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Gender Differences in Spiritual Experiences, Religious Practices, and Congregational Support for Individuals with Significant Health Conditions

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This study sought to identify gender differences among medical patients for their spiritual/religious beliefs/practices and their associations with health. Patients (N = 168) completed the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), and SF-36 general health perception (GHP) and general mental health (GMH) scales. No gender differences were found in endorsement of spiritual experiences, religious practices, or congregational support. For men, religious/spiritual coping significantly correlated with GHP and GMH, and religious support significantly correlated with GMH. For women, measures of spiritual experiences, religious practices, and congregational support were significantly correlated with GMH, but no significant correlations with GHP were noted. Regression analyses revealed that the interaction between gender and BMMRS was a significant predictor for GMH and GHP. Follow-up analyses suggested that for women, GMH was associated with religious/spiritual coping, religious support, daily spiritual experiences, forgiveness, and organizational religion. In contrast, GHP was only significantly predicted by religious support and only for

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men. Although no gender differences were noted in endorsement of religious/spiritual experiences/practices, gender differences in relationships between spirituality beliefs/practices and health may exist among individuals with chronic health issues.

KEYWORDS *Brief Multidimensional Measure of Religiousness/Spirituality, gender, health, religion, spirituality*

Numerous studies have indicated that individuals who are more religious report better physical and mental health (Beery et al., 2002; Jenkins & Pargament 1995; Koenig et al., 1999; Litwinczuk & Groh, 2007; McCullough et al., 2000; Pargament 1997; Powell, Shahabi, & Thoresen, 2003; Wink, Dillon, & Prettyman, 2007). This relationship may in part be related to several non-religious factors that are characteristic of individuals who are active in their respective congregations, including a generally positive world view and social support received from fellow congregants (Koenig et al., 1999). However, other research suggests that religious and spiritual coping accounts for variance in health outcomes beyond that explained solely by psychological coping (Pargament et al., 1990; 1994; Pargament & Park, 1995).

Studies have begun to investigate the impact of religious/spiritual variables and health for different populations, primarily those with potentially life threatening illnesses such as kidney disease (Tix & Frazier, 1997), cancer (Schnoll, Harlow, & Brower, 2000), heart disease (Ai et al., 1998; Byrd, 1988), lung disease (Matthees et al., 2001), HIV/AIDS (Avants, Warburton, & Margolin, 2001), cystic fibrosis (Stern, Canda, & Doershuk, 1992), sickle cell disease (Cooper-Effa et al., 2001), and Amyotrophic Lateral Sclerosis (ALS) (Murphy et al., 2000). More recent research has focused on individuals with chronic disabilities such as spinal cord injury (Franklin et al., 2008), traumatic brain injury (Johnstone et al., 2009), and stroke (Johnstone et al., 2008).

Research has documented gender differences in religious/spiritual practice, yet the possibility that gender differences may exist in the relationship between religious/spiritual variables and health has not yet been examined. This issue is of critical importance, given literature suggesting that religious/spiritual coping can be an effective means of dealing with significant health issues (e.g., cancer; Crane, 2009). To help patients use this type of coping most effectively, an understanding is needed for what aspects of religion and spiritual coping are associated with positive outcomes (e.g., different religious and spiritual practices, activities, beliefs) and for whom (e.g., men, women, persons of different faith traditions). The present study represents an initial attempt to add to this literature on religiosity/spirituality in chronically ill populations by utilizing a measure specifically designed to assess these several aspects of religiosity/spirituality (Brief Multidimensional Measure of Religiousness/Spirituality [BMMRS]; Fetzer Institute and National Institute on Aging [NIA] Working Group, 1999) and specifically examining

how gender may differentially affect the manner by which religious and spiritual variables relate to health outcomes.

GENDER, RELIGION, AND HEALTH OUTCOMES

Gender Differences

Recent population surveys reveal that, among both Christian and non-Christian populations, women are more likely than men to affiliate with religious institutions, to pray, to say religion is important in their lives, to read religious texts, and to believe in life after death (Stark, 2002). Strawbridge, Cohen, and Shema (2000) indicated that women report more frequent weekly religious attendance than men (30% versus 21%). Cloninger and colleagues (1994) evaluated transcendence and personality traits in 1,388 individuals and reported that women had 18% higher self-transcendence scores compared to men. With regards to the growing literature on health and religion/spirituality, research has suggested there may be gender-based differences. For example, studies have shown that women are more likely than men to seek religious consolation (Ferraro & Kelley-Moore, 2000) and to use social support from religious institutions to cope with illness (Strawbridge et al., 2000).

Religion and Survival

Not only has it been documented that women report greater involvement in religious activities as a method of coping, but the association between religious involvement and health outcomes has also generally been stronger for women than for men (Ferraro & Kelley-Moore, 2000; Koenig et al., 1999; McCullough et al., 2000; Strawbridge et al., 2000). Strawbridge and colleagues (2000) examined the effects of religious attendance and other health behaviors on survival using data from a large county study ($n = 5,894$). Using Cox proportional hazards models, they determined that for women the protective effect of weekly religious attendance (relative hazard [RH] = 0.63) had the same level of magnitude as never smoking tobacco (RH = 0.53) and engaging in regular physical activity (RH = 0.68) (Strawbridge et al., 2000). For men, the protective effect of weekly religious attendance (RH = 0.84) was also significant, but it had a more modest effect that was lower than the effect of other health behaviors (e.g., smoking, alcohol consumption, exercise frequency; Strawbridge et al., 2000). In another study, Koenig and colleagues (1999) examined religious attendance as a predictor of survival in a sample of 3,968 community-residing adults. Individuals who attended religious services were more frequently reported as being physically healthier, having more social support, and living healthier lifestyles overall. Women reported more involvement with religious practices than did men, similar

to findings in prior studies (House, Robbins, & Metzner, 1982; Strawbridge et al., 1997), and the relationship between religious attendance and survival was stronger for women in comparison to men.

Numerous reasons for this gender difference have been proposed, and debate is ongoing regarding whether differences are due to sex-role socialization or physiology (Stark, 2002). According to the socialization perspective, women are socialized to be more religious than men in conjunction with expectations that they may be more nurturing and/or dutiful, which some believe are also traits commonly associated with religion (Stark, 2002). In contrast, from a physiological perspective, it has been hypothesized that spirituality (i.e., emotional connection to the universe/higher power) may be a partially inherited trait, whereas religion (i.e., culturally based system of beliefs/practices) is more likely to be a learned behavior (Hamer, 2004). The combined role of both genetic and environmental factors has been suggested by a review of several large-scale twin studies (Hamer, 2004), which indicated that 48% of the variance in general measures of spirituality was explained by genetic factors and 52% was explained by environmental factors (Kirk, Eaves, & Martin, 1999). Moreover, correlations for identical compared to fraternal twins were nearly double, with women showing higher concordance than men (men: identical $r = .40$, fraternal $r = .18$; women: identical $r = .49$, fraternal $r = .26$). Based on these observations, Hamer (2004) concluded that spirituality is a distinct personality trait that may be related to genetic make-up and that women may be genetically predisposed to be more spiritual than men.

Importantly, although these studies suggest a stronger relationship between religious, spiritual, and health variables for women compared with men, some studies have reported different findings. For example, Maselko and Kubzansky (2006) used cross-sectional data from 1,445 respondents of a nationally representative sample of community adults to develop gender-specific models for three denominations: Catholic, Evangelical Protestants, and Mainline Protestants. In unstratified regression models, significant differences were observed for the gender by religious activity interaction, with the greatest differences for Catholic men in predicting psychological distress, self-rated health, and happiness. Thus, when individuals in this study were separated by denominational affiliations, the relationships between public religious activity and indices of health were stronger for men compared with women. Other research has reported no significant gender differences in relationships among religious, spiritual, and health variables (McBride, Arthur, Brooks, & Pilkington, 1998).

Religion in Chronically Ill Populations

Most research to date has examined the relationships between religion and overall health in general populations (i.e., not selected based on health

condition). While informative, it cannot be assumed that findings with healthy individuals will be replicated among individuals with chronic illness. A number of studies indicate reliance on religious/spiritual coping is a frequently used coping style among individuals dealing with significant health issues (e.g., cancer; Crane, 2009). A theoretical rationale for such findings has been offered by Wink and colleagues' (2007) *buffer hypothesis*. According to this theory, individuals may increasingly rely on religious and spiritual resources to enhance their sense of control, particularly when faced with adversity such as chronic health conditions (Wink, Dillon, & Prettyman, 2007). Thus, it is possible that gender differences may be obscured by increased reliance on religious/spiritual coping by both genders when faced with chronic illness.

To the knowledge of these authors, only one study has evaluated gender differences in a chronically ill population. Mystakidou and colleagues (2008) examined the effects of demographic and clinical characteristics on spiritual beliefs and attitudes among 82 individuals with cancer. They replicated gender differences that have been previously documented in generally healthy populations. Specifically, significant correlations were observed between gender and spirituality (i.e., external/ritual and existential/meditative subscales of the spiritual involvement and beliefs scale) among women only. Moreover, in multiple regression analyses, female gender, older age, and years of education were significant predictors of spirituality. However, this study was limited by their use of a measure that focused only on spirituality variables, limiting the specific measurement of other relevant aspects of religiosity (e.g., religious practices and congregational support).

Measurement Issues in Religion and Health Outcomes Research

As noted previously, research is inconsistent regarding relationships among gender, religion, and health. One possible reason for these contradictory results relates to the ambiguous manner in which religious and spiritual variables have been defined and measured (Koenig, 2008; Sloan, Bagiella, & Powell 1999). In general, these related terms (*religious* and *spiritual*) have been used interchangeably and without clear consensus regarding the constructs they measure. Without clear distinctions between these constructs, mechanisms responsible for the relationship between these variables and health will remain uncertain, limiting comparisons across studies.

To address this concern, the BMMRS was developed to measure distinct dimensions of religion (i.e., private religious practices, organizational religiosity, religious support) and spirituality (i.e., daily spiritual experiences, values/beliefs, meaning, forgiveness, religious/spiritual coping; Fetzer Institute and NIA Working Group, 1999). Although originally conceptualized as measuring dichotomous aspects of *religious* versus *spiritual* factors, a recent

study suggests that the BMMRS may best be conceptualized as an index of three distinct aspects of a general religious/spiritual domain: [a] spiritual experiences (i.e., emotional experience of feeling connected with the universe); [b] religious practices (i.e., culturally based activities such as prayer, meditation, reading religious texts); and [c] congregational social support (Johnstone et al., 2009). By conceptualizing the BMMRS in this manner, it is possible to determine the specific manner in which emotional experiences (i.e., spirituality), cultural behaviors (i.e., religious practices), and social support (i.e., congregationally based) affect health. Subsequent studies based on this revised conceptualization of the BMMRS have indicated that the physical and mental well being of individuals with significant health conditions is primarily related to spiritual experiences and congregational support, but not religious practices (Campbell, Yoon, & Johnstone, 2010; Cohen, Yoon, & Johnstone, 2009).

RATIONALE FOR THE CURRENT STUDY

Evidence of gender differences in religiosity/spirituality in the general population abounds, yet research on the role of gender in the use of religiosity/spirituality to cope with chronic health conditions is limited. Utilizing a data set that was the source for other manuscripts on the role of spirituality in well-being (Campbell et al., 2010; Cohen et al., 2009), the current study was conducted to determine: (1) if men and women with chronic health conditions differ in their reliance on spiritual, religious, and congregational support resources; and (2) if different relationships exist between spiritual, religious, and congregational support variables and health for men and women. In light of the buffer hypothesis, which proposes that individuals may increasingly rely on religious and spiritual coping when faced with adversity such as chronic health conditions (Wink, Dillon, & Prettyman, 2007), the interest was in determining if gender differences would be eliminated in a population of individuals with chronic illnesses. In addition, this study expands on prior research by utilizing the BMMRS to determine gender differences in three specific domains (i.e., spiritual experiences, religious practices, congregational support) among a population of individuals with significant health issues.

METHOD

Participants

The sample was drawn from a larger cross-sectional study examining the relationships among spirituality, religion, and health outcomes of individuals

with heterogeneous medical disorders. The total sample included 168 individuals (61 traumatic brain injury, 32 stroke, 25 spinal cord injury, 25 cancer, and 25 from family medicine clinic). Participants were recruited from a mid-western academic health center if they were at least age 18 years, spoke English, and were able to complete the questionnaires. The average time post-injury for the traumatic brain injury (TBI) group ranged from 2 to 204 months, with an average of 44 months ($SD = 51$). The average time post-injury for the stroke group ranged from 4 to 180 months, with an average of 29 months ($SD = 38$). The average time post-injury for the spinal cord injury (SCI) group ranged from 7 to 564 months, with an average of 134 months ($SD = 150$). Given that the data were collected as a larger pilot study of participants with heterogeneous medical disorders, no information was obtained regarding stage of disease (e.g., cancer) or injury severity (e.g., ischemic versus hemorrhagic stroke, evidence of cerebral abnormalities, level of SCI).

Demographic characteristics of the sample are provided in Table 1. Table 1 also provides information from the BMMRS regarding self-reported religious affiliation, as well as the BMMRS spiritual history item (i.e., whether the individual has ever experienced a significant gain or loss in their faith). As seen in Table 1, Chi-square analyses revealed no significant gender differences in the demographic variables, with the exception of the health condition variable ($\chi^2 = 11.36, p < .05$). A review of the distributions of health condition by gender revealed that a higher percentage of male respondents were diagnosed with TBI, while a higher relative percentage of female respondents were family medicine clinic patients. As detailed in the following discussion, this group difference was addressed via statistical methods in subsequent analyses.

Procedure

The study was exploratory in nature and sought to include individuals from diverse outpatient settings so that findings might be generalized to a broad range of patient groups. Potential participants were contacted in outpatient rehabilitation and medical clinics by a faculty member or a research staff member and asked to participate in the study. If individuals expressed an interest in the study, a description of the research was provided and written informed consent was obtained per procedures approved by the appropriate institutional review board. Participants were asked to complete a research packet consisting of paper-and-pencil measures of spirituality/religion (i.e., BMMRS), health status (i.e., SF-36), and demographic information (i.e., gender, age, marital status, education, annual income, and religious preference). Respondents received nominal compensation for their participation.

TABLE 1 Comparison of Demographic Characteristics by Gender

Variable	Male		Female		Test Statistics (χ^2)
	N	%	N	%	
Marital status					4.38
Married	34	47.9	45	46.4	
Cohabiting	5	7.0	2	2.1	
Divorced	10	14.1	17	17.5	
Single	18	25.4	22	22.7	
Other	4	5.66	11	11.3	
Education					1.65
Some high school (HS)	12	17.1	12	12.4	
HS diploma	25	35.7	40	41.2	
1–2 years post HS	14	20.0	15	15.5	
3–4 years post HS	10	14.3	16	16.5	
>4 years post HS	9	12.9	14	14.4	
Annual income					2.70
<\$10,000	10	16.1	16	18.6	
\$10,001 to \$20,000	14	22.6	11	12.8	
\$20,001 to \$30,000	7	11.3	11	12.8	
\$30,001 to \$50,000	14	22.6	19	22.1	
>\$50,000	17	27.4	29	33.7	
Religious Affiliation					6.52
Protestant	38	53.5	53	55.8	
Christian	19	26.8	14	14.7	
Catholic	7	9.9	20	21.1	
Other	1	1.3	2	2.2	
None	6	8.5	6	6.3	
BMMRS					
Significant faith gain					0.75
Yes	46	64.8	64	66.0	
No	25	35.2	33	34.0	
Significant faith loss					1.75
Yes	14	19.7	27	27.8	
No	57	80.3	70	72.2	
Age, years ($M = 47.5$; $SD = 19.3$)					1.96
<31	17	23.9	15	15.5	
31–50	26	36.6	40	41.2	
51–70	20	28.2	29	29.9	
>70	8	11.3	13	13.4	
Health condition					11.36*
Family medicine	4	5.6	21	21.6	
Cancer	8	11.3	17	17.5	
SCI	12	16.9	13	13.4	
TBI	32	45.1	29	29.9	
Stroke	15	21.1	17	17.6	
Mental health treatment					2.35
Yes	31	43.3	53	56.4	
No	39	55.7	41	43.6	

* $p < 0.05$.

Note. Spinal cord injury (SCI); Traumatic brain injury (TBI).

Measures

BRIEF MULTIDIMENSIONAL MEASURE OF RELIGIOUSNESS/SPIRITUALITY (BMMRS)

The BMMRS was used to measure dimensions of spiritual experience, religious practices, and congregational support. The BMMRS is a 38-item self-report survey, with Likert-scale formats, designed by the Fetzer Institute and the NIA for use in health-related research (Fetzer Institute/NIA Working Group, 1999). Any reference to “God” in original BMMRS items was changed to “higher power” for this study to make the measure more suitable for individuals of all faith traditions. Lower scores are indicative of a greater degree of religiosity or spiritual experience for all BMMRS items.

For the current study, based on the recent factor analysis of the BMMRS (Johnstone et al., 2009), the BMMRS subscales were conceptualized as measuring spiritual experiences (i.e., emotional experience of feeling connected to a higher power), religious practices (i.e., culturally based activities), and congregational support factors.

SPIRITUAL EXPERIENCE SUBSCALES

Daily spiritual experience measures the individual’s connection with a higher power in daily life (e.g., “I feel the presence of a higher power,” “I feel deeper peace or harmony,” “I desire to be closer to or in union with a higher power.”). This subscale consists of six items rated on a 6-point response format, ranging from 1 (many times a day) to 6 (never). The internal consistency reliability (Cronbach’s alpha) was 0.88.

Meaning measures a sense of meaning in life (e.g., “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 is composed of two items with a 4-point response format, ranging from 1 (strongly agree) to 4 (strongly disagree). The internal consistency reliability (Cronbach’s alpha) was 0.71.

Values/beliefs measures religious values and beliefs (e.g., “I feel a deep sense of responsibility for reducing pain and suffering in the world,” “I believe in a God who watches over me.”). This subscale is composed of two items with a 4-point response format, ranging from 1 (strongly agree) to 4 (strongly disagree). The internal consistency reliability (Cronbach’s alpha) was 0.67.

Forgiveness measures the degree of forgiveness of self and others, and a belief in the forgiveness of a higher power (e.g., “I have forgiven those who hurt me,” “I know that I am forgiven by a higher power.”). The subscale consists of 3 items rated on a 4-point response format, ranging from 1 (always) to 4 (never). The internal consistency reliability (Cronbach’s alpha) was 0.65.

Religious/spiritual coping purportedly measures religious and spiritual coping strategies (e.g., “I work together with a higher power as partners,” “I look to a higher power for strength, support, and guidance.”). Although its title suggests it measures both “religious” and “spiritual” coping, a previous factor analytic study indicates that items from this scale load on a spirituality factor (Johnstone et al., 2009). As a result, for the purposes of this study it was conceptualized as a “spiritual” subscale. This subscale consists of seven items with a 4-point response format, ranging from 1 point (a great deal) to 4 points (not at all). The internal consistency reliability (Cronbach’s alpha) was 0.83.

RELIGIOUS PRACTICES SUBSCALES

Private religious practices 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 comprises five items. The first four have an 8-point response format, ranging from 1 (more than once a day) to 5 (never); the last item has a 5-point scale (1 = never to 5 = at all meals). The internal consistency reliability (Cronbach’s alpha) was 0.71.

Organizational religiousness measures the frequency of involvement in formal public religious institutions (e.g., “How often do you go to religious service?” “Besides religious service, how often do you take part in other activities at a place of worship?”). This subscale consists of two items with a 6-point response format, ranging from 1 (more than once a week) to 6 (never). The internal consistency reliability (Cronbach’s alpha) was 0.73.

CONGREGATIONAL SOCIAL SUPPORT SUBSCALE

Religious support measures the degree to which individuals perceive that their 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 is composed of four items and a 4-point response format was used, ranging from 1 (very often) to 4 (never). The internal consistency reliability (Cronbach’s alpha) was 0.75.

In addition, the BMMRS spiritual history question was administered; it utilizes a yes/no format to determine the number of individuals who reported experiencing either a significant decline or increase in spiritual faith.

SF-36 Health Status Questionnaire. The Medical Outcomes Study Short Form-Version 2 (SF-36; Forchmeier, McAweeney, & Tate, 2004; Ware, Kosinski, & Gandek, 2000) is a 36-item questionnaire that assesses eight

dimensions of self-perceived health. For the current study the SF-36 GHP scale was used to measure general physical health, and the SF-36 GMH subscale was used to assess general mental health functioning. As one of the most widely used measures of general health outcomes (Garratt et al., 2002), extensive data exist (Ware, 1995; Ware et al., 1993) supporting the content, construct and predictive validity of this measure and the subscales utilized in the present research.

GHP assesses individual's perceptions of themselves as healthy versus sick, with expectations for improving or declining health. This scale is composed of 5 items with a 5-point response format, ranging from 1 (definitely true) to 5 (definitely false). Items include: "I seem to get sick a little easier than other people," "I expect my health to get worse," and "My health is excellent." The internal consistency reliability (Cronbach's alpha) for the present sample was 0.75.

GMH is composed of five items and a 6-point response format, ranging from 1 (all of the time) to 6 (none of the time), with items assessing constructs such as happiness, peace, nervousness, and sadness. For example, items include: "Have you been a very nervous person?" and "Have you been a happy person?" With the study sample, the internal consistency reliability (Cronbach's alpha) was 0.78.

Data Analysis

First, Chi-square analyses were completed to assess for gender differences in demographic characteristics and religious history. Next, we sought to evaluate potential differences in BMMRS and SF-36 scores; to accomplish this, *t*-test comparisons were conducted, using gender as the grouping variable, for each subscale of these two measures. Finally, backwards selection regression analyses were computed to evaluate the extent to which BMMRS Spiritual and Religious variables interacted with gender in predicting health outcomes, as indexed via SF-36 GPH and GMH subscales. To determine whether religious/spiritual variables predicted variance in outcomes beyond what would be accounted for by demographic factors known to be associated with health outcomes, for each equation, demographic variables found to correlate with each outcome (i.e., household income for GMH and age for GPH) were entered in the first step, followed by BMMRS variables. For those analyses where the gender by BMMRS variable interaction term was significant, subsequent regression equations were completed for each gender separately, to clarify the nature of the observed gender differences. For all analyses, missing data were managed with pairwise deletion.

RESULTS

Gender Differences in Demographics and Religious History

Analyses revealed no statistically significant gender differences in religious history (significant faith gain/loss) or in a majority of demographic characteristics (Table 1). However, the groups did differ significantly in terms of health condition. To determine whether health condition was related to the outcomes of interest, and thus would need to be statistically controlled for in regression analyses, ANOVAs utilizing health condition as the grouping variable were computed. Results indicated that there were significant group differences in GMH ($F = 2.81, p < .05$), with the Scheffe test revealing that participants from primary health clinics were more likely to have better mental health than participants with TBI ($p < .05$). Based on this finding, health condition was included as a variable in analyses with GMH as the outcome variable. A second between-groups ANOVA indicated that individuals with differing health conditions did not statistically differ in terms of GHP ($F = 1.37, p > .05$), so this variable was not included in subsequent regression analyses with GHP as the outcome variable.

Gender Differences in BMMRS and SF-36

No statistically significant differences were noted between men and women on any of the subscales of the BMMRS or SF-36 (Table 2).

TABLE 2 *t*-Tests for Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS), and SF-36 General Health Perception (GHP)

Variable	Male (<i>n</i> = 71)		Female (<i>n</i> = 97)		<i>t</i> test
	M	SD	M	SD	
BMMRS					
<i>Spiritual Experiences</i>					
Daily spiritual experiences	20.35	7.48	15.45	6.96	0.92
Meaning	3.86	1.31	3.66	1.28	0.99
Values and beliefs	3.51	1.23	3.31	1.04	1.13
Forgiveness	5.13	1.91	4.88	1.73	0.89
Religious/Spiritual coping	13.28	4.63	12.20	4.14	1.59
<i>Religious Practices</i>					
Private religious practices	21.78	8.66	21.03	8.59	0.55
Organizational religiousness	8.17	3.00	7.38	3.07	.66
<i>Congregational Support</i>					
Religious support	5.77	1.98	5.91	2.08	−0.36
SF-36					
General Health Perception	13.59	4.81	14.51	4.91	−1.20
General Mental Health	12.86	5.58	13.28	5.54	−0.48

* $p < 0.05$.

TABLE 3 Pearson Correlations among Measured Variables by Gender

BMMRS	Male		Female	
	GHP	GMH	GHP	GMH
<i>Spiritual Experiences</i>				
Daily spiritual experiences	.22	.23	.02	.29**
Meaning	.19	.11	.13	.19
Values/beliefs	.22	.09	.10	.11
Forgiveness	.05	.11	.11	.29**
Religious/spiritual coping	.15	.23*	.06	.29**
<i>Religious Practices</i>				
Organizational religiousness	.20	.21	.16	.21*
Religious practices	.17	.06	.02	.16
<i>Congregational Support</i>				
Religious support	.31*	.33*	.08	.33**

* $p < .05$, ** $p < .01$; GHP, General Health Perception; GMH, General Mental Health.

Correlations Among Measured Variables

As shown in Table 3, for men, the SF-36 GMH scale was significantly and positively correlated with the BMMRS religious support ($r = .33$; $p < .05$) and religious/spiritual coping ($r = .23$; $p < .05$) scales. Specifically, male respondents who received greater support from their congregations and used more religious/spiritual coping skills were more likely to report better mental health. The SF-36 GHP scale was significantly and positively correlated with the BMMRS religious support scale ($r = .31$; $p < .05$) for men, suggesting that male participants who received greater support from their congregations were more likely to report better physical health.

For women, the SF-36 GMH scale was significantly and positively correlated with the following BMMRS scales: daily spiritual experience ($r = .29$; $p < .05$); forgiveness ($r = .29$; $p < .05$); religious/spiritual coping ($r = .29$; $p < .01$), religious support ($r = .33$; $p < .01$), and organizational religiousness scales ($r = .21$; $p < .05$). In contrast, for women, the SF-36 GHP scale was not significantly correlated with any BMMRS scale.

Regression Analyses

Demographic and BMMRS variables were utilized in regression analyses to predict SF-36 GMH and GHP scores. Demographic variables were chosen based on analyses detailed above, which identified relationships between GMH and income and health condition, and between GHP and age. These analyses uncovered significant relationships between five of the gender/BMMRS interaction terms and GMH.

First, with the gender by forgiveness interaction term, the model for GMH was significant ($F[2,145] = 9.98$, $p < .001$, adjusted $R^2 = 0.11$), with

income ($B = -0.30$, $t = -3.79$, $p < .001$) and the forgiveness interaction term ($B = 0.17$, $t = 2.14$, $p < .05$) remaining as significant predictors. Second, the model for GMH was significant ($F[2,144] = 12.05$, $p < .001$, adjusted $R^2 = 0.13$) when income ($B = -0.31$, $t = -3.98$, $p < .001$) and the daily spiritual experiences interaction term ($B = 0.22$, $t = 2.81$, $p < .01$) were predictors. Third, the model for GMH was significant ($F[2,108] = 13.67$, $p < .001$, adjusted $R^2 = .19$) when income ($B = -0.34$, $t = -3.90$, $p < .001$) and the religious/spiritual coping interaction term ($B = 0.28$, $t = 3.24$, $p < .01$) were predictors. Fourth, the model for GMH was significant ($F[2,146] = 9.77$, $p < .001$, adjusted $R^2 = 0.11$), with income as a significant predictor ($B = -0.31$, $t = -4.00$, $p < .001$). The organizational religiousness interaction term was not significant ($B = 0.14$, $t = 2.81$, $p = .077$). Finally, the model for GMH was significant ($F[2,108] = 13.67$, $p < .001$, adjusted $R^2 = 0.19$) when income ($B = -0.34$, $t = -3.90$, $p < .001$) and the religious support interaction term ($B = 0.28$, $t = 3.24$, $p < .01$) were predictors.

To deconstruct these interaction effects in predicting GMH, subsequent regression analyses were conducted grouping participants by gender. As detailed in Table 4, the data consistently revealed a positive relationship between BMMRS religious/spiritual variables and GMH and a positive relationship between household income and GMH.

TABLE 4 Deconstructing Significant Gender by BMMRS Coping Interactions—Regression Analyses for General Mental Health and General Health Perception

Variable	Women Only	Men Only
General Mental Health		
Forgiveness	$F(2,85) = 7.67$, $p = .001$	$F(2,61) = 3.16$, $p = .05$
	Forgiveness, $B = .28$, $t = 2.45^{**}$	Forgiveness, $B = -.002$
	Income $B = -.30$, $t = -2.96^{***}$	Income, $B = -.31$, $t = -2.50^{**}$
Daily experiences (DyExp)	$F(2,84) = 7.93$, $p = .001$	$F(2,59) = 4.37$, $p < .05$
	DyExp, $B = .26$, $t = 2.54^{**}$	DyExp, $B = .17$
	Income $B = -.31$, $t = -3.10^{***}$	Income, $B = -.31$, $t = -2.49^{**}$
Religious/Spiritual (R/S) coping	$F(2,84) = 7.66$, $p = .001$	$F(2,61) = 3.41$, $p < .05$
	R/S coping, $B = .25$, $t = 2.45^{**}$	R/S coping, $B = .08$
	Income $B = -.30$, $t = -2.94^{***}$	Income, $B = -.30$, $t = -2.41^{***}$
Organizational Religiousness (OrgRelig)	$F(2,85) = 6.52$, $p < .01$	$F(2,59) = 4.37$, $p < .05$
	OrgRelig, $B = .20$, $t = 1.97^*$	OrgRelig, $B = .04$
	Income $B = -.33$, $t = -3.20^{***}$	Income, $B = -.33$, $t = -2.49^{**}$
Religious support (ReligSpp)	$F(2,66) = 9.35$, $p < .001$	$F(2,41) = 4.19$, $p < .05$
	ReligSpp, $B = .34$, $t = 3.09^{***}$	ReligSpp, $B = .16$
	Income $B = -.33$, $t = -3.03^{***}$	Income, $B = -.34$, $t = -2.25^{**}$
General Health Perception		
Religious Support (ReligSpp)	$F(2,74) = 1.03$, n.s.	$F(2,47) = 3.49$, $p < .05$
	—	ReligSpp $B = .33$, $t = 2.34^{**}$
	—	Age, $B = .20$, $t = 1.42$

* $p = 0.05$, ** $p < 0.05$, *** $p < 0.01$.

Regarding GHP, only one gender-BMMRS interaction term was found to be a significant predictor. Specifically, analyses revealed that the model for GHP was significant ($F[2,122] = 3.83, p < .05$, adjusted $R^2 = 0.04$), with age ($B = 0.18, t = 1.99, p < .05$) and the religious support interaction term ($B = 0.20, t = 2.21, p < .05$) remaining as significant predictors. Subsequent analyses demonstrated that increased use of religious support was significantly associated with better GHP for men but not for women.

DISCUSSION

Gender Differences in BMMRS Scales

A primary finding from this study is that men and women with significant health conditions do not differ in terms of their self-reported level of spiritual experiences, religious practices, or congregational support. This finding is noteworthy when considered in the context of prior research on religion/spirituality in health because it contrasts with findings of other studies suggesting that women may be more spiritual or participate more frequently in religious activities than men (Koenig et al., 1999; House, Robbins, & Metzner, 1982; Strawbridge et al., 1997). One possible explanation for these different findings is that the other studies have primarily evaluated participants with no major health conditions, whereas the current study evaluated a sample of individuals with chronic health conditions (i.e., brain injury, spinal cord injury, stroke, cancer). Thus, while women may generally be more religious/spiritual than men due to environmental and/or genetic factors (Hamer, 2004; Stark, 2002), both genders may increase their reliance on spiritual, religious, and congregational resources with increasing severity of illness/disability (i.e., brain injury, stroke, spinal cord injury, cancer). This interpretation of these findings is in line with the buffer hypothesis, which proposes that increased reliance on religious and spiritual resources for coping may occur when individuals are dealing with chronic health conditions (Wink et al., 2007). This suggests that both men and women may benefit from encouragement to seek out religious/spiritual supports consistent with their individual beliefs to facilitate their coping with chronic health conditions.

Gender-Based Similarities and Differences in BMMRS-Health Relationships

In addition to the absence of differences in self-reported spirituality, religiosity, or congregational support, the current data identified several other similarities in spirituality/religiosity between men and women. Correlation analyses revealed that religious support was positively associated with mental health outcomes for women and men and with both mental and physical

health outcomes for men. Social support models of health stress the importance of relying on others and social support seeking as a means to cope with stress (George, Ellison, & Larson, 2002); the current study indicates that individuals of both genders with significant health conditions benefit from the social support provided by fellow congregants. These findings are consistent with prior studies and with social support models of health. Notably, although research has suggested that it is primarily women who turn to social networks to help them deal with stressors (Strawbridge, Cohen, & Shema, 2000), results from this study offer preliminary suggestions that doing so may be equally important for men with health conditions.

In contrast, the results do suggest that men and women differ in the extent to which utilization of these resources may promote positive health outcomes. Specifically, mental health was significantly correlated with five of the eight BMMRS scales for women, while it was significantly related to only two of the eight scales for men. In addition, subsequent regression analyses revealed a significant interaction between gender and use of religious/spiritual coping, which indicated that improved mental health was associated with increased religiosity/spirituality among women but not among men. This finding of a potentially stronger relationship between spirituality and mental health among women is generally consistent with previous research, which has suggested that women rely more on spiritual experiences and social support to help them cope with stress (Ferraro & Kelley-Moore, 2000; Koenig et al., 1999; McCullough et al. 2000; Strawbridge, Cohen, & Shema, 2000).

In considering what aspects of spirituality may be relevant for health outcomes, for women, mental health was significantly associated with three of the five BMMRS scales (i.e., daily spiritual experiences, forgiveness, and religious/spiritual coping). This association suggests that belief in a loving, supportive higher power is associated with positive psychological coping for women with chronic health conditions, as is a tendency to forgive others or to feel forgiven by a higher power. Given the cross-sectional nature of this research, these data are correlational and therefore unable to clearly indicate a causal relationship. However, it is interesting to note that these findings are consistent with psychoneuroimmunological models suggesting that spiritual beliefs can be powerful modulators of health outcomes (Ray, 2004).

It is noted that the BMMRS organizational religiousness scale (i.e., frequency of attendance at religious services) was positively related to mental health outcomes for women only, suggesting that those who regularly attend religious services may experience better mental health. In addition, regression analyses revealed that BMMRS religious support explained variances in GMH for women beyond what was accounted for by demographic variables. These finding highlights the potential benefits of social support provided by local congregations for women with chronic health conditions. However, caution is again warranted consideration the direction of causality

in these relationships. Specifically, it could be suggested that these findings may be related to the fact that individuals who are healthier are more likely to be able to attend religious services (Idler & Kasl, 1997). This finding is particularly relevant for the populations that were the focus of this research because many individuals with brain injuries, spinal cord injuries, and stroke have difficulties with physical mobility and transportation and may be unable to attend services as a result. Therefore, additional research is needed to better understand the potential significance of gender differences in the relationship between mental health and attending religious services.

While the spiritual/religious variables did not appear to predict mental health outcomes for men in regression analyses, it was noteworthy that GHP was differentially affected by religious/spiritual coping for men than women. Specifically, deconstruction of a significant gender by BMMRS interaction term revealed that religious support was a significant predictor of GHP for men but not women. In contrast to the results for women, among men the data suggest that rather than spiritual resources, use of congregational support (BMMRS religious support scale) is positively correlated with better self-reported health, an index of their coping with chronic illness/disability. One interpretation of this gender difference is that personal beliefs in a higher power may be less important for men coping with illness/disability, possibly as a result of both environmental and genetic factors (Hamer, 2004). Men may be less predisposed to feel connected to a higher power, or less socially influenced to rely less on their emotional experiences associated with their beliefs in a higher power.

Private Religious Practices

While these data highlight similarities as well as some key differences between genders in the relationships between religious/spiritual coping and health outcomes, results from this exploratory research are also important in what they did not demonstrate. Specifically, the frequency of private religious practices (i.e., prayer, meditation, reading religious texts) was not related to the physical or mental health of either men or women, consistent with other studies conducted with this sample that did not specifically look at gender differences (Campbell et al., 2010; Cohen et al., 2009). These findings do not necessarily suggest that such practices are not helpful to individuals as they cope with their health conditions. Rather, increased severity of illness/disability may be associated with greater physical/mental stress as well as increased religious practices (e.g., prayer, meditation) or participation in relevant religious practices. Thus, spiritual practices may indeed be beneficial, but the increase in stress associated with significant health conditions may be obscuring the benefit of such practices.

Limitations and Future Directions

While the present findings highlight some interesting relationships between gender and spirituality among individuals with significant health conditions, several limitations of the study are worth noting. First, as an exploratory study using cross-sectional data to examine correlations between the variables of interest, conclusions regarding causal relationships are not possible. For example, as an alternative to the current conclusions (i.e., that beliefs/behaviors measured by the BMMRS scales may promote better health), it could be argued that better health allows one to be more spiritual, attend more religious activities, and to be more social. Also of concern is the possibility that we did not capture other variables that could be contributing to the outcomes of interest (e.g., time since diagnosis/injury may have implications for GHP and GMH). Another methodological issue is the large number of analyses that were conducted with a relatively small sample, as this data analysis strategy raises the possibility that some findings are due to chance. However, the convergence of findings within this study (e.g., that multiple BMMRS indices of spiritual experiences predict mental health for women), and the consistencies with other research (e.g., that women experience mental health benefits with use of religious/spiritual resources), provides some support for these findings.

The instruments utilized in this research also have some limitations. For example, reliance on self-report measures of health leaves open the possibility the dependent variables may provide more of an indication of coping with health concerns rather than actual health. Future studies could address this limitation by including “objective” measures of health (e.g., measures of health issues, such as stability of blood pressure, or measures of functional physical abilities, such as strength and endurance). In addition, for this research we elected to slightly modify the BMMRS (references to “God” in original BMMRS items were changed to “higher power”) to render the measure more suitable for individuals of all faith traditions. While we propose that utilizing more inclusive terminology may actually strengthen the validity of the BMMRS for use with persons of a range of faith traditions, it would be instructive to have additional data confirming that these modifications do not negatively affect the validity of the instrument.

Some characteristics of the study sample are also noted as limitations of this research. For example, the limited diversity of the sample, which consisted primarily of Caucasian, Christian Midwesterners, restricts the ability to generalize these findings to individuals of other ethnic or religious backgrounds. In addition, the diversity in health conditions experienced by participants in this study may be seen as both a strength and a weakness. In one regard, including individuals with a range of health conditions may increase our ability to generalize findings regarding the relationships between gender, spirituality and health to a more medically diverse population. In

another regard, it could be argued that reliance on religion/spirituality may vary depending on the severity of disability and the risk of mortality associated with the medical condition. Future research with a larger sample would allow for specific examination of this possibility. In addition, it would be informative to examine gender differences in the relationship between religion/spirituality and health at critical time points over the course of coping with chronic health conditions (e.g., at time of diagnosis, during initial management, during long-term health maintenance, at times of medical crises, etc.). A large-scale longitudinal study that would allow for examination of changes in spirituality and their implications following onset of significant health conditions would be informative.

Despite these limitations, this study offers some thought-provoking findings regarding relationships between gender and spirituality among individuals with significant health issues that warrant further research. In addition, findings offer some indications of steps that may be taken to improve health outcomes for men and women with health conditions. Specifically, based on preliminary findings that both men and women with chronic illnesses and disabilities benefit from the support provided by their congregations, health care providers may consider encouraging individuals to take advantage of such resources, which can include emotional support, financial assistance, increased opportunities for socialization, assistance with transportation, etc. In addition, the use of hospital chaplains may be of benefit for person with significant illness/injuries in hospital settings. Finally, these data provide early indications that attending to individuals' needs for spiritual interventions, which may include religious-based counseling (Sperry & Shafranske 2005), meditation (Kabat-Zinn et al., 1998), and/or forgiveness protocols (Baskin & Enright, 2004; Carson et al., 2005), may also have the potential to positive impact health outcomes, particularly for women.

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