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The Natural History of Male Mental Health: Health and Religious Involvement

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Abstract

In prior studies, the effect of religious involvement upon physical health has shown generally positive results, but these studies have been marred by confounders. The 65 year-old US prospective Study of Adult Development has offered an opportunity to repeat these studies with somewhat better control over confounders. The physical and mental health of 224 Harvard University sophomores was monitored for 65 years. Their religious involvement from church attendance to private spirituality was prospectively monitored every 2–4 years from age 47 to 85. In this analysis we focus on the male respondent. We found that religious involvement, no matter how measured was uncorrelated with their late life physical, mental and social well-being. The exception was that the 44 men with major depression or with multiple negative life events were twice as likely to manifest high religious involvement as men with the least “stress.” If these findings can be generalized, they suggest that religious involvement may exert the greatest mental health benefits on people with the fewest alternative social and personal resources.

Keywords

religion; longitudinal study; mental health; human development; aging; depression; USA; men

INTRODUCTION

The modern world is in a quandary with regard to religion and spirituality. On the one hand, in the last 50 years Sunday school attendance in the UK has dropped from 74% to 4% (Heelas & Woodhead, 2005), and evolutionary biologist Richard Dawkins can declare, “I think a case can be made that faith is one of the world’s great evils comparable to the smallpox virus but

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harder to eradicate” (Dawkins, 1997). On the other hand, Gallup polls point out that 85% of Americans believe in God (Gallup & Lindsay, 1999), and an increasing number of researchers report a positive association between religion and health (Koenig, Hays, Lawson, George, Cohen & McCullough, 1999; Koenig, McCulloch & Larson, 2001). Nevertheless, despite growing evidence of a relationship between religious participation and health—both mental and physical—investigators remain uncertain as to what specific factors account for this relationship.

One possibility is that religious involvement affects physical health outcomes through reducing depressive symptomatology, which is known to compromise physical health (Wulsin, Vaillant & Wells, 1999). Indeed, four large-scale studies (Koenig, 1994; Koenig, George & Peterson, 1998; O’Connor & Vallerand, 1990; Nelson, 1989) have found that religious involvement may ameliorate symptoms of depression. General population studies have also noted that high religious affiliation is correlated with low self-report of current depressive symptoms (Williams, Larson, Buckler, Heckman, & Pyle, 1991; Kendler, Gardner & Prescott, 1997).

Another possibility is that spiritual aspects of religion, with heightened focus on love and other positive emotions, may be associated with warm relationships and improved social support, both of which have been linked to positive health outcomes. Indeed, several pioneering studies have shown that social supports and other positive psychological variables, such as altruism and optimism, may mediate the association between religious involvement and health (Krause, 2005; Salsman, Brown, Brechting & Carlson, 2005; Steffen & Masters, 2005). However, such findings have been limited by lack of objective measures of physical health, as well as by cross-sectional and retrospective research designs. In a longitudinal Danish population study, social support mediated the relationship between religious affiliation and decreased risk of premature death, but results were only significant among women (LaCour, Avlund & Schultz-Larsen, 2006).

Critics (Sloan, Bagiella & Powell, 1999; Bagiella, Hong, & Sloan, 2005) have suggested that the relationship between religious observance and physical health may be an illusion due to inadequate control of confounding factors that may undermine both physical health and religious observance. Three such confounding variables are poor premorbid social supports, poor premorbid physical and mental health, and standard risk factors (e.g., social class, stressful life events, early life experiences, smoking and alcoholism). The purpose of this present report is to explore systematically gathered data regarding religious and spiritual involvement from the sixty-five year prospective Study of Adult Development (Vaillant, 2002). Historically, this prospective study has yielded important findings regarding physical health (Vaillant, 1979), social supports (Vaillant, Meyer, Mukamal & Soldz, 1998) and alcohol abuse (Vaillant, 1995).

On the one hand, sociologically our male socioeconomically-favored sample from a single birth cohort is unrepresentative of the population as a whole. Thus, our research with this sample has proved worthless for predicting presidential elections. On the other hand, in order to isolate the effects of a single variable, studies have shown the value of following up a homogeneous sample, rather than a random sample. Unlike most studies that contrast church-going populations to imperfectly matched non-church-going populations, we are able to conduct comparisons within the same sample because study participants comprise a well-studied culturally and socio-economically homogeneous sample of men with a wide variation in religious involvement but with excellent access to health care and education.

In focusing data analysis we will test four hypotheses: 1) that religious involvement would increase with advancing age; 2) that increased religious involvement will be positively associated with mental and physical health; 3) that among the men in this sample heightened

religious involvement will be increased after heightened emotional suffering; and 4) that the spiritual elements of religious involvement will be positively associated with warm relationships and other sources of social support.

METHODS

Subjects

Our study sample consisted of 268 Harvard college sophomores (born about 1920, S.D. = 2) drawn from the graduating classes of 1940–1944. Selection criteria included the absence of known physical and mental illness and a satisfactory freshman academic record (Heath, 1945; Vaillant, 1977). Fifty percent were on scholarship and/or had to work during college. Although skewed towards high SES, 26% of the fathers and 65% of the mothers had not attended college

An interdisciplinary team of internists, psychiatrists, psychologists and anthropologists studied the men. The students' parents were interviewed, and extensive family, social and medical histories were obtained including data on parental religious denomination and adolescent church attendance. The men were re-interviewed at approximately ages 25, 30, 50, 65 and 85 years. Two-thirds of the men obtained graduate degrees and most have worked as physicians, lawyers, university professors or business executives. Since age 45, they have been followed by questionnaires every two years and by physical examinations every 5 years through their 85th year.

MEASURES

To reduce halo effects over the years the different ratings below were assigned by one or two of eight different independent raters and/or by the men themselves.

Predictive Factors (AGE 20–50)

Parental Social Class—This was estimated by the 5-point classification devised by Hollingshead and Redlich (1958).

Warmth of Childhood (Age 0–18 years)—Two research assistants, blind to data gathered after age 20, reviewed 10–20 hours of social history gathered from the participants and their families. They rated the men on five subscales, described in detail elsewhere (Vaillant, 1995). A high score on the sum of these 5 subscales reflected familial cohesion, good relations with parents and an absence of childhood emotional problems (range: 5–25). Inter-rater reliability was .71 (Vaillant, 1974).

Psychosocial Soundness (Age 18–22 Years)—After three years of study, by staff consensus each subject was rated on an ABC (1–3) scale of “psychological soundness.” C, or 3 indicated a categorical judgment of “definite handicap” (Heath, 1945).

Smoking—The men's smoking history was obtained from biennial questionnaires from age 22 to 60 and was measured in pack/years (Vaillant, 1995).

Alcohol Abuse (Age 20–60)—Medical and psychiatric records, interviews and biennial questionnaires were reviewed. DSM-III criteria (Vaillant, 1995; American Psychiatric Association, 1980) were used.

Misery—This category included 13 men who suffered from major depressive disorder, 27 men who had experienced multiple independent stressful life events and 4 who had experienced both. Independent life stress and depression were coded as follows:

- a. Depressive Disorder (Age 20–50) (Vaillant, 1998): An independent psychiatrist, blinded to summary ratings, reviewed the men's complete records (from college until 1970) for nine correlates of depression. The items were: (1) being seriously depressed for 2 weeks or more by self-report, (2) diagnosed clinically depressed by a non-study clinician, (3) received antidepressant medication, (4) manic episodes, (5) sustained inertia or decreased concentration, (6) neuro-vegetative signs of depression (7) attempted or completed suicide, (8) sustained anhedonia, and (9) psychiatric hospitalization (not for alcohol abuse). All men with 3 or more indicators of depression ($n = 17$) were classified probable major depressive disorder with a mean age of onset of 34 ± 8 yr. The mean number of indicators was 5.9 ± 1.6 . In terms of reliability, the senior author independently rated all these men as "depressed." (DSM-III was not published until the men were 60).
- b. Independent Stressful Life Events (Age 20–65): Selected stressful life events that occurred independent of subject's influence were assessed both retrospectively from the men's memory and prospectively by record review (Cui & Vaillant, 1996). The items (weights in parenthesis) were: 1. Parents' divorce (3); 2. Parents' death: at age 20–35 (5), at age 36–45 (4), at age 46–55 (3), at age 56–65 (2); 3. Aged parent dependent on subject (4); 6. Wife's serious medical, mental or drug problems (7); 7. Death of wife (9); 8. Death of child (10); 9. Child's major illness (8). Thirty-one men received scores of 20 or above.

Neuroticism—Measured at age 68 ± 1 by the Neuroticism-Extroversion-Openness (NEO) Inventory of Costa and McCrae (1985).

Lazare Items (Lazare, Klerman & Armor, 1966)—Items related to quality of social relations were selected from Lazare's 182-item personality questionnaire administered when the men were about 50 years of age, and was completed by 146 men. All items utilized a True = 1, False = 0 format.

Gallup Items: (Isaacowitz, Vaillant & Seligman, 2003)—This was a 102-item questionnaire returned by 98 surviving men when they were about 80. Items selected for this study reflected spirituality and quality of social relations. Responses were based on a 5-point Likert-type scale. (5 = Very True of me).

Object Relations (Age 47) (Vaillant, 1978)—This is an aggregate score for the following items (rated 0 for false and 1 for true): (a) Not married for more than 10 yrs, (b) Divorced, separated, single, (c) Has no children, (d) Problems with children, (e) No contact with family of origin, (f) Has few friends, (g) Not a member of any clubs, (h) No regular social activity with others. Range (1–7).

Social Supports (Age 50–70)—(Vaillant et al., 1998): After reviewing 11 biennial questionnaires and all interview data, an independent rater assigned social support ratings. (Men who died prior to age 60 were excluded due to inadequate data.) Reliability for the sum of these ratings (assessed by intraclass correlations computed for 3 raters on 30 cases) was .92. Points for the six-item scale were assigned as follows:

- a.) Warm Marriage: Marital quality was assessed by a methodology described elsewhere that included three wives' questionnaires and five men's questionnaires (Vaillant & Vaillant, 1993). 4 = marriage—not necessarily the first—consistently rated as happy by both partners

from age 50 to 70; 2 = intact marriage with some strengths and weaknesses; 0 = unmarried, divorced or unhappily married during the period. b.) Adult Sibling Relations: 2 = warm confiding relationship with at least one sibling; 1 = ambiguous relationships; 0 = only child, all siblings deceased or little contact with surviving siblings. c.) Close to Kids: 2 = highly satisfying, loving and mutual relations with at least one child; 1 = ambiguous; 0 = unsatisfying or no children. d.) Use of Confidantes: 2 = at least 1 non-family confidante; 1 = limited use or only wife; 0 = no confidantes. e.) Regular Recreation with Friends: Two independent raters scored participants' recreational activities at the age 47–50 and again at age 62–65. 2 = recreation with friends noted at both times; 1 = noted at one time; 0 = absent at both times. f.) Number of Friends: 2 = part of a rich social network; 1 = unclear; 0 = socially isolated.

Adult Adjustment, Age 50 to 65 years—(Vaillant & Vaillant, 1990): On the basis of all reported behavior since 1970, the subjects were evaluated on 9 variables for mental health in late midlife: (1) Occupational decline; (2) Less than three weeks of vacation; (3) More than five days of annual sick leave; (4) Limited recreation with others; (5) Career and/or retirement dissatisfaction; (6) Marital dissatisfaction; (7) Tranquilizer use; (8) Psychiatrist visits; (9) Early retirement. Rater reliability for the total scale was .86.

Religious Involvement (Age 45–75)—Religious involvement was assessed as a global variable over a thirty year period on a single 5-point scale: 0 = no involvement; 1 = some involvement; 2 = deep involvement (0.5 and 1.5 ratings were permitted for rater uncertainty), but values are rounded up in the tables. By design religious involvement was assessed in different ways on different questionnaires.

A rating of 0 reflected a man that at: a) Age 45 and age 65 never went to religious services; b) At age 55 and age 65 indicated that personal belief in God and religious services were of “no importance”; c) At age 60 reported “no real involvement” with religion for the last 20 years; d) At age 70 reported “no involvement” in religious services; e) At age 75 reported that religious participation was of “no importance” or “does not apply to my life.” In assigning final ratings interview data were checked for corroboration.

A rating of 2 reflected men who reported “deep” or “weekly” or “high” religious involvement at each of the six time periods. A rating of 1 was assigned to intermediate cases (e.g., “monthly” service attendance, and “some” involvement with religion” or a shift in religious involvement between 45 and 75).

C. Outcome Measures

Years Dead or Disabled by Age 80—Disabled was defined as either subjectively or objectively disabled. Every two years since age 65 the men have completed a 10 question multiple-choice assessment of graded physical limitation (Vaillant, 2002) very similar to question #3 on the SF-36 (Ware, 1992). Subjective disability meant men ceased to play strenuous sports (e.g., downhill skiing, tennis singles), were unable to climb two flights of stairs without resting, were unable to move heavy furniture without limitation, and experienced “significant” cutbacks in enjoyed activities.

Objective Physical Health—Every 5 years since age 45 each man's health status (using data from physical examination, blood chemistries, EKG, and chest x-ray) has been rated by an internist blinded to other data as follows: 1 = physical health excellent; 2 = minor irreversible problems; 3 = life shortening irreversible illness without disability; 4 = objective disability (irreversible illness with significant disability) (Vaillant, 1979). At age 50 the 224 men in this paper were all still alive, and only 2 were disabled.

Mortality—Except for two men who died overseas, death was established by death certificate.

STATISTICAL METHODS

Variables were examined in their continuous and dichotomized forms. In Tables 1 and 2, where variables were not continuous, the X^2 statistic was used. Because much of our data were not normally distributed, Spearman's rho was used as the statistical test of association. For clarity of contrast, however, dichotomized variables were presented in Tables 4 and 8. To avoid selective cutting points, significance was determined by the rho between the full rating scale of the individual variables. Because many of our significant findings supported each other in consistent directions, a full Bonferroni correction for multiple comparisons seemed too conservative. Instead, the paper comments on results significant at a 2 tailed $p < .01$. Because, in general, the associations between religious involvement and outcome variables were not significant, multivariate causal analysis contributed nothing further to our analyses and are reported only in passing.

RESULTS

Attrition

By age 50, the original cohort of 268 was reduced to 237 due to voluntary withdrawal from the study ($n=19$) or death ($n=12$). By age 65—an age when lifespan shifts in religious involvement could be reliably assessed—the sample was further reduced to 224 due to 13 additional deaths. Besides poorer health and mortality, the only significant differences between the 44 men who died or withdrew and the 224 men included were that the former were four times as likely to have been depressed ($x^2=18$, d.f. = 1, $p < .001$), twice as likely to be Catholic ($x^2=4.3$, d.f. = 1, $p = .036$) and four times as likely to be alcohol dependent ($x^2=14$, d.f. = 1, $p < .001$). Social class, parental education and college soundness did not distinguish the two groups. Regular adolescent religious service attendance was twice as common among men who died too young to be included, but the difference was not significant.

In the 1940's parental religious denomination was significantly associated with parental social class but was not associated with the student's subsequent religious involvement, education, future mental health or even their likelihood of divorce (Table 1). Childhood church attendance was associated with parental religious denomination ($x^2=43$, d.f. = 4, $p < .001$) with Catholics being the most regular services attendees and Jews the least. Childhood church attendance was also associated with adult religious involvement ($x^2=14$, d.f. = 4, $p = .007$), but not with adult adjustment ($x^2=1.0$, d.f. = 4, $p = .90$).

Counter to our first hypothesis that religious involvement would increase with age, 58% of the men reported little religious involvement at 65 in contrast to only 28% when adolescent (Table 2). While our data depend on the men's retrospective report at age 65, review of questionnaire and interview data provided qualitative confirmation of self-report. Not discernible from the composite table was the fact that 15 (25%) of the 60 men with little religious involvement when young were very involved after age 60. Nine (26%) of the men with regular church attendance when young had virtually no involvement after age 60.

Table 3 addressed our efforts to distinguish "religiosity" from "spirituality." In our sample despite the theoretical differences, the two concepts overlapped so markedly that in our data it was not possible to find any significant outcome difference between the effects of "religiosity" and "spirituality." For example, attendance at religious services on a 1–6 scale correlated with time spent in "private, spiritual practices" on a 1–5 scale with a rho of .64. Although there were a few exceptions of men who responded positively to the spiritual items but not to the religious items, there were virtually no men high on the religious items who were

not also high on the spiritual items. In short, our measure of “religious involvement” appears to have good face validity in measuring both “religiosity” and “spirituality.”

In this socioeconomically favored sample there were wide differences in mental health and in the rate of development of irreversible physical illness. Only 10 (4%) were chronically ill or disabled at age 45, 182 (91%) were chronically ill, disabled or dead by age 75. Yet in this sample, counter to our second hypothesis, religious involvement in adulthood was quite independent of any prior or subsequent measure of mental or physical health defined in a broad variety of ways (Table 4). The mortality rate at each age for the 90 least and the 48 most religiously involved was virtually identical. In contrast, all measures of physical and mental health correlated highly with adult adjustment assessed at age 65. Mortality at 65 was 4 times higher among the alcohol and cigarette abusers as among nonsmoking, social drinkers (Vaillant, 1995). Virtually all of the 13 measures used to assess mental, physical and social health in Table 4 were significantly associated with all the other measures at a $p < .01$ level (not shown).

Despite our expectation that we would find a positive relationship between physical health and religious involvement, Table 4 revealed none. By 2007, 112 of the 224 men had died - 51% of the 90 least religious and 52% of the 48 most religious. Significantly, in this highly educated, health sophisticated sample religious involvement was not correlated with cigarette and alcohol abuse, a fact that may have contributed to the lack of association between religious involvement and physical health.

Table 5 confirmed our third hypothesis that there was a significant association between religious involvement and stressful life events and depression—variables strongly associated with poor mental health. Although both psychiatric visits and religious involvement were significantly correlated with stressful life events and depression, they were not correlated with each other. The three putative causal variables associated with greater religious involvement - childhood church attendance, depressive symptoms and independent stressful life events - were not significantly correlated with each other. When the contribution of the other two variables was controlled through multiple regression, each remaining variable continued to be positively associated with religious involvement ($p = .045$ to $p = .076$).

Between the ages of 20 and 60 the men with the most “misery” were more likely to seek religious and psychotherapeutic involvement than the men with the lowest stress. Including those men who also sought psychiatric help, 34% percent of the 44 men with the most “misery” manifested significant religious involvement from age 60 to 80. This was in contrast to 19% of the 42 men with low stress ($\chi^2 = 10.5$, d.f.4, $p = .03$). While the numbers were too small to show significance, the 15 men whose religious involvement increased between adolescence and old age manifested nine times as many symptoms of depression (n.s.), three times as many visits to psychiatrists (n.s.), and spent three times as many years dead or disabled before age 80 ($t = -2.6$, d.f. = 24, $p = .06$) as the 9 men whose religious involvement declined over time.

Finally, our fourth hypothesis that spirituality would be associated with loving behavior toward others and thus enhances social support was not confirmed. In Table 6, although the six 5-point items chosen to reflect spirituality were correlated with religious involvement, they were uncorrelated with adult adjustment from age 50 to 65 and with social supports from age 50 to 70. Conversely, six 5-point items on personality inventories reflecting evidence of real life loving relationships correlated significantly with adult adjustment and social support but not with religious involvement.

DISCUSSION

Our finding suggesting that religious involvement does not increase with age was atypical. Cross sectional studies (Tornstam, 1994; Kendler et al, 1997) have suggested that religious involvement does increase with age, but these findings may have been an artifact of birth cohort. In a prospective study similar to ours, Wink and Dillon (2002) did report an increase in spirituality over time, but on a 1 to 5 scale of spirituality, they only noticed a very modest shift over time from 1 to 2.

The fact that our study did not confirm numerous well-designed studies that suggest that religious involvement contributes to health maintenance deserves more extensive comment. On the one hand, there is an impressive body of well-marshaled research (Koenig et al. 2001) suggesting that attendance at religious services is protective against premature mortality. On the other hand, all of these papers fail to show a direct causal effect (Sloan et al., 1999). Too few of the positive studies control for premorbid objectively measured physical health and for alcohol abuse rather than for alcohol consumption. As an example, the elegantly designed and analyzed study by Musick, House & Williams (2004) undertook face-to-face interviews with a probability sample of 3,617 respondents with a 7.5-year follow-up period. But the study implausibly noted that “church attendees were also less likely to smoke and drink, but those variables did not significantly affect mortality; thus they are not considered further,” p. 204. In virtually all medically conducted studies alcohol abuse and smoking are among the most important causes of premature mortality. In our study multiple regression analysis revealed that premorbid physical health, smoking, alcohol *abuse* and social supports each made independent contributions to mortality. Partialling these variables out did not alter the lack of correlation of religious involvement with health.

Another possibility for our aberrant findings is that many of the studies linking religious observance to physical health come from the United States “Bible Belt” where agnostics are, at least statistically, social outliers. In our highly educated, politically liberal sample of men centered in northeastern United States high religious involvement was not the cultural norm and, more important, was not associated with other sources of social supports (Vaillant et al., 1998). In other words, in samples where healthy social adjustment usually includes clear religious involvement, such involvement should correlate with warm relationships, social supports and physical health. Such evidence, however, does not reflect a direct causal relationship between religious involvement and health. In England where church attendance is not the rule, we are unaware of studies showing a clear link between physical health and religious involvement.

A third possibility is that in our highly educated and privileged sample the protective effects to physical health of graduate school and high SES replaces the protective contribution that religious involvement offers to more marginalized and to less well educated samples. For example, in our underprivileged inner city sample (Vaillant, 2002) religious involvement at age 47 did predict fewer years disabled at age 70 ($\rho = -.17$, $p = .002$). However, the significance of this effect disappeared if smoking, alcohol abuse and years of education were controlled (unpublished data). Thus, Linda George and co-workers may have been closest to the truth when they suggested that the association of religion to physical health was indirectly mediated by reduced risk factors and increased social support (George, Larson, Koenig & McCullough, 2000).

Of course, our “Oxbridge” sample like Eric Kandel’s *aplysia*, was too atypical and elite to have generalizeability to general populations without confirmatory studies. Nevertheless, our study provided control for the critical contribution that confounders -social support, alcohol abuse, heavy smoking all negatively affected by low education -make to health maintenance.

In closing let us offer by analogy a fifth possibility. Until the 1954 discovery of chlorpromazine, the world literature uniformly maintained the efficacy of insulin coma in schizophrenia. After the discovery of an effective neuroleptic, investigators became bold enough to conduct adequately controlled studies on insulin coma. By excluding all confounders, they demonstrated that the crucial ingredients were the vastly greater care the insulin coma patients received and the better morale of their doctors and nurses (Cramand, 1987) rather than the “religious” adherence to insulin induced coma per se (Ackner, Harris & Oldham, 1957). We suspect that the world literature reviewed by Koenig et al. (2001) is correct in uniformly asserting that greater religious involvement reduces depressive symptomatology. For example, Ironson and her collaborators (2002) have shown that increased spiritual involvement not only reduced depression in terminally ill AIDS victims, and mediated increases in hopefulness and in helping behaviors, but also decreased cortisol.

However, the faith, hope and love that the men in our study who gave up religious involvement in middle life alleged to have received from wives, children and grand children may possibly have served as an effective alternative. Increased faith, hope and love decrease pain and alleviate suffering whether provided by religious institutions, caring doctors and nurses, education, sobriety or spiritual meditation.

References

- Ackner B, Harris A, Oldham AJ. Insulin Treatment of Schizophrenia, a controlled Study. *Lancet* 1957;i: 607–611. [PubMed: 13407078]
- American Psychiatric Association. Diagnostic and Statistical Manual. 3. Washington, D.C: American Psychiatric Association; 1980.
- Bagiella E, Hong V, Sloan RP. Religious attendance as a predictor of survival in the EPESE cohorts. *International Journal of Epidemiology* 2005;34:443–451. [PubMed: 15659472]
- Costa, PT.; McCrae, RR. The NEO personality inventory manual. Odessa, FL: Psychological Assessment Resources; 1985.
- Cramand WA. Lessons from the insulin story in psychiatry. *Australia and New Zealand Journal of Psychiatry* 1987;21:320–326.
- Cui X, Vaillant GE. Antecedents and consequences of negative life events in adulthood: a longitudinal study. *American Journal of Psychiatry* 1996;152:21–26. [PubMed: 8540586]
- Dawkins R. Is science a religion. *The Humanist* 1997 Jan/Feb;:26.
- Gallup, G., Jr; Lindsay, DM. Surveying the religious landscape: Trends in US beliefs. Harrisburg, PA: Morehouse; 1999.
- George LK, Larson DB, Koenig HG, McCullough MS. Spirituality and health: What we know. *Journal of Social and Clinical Psychology* 2000;19:102–116.
- Heath, CW. What people are. Cambridge, MA: Harvard University Press; 1945.
- Heelas, P.; Woodhead, L. The spiritual revolution: Why religion is giving way to spirituality. London: Blackwell; 2005.
- Hollingshead, AB.; Redlich, FC. Social class and mental illness. New York: John Wiley & Sons; 1958.
- Ironson G, Solomon GF, Balbin EG, O’Cleirigh C, George A, Kumar M, Larson D, Woods TE. The Ironson-Woods spirituality/religiousness index is associated with long survival, health behaviors, less distress and low cortisol in people with HIV/AIDS. *Annals of Behavioral Medicine* 2002;24:34–38. [PubMed: 12008793]
- Isaacowitz DM, Vaillant GE, Seligman MEP. Strength and satisfaction across the adult lifespan. *International Journal of Aging and Human Development* 2003;27:181–201. [PubMed: 15151189]
- Kendler KS, Gardner CO, Prescott CA. Religion, psychopathology and substance use and abuse: A multi-measure, genetic-epidemiological study. *American Journal of Psychiatry* 1997;154:327–336.
- Kendler KS, Prescott CA, Neale MC, Pedersen NL. Temperance board registration for alcohol abuse on a national sample of Swedish male twins, born 1902 to 1949. *Archives of General Psychiatry* 1997;54:178–184. [PubMed: 9040286]

- Koenig HG, Hays JC, Lawson DB, George LK, Cohen HI, McCullough ME. Does religious attendance prolong survival? A six-year follow-up study of 3,968 older adults. *Journal of Gerontology, Series A, Biological sciences & medical sciences* 1999;54A:M370–376.
- Koenig HG, George LK, Peterson BL. Religiosity and remission of depression in medically ill older patients. *American Journal of Psychiatry* 1998;155:536–542. [PubMed: 9546001]
- Koenig HG. Religion and older men in prison. *International Journal of Geriatric Psychiatry* 1994;10:219–230.
- Koenig, HG.; McCulloch, ME.; Larson, DB. *Handbook of Religion and Health*. New York: Oxford; 2001.
- Krause N. Exploring age differences in the stress-buffering function of social support. *Psychological Aging* 2005;20(4):714–7.
- LaCour P, Avlund K, Schultz-Larsen K. Religion and survival in a secular region. A twenty-year follow-up of 734 Danish adults born in 1914. *Social Science & Medicine* 2006;62(1):157–64. [PubMed: 16002195]
- Lazare A, Klerman GL, Armor DJ. Oral, obsessive and hysterical personality patterns. *Archives of General Psychiatry* 1966;14:624–630. [PubMed: 5934871]
- Musick MA, House JS, Williams DR. Attendance at religious services and mortality in a national sample. *Journal of Health and Social Behavior* 2004;45:198–213. [PubMed: 15305760]
- Nelson PB. Ethnic differences in intrinsic/extrinsic religious orientation and depression in the elderly. *Archives of Psychiatric Nursing* 1989;3:199–204. [PubMed: 2774673]
- O'Connor BP, Vallerand RJ. Religious motivation in the elderly. *Journal of Social Psychology* 1990;130:53–59. [PubMed: 2325401]
- Salsman JM, Brown TL, Brechting EH, Carlson CR. The link between religion and spirituality and psychological adjustment: the mediating role of optimism and social support. *Personality Social Psychology Bulletin* 2005;31(4):522–35. [PubMed: 15743986]
- Sloan RP, Bagiella E, Powell T. Religion, spirituality, medicine. *Lancet* 1999;353:664–667. [PubMed: 10030348]
- Steffen PR, Masters KS. Does compassion mediate the intrinsic religion-health relationship? *Annals of Behavioral Medicine* 2005;30(3):217–24. [PubMed: 16336073]
- Tornstam, L. Gerotranscendancy: A theoretical and empirical explanation. In: Thomas, LE.; Eisenhandler, SA., editors. *Aging and the Religious Dimension*. Westport, CT: Auburn House; 1994.
- Vaillant, GE. *Aging well*. Boston: Little Brown; 2002.
- Vaillant GE. Natural history of male psychological health: XIV. Relationship of mood disorder vulnerability to physical health. *American Journal of Psychiatry* 1998;155:184–191. [PubMed: 9464196]
- Vaillant GE, Meyer SE, Mukamal K, Soldz S. Are social supports in late midlife a cause or a result of successful physical aging. *Psychological Medicine* 1998;28:1159–1168. [PubMed: 9794023]
- Vaillant, GE. *Natural history of alcoholism revisited*. Cambridge, MA: Harvard University Press; 1995.
- Vaillant CO, Vaillant GE. Is the U-curve of marital satisfaction an illusion? A forty-year study of marriage. *Journal of Marriage & Family* 1993;55:230–239.
- Vaillant GE, Vaillant CO. Natural history of male psychological health: XII. A 45-year study of successful aging at age 65. *American Journal of Psychiatry* 1990;147:31–37. [PubMed: 2293786]
- Vaillant GE. Natural history of male psychological health: Effects of mental health on physical health. *New England Journal of Medicine* 1979;301:1249–1254. [PubMed: 503127]
- Vaillant GE. Natural history of male psychological health VI: Correlates of successful marriage and fatherhood. *American Journal of Psychiatry* 1978;135:653–659. [PubMed: 655274]
- Vaillant, GE. *Adaptation to life*. Boston, MA: Little Brown; 1977.
- Vaillant GE. Natural history of male psychological health: II. *Archives of General Psychiatry* 1974;31:15–22. [PubMed: 4835983]
- Ware JE, Sherbourne CD. The MOS 36-item short-form health survey SF-36, I: Conceptual framework and item selection. *Medical Care* 1992;30:473–483. [PubMed: 1593914]
- Williams PR, Larson DB, Buckler RE, Heckman RC, Pyle CM. Religion and psychological distress in a community sample. *Social Science & Medicine* 1991;32:1257–1262. [PubMed: 2068608]

- Wilson, EO. On human nature. Cambridge, MA: Harvard University Press; 1978.
- Wink P, Dillon M. Spiritual development across the adult life course. *Journal of Adult Development* 2002;9:79–94.
- Wulsin LR, Vaillant GE, Wells VE. A systematic review of the mortality of depression. *Psychosomatic Medicine* 1999;61:6–17. [PubMed: 10024062]

TABLE 1
ASSOCIATION OF PARENTAL RELIGIOUS DENOMINATION WITH RELEVANT VARIABLES

	Parental Religious Denomination			Protestant <i>N</i> = 181
	Jewish <i>n</i> = 23	Catholic <i>n</i> = 20		
Parental Social Class				
$\chi^2 = 22$, d.f. = 2, <i>p</i> < .001				
Upper/upper middle <i>n</i> = 164	13	56%	7	35%
Middle/Blue collar <i>n</i> = 60	10	44%	13	65%
Religious Involvement (Age 45–75)				
$\chi^2 = 7.8$, d.f. = 4, <i>p</i> = .10				
None <i>n</i> = 90	11	47%	9	45%
Intermediate <i>n</i> = 86	9	39%	3	15%
High <i>n</i> = 48	3	13%	8	40%
Adult Adjustment (Age 50–65)^a				
$\chi^2 = 5.4$, d.f. = 4, <i>p</i> = .247				
Excellent <i>n</i> = 68	10	45%	5	25%
So-So <i>n</i> = 99	9	41%	7	35%
Poor <i>n</i> = 55	3	14%	8	40%
Ever Divorced as Adult				
$\chi^2 = 1.4$, d.f. = 2, <i>p</i> = .85	4	17%	9	25%

^a *n* = 222 not 224 due to missing data.

TABLE 2

RELIGIOUS INVOLVEMENT DURING STAGES OF ADULT LIFE

	10–19 n = 126	20–29 n = 146	30–39 n = 145	40–49 n = 152	50–59 n = 153	60–69 n = 139
High						
Intermediate	40%	18%	30%	27%	20%	20%
None	32%	39%	34%	23%	26%	22%
	28%	43%	36%	50%	54%	58%

TABLE 3
CORRELATION OF “RELIGIOUS INVOLVEMENT” WITH “PENCIL AND PAPER” INDICATORS OF “SPIRITUALITY” AND “RELIGIOSITY”

	Religious Involvement (Age 45–75)		
	None	Intermediate	High
“RELIGIOUS” ITEMS (yes/no)^a			
n = 153			
I am satisfied with my religious life (age 75)	2%	26%	93%
n = 94			
I believe in a universal power, a God (age 75)	15%	48%	87%
n = 96			
I believe people have souls (age 75)	11%	41%	79%
n = 75			
Weekly religious services attendance (age 75–85)	3%	4%	72%
n = 75			
I believe in life after death (age 85)	0%	7%	44%
“SPIRITUAL” ITEMS (yes/no)^a			
n = 128			
2 or more times/wk I spend time in private spiritual practices (Age 75)	8%	25%	67%
n = 131			
I definitely experience the presence of a higher power (Age 75)	0%	15%	59%
n = 133			
As I grow older, it is important to me to have a deepening spiritual life (Age 75)	6%	28%	59%
n = 126			
My spiritual beliefs lie behind my whole approach to life (Age 75)	11%	33%	74%

^aFor calculating Spearman’s rho these items were scored on a full 5-point scale rather than the dichotomous format used to present the data in the table format.

TABLE 4
RELIGIOUS INVOLVEMENT (AGE 45–75) WAS NOT ASSOCIATED WITH PRIOR OR FUTURE PHYSICAL OR MENTAL HEALTH

		Religious Involvement Age = 45–75 n = 222 ^a	Adult Adjustment Age = 50–65 n = 222 ^a
<u>SOCIAL CLASS</u>			
Childhood Social Class	n = 222	-.09	.04
Father's Education	n = 221	.06	.04
Mother's Education	n = 221	.00	-.01
<u>MENTAL HEALTH</u>			
Warm Childhood	n = 222	.09	.19**
Psychological Soundness (Age 21)	n = 220	.05	.18**
Object Relations (Age 47)	n = 213	.08	.38***
Warm Marriage (Age 50–70)	n = 221	.03	.45***
Close to Kids (Age 50–70)	n = 222	-.02	.28***
Social Supports (Age 55–75)	n = 222	.10	.55***
Adult Adjustment (Age 50–65)	n = 222	.04	—
Neuroticism (Age 60)	n = 168	.04	-.29***
Smoking (Age 20–60)	n = 222	-.01	-.23***
Alcohol Abuse (Age 20–65)	n = 222	.03	-.34***
<u>PHYSICAL HEALTH</u>			
Objective Health (Age 45)	n = 222	.06	.34***
Objective Health (Age 55)	n = 222	.04	.30***
Objective Health (Age 60)	n = 222	.01	.28***
Objective Health (Age 70)	n = 222	-.03	.31***
Objective Health (Age 75)	n = 222	-.04	.14*
Objective Health (Age 80)	n = 218 ^a	.01	.13
Years Disabled or Dead <80	n = 220	.04	-.27***
Still Alive in 2007	n = 224	.00	.11

Spearman Correlation Coefficient (rho)

*
p < .05

**
p < .01

p < .001

^a n does not equal 224 due to missing data.

TABLE 5
 PARADOXICAL ASSOCIATIONS OF CERTAIN VARIABLES WITH MENTAL HEALTH AND
 RELIGIOUS INVOLVEMENT

		Religious Involvement Age = 45–75 n = 222 ^a	Adult Adjustment Age = 50–65 n = 222 ^a
"I feel starved for affection." (Age 50)	N = 142	.17 [*]	-.47 ^{***}
Symptoms of Major Depression	n = 222	.10 ^b	-.40 ^{***}
Stressful Life Events (Age 20–70)	n = 113	.23 [*]	-.34 ^{***}
"Misery"	n = 222	.19 ^{**}	-.32 ^{***}
% of Income to Charity (Age 65)	n = 238	.40 ^{***}	.06
Number of Psychiatric Visits (Age 20–60)	n = 222	.00	-.47 ^{***}

*
 $p < .05$

**
 $p < .051$

 $p < .001$

^a
 n does not equal 224 due to missing data.

^b
 When "depression" was assessed in other ways, it was significantly associated with religious involvement.

TABLE 6
SPIRITUALITY AND OBJECT RELATIONS

		Religious Involvement Age 45–75	Adult Adjustment Age 50–65	Social Support Age 50–70
Gallup Inventory “Spiritual” Items				
I often experience emotions evoked by beauty	n = 92	.22*	-.03	.15
I believe that each person has a soul	n = 96	.56***	-.06	.05
I believe that people are born to do good	n = 94	.28**	.00	-.09
I believe in a universal power, a god	n = 94	.58***	-.06	.04
I believe unselfish love is the best method for securing real peace of mind	n = 91	.25*	-.04	.16
In the last 24 hours, I have personally spent 30 minutes in prayer, meditation or contemplation	n = 95	.52***	-.14	.00
Gallup Inventory “Object Relations” Items				
I believe I am the most important person in someone else’s life	n = 98	.07	.34***	.29**
I have cared deeply about someone for ten or more years	n = 97	-.05	.31**	.47***
I always feel the presence of love in my life	n = 93	.11	.33***	.39***
Lazare Inventory “Object Relations” Items				
I feel isolated even in the presence of others	n = 141	.00	-.33***	-.27***
I have sometimes thought that the depth of my feelings might become destructive	n = 141	.17	-.35***	-.28***
People usually let you down	n = 142	.06	-.29***	-.25**

^a $p = .07$

** $p < .01$

*** $p < .001$