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Religion, Risk, and Medical Decision Making at the End of Life

Peter H. Van Ness, PhD, MPH,
Yale University School of Medicine and Yale School of Public Health, New Haven, Connecticut

Virginia R. Towle, MPhil,
Yale University School of Medicine, New Haven, Connecticut

John R. O'Leary, MA, and
Yale University School of Medicine, New Haven, Connecticut

Terri R. Fried, MD
Veterans Affairs Connecticut Healthcare System, West Haven, Connecticut and Yale University School of Medicine, New Haven, Connecticut

Abstract

Objectives—The purpose of this study is to present empirical evidence about whether religious patients are more or less willing to undergo the risks associated with potentially life-sustaining treatment.

Methods—At least every 4 months 226 older community-dwelling persons with advanced cancer, congestive heart failure, or chronic obstructive pulmonary disease were asked questions about several dimensions of religiousness and about their willingness to accept potentially life-sustaining treatment.

Results—Results were mixed but persons who said that during their illness they grew closer to God (odds ratio [OR] = 1.79; 95% confidence intervals [CI] = 1.15, 2.78) or those grew spiritually (OR = 1.61; 95% CI = 1.03, 2.52) were more willing to accept risk associated with potentially life-sustaining treatment than were persons who did not report such growth.

Discussion—Not all dimensions of religiousness have the same association with willingness to undergo potentially life-sustaining treatment. Seriously ill older, religious patients are not especially predisposed to avoid risk and resist treatment.

Keywords

religion; risk; medical decision making; end of life; aging

In the past decade, studies have shown that religiousness, as variously measured, is associated with a preference for undergoing life-sustaining treatment at the end of life: Carmel and Mutran (1997a) identify in an older Israeli sample an association between religiosity and “wishes for life-sustaining treatment” in both conditions of mild and severe illness (p. S100); Cicirelli, MacLean, and Cox (2000) report that study participants high in intrinsic religiosity prefer strategies for extending life as compared to refusing treatment; Heeren, Menon, Raskin, and Ruskin (2001) provide evidence that Christians of various denominations generally show greater “willingness to undergo life saving procedures” than do persons with no religious

Correspondence concerning this article should be addressed to Peter H. Van Ness, PhD, MPH, Yale University School of Medicine, Department of Internal Medicine, Program On Aging, 300 George Street, Suite 775, New Haven, CT 06511; e-mail: peter.vanness@yale.edu.

affiliation (p. 206); and most recently, Balboni et al. (2007) report that "Religiousness was significantly associated with wanting all measures to extend life" (p. 555).

These results, and others like them (Cohen-Mansfield, Droge, & Billig, 1992; True et al., 2005) from predominantly Jewish and Christian populations are consistent with the importance that Biblical traditions place on life as a gift of God and hope as a quality of religious life (Van Ness & Larson, 2002). Furthermore, the scriptures of the major Western monotheistic traditions contain stories in which health and healing are portrayed as signs of divine favor (*1 Kings* 17: 17–24, *Psalm* 41; *Mark* 5: 24b–34, *Acts* 28: 7–10; and *Al Qur'ān* 3: 172–174, 16: 68–70). Carmel and Mutran (1997b) supplemented their empirical study cited above with an explanatory model for the results they found in the Israeli study sample. In attempting to explain the variability in the preferences regarding potentially life-sustaining treatment in their seriously ill, older cohort, they reported that "The most powerful explanatory variable is past experience with other people's illnesses" (p. 1725). Thus, in addition to resources of life affirmation and hope for the future, it seems that religious patients draw upon narratives of divine healing, occurring not only in scripture, but perhaps also in their own lives or the experiences of other members of their religious community who have recovered from illness. Their selective recollection of positive experiences of illness might explain why religious persons are more willing to undertake potentially life-sustaining treatment than their less religious counterparts.

Another possible explanation for the apparently greater willingness of relatively religious persons to undertake potentially life-sustaining treatment at the end of life is their tendency to respect and obey physician recommendations. Koenig, McCullough, and Larson (2001, p. 405) opine that religious persons tend to "adhere to the advice of experts or authorities (such as physicians)." They offer evidence from a study coauthored by two of them (Koenig and Larson) showing that persons who attended religious services with relatively higher frequency were more likely to take medication for high blood pressure upon being told by a physician that they were hypertensive (Koenig et al., 1998). These authors acknowledged mixed results on this topic at the time they wrote this work and this pattern has continued in more recent studies with the association of religiousness and adherence varying in studies with different samples, different measures of religiousness, and different health outcomes. In a religiously diverse population in Geneva, Switzerland, Borras et al. (2007) reported that more than a quarter of nonadherent and partly adherent patients indicated some incompatibility of taking medication for schizophrenia with their religion. In a study of HIV patients in the southern United States, the authors reported positive associations between some religious predictors and adherence, and negative associations with others (Parsons, Cruise, Davenport, & Jones, 2006). More directly relevant here is a report by Benjamins that persons attending religious services with relative frequency were more trusting of both their own physicians and physicians in general (Benjamins, 2006). Furthermore, the highest levels of trust among the religious respondents was reported for mainline Protestants, Roman Catholics, and Jews—the denominations most highly represented in the sample whose results are presented in this study. If physicians recommend potentially life-sustaining treatment, then the greater trust that religious persons have in physicians might make them more willing to undertake such treatment.

The research documented in this article makes new contributions to this line of work in two important ways. It compares results from multiple measures of religiousness, including two that inquire about religiousness and spirituality as reflected in the ongoing experience of illness itself. Also, people were asked about preferences for potentially life-sustaining treatments not only in different treatment-burden scenarios, but they were also asked if they were willing to undertake treatment with various increasing probabilities of death and complementary

decreasing probabilities of returning to their current state of health. In effect, they were asked about their willingness to undertake the risks associated with life-sustaining treatment.

Anthropologists (Douglas & Wildavsky, 1982) and sociologists (Beck, 1992) claimed that attitudes toward risk are cultural and social constructs, so it is reasonable to hypothesize that peoples' religious beliefs and behaviors inform their attitudes toward risk, lifestyle choices, and decisions about medical treatment. Epidemiologic investigations of religious involvement and mortality have generally shown a modest, positive association between religious involvement and longevity (McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000). Part of this salutary relationship has been attributed to healthy lifestyle choices that avoid known risk factors. For instance, in a recent critical review of this literature, Lynda Powell and colleagues wrote that evidence "suggests that the relationship between religion or spirituality and cardiovascular death is, to a large extent, explained by the encouragement that religion or spirituality provides for living a healthier lifestyle" (Powell, Shahabi, & Thoresen, 2003, p. 42). To investigate whether the apparently risk-averse lifestyles of many religious persons include avoidance of medical risks at the end of life or whether views about God and authority predispose religious and spiritual persons to undertake potentially life-sustaining treatment, seriously ill older persons were questioned about religion, risk, and medical decision making.

Method

Detailed information about the study population and methods is available in other publications (Fried, Bradley, Towle, & Allore, 2002; Fried et al., 2006). Briefly, participants for this study were 226 community-dwelling older persons with advanced chronic illness. They were mostly religious and Christian: 63% Roman Catholic, 26% Protestant, 3% Jewish, 3% of other religious traditions, with 5% who reported no religious preference. Sequential charts of persons aged 60 years or older with a primary diagnosis of cancer, congestive heart failure (CHF), or chronic obstructive pulmonary disease (COPD) were screened for the primary eligibility criterion of advanced illness. An additional eligibility criterion was the need for assistance with at least one instrumental activity of daily living (IADL; Lawton & Brody, 1969). Of 548 patients identified by chart review, 470 of them received a telephone screen, and 362 of them required IADL assistance. Exclusion criteria included cognitive impairment ($n = 77$) as evaluated by the Short Portable Mental Status Questionnaire (SPMSQ; Pfeiffer, 1975) and the Executive Interview (EXIT; Royall, Mahurin, & Gray, 1992), and part-time Connecticut residence ($n = 6$). Of the 279 eligible patients, 2 died prior to participation and 51 refused participation. Nonparticipants did not differ from participants according to age or gender.

Patients were initially interviewed in their homes and all variables were obtained by self-report. Subsequently, patients were interviewed at least every 4 months for up to 2 years. Patients experiencing a decline in health status as determined by a monthly telephone call had the next interview scheduled immediately. Subsequent interviews were conducted every 4 months, unless the patient experienced another health decline. The median number of interviews per study participant was two for cancer patients (Interquartile Range [IQR] = 1,4), four for patients with CHF (IQR = 3,7), and five for patients with COPD (IQR = 3,7). Five dimensions of religiousness were measured and used in the analysis. They included measures of attendance at religious services (once a month or more vs. less frequently), religious identity (deeply vs. less religious), and religious comfort (a great deal vs. little or none). Also included were two indicator variables for growing closer to God and growing spiritually (Pargament et al., 1990). Specifically, the coding here contrasts the "Strongly Agree" and "Agree" categories with the "Neither Agree nor Disagree," "Disagree," and "Strongly Disagree" categories.

Sociodemographic and health status covariates were considered as candidates for inclusion in multivariable models. Sociodemographic variables were obtained at the baseline assessment

only; health status measures were obtained at each interview. Sociodemographic variables included age, gender, ethnicity, current marital status, education (12 years or more vs. fewer years), sufficiency of monthly income (Pearlin, Lieberman, Menaghan, & Mullan, 1981), months of follow-up, and preparation of a living will document. Health status variables included self-rated health, with grouped response categories of *poor, fair* vs. *excellent, very good, good*. Activities of daily living (ADL) and IADL disability (each of 7 ADLs [Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963] and IADLs [Lawton & Brody, 1969] scored as 0 = *independent*, 1 = *requiring assistance*, and 2 = *unable to perform*), self-rated life expectancy, and worst pain in the last 24 hours, with grouped response categories of *no pain, mild pain* vs. *moderate pain, severe pain*. Depression was measured using the two-item PRIME-MD instrument (Whooley, Avins, Miranda, & Browner, 1997).

The outcomes consisted of two questions inquiring about participants' willingness to undertake potentially life-sustaining treatment under two scenarios in which participants were asked whether they would be willing to undergo either low- or high-burden treatment with different likelihoods of a return to current health status vs. dying despite treatment; evidence for the reliability and validity of this instrument are provided elsewhere (Fried, Bradley, & Towle, 2002). Patients were not asked to respond to their actual care options, which varied by study participant and over time; instead, they were presented with uniform but realistic conditions of treatment burden and risk. Study participants were asked to state their preferences for each of the two scenarios without reference to their preferences in the other scenario. The low-burden treatment consisted of brief hospitalization with minor tests such as x-rays and blood draws, and low-burden therapies such as intravenous antibiotics and oxygen. The high-burden treatment consisted of extended hospitalization, invasive tests, and high-burden therapies such as surgery or intubation. Regarding both treatments, people were told that without treatment they would not survive for long, and then were asked whether they were willing to undertake treatment with various increasing probabilities of death and complementary decreasing probabilities of returning to their current state of health. The ordinal outcome indicated four ordered levels of willingness to accept potentially life-sustaining treatment, corresponding to the highest likelihood of death at which a participant would be willing to undergo treatment. Risk, as it relates to these outcome variables, is not simply understood in terms of probability of some harm, for instance, dying. Rather, the willingness to undertake risk is understood here as the willingness to experience treatment burden, that is, the discomforts associated with therapeutic interventions and diagnostic tests at a less-than-certain likelihood of returning to a current state of health: A greater willingness to undertake risk is thus indicated by a willingness to experience treatment burden at a lower likelihood of returning to current state of health.

Graphical linearity tests were conducted to determine whether the ordinal religion predictors and multilevel covariates had linear relationships with the ordinal willingness to accept potentially life–sustaining treatment outcomes. Such linear relationships were not definitively present in most cases, so we dichotomized responses in accordance with the belief that only relatively high levels of religiousness would be associated with outcomes of interest. For instance, as noted above, study participants who neither agreed nor disagreed with affirmations of two aspects of spiritual growth were coded as not having experienced it.

Descriptive statistics are provided at baseline and across the course of follow-up for the religion predictors. The Kendall's tau-*b* correlation coefficient for ordinal and binary data was used to assess baseline correlations between the religion predictors and the two study outcomes. To determine factors associated with preferences over time, we utilized generalized, linear mixed-effects regression, implementing repeated measures of continuation ratio models with the inclusion of a patient-level random effect (Breslow & Clayton, 1993). Random intercept terms were included in the regression models that induced a compound symmetry covariance structure; random slopes were added to the models but did not contribute significantly to model

fit and were removed. Using a continuation ratio regression model accounted for the progressively ordinal nature of the treatment preference outcome. The outcome is progressive in the sense that respondents who desire treatment with a higher likelihood of death are assumed to desire treatment at all lower likelihoods. For instance, study participants willing to accept potentially life-sustaining treatment with a 90% probability of death assented to treatment at a lower 50% probability of death. The odds ratios (OR) for these models are interpretable as measures of association between individual trajectories of repeatedly measured explanatory and repeatedly measured outcome values, and specifically, in terms of the odds of desiring therapy at a given likelihood as compared to a lower likelihood of death or disability. Such interpretations of study results are highly pertinent to researchers' interest in religiousness and treatment preferences as they change over the course of a terminal illness at the end of life.

We used a forward selection approach to build the multivariable models, retaining variables with *p* values less than 0.10. The model selection process was done separately for each of the outcomes investigated to ensure that the most pertinent control variables were identified. Religious predictors of interest were forced into multivariable models, as were sociodemographic and design variables to control for possible confounding. In addition to the variables that were forced into the model, other candidate variables included those that we found in our prior studies to be associated with preferences (Fried, Van Ness, et al., 2007). Goodness of model fit was examined, giving special attention to obtaining satisfactory convergence of the mixed models (Van Ness, O'Leary, Byers, Fried, & Dubin, 2004). A *p* value less than 0.05 (for two-sided tests) is understood to indicate statistical significance. All analyses were carried out using SAS software (Version 9.1; SAS/STAT User's Guide, 2003).

Results

Table 1 provides a description of the study population at baseline. The population consisted of older persons with objective and subjective ratings of poor health. Descriptions of the religious predictors at baseline are provided in Table 2, along with unadjusted cross-sectional correlations with the two study outcomes. The explanatory variable of growing closer to God shows the strongest associations with the outcomes at baseline, whereas the religious identity predictor has a nonsignificant inverse correlation with the low-burden treatment outcome. These results prefigure findings of more complex longitudinal analyses.

Over time there was a decline in the health of the cohort, with 77% of patients with cancer, 43% of patients with COPD, and 46% of patients with CHF dying within the two years of follow-up. (Previous publications have shown there to be considerable heterogeneity in the trajectories of patient preferences over time [Fried, O'Leary, Van Ness, & Fraenkel, 2007], but some evidence of a decreased willingness to accept potentially life-sustaining treatment over time and with declining health status [Fried, Van Ness, et al., 2007]). The trajectories of binary versions of responses to the religion and spirituality predictors are summarized in Table 3 and show considerable stability over time. The two growth variables show a little more variability than the others, with the proportions of study participants increasing in religiousness/spirituality being greater than the proportions decreasing. For instance, for the spiritual growth variable, 24% (19 / [51 + 19 + 10]) move toward more growth but only 16% (17 / [71 + 17 + 16]) move toward less. There is evidence of religious attendance declining over time.

Table 4 summarizes bivariate results that reflect the full longitudinal data set. Bivariate longitudinal analysis shows that over time persons reporting growing closer to God (OR = 1.78; 95% confidence intervals [CI] = 1.18, 2.69) and, to a lesser degree, growing spiritually (OR = 1.50; 95% CI = 0.98, 2.28), were on average more willing to accept the risk associated with low-burden treatment. There is some evidence of associations between these variables

and willingness to accept the risk of high-burden treatment, but these results did not reach statistical significance. Relatively frequent attendance at religious services seemed to have an association with the high-burden treatment outcome. In this seriously ill cohort, however, the religious attendance–treatment outcome association is confounded by patient health status. People with poorer health are less able and inclined to attend services than their healthier counterparts. For instance, when a measure of functional disability—Katz' Activities of Daily Living Scale—(Katz et al., 1963) was added to the bivariate model, the association of religious attendance became smaller in magnitude and nonsignificant (OR = 1.59; 95% CI = 0.91, 2.80; and *p* value .11). The bivariate results for the spiritual growth variables were virtually unchanged by the addition of a functional status control variable. Also noteworthy are the OR less than 1 for the religious identity predictor suggesting a reduced willingness to accept risk; they are not, however, statistically significant.

The results from multivariable mixed-effects continuation ratio models mostly confirm the bivariate pattern of associations (Table 5). Patients who report growing closer to God (OR = 1.79; 95% CI = 1.15, 2.78) and growing spiritually (OR = 1.61; 95% CI = 1.03, 2.52) remained more willing to accept risk associated with potentially life-sustaining treatment. The associations with the treatment outcomes for the religious attendance and identity predictors generally became weaker and less precise in the presence of covariates.

Included in the multivariable models was a variable for months of follow-up. In the growing-closer-to-God model for the low-burden treatment out-come, the parameter estimate was negative (OR = 0.96; 95% CI = 0.94, 0.98), indicating that on average, with each additional month of follow-up study, participants became less willing to accept risk associated with potentially life-sustaining low-burden treatment. An interaction term crossing the months of follow-up predictor with the variable for growing closer to God was not statistically significant ($p = 0.12$), yet its interpretation suggested a lower OR for the months of follow-up predictor among the persons growing closer to God than for others. This lower OR provides evidence that persons who reported growing closer to God declined in their willingness to accept risk associated with potentially life-sustaining low-burden treatment more rapidly than others.

Discussion

Although our results are consistent with prior studies that have demonstrated a relationship between religiousness and a preference to undergo life-sustaining treatment at the end of life, they also suggest that not all dimensions of religiousness have the same association with the willingness of seriously ill patients to accept risk associated with potentially life-sustaining treatment. The two religious predictors that show associations with the low-burden treatment outcome—growing closer to God and growing spiritually—share two important characteristics: They are experiential in nature and positive in connotation. Both characteristics are indicated by a variant of the word *growth* in the study question. Possibly, growing spiritually or closer to God empowers people to undertake greater risk in their treatment regimen than patients without this growth. It may give them hope that the outcome will be favorable and may give them confidence that even if it is unfavorable, they can endure treatment burden with the aid of divine and spiritual resources. Results for the high-burden outcome warrant qualification of this interpretation. The empowering impact of growing closer to God appears to be effective in the case of low-burden treatment but not for high-burden treatment. Having a strong sense of religious identity, on the other hand, does not necessarily signify the presence of positive spiritual experience. Kenneth Pargament has empirically identified two types of religious coping modalities, one negative and the other positive (Pargament, Smith, Koenig, & Perez, 1998). The negative variety characteristically experiences illness as punishment or abandonment by God and includes feelings of anger and despair concerning God. Epidemiologic evidence suggests that positive and negative aspects of religiousness have

respectively beneficial and harmful impacts upon depression, and, perforce, on hopelessness, among older adults (Braam, Beekman, & van Tilburg, 2003). It is understandable that persons whose strong religious identity is shaped by negative coping might be relatively unwilling to undertake risks of treatment.

As regards health behaviors, religious people appear to be risk averse. Results here suggest that religiousness is not always associated with risk aversion. Economists have long posited that attitudes toward financial risk differ according to the type of risk contemplated (Friedman & Savage, 1948). A similar phenomenon appears to apply for health-related risks among religious populations. In this study a certain type of religiousness appears—at least as regards low-burden treatments—associated with a willingness to accept greater treatment risk.

Interpretation of results should recognize the moderate size and precision of the reported associations and their occurrence in a context of a multiplicity of comparisons. The numbers of religious traditions and terminal diseases represented in the data set were small and limit the generalizability of the results. Future studies with larger sample sizes, and with greater religious diversity, are desirable to more fully understand the role of religiousness in medical decision making at the end of life.

In conclusion, the study results provide some evidence that persons who experience their illness as involving spiritual growth or growth in their relationship with God are also more willing to accept the risk associated with potentially life-sustaining treatment. Although religiousness as regards identity and service attendance has been associated with the avoidance of a number of risky behaviors in some epidemiologic studies, religiousness that is experiential and positive may actually bolster people's willingness to undertake certain sorts of medical risks.

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Table 1

Description of 226 Participants at Baseline

Age (years ± standard deviation [*SD*])	72.8 ± 7.2
High school education (%)	31
White (%)	91
Women (%)	43
Married (%)	58
Sufficiency of monthly income (%)	45
Diagnosis (%)	
Cancer	35
COPD	36
CHF	29
Has a living will (%)	53
Self-rated health: Poor/fair (%)	64
Self-rated life expectancy (%)	
<2 years	15
≥2 years	42
Uncertain	43
Depressed (%)	47
Moderate/severe pain (%)	27
ADL (number ± *SD*)	0.8 ± 1.4
IADL (number ± *SD*)	4.8 ± 2.8
≥2 hospitalizations in past year (%)	47
Intensive care unit admission in past year (%)	34

Note: COPD = chronic obstructive pulmonary disease; CHF = congestive heart failure.

Table 2

Baseline Prevalences and Correlations[a] of Religiousness Predictors With Potentially Life-Sustaining Treatment Outcomes

Predictor Variable	Prevalence (%)	Low-Burden Treatment		High-Burden Treatment	
		Correlation Coefficient	*p* Value	Correlation Coefficient	*p* Value
Religious attendance (once a month or more vs. less frequently)	25	0.05	.45	0.01	.87
Religious identity (deeply religious vs. less religious)	26	−0.02	.72	0.01	.92
Religious comfort (a great deal vs. little or none)	58	0.08	.22	0.02	.70
Grown closer to god (yes vs. no)	60	0.15	.02	0.10	.10
Grown spiritually (yes vs. no)	56	0.08	.19	0.05	.46

[a] These are values of Kendall's tau-*b* correlation coefficients for ordinal data.

Table 3

Categorization of Longitudinal Trajectories of Religious Predictor Variables Stratified by Responses Recorded at Baseline Interview

Predictor Variable	Same[a]	Less[b]	More[c]	Variable[d]
Religious attendance (*N* = 184)				
Once a month or more	21	18	0	7
Less frequently	127	0	4	7
Religious identity (*N* = 184)				
Deeply religious	35	6	0	10
Less religious	109	0	17	7
Religious comfort (*N* = 183)				
A great deal	86	11	0	8
Little or none	54	0	13	11
Grown closer to god (*N* = 184)				
Yes	79	17	0	16
No	44	0	14	14
Grown spiritually (*N* = 184)				
Yes	71	17	0	16
No	51	0	19	10

[a] This category records study participants whose binary variable value did not change for all of their longitudinal observations.

[b] This category records study participants whose binary variable value changed from a more religious to a less religious value and did not change again.

[c] This category records study participants whose binary variable value changed from a less religious to a more religious value and did not change again.

[d] This category records study participants whose binary variable value changed at least twice during the course of their longitudinal observations.

Table 4

Bivariate Longitudinal Analyses of Religiousness Predictors and Willingness to Accept Risk Associated With Potentially Life-Sustaining Treatment[a]

	Low-Burden Treatment			High-Burden Treatment		
Predictor Variable	**Odds Ratio**	**95% CI**	***p* Value**	**Odds Ratio**	**95% CI**	***p* Value**
Religious attendance (once a month or more vs. less frequently)	1.35	0.78, 2.34	.28	1.79	1.03, 3.10	.04
Religious identity (deeply religious vs. less religious)	0.75	0.46, 1.21	.24	0.68	0.42, 110	.12
Religious comfort (a great deal vs. little or none)	1.22	0.78, 1.90	.39	0.93	0.60, 1.46	.77
Grown closer to god (yes vs. no)	1.78	1.18, 2.69	.01	1.32	0.87, 2.01	.19
Grown spiritually (yes vs. no)	1.50	0.98, 2.28	.06	1.14	0.75, 1.74	.53

[a]These are longitudinal continuation ratio models with random intercepts including only structural covariates specific to continuation ratio models and months of follow-up variable characteristic of longitudinal models.

Table 5

Multivariable Longitudinal Analyses of Religiousness Predictors and Willingness to Accept Risk Associated With Potentially Life-Sustaining Treatment[a]

	Low-Burden Treatment[b]			High-Burden Treatment[c]		
Predictor Variable	**Odds Ratio**	**95% CI**	***p* Value**	**Odds Ratio**	**95% CI**	***p* Value**
Religious attendance (once a month or more vs. less frequently)	1.50	0.84, 2.67	.17	1.54	0.86, 2.75	.14
Religious identity (deeply religious vs. less religious)	0.83	0.50, 1.37	.47	0.75	0.45, 1.24	.26
Grown closer to god (yes vs. no)	1.79	1.15, 2.78	.01	1.41	0.90, 2.21	.13
Grown spiritually (yes vs. no)	1.61	1.03, 2.52	.04	1.24	0.79, 1.94	.35

[a] These are longitudinal continuation ratio models with random intercepts.

[b] These models include covariates for age, gender, race, marital status, education, disease status, months of follow-up, self-reported longevity, living will status, income, pain, depression.

[c] These models include covariates for age, gender, race, martial status, education, months of follow-up, self-reported longevity, living will status, income, and ADL disability.