spiritual), behaviors/beliefs (i.e., religious and non-religious), and social support (i.e., religious and non-religious) on immunological functioning, and ultimately health (Glaser & Kiecolt-Glaser, 2005; Lutgendorf & Costanzo, 2003; Ray, 2004a; Segerstrom & Miller, 2004; Steptoe, Hamer, & Chida, 2007).

The current results are also important as they indicate the need to conceptualize these psychological processes in terms of positive and negative valences, which were not

identified in the original construction of the BMMRS. This will allow for the determination of the impact of both positive and negative psychological processes (i.e., emotions, social perceptions) on health outcomes, as has been indicated in several other psychoneuroimmunological research studies (e.g., Sherman, Simonton, Latif, Spohn, & Tricot, 2005; Ellison, Hummer, Cormier, & Rogers, 2000; Tarakeshwar, Hansen, Kochman, & Sikkema, 2005; Tarakeshwar, Pearce, & Sikkema, 2005; Thoreson, 1999). It is particularly noteworthy that the positive and negative aspects of spirituality and congregational support appear to be distinct constructs, and do not operate as opposite ends of the same continuum (i.e., low negative spirituality does not equal high positive spirituality).

Spiritual Experience as Affective Process

The previous and current results suggest that *spirituality* may be best conceptualized as the emotional experience of feeling connected with a higher power. The separation of affective and behavioral experiences is important as behaviors, including many rituals in organized religious settings, may or may not produce an emotional experience. Review of the items on the Positive Spirituality components from the two previous and current BMMRS PCAs indicate that these items generally describe emotional experiences of awe, wonder, harmony, unity, peace, or connectedness with the universe or a higher power. Whether the experience is described as “spiritual” or “religious” is less important if the main process is an affective, emotional feeling of connectedness with (or abandonment by) the divine. Moreover, the label of “religious” and/or “spiritual” may miss the underlying process of the experience, which is especially important with an increasing number of individuals claiming no religious affiliation.

Consistent with previous studies, it is suggested that these emotional experiences of connectedness be primarily conceptualized as “spiritual.” Conceptualization of spirituality in this manner also allows for the emotional experiences of skeptics to be acknowledged as being “spiritual,” without the suggestion that such occurrences be limited solely to emotional connections with one or more deities, or adherence to specific religious systems of belief or ritual.

Current and previous PCAs also suggest that there are three distinct affective/spiritual subdomains, including Positive Spiritual Experiences, Negative Spiritual Experiences, and Forgiveness. The Positive and Negative Spiritual Experience components are consistent with previously identified *Spirituality* and *Spiritual Distress* components (Piedmont et al., 2007), as well as the *Spirituality, Loving/Forgiving God*, and *Guilt vs. God’s Grace* components (Stewart & Koeske, 2006). This negative spirituality factor is also consistent with previous research that indicates that such negative spiritual experiences (or what has been defined as “negative spiritual coping” by Pargament, 1997) may lead to worse health. It will be beneficial for future research to separate these two negative spirituality items from the BMMRS Religious/Spiritual Coping subscale and conceptualize them as items on an individual negative spirituality scale.

One of the most interesting findings from the current study is the consistent identification of forgiveness as a theoretically and statistically distinct spiritual construct found across multiple studies (Idler et al., 2003; Johnstone et al., 2009; Johnstone et al., 2016; Neff, 2006). The Forgiveness scale has items related to granting forgiveness to oneself or another person, and to receiving divine forgiveness (i.e., feeling forgiven by a

higher power). This finding may not be surprising given the central importance of forgiveness in most religions (Pargament & Rye, 1998). Aspects of forgiveness that are not assessed by the BMMRS include seeking or receiving forgiveness from another person (see Witvliet, Van Tongeren, Root-Luna, 2016). In light of the sample (i.e., with the largest percentage self-identifying as Christian), it is worth noting that this religious tradition emphasizes seeking forgiveness from God and from others, as well as granting forgiveness to others; and whereas humble repentance is emphasized, self-forgiveness is not (see Witvliet, Hinman, Eline, & Brandt, 2011). In another study, forgiveness was the only BMMRS scale to significantly predict health outcomes in a sample of individuals with heterogeneous health conditions after accounting for demographic and personality characteristics, suggesting the relative importance of forgiveness on health (Johnstone et al., 2012). It is also important to note that Forgiveness emerged as a separate factor in the Piedmont study (2007), and was significantly correlated with measures of personality but not with other spiritual/religious measures. This suggests that the forgiveness items on the BMMRS may capture characteristics with strong personality traits that transcend spiritual and religious measures—although it is acknowledged that acts of receiving and granting forgiveness may also be tied to specific religious rituals, social processes, and cognitive beliefs.

Religion as Behavioral Ritual

Consistent with several previous studies, a component was identified that can be conceptualized as a general *Religious Behavior* construct involving the frequency of culturally based activities/behaviors (e.g., prayer/meditation, rituals, religious service attendance, reading religious texts) that are generally associated with many religious

traditions regardless of their specific systems of belief. In fact, each of the questions from this component relate to the frequency with which individuals report engaging in specific cultural practices and rituals. This *Religious Behaviors* factor is generally consistent with the *Religiosity* factors identified by Piedmont and colleagues (2007) and by Stewart and Koeske (2006). These religious practices/rituals are often the primary behaviors that individuals use to achieve spiritual experiences (e.g., ritual prayer/dance/song to achieve communion with God, meditation to achieve enlightenment, a vision quest to connect with the Great Spirit, etc.).

Religion as Social Process

Many psychoneuroimmunological models of health verify the importance of social support in the maintenance of health (Ray, 2004a; Uchino, 2006), so it is not surprising that religiously-based social support has been consistently identified as a distinct factor that impacts health (George, Ellison, & Larson, 2002). However, the current and previous studies suggest that it is important to distinguish the perceived positive social support and negative social experiences offered by fellow congregants, similar to the need to distinguish between positive and negative spiritual experiences. It is noteworthy that the current and one previous factor analysis of the BMMRS (Johnstone et al., 2016) both found that negative spiritual experiences and negative congregational support factors loaded on the same factor. This is not surprising as it suggests that individuals who have negative interactions with their fellow congregants are also likely to have negative beliefs about the divine (i.e., they are abandoned/punished by a higher power). These findings suggest that positive and negative congregational support should be viewed as separate constructs, and not as different ends of the same continuum. Just as

positive (e.g., agreeableness) and negative personality traits (i.e., neuroticism) can affect health, so can positive and negative spiritual beliefs and perceived congregational support.

Religion as Cognitive Process

It is noted that the BMMRS does not thoroughly assess the “cognitive beliefs” that are common to most religions (e.g., nature of divinity, cognitive beliefs necessary for salvation, existence of an afterlife, intellectual importance of specific rituals). As a result, the current and previous BMMRS component analyses may have been unable to determine the existence of specific religiously-based cognitive beliefs. Another measure of religiosity and spirituality that is more comprehensive in its assessment of cognitive beliefs is the *Expressions of Spirituality Inventory* (MacDonald, Friedman, Brewczynski, Holland, Salagame, Mohan, Gubrij, Cheong, et al., 2015), which has been validated in a factor analysis of over 4,000 individuals from eight different countries and multiple religions. A factor analysis of this measure identified 5 distinct factors, including 2 that were primarily related to *affective* processes (i.e., labeled as spiritual experience, existential well-being), 1 that was primarily related to *behavioral* actions (i.e., labeled as intrinsic religiousness), and two that were primarily related to *cognitive* processes (i.e., labeled as nonreligious spiritual cognitions, paranormal beliefs), further suggesting the validity of our categories in developing a clearer understanding of the role of religious and spiritual factors in influencing health and functioning. Future research can use measures such as the BMMRS and the Expressions of Spirituality Inventory to determine the theoretical and statistical existence of affective, behavioral, cognitive, and social constructs common to all measures of religiosity and spirituality.

Limitations and Future Directions

The study is limited by several factors. First, it was conducted with generally healthy undergraduate students, most of whom were female, and as a result the findings should be generalizable only to this sample (i.e., relatively young, female college students, primarily Christian, likely higher SES). In addition, nearly 20% of the sample did not provide demographic information. However, it is noted that these results are generally consistent with those of similar studies based on very different populations (i.e., medical/neurologic samples with variable demographic characteristics: U.S., India; African American, Caucasian, South Asian; Christian, Hindu, Muslim), suggesting generalizability of the model to broad populations. It is also noted that the study used exploratory PCA in order to be comparable to previous similar studies (Johnstone et al., 2009; Johnstone et al., 2016).

Based on the consistency of results across the three studies, the proposed BMMRS taxonomy based on psychological processes can be investigated in psychoneuroimmunological models of health, consistent with Ray's (2004a; 2004b) suggestion that psychoneuroimmunological health research include measures of spiritual experiences (i.e., affect), religious beliefs (i.e., cognition), religious practices (i.e., behaviors), and congregational social support (i.e., social), in addition to non-religious emotions, beliefs, behaviors, and social support. By conceptualizing the BMMRS and other measures of religion and spirituality in terms of psychological processes, it will be possible to determine whether individuals' health status is impacted primarily by emotional experiences (i.e., spirituality), culturally influenced behaviors/rituals, culturally based cognitive beliefs, congregation based social support, or a combination of all

(Campbell, Yoon, & Johnstone, 2010; Cohen, Yoon, & Johnstone, 2009). Whether or not a construct is conceptualized as being “spiritual” or religious” in nature is of less importance, but rather the identification of the specific mediating “psychological” processes is of utmost importance. This will be particularly relevant given the growing number of “nones” in society who may experience these underlying processes as the result of traditionally non-religious and non-spiritual content (e.g., engagement in science; Valdesolo, Park, & Gottlieb, in press). Moreover, focusing on the underlying processes permits an examination of whether the various effects of religious affiliation are because of something unique about religion (i.e., whether religion is “special;” Smith & Crosby, 2017).

Depending on the findings, it will be possible to develop appropriate “religious” and/or “spiritual” interventions that are focused on affective, behavioral, cognitive, and social processes (e.g., forgiveness protocols, meditation/prayer practices for stress reduction, reliance on existing religious social networks) to improve the physical and mental health of individuals. For example, one study of persons with spinal cord injuries indicated that congregational support (but not other BMMRS scales) was a primary predictor of positive health outcomes, which is not surprising given the mobility difficulties experienced by persons with such physically limiting conditions (Franklin, Yoon, Acuff, & Johnstone, 2008). For these individuals, the physical and emotional support offered by their fellow worshipers appears to be more important than their personal spiritual experiences or frequency of religious practices.

The consistent identification of forgiveness as a unique spiritual construct suggests that further research can explore the efficacy of forgiveness interventions on

physical and mental health for persons who have been emotionally or physically injured as the result of others (e.g., issues of marital infidelity, persons with physical injuries caused by others, etc.) or who have hurt others themselves (e.g., soldiers in battle). Other implications should include self-inflicted forms of harm and the use of interventions fostering self-forgiveness as a means to remedy such conditions. Already, forgiveness-prompting interventions have demonstrated the positive psychological and physiological side effects of compassionate and benefit-focused reappraisal strategies (see Witvliet & Root Luna, in press, for a review). A next step in this field may be to determine whether these approaches—religiously tailored to fit the individual—will be even more effective than existing interventions in fostering forgiveness and positive psychoneuroimmunological outcomes. Determinations can be made whether or not approaches to seek and grant forgiveness when tailored to the religiosity of the person will be more effective than existing approaches that offer a general frame that people adapt to their situations (Witvliet & Root Luna, in press).

The effect of positive and negative impact of religious beliefs on health outcomes can also be determined. For example, Saroglou and colleagues (2005) reported that increased religiosity was associated with increased altruism directed towards loved ones but not strangers, but increased spirituality was associated with increased altruism towards both loved ones and strangers. This finding suggests that spiritual experiences are associated with increased prosocial behaviors towards all “others,” whereas religious beliefs may in fact decrease prosocial behaviors towards others outside of the perceived “in-group.” Interventions aimed at promoting perceived similarities between others,

rather than differences, may lead to better social relationships among all peoples, including peoples from different faiths.

In conclusion, the results strongly suggest that the spiritual and religious subscales of the BMMRS are best conceptualized in terms of a taxonomy expressed in terms of psychological processes (i.e., emotional, behavioral, social). Such a model can be used within psychoneuroimmunological studies to identify the primary predictors of health outcomes. As such, specific emotional, behavioral, and social interventions can be developed (versus vaguely defined spiritual and religious interventions) to improve the psychological functioning, immunological functioning, and ultimately health of individuals from diverse groups. Consistent with the aims of this journal, the results suggest that this taxonomy is appropriate to use with different cultures (U.S., India), religions (i.e., Christian, Hindu, Muslim), and populations (i.e., healthy students, medical/neurologic patients).

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Table 1: PCA resultsRotated Component Matrix^a

BMMRS ITEM	BMMRS Scale	Component				
		1	2	3	4	5
I believe in a higher power who watches over me.	Values/Beliefs	.862	.063	.211	.156	-.046
I desire to be closer to or in union with a higher power.	DSE	.818	.259	.238	.069	.072
The events in my life unfold according to a divine or greater plan.	Meaning	.809	.072	.134	.200	-.002
I look to a higher power for strength, support, and guidance.	RS Coping	.784	.253	.257	.095	.046
I find strength and comfort in my religion.	DSE	.776	.280	.247	.188	.128
I know that I am forgiven by a higher power.	Forgiveness	.767	.011	.229	.335	.006
I feel the presence of a higher power.	DSE	.727	.243	.006	.207	.027
I feel the love of a higher power for me, directly or through others.	DSE	.721	.247	.180	.283	.117
I wonder whether I have been abandoned by a higher power.	RS Coping	.718	.311	.233	.106	.061
How often do you pray privately in places other than at church or synagogue?	PRP	.704	.389	.302	.054	.038
I work together with a higher power as partners.	RS Coping	.636	.368	.055	.098	-.138
I am spiritually touched by the beauty of creation.	DSE	.634	.244	.055	.223	-.002
I have a sense of mission or calling in my own life.	Meaning	.618	.128	.095	.153	.002
How often do you go to religious services?	OR	.602	.400	.375	.054	.023
I think about how my life is part of a larger spiritual force.	RS Coping	.566	.349	.050	.159	-.116
I try to make sense of the situation and decide what to do without relying on a higher power.	RS Coping	.368	.275	.053	.021	.343
Within your religious or spiritual tradition, how often do you meditate?	PRP	.162	.689	-.038	.108	-.219
How often do you watch or listen to religious programs on TV or radio?	PRP	.360	.627	.088	.045	-.063
How often do you read the Bible or other religious literature?	PRP	.496	.623	.296	.091	.058
Besides religious services, how often do you take part in other activities at a place of worship?	OR	.330	.499	.431	.101	-.072
If you were ill, how much would the people in your congregation help you out?	Religious Support	.248	.019	.863	.102	-.104
If you had a problem or were faced with a difficult situation, how much comfort would the people in your congregation be willing to give?	Religious Support	.289	.087	.839	.127	-.045
How often are prayers or grace said before or after	PRP	.398	.285	.430	-.019	.090

BMMRS ITEM	BMMRS Scale	Component				
		1	2	3	4	5
meals in your home?						
I have forgiven myself for things I have done wrong.	Forgiveness	.265	.071	.069	.832	.036
I have forgiven those who hurt me.	Forgiveness	.381	.066	.129	.664	-.021
I feel deep inner peace or harmony.	DSE	.322	.364	.065	.479	-.012
How often are the people in your congregation critical of you and the things you do?	Religious Support	.096	-.119	-.039	-.046	.820
How often do the people in your congregation make too many demands on you?	Religious Support	.063	-.150	-.159	-.022	.799
I feel I am being punished by a higher power for my sins or lack of spirituality.	RS Coping	- .361	.076	.244	.317	.560

Daily Spiritual Experience (DSE); Organizational Religiousness (OR); Private Religious Practice (PRP); Religious/Spiritual Coping (RS Coping).
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

^a Rotation converged in 7 iterations.

Table 2. Means, Standard Deviations, and Correlations among BMMRS Components

Variable	1	2	3	4	5
1. Positive Spiritual Experience	--				
2. Religious Practices	.73 **	--			
3. Positive Cong. Support	.61 **	.51 **	--		
4. Forgiveness	.59 **	.46 **	.38**	--	
5. Negative Spir/Cong. Support	-.04	-.16 **	-.06	.02	--
Mean	30.83	9.78	8.90	6.67	6.35
Standard Deviation	9.76	2.89	3.81	1.34	1.08

Note: N = 398, ** p < .01; Negative Spiritual/Congregational Coping (Negative Spir/Cong Support).

Figure 1: Scree plot

