# *Religion as Moderator of the Depression-Health Connection*

## *Findings From a Longitudinal Study*

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This study used a representative community-based sample of men and women born in the San Francisco Bay Area in the 1920s to investigate the long-term relations between religiousness, spirituality, depression, and physical health. In late adulthood (age late 60s/mid-70s), religiousness buffered against depression associated with poor physical health, with highest levels of depression observed in the low-religiousness–poor-physical-health group. The buffering effect of religiousness was present after controlling for social support and was predicted longitudinally using religiousness scored in middle adulthood (age 40s)—a time interval of approximately 30 years. Spirituality, operationalized in terms of adherence to noninstitutionalized religious beliefs and practices, did not have the same buffering effect as religiousness. The findings are discussed with regard to the mechanisms underlying the salutary effect of religion on depression resulting from personal adversity.

***Keywords:*** *religion; spirituality; health; depression; buffer; longitudinal*

*There is a well-established* negative relationship between religion and depression (e.g., Koenig, McCullough, and Larson 2001; McCullough and Smith 2003). Comparatively little is known, however, about the buffering effect of religion on depression in response to adversity, the kinds of religious beliefs and practices that serve as potential buffers, and whether the buffering effect can be predicted longitudinally. In this research, we used data from a long-term longitudinal study of men and women to investigate the relations between religiousness, spirituality, depression, and physical health using data

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collected in middle and late adulthood, a time interval of close to 30 years.

### *RELIGION AS BUFFER*

Although robust, the negative relationship between religion and depression is small in magnitude (Smith, McCullough, and Poll 2003). If religion functions to provide meaning and purpose in life (Koenig, Larson, and Larson 2001), it may be unrealistic to expect that its salutary effects will be equally strong among all individuals and situations (Bickel et al. 1998). Rather, the negative association between religion and depression may be particularly evident among individuals whose purpose in life is disequilibrated by an external stressor (Idler and Kasl 1997; McCullough and Smith 2003). Conversely, individuals who are low in religiousness may function well until faced with adversity. Few studies have focused specifically on the buffering effect of religion on depression as a function of stress or adversity, and among these, some have found support for the buffering hypothesis (e.g., Bickel et al. 1998; Braam et al. 1997; Maton 1989; Strawbridge et al. 1998), whereas others have not (e.g., Thearle et al. 1995; Krause and Van Tran 1989).

From the perspective of research on aging, however, several of these studies used only young or middle-aged participants (e.g., Kendler, Gardner, and Prescott 1999; Maton 1989). In addition, some studies focused exclusively on the buffering effect of religiousness on depression among individuals who were currently experiencing personal stress (Musick et al. 1998; Pressman et al. 1990) or who were caregivers to persons experiencing adversity (Robinson and Kaye 1994), designs that detract from establishing the interaction effects that may result when different levels of religiousness and stress are investigated.

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The overall body of research suggests that religion buffers against some stressors but not others (Ellison 1994). Although religion protects individuals who experience nonfamily problems (e.g., unemployment [Shams and Jackson 1993]) and uncontrollable stressors (e.g., physical health) against depression, it may increase depression related to marital problems that elicit conflict between religious values and personal experiences (Strawbridge et al. 1998). This differential effect of religion on depression as a function of the nature of the stressor may explain why studies using aggregate measures of stress that combine family and health factors (e.g., Krause and Van Tran 1989) failed to support the buffering hypothesis.

### *DISTINCTION BETWEEN RELIGIOUSNESS AND SPIRITUALITY*

What aspects of religion protect an individual against depression? Answering this question has been complicated by the high intercorrelation and the resulting lack of discriminant validity among most measures of religious behavior (McCullough et al. 1997). Measures of intrinsic religiousness have a stronger negative correlation with depression than measures of religious attitudes and beliefs (Smith et al. 2003). In addition, participation in public religious activities (organized religiousness) and living in communities where there is a conservative religious climate has a stronger negative effect on depression than involvement in private (nonorganized) religious activities and living in a more liberal religious locale (Braam et al. 2001; McCullough and Larson 1999). In contrast, extrinsic religious motivation and the use of negative religious coping (making malevolent religious appraisals) are positively correlated with depression (Pargament et al. 1998).

In this study, we used measures of two distinct but overlapping types of religious orientation—religiousness and spirituality—to investigate the buffering effect of religion on depression as a function of physical health. Religiousness was operationalized in terms of the importance of institutionalized religious beliefs and practices in the life of the individual; it combined frequency of church attendance and salience of religious belief (Wink and Dillon 2003) and thus parallels the *general religious involvement* that has been uniformly found to have a negative relation to depression (McCullough and Larson 1999).

We operationalized spirituality in terms of the importance of noninstitutionalized religious beliefs and practices (Wink and Dillon 2003) in the life of the individual (e.g., meditation, emphasis on sacred connectedness with God or nature; blending of diverse religious and mythical traditions). Because our definition of spirituality emphasized the person-centered aspects of religion, it has conceptual overlap with measures of nonorganized religion used in previous research on the depression-health connection (e.g., Strawbridge et al. 1998). What differentiates our operationalization of spirituality, however, is the added emphasis on nontraditional beliefs and practices characteristic of individuals who in surveys identify as seekers or as spiritual but not religious (e.g., Fuller 2001; Roof 1999). Incorporating personal seeking allows us to compare the buffering effect of traditional religiousness with noninstitutionalized religion, a form that has gained increased prominence in America (e.g., Roof 1999; Wuthnow 1998). Yet, as noted by Miller and Thoresen (2003), research on the religion-health connection lacks studies of spirituality conceptualized distinct from religiousness.

### *LONGITUDINAL ANTECEDENTS OF THE BUFFERING EFFECT*

Most of the research on the buffering effect of religion on depression has been cross-sectional. It is unclear, therefore, whether the negative relation between religion and depression means that religion per se is a protective factor or whether it is a proxy for other factors.

If, for example, seriously depressed individuals do not have the energy to attend a place of worship, then a high rate of religious attendance may serve as a proxy for good mental health, thus accounting for the negative correlation between religion and depression. Similarly, during times of distress, individuals may seek comfort in religion as a way of dealing with depression in which case religiousness does not act as a buffer but serves a palliative function following adversity (Ferraro and Kelley-Moore 2000; Idler 1995). Prospective, short-term longitudinal studies indicate that religiousness decreased depression following physical illness (Braam et al. 1997; Koenig, George, and Peterson 1998; Idler and Kasl 1992; Pressman et al. 1990), and stress (Hettler and Cohen 1998; Park, Cohen, and Herb 1990). There is, however, an absence of long-term longitudinal data on the relation between religion and depression (see Smith et al. 2003).



### *HYPOTHESES*

Using data from the Institute of Human Development (IHD) longitudinal study, we hypothesized that in late adulthood (age late 60s/mid-70s) religiousness would act as a buffer against depression associated with poor physical health. We expected that among individuals who were in poor physical health, those who were high in religiousness would be less depressed than those who were low in religiousness. We also tested the less well-researched alternative hypothesis that the interaction effect would be due to a significant difference among individuals who were low in religiousness, with those in poor physical health being more depressed than those who were in good physical health. Because of the well-established positive relationship between social support and religiousness (Ellison and George 1994; Koenig, Hays, et al. 1997), and the negative relationships between social support and depression (George et al. 1989; Goldberger, Van Natta, and Comstock 1985), and physical health (Blazer, Hughes, and George 1987; Koenig et al. 1988), we controlled for social support in our analysis. Because women tend to score higher on religiousness than men (Levin, Taylor, and Chatters 1994), and because the buffering effect of religiousness on depression may vary by gender (Idler and Kasl 1992), we also controlled for gender.

We hypothesized that the pattern of relations among religiousness, depression, and physical health in late adulthood (age late 60s/mid-70s) would hold when religiousness scored in middle (age 40s) and late middle (age 50s/early 60s) adulthood was substituted in the analyses for religiousness scored in late adulthood. In the longitudinal analyses we used measures of physical health and well-being (a proxy for depression) scored in middle adulthood as covariates to control for their effect on the long-term buffering effect of religiousness on depression in late adulthood.

In the absence of prior studies, it was uncertain whether spirituality would have the same buffering effect as religiousness. Like religiousness, spirituality provides an individual with a sense of purpose and meaning in life, and, therefore, may exercise a similar buffering effect. However, because the negative relationship between religion and

depression is stronger in studies that use measures of organized (or traditional) religiousness (e.g., Strawbridge et al. 1998), spirituality may not have a buffering effect. We used the same analytic procedures to test the buffering effect of spirituality as those outlined for religiousness, with one exception. Because previous research with this sample found that spirituality gained in prominence from late middle adulthood (age 50s/early 60s) onward (Wink and Dillon 2002), we restricted the testing of the longitudinal hypothesis to this age interval.

## *Method*

### *SAMPLE*

The data came from the Intergenerational Studies established by IHD at the University of California, Berkeley in the 1920s. The original sample was a representative sample of newborn babies in Berkeley (California) in 1928-1929 (the Berkeley Guidance Study) and of preadolescents (ages 10 to 12) selected from elementary schools in Oakland (California) in 1931 and who were born in 1920-1921 (the Oakland Growth Study). Both samples were combined into a single study in the 1960s (Eichorn 1981). The participants were studied intensively in childhood and adolescence and interviewed in-depth four times in adulthood: in *early adulthood* (age 30s; interview conducted in 1958), *middle adulthood* (age 40s; 1970), *late middle adulthood* (age 50s/early 60s; 1982), and *late adulthood*, when the participants were in their late 60s or mid-70s (1997 to 2000). At each interview phase, the participants also completed self-administered questionnaires.

Three hundred individuals took part in at least one of the three assessments conducted between early and late middle adulthood. By late adulthood, 26% of these individuals had died. Of the remainder, 1% had become seriously cognitively impaired, 7% were noncontactable, and 5% declined to participate. Of the available participants (neither dead, noncontactable, nor severely cognitively impaired), 90% ($n = 184$) were interviewed in late adulthood. Prior analyses indicated very little bias due to sample attrition other than a slight tendency for lower participation rates among individuals with lower levels of education (Clausen 1993; Wink and Dillon 2002).



### *CHARACTERISTICS OF THE SAMPLE*

In the current sample, 53% are women and 47% are men; 36% were born in the early 1920s, and 64% were born in the late 1920s. All but 6 of the participants are White, reflecting the racial composition of the Bay Area in the 1920s when the sample was drawn. Forty-seven percent are college graduates, a figure that is substantially higher than for same-age Americans nationwide, approximately 20% (Smith 2003:3), but slightly more typical of educational levels in California (Stoops 2004:9), including the Alameda County Study (Strawbridge et al. 1992). In late middle adulthood, 59% of the participants (or their spouses) were upper-middle-class professionals or executives, 19% were lower middle class, and 22% were working class. In late adulthood, 71% (85% of men and 55% of women) were living with their spouse or partner (paralleling same-age national census data: 77% of men and 53% of women [Smith 2003:3]), and 69% of the sample's couple-households had an annual income of more than $40,000—higher than the comparable figure (49%) for same-age married households nationwide (Smith 2003:4). The study participants resided primarily in Northern (69%) or Southern (12%) California and the western or southwestern states (12%).

The majority of the sample (73%) grew up in Protestant families (similarly, 68% of Americans born in the 1920s are Protestant); 16% grew up Catholic, 5% grew up in mixed religious households, and 6% came from nonreligious families. In late adulthood, 58% of the study participants were Protestant (and of these, 78% were members of mainline denominations, primarily Presbyterian, Episcopalian, and Methodist), 16% were Catholic, 2% were Jewish, and 24% were not church members. Forty-nine percent of the participants self-identified as Republican, 30% as Democrat, and 21% as independent; this distribution closely approximates political affiliation data for mainline Protestants in the Pacific region where the respective rates are 51%, 36%, and 18%.[1] Forty-five percent reported weekly church attendance, and 81% said that religion was important in their lives. These figures closely parallel national polls; 52% of Americans in the 65-to-74 age category attend church weekly, and 90% say that religion is important in their lives (Gallup and Lindsay 1999:10, 14-15). In sum, with the exception of race, education, and income, the religious and

other social characteristics of the sample closely resemble those of similar-age Americans.

### *MEASURES*

*Religiousness and spirituality.* The IHD study participants were asked about religion at each assessment. Religiousness and spirituality were coded separately on 5-point scales independently by two raters using responses to structured open-ended questions on religion from transcripts of interviews conducted with the participants at each time point (see Wink and Dillon 2002 and 2003 for a more detailed description of the ratings and the rating process). In this study, we used *religiousness* scored from interviews conducted in middle, late middle, and late adulthood, and *spirituality* scored from interviews in late middle and late adulthood. On *Religiousness*, a score of 5 indicated that institutionalized religious beliefs and practices played a *central* role in the respondent's life indicated by belief in God, an afterlife, and prayer, and/or frequent attendance (e.g., weekly) at a traditional place of worship. A score of 3 indicated that institutionalized religion had *some* importance in the individual's life; there was some uncertainty about belief in God or the afterlife, and attendance at a place of worship tended to be less frequent (e.g., once or twice a month). A score of 1 indicated that institutionalized religion played *no part* in the life of the individual as reflected in an explicitly stated lack of belief in God, the afterlife, or prayer, and the absence of attendance at a place of worship.

A dichotomized measure of religiousness that split the sample at each of the three assessments into those who were high (score of 3 or above on the rating scale; 35% of the sample) or low (a score below 3 on the rating scale; 65% of the sample) on religiousness was used for the analyses in this study. In late adulthood, religiousness correlated highly ($r|156| = .86$) with the Organized Religious Activities subscale of Koenig, Parkerson, and Meador's (1997) Religious Index. The Kappa index of reliability for the two sets of ratings of religiousness ranged from a low of .66 for late middle to .72 for late adulthood (all $p$ values $< .001$). The average rank order stability between the ratings of religiousness (combined across the two raters) for the three time periods was .81.



On *Spirituality*, a score of 5 indicated that noninstitutionalized religious beliefs and practices played a *central* role in the individual's life. The person expressed an awareness of sacred connectedness with God, a Higher Power, or nature, and systematically engaged in intentional spiritual practices (e.g., meditation, Shamanistic journeying, centering, or contemplative prayer) on a regular basis. A score of 3 indicated that spirituality had *some* importance in the life of the individual; the individual reported having spiritual experiences and engaged in spiritual practices occasionally. A score of 1 indicated that the individual had *no interest* in spiritual matters.

For this study's analyses, we used a dichotomized measure of spirituality that split the sample at each of the three assessments into those who were high (score of 2.5 or above on the rating scale; 24% of the sample) or low (a score below 2.5 on the rating scale; 76% of the sample) on spirituality. In assigning group membership, we used a slightly lower cutoff point for spirituality than for religiousness because fewer individuals in the sample received high scores on spirituality. In late adulthood, spirituality correlated moderately ($r|156| = .34$) with the Nonorganized Religious Activities subscale of Koenig, Parkerson, et al.'s (1997) Religious Index. The Kappa index of reliability for the two sets of ratings of spirituality was .56 for ratings in late middle adulthood and .63 for ratings in late adulthood, $p < .001$. The intercorrelation between ratings of spirituality in late middle and late adulthood was .62.

*Physical health.* At each of the assessments, the study participants were asked several open-ended questions about their current health and health history. The health sections of the interview transcripts were used to rate the participants' health status in middle, late middle, and late adulthood by three pairs of independent raters. The ratings were done on a 4-point scale adapted from Belloc, Breslow, and Hochstim (1971). A score of 4 indicated no physical complaints, a score of 3 indicated the presence of a minor nondisabling illness (e.g., minor arthritis, elevated blood pressure or cholesterol level that was under control with medication), a score of 2 indicated the presence of at least one chronic illness that resulted in moderate disability (e.g., glaucoma, diabetes, circulatory problems), and a score of 1 indicated the presence of one or more chronic illnesses resulting in serious disability and/or threat to life (e.g., recent cancer or congestive heart

failure, severe arthritis). In late adulthood, we assigned participants whose average score was higher than 2 to the good-physical-health group (66% of the sample) and individuals whose scores were 2 or lower to the poor-physical-health group (34% of the sample). The Kappa index of reliability for the three sets of health ratings ranged from .67 for late adulthood to .70 in middle adulthood. In late adulthood, our 4-point rating of physical health correlated .52 with the self-report Medical Outcomes Study Survey Form (SF-36; Ware 1993).

*Depression* in late adulthood was measured with the 20-item Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff 1977), a well-validated self-report measure of depression that has been used with older populations (Radloff and Teri 1986). Using a commonly accepted cutoff score of 16 or higher as indicative of minor depression, 14% of the sample was classified as depressed, a percentage comparable with that found in other community-based studies (e.g., Braam et al. 2001). The alpha coefficient of reliability for the CES-D was .82.

Because the study participants were administered the CES-D only in late adulthood, we used the California Psychological Inventory's (CPI) Well-Being Scale (Gough and Bradley 2002) as a proxy for a self-report measure of depression in middle and late middle adulthood. Low scorers on the CPI Well-Being Scale are described as alienated, dissatisfied, pessimistic, and experiencing a significant level of maladjustment (Groth-Marnat 2004). In late adulthood, the CES-D and the CPI Well-Being Scale were highly negatively correlated ($r[123] = -.55$, $p < .001$).

*Social support* in late adulthood was measured with the Lubben Social Network Scale (LSNS; Lubben 1988), a 10-item self-report scale that assessed the number of family members and friends in the individual's social network, frequency of social contact, whether the person had a confidant, and lived alone or with others. The alpha coefficient of reliability for the LSNS was .63. *Gender* was measured with a 1/0 dummy variable (1 = woman, 0 = man).

## Results

*Relations among the study's variables in late adulthood.* In late adulthood, religiousness was unrelated to depression and physical health (see Table 1).[2] As hypothesized, religiousness correlated positively with social support, and depression correlated negatively with physical health and social support. A positive correlation between religiousness and gender meant that women tended to score higher on religiousness than men. Spirituality correlated significantly with religiousness and gender (more women than men scored high on spirituality).



TABLE 1
Correlations Among the Study's Variables in Late Adulthood

| | *Variables* | | | | | |
|---|---|---|---|---|---|---|
| *Variable* | *1* | *2* | *3* | *4* | *5* | *6* |
| 1. Religiousness | — | .31** | .08 | −.01 | .25** | .28* |
| 2. Spirituality | | — | .09 | .06 | .01 | .27* |
| 3. Depression | | | — | −.25** | −.19* | .06 |
| 4. Physical health | | | | — | .06 | .01 |
| 5. Social support | | | | | — | .01 |
| 6. Gender | | | | | | — |

NOTE: $N$ ranges between 156 and 157.
*$p < .05$. **$p < .01$ (two-tailed).

In addition, we correlated all of the study's variables with Hollingshead and Redlich's (1958) 5-point Social Class Index and with a dummy 0/1 variable assessing whether the participant belonged to the younger (age late 60s) or older cohort (age mid-70s) (data not shown but available from the authors). Social class and cohort were unrelated to the study's variables other than a negative relationship between age and physical health ($r[157] = .24$, $p < .01$).

*Buffering effect of religiousness in late adulthood.* To test the buffering hypothesis, we first performed a three-way univariate ANOVA using data from the assessment in late adulthood. The CES-D was the dependent variable, and dichotomized ratings of religiousness, physical health, and gender were the three independent factors. Social support was used as a covariate. The main effects of religiousness, $F(1, 147) = .35$; physical health, $F(1, 147) = .34$; and gender, $F(1, 147) = 1.60$, were not significant but there was a significant relationship between depression and social support, the covariate, $F(1, 147) = 4.76$, $p = .03$, $\eta^2 = .032$ (see Table 2 for means and standard deviations). There was a significant two-way interaction between religious-

TABLE 2
Descriptive Statistics for Analysis of Variance Testing the Buffering Effect of Religiousness on the Depression–Physical Health Connection in Late Adulthood

| | *Religiousness* | | | | | |
|---|---|---|---|---|---|---|
| | *Late Adulthood* | | *Late Middle Adulthood* | | *Middle Adulthood* | |
| *Physical Health in Late Adulthood* | *High* | *Low* | *High* | *Low* | *High* | *Low* |
| Men | | | | | | |
| Good | | | | | | |
| *M* | 1.49 | 1.38 | 1.52 | 1.38 | 1.53 | 1.36 |
| *SD* | .22 | .30 | .29 | .29 | .29 | .25 |
| Poor | | | | | | |
| *M* | 1.26 | 1.52 | 1.36 | 1.47 | 1.19 | 1.49 |
| *SD* | .18 | .36 | .19 | .38 | .20 | .35 |
| Women | | | | | | |
| Good | | | | | | |
| *M* | 1.42 | 1.39 | 1.39 | 1.44 | 1.36 | 1.45 |
| *SD* | .30 | .30 | .31 | .28 | .28 | .31 |
| Poor | | | | | | |
| *M* | 1.51 | 1.66 | 1.64 | 1.59 | 1.41 | 1.62 |
| *SD* | .39 | .48 | .45 | .45 | .36 | .47 |

NOTE: For men, $n = 75$, 72, and 69 and for women, $n = 81$, 79, and 74 for late, late middle, and middle adulthood, respectively.

ness and physical health, $F(1, 147) = 5.48$, $p = .039$, $\eta^2 = .039$. The two-way interactions between gender and physical health, $F(1, 147) = .36$, and religiousness and gender, $F(1, 147) = 3.31$, $p = .07$, and the three-way interaction between religiousness, physical health, and gender, $F(1, 147) = .68$, were not significant.

As shown in Figure 1, the significant interaction between religiousness and physical health in late adulthood was because individuals who were either low in religiousness and physically healthy or high in religiousness and in poor physical health scored lowest on depression. The highest level of depression was present among individuals who were low in religiousness and in poor physical health. Follow-up *t*-test comparisons indicated that the only significant difference was among the two groups low in religiousness, with individuals in poor physical health scoring higher on depression than those who were physically healthy, $t(34, 64) = 2.68$, $p = .009$.



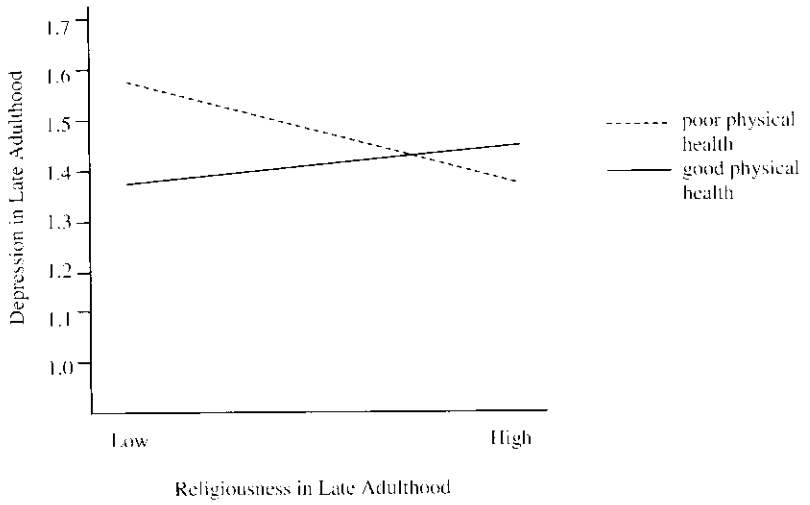


**Figure 1: Depression as a Function of Physical Health and Religiousness in Late Adulthood**

*Buffering effect of religiousness: Longitudinal findings.* Can the moderating effect of religiousness on the depression–physical health connection in late adulthood be predicted longitudinally? We addressed this question by replicating the three-way univariate ANOVA described above using the same set of variables with two exceptions. In the first longitudinal model, we replaced religiousness in late adulthood (age late 60s/mid-70s) with religiousness in *late middle* adulthood (age 50s/early 60s) as one of the three independent factors. In this analysis, we used physical health in late middle adulthood as a covariate (we did not have a measure of social support in late middle adulthood to use as an additional covariate). In the second longitudinal model, we used religiousness and physical health in *middle* adulthood (age 40s) as an independent factor and covariate, respectively.

In the three-way ANOVA using religiousness in late middle adulthood (age 50s/early 60s) as an independent variable, we found no significant main effects or interactions (see Table 2 for means and standard deviations). This means that religiousness in late middle adulthood did not have the same moderating effect on the depression-physical health connection in late adulthood as religiousness in late adulthood (age late 60s/mid-70s; see Figure 2).


**Figure 2: Depression as a Function of Physical Health in Late Adulthood and Religiousness in Late Middle Adulthood**

In the three-way univariate ANOVA using religiousness in middle adulthood (age 40s), there were no significant main effects of religiousness, $F(1, 134) = 2.59$; physical health, $F(1, 134) = .00$; and gender, $F(1, 134) = .46$, on depression in late adulthood (see Table 2 for means and standard deviations). The effect of physical health in middle adulthood (the covariate) was also not significant. The only significant interaction was between religiousness and physical health, $F(1, 134) = 4.01$, $p < .05$, $\eta^2 = .035$ (see Figure 3). A follow-up $t$-test analysis for independent samples indicated that the interaction effect occurred because among individuals low in religiousness, those who were in poor physical health scored significantly higher on depression than those who were in good physical health, $t(59, 38) = 2.14$, $p = .035$. The difference between individuals who were in poor physical health and low in religiousness and those who were in poor physical health and high in religiousness was significant at a trend level, $t(38, 11) = 1.81$, $p = .077$.

We next ran an additional three-way ANOVA using the same set of variables as in the previous analysis but also including the CPI Well-Being Scale (a proxy for depression) in middle adulthood as an additional covariate. In this reduced sample (not all participants completed the CPI in middle adulthood), we found a significant effect of



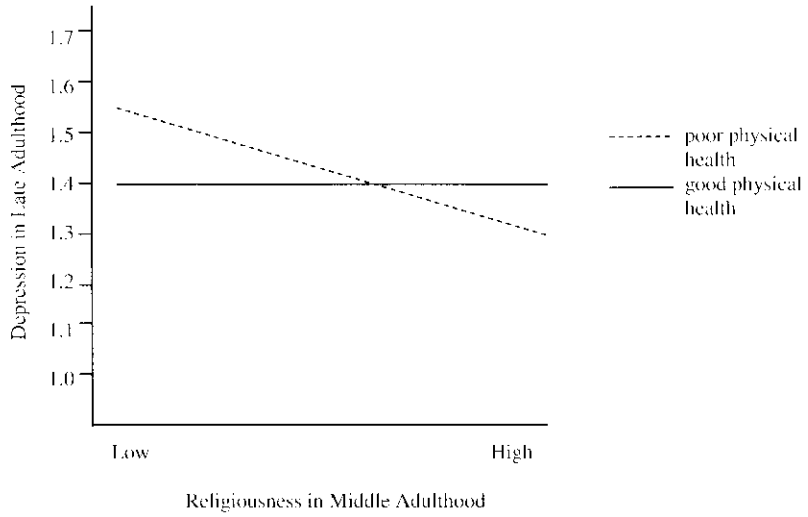


**Figure 3: Depression as a Function of Physical Health in Late Adulthood and Religiousness in Middle Adulthood**

well-being in middle adulthood on depression in late adulthood, $F(1, 117) = 37.76$, $p < .001$, $\eta^2 = .23$, but this did not affect the significant interaction between religiousness and physical health, $F(1, 117) = 4.43$, $p = .037$, $\eta^2 = .039$ (data not shown but are available from the authors).

*Buffering effect of spirituality.* We used the same procedure outlined above to test for the buffering effect of spirituality on the depression–physical health connection. We first ran a three-way univariate ANOVA with the CES-D in late adulthood as the dependent variable, spirituality and physical health in late adulthood and gender as the independent factors, and social support as a covariate (see Table 3 for means and standard deviations). We found a marginally significant main effect of spirituality on depression, $F(1, 147) = 3.34$, $p = .07$, meaning that highly spiritual individuals (irrespective of their physical health status) tended to be less depressed than individuals who scored low on spirituality. There were no other significant main effects or interactions including the two-way spirituality-by-health interaction, $F(1, 147) = .32$, $p = .57$, and the three-way spirituality-by-health-by-gender interaction, $F(1, 147) = .22$, $p = .64$. The effect of the covariate (social support) was significant, $F(1, 147) = 4.12$, $p = .044$,

TABLE 3
Descriptive Statistics for Analyses of Variance Testing the Buffering Effect of Spirituality on the Depression–Physical Health Connection in Late Adulthood

| | *Spirituality* | | | |
|---|---|---|---|---|
| | *Late Adulthood* | | *Late Middle Adulthood* | |
| *Physical Health in Late Adulthood* | *High* | *Low* | *High* | *Low* |
| Men | | | | |
| Good | | | | |
| *M* | 1.39 | 1.41 | 1.42 | 1.40 |
| *SD* | .32 | .28 | .39 | .28 |
| Poor | | | | |
| *M* | 1.38 | 1.46 | 1.40 | 1.45 |
| *SD* | .46 | .32 | .65 | .31 |
| Women | | | | |
| Good | | | | |
| *M* | 1.34 | 1.44 | 1.32 | 1.43 |
| *SD* | .29 | .30 | .20 | .31 |
| Poor | | | | |
| *M* | 1.43 | 1.70 | 1.68 | 1.59 |
| *SD* | .32 | .48 | .38 | .46 |

NOTE: For men, $n = 75$, 72, and 69, and for women, $n = 81$, 79, and 74, for late, late middle, and middle adulthood, respectively.

$\eta^2 = .027$. We next repeated the procedure replacing spirituality in late adulthood with spirituality in late middle adulthood and using physical health in late middle adulthood as a covariate. We found no significant main effects or interactions (see Table 3 for descriptive statistics).

## *Discussion*

This study used a representative community-based sample of men and women born in the San Francisco Bay Area in the 1920s to investigate the relations between religiousness, spirituality, depression, and physical health. The main results were (1) evidence of a concurrent and long-term buffering effect of religiousness on depression as a function of physical health in late adulthood and (2) the presence of a differential effect of religiousness and spirituality on the depression–physical health connection.



In this relatively healthy sample of older adults we did not find evidence of a direct relationship between religiousness and depression: Individuals high in religiousness did not score lower on depression than individuals low in religiousness. This was the case primarily because participants who were in good physical health did not appear to need religion to maintain a positive view of the self. However, when physical health status was considered, (1) in the low-religiousness group, individuals who were in poor physical health scored significantly higher on depression than individuals who were in good physical health, and (2) in the high-religiousness group, physical health status did not have a significant effect on depression. The "buffering effect" hypothesis was thus supported because the highest levels of depression were observed in the low-religiousness/poor-physical-health group. The fact that we did not find a direct relationship between religiousness and depression supports the view of religion as a particularly valuable resource in times of stress or disequilibrium (McCullough and Smith 2003; Pargament 1997). Previous research with this sample indicated a direct positive relationship between religiousness and several areas of positive psychosocial functioning including involvement in interpersonal and community activities and generativity (Dillon, Wink, and Fay 2003; Wink and Dillon 2003). These behavior domains differ, however, from the affective states measured by life satisfaction (Wink and Dillon 2001) and depression, where religiousness acts as a buffer against the loss of a sense of well-being but not a deterrent.

The buffering effect of religiousness on depression was present after controlling for social support, meaning that although individuals high in religiousness tended to have closer emotional ties with family and friends, this did not explain why religiousness buffered against depression. This finding fits with other research indicating that social support obtained from nonreligious (secular) sources is not a mediator of the religion-depression connection (e.g., Ellison et al. 1997; Musick et al. 1998).

Our finding that the buffering effect of religiousness in late adulthood could be predicted longitudinally from middle adulthood has important implications for the ongoing inquiry into the mechanisms explaining why religiousness buffers against stress or adversity. It makes it unlikely that the buffering effect of religiousness on depression in late adulthood was due to the presence of short-term selection

effects (see George, Ellison, and Larson 2002). Both the length of the buffering effect (close to 30 years) and its presence even after controlling for physical health and well-being in middle adulthood make it unlikely that religiousness was merely a proxy for good mental health or was the consequence of a drift toward religiousness following adversity. The fact that religiousness in both middle and late adulthood had the same buffering effect on depression in late adulthood is most likely due to the high rank order stability of religiousness evident in our sample from middle adulthood (as noted in the Method section). A high correlation between religiousness in middle and late adulthood—especially when corrected for unreliability of measurement—meant that very few individuals in our study experienced major changes in religious involvement that altered their relative religiousness vis-à-vis their peers.

The predictive power of religiousness from middle adulthood onward—if substantiated by data from other long-term longitudinal studies—has two important implications. First, it suggests that the concurrent effects of religiousness on many domains of psychosocial functioning in late adulthood can be predicted equally well from religiousness from earlier periods in the life course (e.g., Wink and Dillon 2003). Second, it confirms findings from short-term longitudinal studies (e.g., Goldman, Korenman, and Weinstein 1995; Idler and Kasl 1997) that negative stressors associated with aging (e.g., disability, poor physical health) do not have a significant detrimental effect on religious involvement (e.g., George et al. 2002). Because of the high rank order stability of religiousness, this study is unable to confirm or disconfirm whether investment in religious capital (e.g., Iannaccone 1990) earlier in the adult life cycle might buffer individuals against later adversity even if they had declined in religiousness subsequently.

In view of the high intercorrelation among scores on religiousness from middle adulthood onward, it is puzzling that the buffering effect of religiousness on depression in late adulthood (age late 60s/mid-70s) could be predicted using religiousness scored in middle (age 40s) but not late middle (age 50s/early 60s) adulthood. Typically, in longitudinal research, the strength of the relationship between a predictor and an outcome variable increases as an inverse function of time (the shorter the interval, the stronger the observed relationship). In this study, the opposite was true. A possible explanation for this anomaly



is that the aggregate mean level of religiousness among the IHD participants was at its lowest in late middle adulthood, a time in the life course coinciding with the freedom of the empty nest, and sociohistorically, a time (1982) when the broader resurgence of American interest in religion in the 1980s had not fully taken hold. It is possible that the aggregate decrease in religiousness in the sample resulted in subtle changes in the composition of the high- and low-religiousness groups that in turn attenuated the buffering effect evident in middle (age 40s) and late (age late 60s/mid-70s) adulthood when religiousness was more salient in the participants' lives.

Unlike religiousness, spirituality did not have a significant buffering effect on depression associated with poor physical health. There are several possible explanations for this finding. From a methodological standpoint, it could be argued that our operationalization of spirituality—although reliable—lacked validity. This explanation is unlikely, however, because in previous research, we found that spirituality was related to several aspects of positive psychosocial functioning in late adulthood including involvement in creative activities, wisdom, and deriving well-being from personal growth (Wink and Dillon 2003). Another possibility is that spirituality's buffering effect was attenuated by the relatively small number of spiritual individuals in the study that resulted in a somewhat less stringent criterion—compared to religiousness—for membership in the high-spirituality group. Contrary to this explanation, however, the spirituality-by-health and the spirituality-by-health-by-gender interaction effects were neither significant nor approached significance even at a trend level.

Sociologically, it could be argued that religiousness, unlike spirituality, provides individuals with a stronger and more historically grounded sense of group identity and values (Braam et al. 2001) and/or support from other church members (Ellison and Levin 1998)—characteristics that are particularly conducive to the preservation of positive affect during stressful times. Although we controlled for social support obtained from family and friends, we did not have a discrete measure of religious support, found by Ellison et al. (1997) to mediate the relation between religion and psychological distress. Thus, we cannot rule out the possibility that the spiritual individuals in our study received less religion-based identity affirmation than the highly religious individuals. Spirituality, moreover, may provide a

more diffuse sacred canopy (Berger 1967) than that provided by traditional forms of religion, thus making it more difficult for spiritual individuals to find meaning in adversity.

An alternative explanation is that because of its association with creativity and personal growth, spirituality is more conducive than religiousness to psychological openness to negative affect resulting from personal adversity. Consequently, a narrow focus on depression may not provide a broad enough outcome measure for testing the beneficial effect of spirituality in response to adversity. In support of this hypothesis, there is evidence that spirituality has a buffering effect on personal mastery associated with poor physical health among this sample's women participants (Wink, Dillon, and Prettyman 2004).

In conclusion, it is important to acknowledge the limitations of this study. The IHD sample consists of a relatively small number of men and women who, although representative of San Francisco's East Bay population in the 1920s, is predominantly White and from Protestant backgrounds. Although as indicated, the religious and other social characteristics of the sample closely approximated national trends (with the exception of race, education, and income), it is important for our results to be replicated using data from other long-term longitudinal studies and with samples that have greater age, racial, geographic, and religious diversity. Nonetheless, our findings add new information to ongoing efforts to understand the mechanisms underlying the salutary effect of religion on coping with personal adversity.

## NOTES

1. These percentages are derived from survey data collected by the Bliss Institute at the University of Akron (1992 to 2000) and available to the second author as part of the Religion by Region project sponsored by the Leonard E. Greenberg Center for the Study of Religion in Public Life, Trinity College, Hartford, Connecticut.

2. The drop in the number of participants in the correlational and all subsequent analyses from 184 to 157 is because not everyone who was interviewed completed the self-report questionnaire that included the Center for Epidemiologic Studies-Depression Scale (CES-D). A *t*-test comparison of the participants who completed the questionnaire and those who did not revealed no differences between the two groups in either religiousness or spirituality, $t(24, 157) = -1.18$ and $-1.87$, respectively.



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