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Correlates of Spirituality in Older Women

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Abstract

Introduction—The role of spirituality in the context of mental health and successful aging is not well understood. In a sample of community-dwelling older women enrolled at the San Diego site of the Women's Health Initiative study, we examined the association between spirituality and a range of variables associated with successful cognitive and emotional aging, including optimism, resilience, depression, and health-related quality of life (HRQoL).

Methods—A detailed cross-sectional survey questionnaire on successful aging was completed by 1,973 older women. It included multiple self-reported measures of positive psychological functioning (e.g., resilience, optimism), as well as depression and HRQoL. Spirituality was measured using a 5-item self report scale constructed using two items from the Brief

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Multidimensional Measure of Religiosity/Spirituality and three items from Hoge's Intrinsic Religious Motivation Scale

Results—Overall, 40% women reported regular attendance in organized religious practice, and 53% reported engaging in private spiritual practices. Several variables were significantly related to spirituality in bivariate associations; however, using model testing, spirituality was significantly associated only with higher resilience, lower income, lower education, and lower likelihood of being in a marital or committed relationship.

Conclusions—Our findings point to a role for spirituality in promoting resilience to stressors, possibly to a greater degree in persons with lower income and education level. Future longitudinal studies are needed to confirm these associations.

Keywords

Spirituality; religiosity; elderly; successful aging; resilience

Introduction

In recent years there has been a growing interest in understanding the role of spirituality and religious practices in the construct of 'successful aging' and mental health (Crowther, Parker, Achnebaum, Larimore, & Koenig, 2002). Research in this area has, however, been limited by a lack of consensus on definitions of spirituality and religiosity. Blazer and Meador (2009) defined religion as an "organized system of beliefs, practices, rituals, and symbols designed to facilitate closeness to the sacred or transcendent" and spirituality as an entity that "encompasses religion but expands the above definition as an understanding of answers to ultimate questions about life, meaning, and relationship to the sacred or transcendent." Various definitions of spirituality and religiosity (most often operationalized as attendance in religious practices) have been reported to be associated with multiple positive health outcomes including longevity (Glass, de Leon, Marottoli, & Berkman, 1999), lower mortality (due to better health practices) (Strawbridge, Shema, Cohen, & Kaplan, 2001; Zhang, 2008), better adaptation to and faster recovery from medical illnesses (Ell, Nishimoto, Morvay, Mantell, & Hamovitch, 1989; Koenig, George, & Peterson, 1998), higher self esteem (Murray-Swank et al., 2006), lower rates of depression (Murray-Swank et al., 2006; Wright, Frost, & Wisecarver, 1993; Maselko, Gilman, & Buka, 2009), lower smoking and alcohol use (Edlund et al., 2009; Underwood & Teresi, 2002), better Quality of Life (QoL) (Underwood & Teresi, 2002; Ironson et al., 2002), and better cognitive functioning (Hill, Burdette, Angel, & Angel, 2006; Van Ness & Kasl, 2003; Reyes-Ortiz et al., 2008). Studies using biomarkers have further validated associations between spirituality/religiosity and successful health-related outcomes (Ironson et al., 2002; Borg, Andree, Sorderstrom, & Farde, 2003). Some authors have even suggested a role for spirituality in health promotion (Crowther et al., 2002). However, a broader interpretation of the available evidence is limited by studies restricted to specialized populations such as medically ill persons or persons who have experienced a recent loss. Meaningful incorporation of spirituality into models of well being and health promotion in aging will require a broader and more thorough understanding of how various aspects of spiritual practice may interact with domains related to successful aging in the community. The experience of religion is an intensely personal one (Blazer & Meador, 2009), suggesting that there may be personal attitudes and personality traits that evolve over a lifetime of accumulated experience that influence an individual's spirituality.

To expand an understanding of the relationship between spirituality and successful aging, we examined associations between spirituality and measures of domains that had been associated with self-reported successful aging in our previous work (Vahia et al., 2010;

Lamond et al., 2008; Montross et al., 2006) in a sample of older, community-dwelling women. The term 'spirituality' as used in this study, represented the domains of religious attendance, private spiritual practice, and religious/spiritual motivation. Based on trends in the literature, we hypothesized that spirituality would be associated with several positive psychological traits such as resilience, better physical and emotional functioning, and with lower depression. We also sought to explore the relationship of spirituality with age, education, income, ethnicity, and marital status.

Methods

Participants and Procedures

Participants for the current study were recruited from the San Diego clinical center of the Women's Health Initiative (WHI), a large NIH-funded multi-center study of the predictors of morbidity and mortality among post-menopausal women (Langer et al., 2003). A complete description of the methodology of the WHI study is available elsewhere (The Women's Health Initiative Study Group, 1998). At the time of enrollment in the WHI study, potential subjects were excluded if they did not plan to reside in the area for at least 3 years, had medical conditions predictive of survival less than 3 years, or had complicating conditions such as alcoholism or drug dependency. This study was approved by the Institutional Review Board of the University of California, San Diego. The WHI San Diego site enrolled 5608 women between 1993 and 1998. In 2005, all subjects who were still active participants in the study were invited to participate in a mailed survey study. A total of 3653 surveys were mailed out and 2017 surveys were returned. The response rate for the survey was thus 55%. Of the returned surveys, 1942 were deemed usable for this study. Comparing the 2017 survey responders to non-responders, responders had higher educational attainment, were more likely to be married, and had higher incomes at the time of WHI enrollment.

Description of Variables

Demographics—Age was obtained at the time of the survey, but educational attainment, and income were obtained at the time of enrollment into the WHI. The mean difference in years between these assessments was 8.5 years (std. dev=1.2).

Measure of spirituality—To assess spirituality, we constructed a 5-item measure. We adapted two items from the Brief Multidimensional Measure of Religiosity/Spirituality (Fetzer Institute, 1999): (1) How often do you attend church/synagogue?; and (2) How often do you spend time in private spiritual activities? and added three items from Hoge's Intrinsic Religious Motivation Scale (Hoge, 1972): (3) In my life I experience the presence of the divine; (4) My spiritual beliefs lie behind my whole approach to life; and (5) I carry my spiritual beliefs into all other dealings in life. Items (1) and (2) are scored from 0 (never) to 5 (more than once a week). Items (3)–(5), derived from Hoge (1972), are scored from 0 (definitely not true) to 5 (definitely true). For analyses, we used a summed score of the five items, after each item was standardized to have zero mean and unit variance.

Measures of Successful Aging-related Domains—The survey questionnaire included several published scales to measure successful aging-related domains, based on our and other investigators' previous work. Participants were asked to rate their own degree of successful aging on a scale from 1 to 10 (1 = least successful, 10 = most successful). The mean score on this scale was 8.2 in another sample gathered through our research center (Moore et al., 2007). Subjects' level of resilience was evaluated using the Connor-Davidson Scale for Resilience (CD-RISC) (Connor & Davidson, 2003). Stressful life events in the last year were evaluated using the Life Events Scale (LES) (Matthews et al., 1997) Total Score. Optimism was measured using the Life Orientation Test (LOT) (Scheier, Carver, & Bridges,

1994). Attitude toward aging was examined using the Philadelphia Geriatric Morale Scale (PGMS) (Lawton, 1975). We assessed depression using the Center for Epidemiological Studies scale for Depression (CESD) (Radloff, 1977). We also used the Medical Outcomes Study 36-item Short-Form Health Survey or MOS-SF 36 (Ware & Sherbourne, 1992) to assess physical and mental functioning.

Statistical Analyses

We first examined bivariate associations of successful aging-related variables with spirituality, using Spearman rank correlation coefficients for continuous and ordinal variables, and Kruskal-Wallis non-parametric ANOVAs for categorical variables. We used Bonferroni correction to reduce the possibility of type I errors, defining the significance level as $p < 0.004$ for these analyses. To examine the effects of successful aging-related measures on spirituality simultaneously, we performed a multiple linear regression analysis with spirituality as the dependent variable and successful aging-related measures as the independent variables. We used a stepwise model selection procedure employing the Akaike Information Criterion (AIC) to determine the independent variables in the final multiple regression model.

Finally, to evaluate the sensitivity of our results to missing data we re-ran all analyses using five multiply-imputed datasets using the method of chained equations (van Buuren, Brand, Groothuis-Oudshoorn, & Rubin, 2006). Results (not presented here) showed few differences from complete case analyses.

All analyses were performed in the R statistical language (R Version 2.9).

Results

The total sample included in our analysis consisted of 1,942 women aged from 60 to 91 years (mean=73, Std Dev=7.1). Almost all (97%) of the participants had completed high school, and 86% had at least enrolled in college. Most of the participants (91%) were Caucasian and 5.9% reported being of Hispanic ethnicity. Fifty-nine percent were married, and 63% had a mean annual household income of \$35,000 or greater.

The internal consistency of the five items in the spirituality scale was acceptable (Cronbach's $\alpha = 0.92$). On the spirituality measure, 41% reported attending church more than once a week, and 53% reported engaging in private spiritual practice more than once a week. Fifty-five percent rated the item "In my life I experience the presence of the divine" with a score of 4 or 5 (out of a maximum 5). These scores indicated strong agreement with the item. Fifty-eight percent rated the item "my spiritual beliefs lie behind my whole approach to life" as 4 or 5, and 56% rated the item "I carry my spiritual beliefs into all other dealings in life" with a score of 4 or 5. Results of bivariate correlations between spirituality and dimensional variables are shown in Table 1a; results of Kruskal-Wallis tests on categorical variables and spirituality are shown in Table 1b.

Measures significantly associated with spirituality ($p < 0.004$ after Bonferroni correction) were education, income, marital status, race, Hispanic ethnicity, CD-RISC score, LES score, and LOT score. Prior to model selection, we examined the predictors for collinearity before running the stepwise selection procedure. While multicollinearity was not an issue in the final model, presence of moderate degree of correlation among the independent variables should be recognized as a limitation when interpreting regression coefficients. After model selection with multiple regression, level of education (standardized coefficient = -0.03 , $z = -3.5$, $p < 0.001$), income (std. coef. = -0.02 , $z = -2.4$, $p = 0.016$), and CD-RISC score (st. coef. = 0.05 , $z = 5.1$, $p < 0.001$) remained significant. Similarly, there were significant differences

in spirituality ratings between women who were married or living in a marriage-like relationship and those divorced or separated (st. coef. = -0.09, $z = -3.9$, $p < 0.001$), or never married (st. coef. = -0.12, $t = -2.5$, $p = 0.01$). No other variables achieved significance in the model selection procedure.

Discussion

The findings provided partial support to our hypothesis. Among the positive personality traits, greater spirituality correlated with higher resilience (CD-RISC) and higher optimism (LOT) in bivariate analyses, but only with resilience in model testing. Spirituality was not associated with self-rated successful aging, HRQOL, or level of depression. Among the demographic variables, greater spirituality was related in bivariate analyses to lower education, lower income, lower likelihood of being in a marital or committed relationship, race, ethnicity, and score on the LES, but the last three variables were not significant in model testing.

In this study, resilience had the strongest level of association with increased spirituality, which remained significant after controlling for demographic variables. This finding is consistent with previous work by others (Connor et al., 2003) using the CD-RISC, demonstrating an association between spirituality and coping, especially in persons who survive trauma or loss. It is conceivable that increased spirituality offers a coping strategy to negative life events, thereby promoting resilience. This would support investigations (Koenig et al., 1998; Ironson et al., 2002) reporting that higher spirituality or religiosity was associated with faster recovery from medical illnesses.

Also of note were our findings associating spirituality with lower income, lower level of education, and lower rates of being married or in a committed relationship. We speculate that these findings may be consistent with life situations requiring recruitment of higher coping strategies and greater need for traits such as resilience. The nature of our data does not allow us to explore whether there may be mediating or moderating relationships between these variables.

In contrast to prior reports (Murray-Swank et al., 2006; Wright et al., 1993; Maselko et al., 2009; McCullough & Larson, 1999) we did not find an association with lower rates of depression. This could be due to the fact that at baseline, a majority of participants had few or no depressive symptoms (CES-D mean < 6). We also did not find an association between HRQOL in terms of physical and emotional functioning as measured by the SF-36 and our spirituality measure, unlike some other reports (Underwood & Teresi, 2002; Ironson et al., 2002), but similar to the findings of Atchley et al. (1997). The lack of association with HRQOL may be partly explained by low sensitivity of global measures of functioning such as SF-36 toward specific domains such as spirituality.

Our study had several strengths. We included a large, well-characterized community-dwelling sample of relatively healthy older women, allowing us to study spirituality within a wider context than specialized subpopulations that involve higher coping. We examined multiple domains associated with successful aging and our measure of spirituality had adequate internal consistency. On the other hand, this study also had several limitations. All our subjects were women, a majority of the sample was Caucasian, and the median level of educational attainment was some college. Therefore, our findings may not generalize to other populations. Although our sample included a large percentage of women participants in the Women's Health Initiative, their educational attainment, income, and overall health may be higher than in the general population, and the subset of WHI who completed the survey used in this study were wealthier, better educated, and more likely to be married than

those who did not return the survey. Therefore, there are additional limitations in how the obtained sample represents the general population of women. Furthermore, the study was cross-sectional, and thus, conclusions about the effect of spirituality on successful aging and related domains may be confounded by cohort effects and/or a bias in sample collection. The cross-sectional nature of the study does not allow us to establish chronological relationships between aging and spirituality. In addition, most of the variables in our study were measured by self-report, which may be influenced by social desirability (Ahern, Kiehl, Lou Sole, & Byers, 2006). Finally, spirituality is a broad and multidimensional construct. While we believe that our measure addressed key broad dimensions, other domains not measured, such as religious coping, may influence successful aging in other ways.

In summary, we found that spirituality was associated with a specific demographic profile (lower education, lower household income, and lower likelihood of being in a marital or committed relationship), and higher level of resilience. These findings may help expand our understanding of the role of spirituality within the broader paradigm of successful aging, and bear replication and longitudinal study.

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Table 1a

Associations of Spirituality with Dimensional Variables (Total N = 1,942)

Successful Aging Related Variables	Mean	Std. Dev	Association with spirituality measure ^a	
			Rho	p-value
Age	73	7.1	0.005	0.840
Self-rated successful aging (1–10)	8.0	2.2	0.064	0.499
Attitude toward aging – PGMS (0–5)	3.8	1.3	0.060	0.011
Resilience - CD-RISC (1–100)	75.7	13.0	0.282	<0.001
Depression - CESD (0–60)	6.5	6.2	−0.018	0.4768
SF-36 Physical composite (0–100)	43.4	11.3	−0.036	0.128
SF-36 Mental composite (0–100)	56.6	7.3	0.042	0.071
Optimism – LOT (6–30)	24.3	3.2	0.106	<0.001
Life Events Scale – LES (0–33)	3.1	2.9	.118	<0.001

Acronyms: PGMS: Philadelphia Geriatric Morale Scale; CD-RISC: Connor David Scale for Resilience; CESD: Center for Epidemiological Studies Depression scale; LOT: Life Orientation Test

^aCategorical variables were tested using Kruskal-Wallis ANOVA, and χ^2 is the test statistic. All other variables were tested using Spearman's rho.

Table 1b

Associations of Spirituality with Discrete Variables (Total N = 1,942)

Successful Aging Related Variables	N ^b	Association with spirituality measure ^a		
		χ^2	df	p-value
Level of education		28.4	4	<0.001
No high school diploma	50			
High school diploma/GED	212			
Some College/Vocational after HS	841			
College graduate/baccalaureate	205			
Some postgraduate education	625			
Mean household income		25.2	4	<0.001
<\$20,000	251			
\$20,000–34,999	397			
\$35,000–49,999	399			
\$50,000–74,999	457			
>\$75,000	363			
Marital status		16.3	4	0.002
Married	1,150			
Live-in relationship	51			
Widowed	314			
Divorced	363			
Never married	53			
Race		20.0	1	<0.001
White	1764			
Non-White	130			
Hispanic ethnicity		9.84	1	0.002
Hispanic	115			
Non-Hispanic	1,771			

^a Categorical variables were tested using Kruskal-Wallis ANOVA, and χ^2 is the test statistic. All other variables were tested using Spearman's rho.

^b Number of subjects (N) may not sum to 1,942 for discrete variables due to missing data.