Religiosity and mental health in southern, community-dwelling older adults

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Abstract
This study considers potential interaction effects of three measures of religiosity, organized (OR), non-organized (NOR), and intrinsic religiosity (IR), on depression and general mental health, controlling for socio-demographic characteristics and mobility. In-home interviews were conducted among a stratified random sample of Medicare beneficiaries from five central Alabama counties (the University of Alabama at Birmingham Study of Aging). Those who were high on all three dimensions of religiosity reported having fewer symptoms of depression and better mental health than did those who were low on all three dimensions of religiosity. Subjects who scored high on OR reported lower levels of depression ($F(1,981) = 3.97, p<0.05$). Neither IR nor NOR had salutary effects on the measure of depression nor on the general measure of mental health. The interpretation of the relationships of religiosity with the Geriatric Depression Scale (GDS) and the general mental health (Mental Component Score of the SF-12; MCS) measures was complicated by the presence of three way interactions ($F(1,981) = 9.02, p<0.01$ and $F(1, 981) = 5.46, p<0.05$, for GDS and MCS respectively). The presence of interaction effects between the different dimensions of religiosity and mental health affirms the importance of remaining sensitive to the multidimensional nature of religiousness and its relationships with measures of mental health.

Introduction
A growing body of research documents the positive effects of religious belief and behavior on adult mental and physical health (George, 2002; Koenig et al., 2001; Mills, 2002; Thoresen & Harris, 2002). As evidence mounts, religious and spiritual components to health are gaining increasing acceptance in theoretical models of intervention (e.g., Crowther et al., 2002; Koenig & Brooks, 2002; Parker et al., 2002b). At the same time, demands for scientific investigation and debates regarding the appropriateness of incorporating religiosity into clinical practice are intensifying (see special issues, Annals of Behavioral Medicine, 2002; Public Policy & Aging Report, 2002). The assessment of the relationship between religiosity and mental health has been complicated and simultaneously enhanced by the identification and application of different dimensions of religiosity (Fetzer Institute, 1999; Thoresen & Harris, 2002). In addition to the rather inconsistent and unsophisticated selection of measures of religious beliefs and practices, the order of effects of multiple dimensions of religion and spirituality and their interactions on a variety of physical and mental health outcomes have not been systematically studied (Koenig et al., 2001; Powell et al., 2003; Thoresen & Harris, 2002). Although recent studies have reflected a growing scientific rigor and creativity (e.g., Oman et al., 2002; Parker et al., 2003; Pearce et al., 2002), research is needed to clarify the interrelationships among the measurements of religion, the associated effects on multiple measures of mental health, and particular populations (Binstock 2002; Mills, 2002). Such research would provide needed guidance and assistance to clinicians to the application of this complex concept in practice (Mills, 2002).

This study examined the association of different dimensions of religiosity and mental health of...
older persons, while controlling for other relevant variables. Beginning with the general hypothesis that highly religious people have reported better mental health than have those who were less religious, this research addressed the question ‘Do dimensions of religiosity interact with one another such that the effect of one dimension on mental health is contingent on the level of some other dimension?’

Spirituality has been generally defined with a primary emphasis on the individual’s personal experience, while religiosity has referred to a person’s experience in the context of organized religion (Crowther et al., 2002; Miller & Thoresen, 1999). However, the lines of research are often blurred when these concepts are operationalized. Our brief review of the literature on religiosity and mental health is grounded in the measures used for our study, organized (OR), non-organized (NOR), and intrinsic religiosity (IR) (Koenig et al., 1997b), and their concomitant association with measures of depression and mental health.

Studies focusing on the relationship between religiosity and elders’ mental health and emotional well-being have shown mostly salutary effects (e.g., Koenig et al., 2001; Levin & Chatters, 1998). Recent studies and reviews of the literature have shown generally that people who are more religious along a variety of dimensions tended to score lower on measures of depression. Koenig and colleagues (2001) review of cross sectional studies that assessed the relationship of organized religious activity and depression found that persons who reported more participation in religious activities were less depressed. Ellison (1995) found that church attendance was associated with less depression among Whites, but not among Blacks. Koenig et al. (1997a) found that the rate of depression in subjects who attended religious services once per week or more was only half that of subjects who attended services less than once per week, even after controlling for physical health, social support, age, sex, and race. Koenig et al. (1995) found cognitive symptoms of depression, but not somatic symptoms, were related to religious coping. In an area of the world where religious involvement is low (e.g., Holland), less religious older persons experienced higher levels of depression (Braam et al., 1997; 2001).

Koenig et al. (1988) found organizational religiosity, non-organizational religiosity, and intrinsic religiosity were related to general well-being and morale, even when controlling for health, social support, and financial status. These relationships were higher for women and for persons aged 75 or older. A number of recent works have demonstrated the benefits of religiosity in living with a variety of health conditions (e.g., Koenig et al., 1998b: Rabin, 1999; Sephton et al., 2001). Similarly, studies of mental health have shown that religious activity buffers against the negative effects of substance abuse (e.g., Kendler et al., 1997) and chronic pain (Kabat-Zinn et al., 1985), known co-morbid, associative conditions with depression and mental health problems. The weight of evidence has suggested that people in the US turn first to religion in coping with difficult life events (e.g., the September 11th terrorist attacks) that might otherwise have contributed to depression or mental health problems (Schuster et al., 2001).

A major difficulty with research on religiosity and older adults has been the potential confounding of measures of public or organizational religious participation with health or mobility issues (Levin & Markides, 1986). Church/religious service attendance is a typical measure of religiosity. However, attendance may be very difficult or impossible for older persons because of chronic illness and limited functional status. Many people with chronic illness report that spiritual and religious beliefs and practices provide hope, reduce anxiety, and promote a general sense of well-being and purpose in life. Older adults who become more disabled and unable to go to church are more likely to engage in non-organized religious activity and may experience a deepening of their internalized belief to cope with increasing stress and disability (Koenig, 2002; Pressman et al., 1990).

Findings concerning the relationship between non-organizational religious activities and depression and other measures of mental health are less clear (Sloan & Bagiela, 2002). Idler (1987), and Mosher and Handal (1997) found inverse associations between non-organized religious activity and depressive symptoms. While prayer and other religious activities have been associated with better coping and less depression (Sloan et al., 2000), religious beliefs indicative of religious struggles have been associated with worse mental health outcomes (Pargament et al., 2001).

Koenig et al. (1992) found measures of religious coping predicted fewer depressive symptoms among 850 consecutively admitted hospitalized patients. Using the National Institute of Mental Health Diagnostic Interview Schedule with 87 medical inpatients from consecutive, interdisciplinary admissions, Koenig et al. (1998a) found measures of religious attitudes to be associated with speed of remission. Both studies also found religious beliefs were very important for patients showing little or no improvement in their medical conditions.

Additionally, measures of religiosity have been found to be associated with improved attendance at scheduled medical appointments (Koenig, 1995), greater agreement with care and improved compliance (Koenig et al., 1998b), improved medical outcomes (Oxman et al., 1995), and longer life (Oman et al., 2002; Oman & Reed, 1998; Strawbridge et al., 1997).

In summarizing 850 related studies, Koenig et al., (2001) developed a comprehensive model that
integrates the overall findings. Many of these studies were conducted with community-dwelling older persons with chronic disability. The vast majority of such studies found that religious involvement and religiosity were associated with greater well-being and life satisfaction, greater purpose and meaning in life, greater hope and optimism, less anxiety and depression, more stable marriages, and lower rates of substance abuse. Koenig’s model illustrates how religious beliefs and practices might impact mental and physical health without necessarily depending on ‘supernatural’ explanations.

Methods

Sample

Data for this study were collected using in-home interviews conducted from 1999–2001 with 1000 adults 65 or older recruited from a stratified, random sample of the Medicare beneficiary list from five central Alabama counties, (three more rural and two mostly urban). The sample was stratified by county, race, and sex, and included balanced numbers of African-American males and females and Caucasian-American males and females.

Measures

Religiosity. Religiosity was measured using a slightly modified version of the DUREL (Koenig et al., 1997b). This five-item measure captures the three major dimensions of religiousness presented by Koenig and Futterman (1995). Organizational religiosity (OR) was assessed using a single item measure of frequency of attendance at church or other religious meetings. Scores could range from 1 (more than once a week) to 6 (never). Organizational religiosity was dichotomized into those who attended church at least weekly (1) and those who did not (0). Non-organizational religiosity (NOR) refers to the frequency the respondent spent time in private religious activities, such as prayer, meditation or Bible study. Scores could range from 1 (more than once a week) to 6 (never). Non-organizational religiosity was dichotomized into those who prayed more than weekly (1) and those who did not (0). Scores on three different items were summed to measure intrinsic religiosity (IR). Koenig et al., (1997b) selected these items as a measure of IR based on their loadings on the IR factor of a principal components factor analysis of the Hoge 10-item scale of intrinsic religiosity. Respondents rated how true each of the following statements was of them: ‘In my life, I experience the presence of the Divine (i.e., God)’; ‘My religious beliefs are really what lie behind my whole approach to life’; and ‘I try hard to carry my religion over into all other dealings in life’. Scores on the IR variable could range from 3 (high intrinsic religiosity) to 15 (not high intrinsic religiosity). Cronbach’s index of internal consistency for these data was 0.83, suggesting the items included in this index measured a single concept. Intrinsic religiosity was dichotomized into those who scored 3 (1) and those who did not (0).

Mental health. This study used two different measures of mental health—the Geriatric Depression Scale (GDS; Sheikh & Yesavage, 1986) and the mental health subscale of the SF 12 (MSC; Ware et al., 1995). The GDS is a count of the number of symptoms of depression a subject reports having and ranges from 0 (no symptoms reported) to 15. The MCS is a measure of global mental health ranging from 0–100. A higher score on the MCS indicates better mental health.

Demographic characteristics. Socio-demographic controls included chronological age, sex (1 = male, 2 = female), ethnicity (0 = White, 1 = Black), urban/rural (0 = urban, 1 = rural), marital status (1 = currently married, 0 = not currently married), educational attainment measured on a scale ranging from 6 (6 or fewer years of school completed) to 17 (completed professional or graduate degree), and income sufficiency measured on a scale ranging from 1 (is not enough to make ends meet) to 4 (allows you to do more or less what you want).

Mobility. Mobility was included as a control variable in this study, since a number of researchers have expressed concern that measures of participation in organized religion may be confounded by health/mobility factors (Levin & Markides, 1986; Koenig et al., 1993). The measure of mobility used in this study was developed for the University of Alabama at Birmingham’s Study of Aging (Parker et al., 2002a). It considers five levels of life-space (range from ‘been to other rooms of your home besides the room where you sleep’ to ‘been to places outside your immediate town’ with level of independence (complete independence, equipment used, help from another person needed), and frequency of mobility (never, less than once a week, one to three times a week, four to six times a week, and daily). The resulting score ranged from 0 (low mobility) to 120 (high mobility).

Analysis plan

Data were analyzed using a 2 × 2 × 2 multivariate analysis of covariance (MANCOVA) to examine the effects of organized religiosity (high and low), non-organized religiosity (high and low) and intrinsic religiosity (high and low) on psychological wellbeing. Depressive symptoms (GDS) and general mental health (MCS) were treated as a system as these two variables were highly correlated (r = −0.57, p<0.001).
Results

Socio-demographic characteristics of study participants

Table 1 presents the means and standard deviations for all variables included in the analyses. The information that follows in this paragraph further characterizes study participants. Over 90% of the respondents resided in a single-family house and 50% lived with their spouse. Another 25% lived with relatives or in-laws other than their spouse. Approximately half (51%) were currently married and 39% were widowed. One fifth of the respondents had six or fewer years of education, half of the respondents had not completed high school, one quarter had either a high school degree or a GED, and approximately 7% were college graduates. Twenty-eight percent reported that their income was sufficient to allow them to do ‘more or less what they wanted’, another 28% said their income ‘kept them comfortable but permitted no luxuries’, 35% reported their income was ‘just enough to get by on’, and 9% said their income was ‘not enough to make ends meet’.

Church attendance played a significant role in the lives of the respondents with 61% attending church at least weekly (high OR). Over three fourths (76.9%) reported praying more than weekly (high NOR). Almost three-fourths (72.6%) scored 3 on the intrinsic religiosity scale (high IR). Finally, 43% of the respondents were high on all three measures of religiosity.

The mental health of these respondents approximated that for community-dwelling older adults in general. Approximately 10% of these respondents (100 of 999) scored six or higher on the short form of the GDS, or slightly less than the standard 13% for the population of community-dwelling older adults (Kurlowicz, 1999). Respondents also scored slightly above average on the MCS (53.5 versus 50.0) (Ware et al., 1995).

Relationships of dimensions of religiosity with mental health

Since over 70% of the respondents reported the highest level of NOR and the highest level of IR possible on the measures used, the cutting point for these two variables was high versus all others. Because many churches, particularly in rural areas, only offer services once weekly, we combined the more than weekly and once weekly responses into a single category. Since this category included 61% of the respondents, we used weekly or more as the cutting point for OR.

The $2 \times 2 \times 2$ (OR x NOR x IR) MANCOVA demonstrated two significant effects, a main effect and a three-way interaction. Organizational religiosity had a statistically significant effect on mental health, $F(2, 980) = 4.74, p < 0.01$. There were no significant main effects for NOR or IR, and there were no significant two-way interactions. However, a significant, multivariate three-way interaction was demonstrated, $F(2, 980) = 4.99, p < 0.01$.

Examination of the univariate effects showed that the main effect was significant for GDS only. People high on OR had lower GDS scores than did those who were lower on OR (2.24 versus 2.60, adjusted for covariates), $F(1,981) = 3.97, p < 0.05$. However, the three-way interaction was significant for both GDS ($F(1,981) = 9.02, p < 0.005$) and for MCS, $F(1,981) = 5.46, p < 0.05$. Adjusted means for low and high intrinsic religiosity are presented in Table 2.

In an effort to interpret the three-way interactions, we arranged the categories of respondents into four groups based on the number of dimensions of religiosity on which they were classified as scoring

<table>
<thead>
<tr>
<th>Item</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirituality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend church weekly or more (OR)</td>
<td>1–6</td>
<td>2.69</td>
<td>1.71</td>
</tr>
<tr>
<td>Pray more than weekly (NOR)</td>
<td>1–6</td>
<td>1.62</td>
<td>1.40</td>
</tr>
<tr>
<td>High intrinsic religiosity (IR)</td>
<td>3–15</td>
<td>3.89</td>
<td>2.00</td>
</tr>
<tr>
<td>Mental Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geriatric Depression Scale (GDS)</td>
<td>0–15</td>
<td>2.36</td>
<td>2.33</td>
</tr>
<tr>
<td>General mental health (MCS)</td>
<td>0–100</td>
<td>53.49</td>
<td>9.79</td>
</tr>
<tr>
<td>Demographic characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>65–106</td>
<td>75.31</td>
<td>6.72</td>
</tr>
<tr>
<td>Female gender</td>
<td>0–1</td>
<td>50%</td>
<td>–</td>
</tr>
<tr>
<td>African American ethnicity</td>
<td>0–1</td>
<td>50%</td>
<td>–</td>
</tr>
<tr>
<td>Rural residence</td>
<td>0–1</td>
<td>51%</td>
<td>–</td>
</tr>
<tr>
<td>Currently married</td>
<td>0–1</td>
<td>51%</td>
<td>–</td>
</tr>
<tr>
<td>Socio-economic status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>6–17</td>
<td>10.61</td>
<td>3.26</td>
</tr>
<tr>
<td>Income sufficiency</td>
<td>1–4</td>
<td>2.75</td>
<td>0.97</td>
</tr>
<tr>
<td>Life space mobility (LSIV)</td>
<td>0–120</td>
<td>64.13</td>
<td>24.92</td>
</tr>
</tbody>
</table>

List-wise $n = 997$
high (low on all three dimensions of religiosity, high on one of the three dimensions of religiosity, high on two of the dimensions of religiosity, and high on all three dimensions of religiosity). We then compared these groupings using Scheffé methods (see Table 2 for groupings and category means adjusted for covariates). Respondents who scored high on all three measures of religiosity had lower GDS and higher MCS scores than did those who scored high on two of the three measures of religiosity (1.97 versus 2.60, Scheffé $F(7, 981) = 5.14, p<0.001$ for GDS and 54.14 versus 52.48, Scheffé $F(7, 981) = 4.99, p<0.001$ for MCS). Those who scored high on two of the three dimensions of religiosity, however, had higher GDS and lower MCS scores than did those who scored high on one of the three measures of religiosity (2.60 versus 2.23, Scheffé $F(7, 981) = 3.11, p<0.005$ for GDS and 54.31 versus 52.63, Scheffé $F(7, 981) = 3.65, p<0.001$ for MCS). Those who scored high on one of the three dimensions of religiosity had lower GDS and high MCS scores than did those who scored low on all three of the measures of religiosity (2.23 versus 2.93, Scheffé $F(7, 981) = 6.28, p<0.001$ for GDS and Scheffé $F(7, 981) = 2.30, p<0.05$ for MCS). Finally, those who were high on all three dimensions of religiosity reported having fewer symptoms of depression and better mental health than did those who were high on two of the three dimensions of religiosity. Furthermore, respondents high on OR only and respondents high on IR only had GDS scores similar to those who were high on all three dimensions of religiosity, and respondents high on NOR only and respondents high on OR only had MCS scores similar to those who were high on all three dimensions of religiosity.

### Discussion

This research addressed the question ‘Do dimensions of religiosity interact with one another such that the effect of one dimension on mental health is contingent on the level of some other dimension?’ We examined this question using two different mental health measures (GDS and MCS).

If the different dimensions of religiosity had independent effects we would expect that persons who scored high on all three dimensions of religiosity (the ‘highly religious’) would report better mental health and fewer depressive symptoms than those who scored high on only two dimensions of religiosity. The data supported this expectation. Participants high on all three dimensions, the largest group in the study, had the lowest GDS scores and had higher MCS scores than did those who scored high on only two of the three dimensions of religiosity. The data were inconsistent with this prediction. In several cases, those who scored high on two of the three dimensions of religiosity had poorer mental health and more depressive symptoms than did those high on only one of the dimensions.

<table>
<thead>
<tr>
<th>IR</th>
<th>NOR</th>
<th>OR</th>
<th>$n$</th>
<th>GDS Composite</th>
<th>Cell</th>
<th>MCS Composite</th>
<th>Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>High on no dimensions</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>88</td>
<td>2.93</td>
<td>52.42</td>
<td>52.42</td>
</tr>
<tr>
<td>High on one dimension</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>34</td>
<td>2.23</td>
<td>54.31</td>
<td>52.82</td>
</tr>
<tr>
<td>High on two dimensions</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>63</td>
<td>2.53</td>
<td>55.47</td>
<td>54.64</td>
</tr>
<tr>
<td>High on three dimensions</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>44</td>
<td>2.03</td>
<td>54.14</td>
<td>52.63</td>
</tr>
<tr>
<td>S within-group error</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>424</td>
<td>1.97</td>
<td>54.14</td>
<td>54.14</td>
</tr>
</tbody>
</table>

| Evaluated at covariates: age $= 75.31$, sex $= 0.50$, race $= 0.50$, rural $= 0.51$, currently married $= 0.51$, education level $= 10.61$, income sufficiency $= 2.75$, and mobility $= 64.13$. Composite means in the same column that share the same subscript are not statistically significantly different from one another using Scheffé techniques, $p > 0.05$. Values enclosed in parentheses represent mean square errors. |
Also in four of six comparisons, participants who scored high on one of the dimensions of religiosity reported depressive symptoms and general mental health scores similar to those of persons who scored high on all three dimensions of religiosity.

Scoring high on all three dimensions of religiosity is consistent with traditional norms of Protestant Christianity as practiced in the deep South. Adherents are encouraged to be regular churchgoers, to pray regularly, and to use religious principles to guide all aspects of their lives. Highly religious behavior and belief are strongly reinforced by the prevailing culture, and thus it is not surprising that people who conform to this pattern experience better mental health and fewer depressive symptoms.

But why is it that participants who scored high on one dimension of religiosity only generally reported better mental health and lower depression than those who scored high on two dimensions of religiosity? We might infer that people who scored high on two but not three dimensions were persons reared in and committed to traditional notions of religiosity but whose current practice did not conform to these norms. Such persons, for example, those high on OR and NOR but not IR (n = 87), or those high on OR and IR but not on NOR (n = 63), might well experience lower levels of well-being and greater depression associated with inconsistencies in their religious life. Another group with higher depression scores (n = 193) was high on IR and NOR but low on OR. Despite our attempts to control for mobility, this group was likely to have included participants unable to attend religious services because of poor health or lack of access to transportation. Previous research underscores the dynamic nature of religion and spirituality, and suggests that as older adults become more disabled and unable to go to church, they are more likely to engage in NOR and to experience an elevation in their IR (Koenig, 2002).

The participants whose GDS and mental health scores were as good as those of the ‘highly religious’ but who scored high on one dimension of religiosity only, by contrast, may not have adhered at all to the traditional norms of religious behavior/belief. Participants in the group high on OR only (n = 34), for example, may have attended services largely for social or professional reasons, with a weak or nonexistent belief system in a higher power. Church attendance in this case may have resulted in lower depression because it was a regular, planned activity that resulted in positive, meaningful contacts with others. Similarly those in the group with high IR only (n = 44) may have corresponded to the spiritual only group identified by Shahabi et al., (2002). Such persons may have had strong personal belief systems that did not involve attending communal services or engaging in devotional activity but that did serve to buffer against depression and other mental health problems. Finally, the group that scored high on NOR only (n = 63) could have been individuals whose favorable mental health scores were related to secular meditation rather than a particular religious activity associated with a more orthodox belief system. This finding would be consistent with some recent therapeutic interventions involving meditation (Kabat-Zinn et al., 1992).

This study was limited in a number of ways. Since the data were gathered cross-sectionally, the results do not reflect patterns of behavior, health, and belief over time. Equally important was the lack of variability on the dimensions of religiosity measured. Over 40% of the respondents scored at the top on all three measures of religiosity, a finding that might be unique to the southern region of the US. More refined measures might have increased the variation in religiosity which, in turn, could have resulted in improved clarity concerning the relationships between religiosity and mental health (Underwood & Teresi, 2002).

These findings suggest that the relationship of religiosity with mental health in older adults is complex. It varies both with the measure of mental health under consideration and with the dimension of religiosity being considered. The data from this study provide little evidence to support the hypothesis that the different dimensions of religiosity (OR, NOR, and IR) have independent, positive effects on older persons’ mental health. Rather, the results suggest that attention must be paid to the interaction effects among the dimensions of religiosity in studying their impact on mental health. Further, the complexity of these findings affirm the importance of the growing pattern across professions of including religion and spirituality in clinical training (American Psychiatric Association, 1992; 1995; Council on Social Work Education, 1995; Pulchalski & Larson, 1998) and as a area of relevance in the health care accreditation process (The Joint Commission on the Accreditation of Healthcare Organizations, 2001). Finally, future research should explore the dynamic nature of religious and spiritual trajectories by using multidimensional measures of these variables over time so that the mental health consequences of movement in and out of mainstream religion can be more carefully examined.

Acknowledgements

This research was funded by the National Institute on Aging (Grant #NIA AG150602) and the AARP/Andrus Foundation. Though the views expressed in this article are the exclusive opinions of its authors, the authors gratefully acknowledge the assistance of The John A. Hartford Foundation’s Geriatric Social Work Faculty Scholars Program.
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