RELIGION AND HEALTH: IS THERE AN ASSOCIATION, IS IT VALID, AND IS IT CAUSAL?

JEFFREY S. LEVIN

Department of Family and Community Medicine, Eastern Virginia Medical School, P.O. Box 1980, Norfolk, VA 23501, U.S.A.

Abstract—This paper reviews evidence for a relationship between religion and health. Hundreds of epidemiologic studies have reported statistically significant, salutary effects of religious indicators on morbidity and mortality. However, this does not necessarily imply that religion influences health; three questions must first be answered: "Is there an association?", "Is it valid?", and, "Is it causal?" Evidence presented in this paper suggests that the answers to these respective questions are "yes," "probably," and "maybe." In answering these questions, several issues are addressed. Second, the problems of chance, bias, and confounding are examined. Third, alternative explanations for observed associations between religion and health are described. Fourth, these issues are carefully explored in the context of Hill's well-known features of a causal relationship. Despite the inconclusiveness of empirical evidence and the controversial and epistemologically complex nature of religion as an epidemiologic construct, this area is worthy of additional investigation. Further research can help to clarify these provocative findings.

Key words—causation, epidemiology, health, religion

INTRODUCTION

Over the past several years, comprehensive reviews of epidemiologic and medical studies of the health effects of religiosity have begun to appear. In the first of these reviews [1], the authors were surprised to uncover over 250 published empirical studies dating back to the 19th Century. Why did it take so long for this body of findings to be discovered?

First, these hundreds of studies do not truly represent a 'literature,' in the usual sense of the term. Few of these studies set out explicitly to study religion. Rather, in studies of various health outcomes and causes of morbidity or mortality (e.g. cardiovascular disease, uterine cancer, colitis, symptomatology), one or more religious indicators made a serendipitous 'guest appearance' alongside scores of other psychosocial measures [2]. Findings bearing on religion-health linkages were then buried in tables, often without comment in either text or abstract, and usually without reference to similar findings from other studies. Indeed, most of these researchers may have been unaware of these studies' existence [3]. This has worked against the collation of such findings, such as in review articles.

Second, salient ideological and institutional barriers within academic medicine have discouraged the dissemination of positive findings. These barriers include beliefs or attitudes such as, "Religion is unimportant," "Religion is not real," "This is bad science," "This goes against my training," and, "This will only encourage the clergy" [4].
Ellis, have all spoken of religion as a force which, for better or worse, influences human health and well-being and deserves careful scrutiny [11]. James [12], for one, used a medical metaphor to distinguish between "healthy-minded" and "sick" religious expression, and he attributed beneficial and dire effects of these respective types of religion to their emotional sequelae.

More recently, notable reviews and original studies have appeared, and in the most mainstream of scientific journals. In his classic review of psychosocial factors in the etiology of coronary disease published in the *New England Journal of Medicine*, Jenkins [13] reviewed several epidemiologic studies of religious differences in morbidity. Comstock and associates at Johns Hopkins have published nearly a dozen epidemiologic papers which present positive findings linking measures of religiosity to various health outcomes, including a much-cited study in the *Journal of Chronic Diseases* which revealed that infrequent church attendance is a risk factor for several causes of mortality [14]. Byrd [15] published results of a double-blind, randomized, controlled clinical trial of the effects of prayer on coronary care outcomes in *Southern Medical Journal*. This study was so provocative that it led to an editorial. Other editorials or special essays discussing this subject have appeared in *The Journal of Family Practice, Journal of the National Medical Association, Milbank Memorial Fund Quarterly, The Johns Hopkins Medical Journal*, and especially *Social Science & Medicine*, as well as in the official journals of numerous state and foreign medical societies. Further, the hundreds of empirical studies which have presented data on religion have appeared in most of the leading medical journals in the world [1], including *JAMA, Lancet, American Journal of Public Health, and American Journal of Epidemiology*.

In light of this seeming goldmine of information, only recently unearthed and collated and not fully synthesized or critiqued, this paper intends to critically assess the possibility of a religion-health relationship as suggested by the accumulation of over a century of empirical data. This paper will make no judgements as to the existence of spiritual or divine or supernatural realities; in fact, such speculation has no bearing on this discussion. The task is much simpler: confronted with hundreds of studies whose findings are mostly in accord, there is a need to systematically examine the evidence that something known popularly as religiosity or religiousness, however conceived, is related to health. This can be done in much the same way that any other newly discovered risk factor or protective factor is examined in the absence of either an established etiology or a theoretically based expectation. In epidemiologic fashion [16], this task will consist of answering three questions: (a) "Is there an association?", and if so, (b) "Is it valid?", and if so, (c) "Is it causal?"

**IS THERE AN ASSOCIATION?**

In their initial review of published findings, Levin and Schiller [1] found that, generally speaking, religiosity, however operationalized, seems to exert a salutory effect on health, regardless of the outcomes or diseases or types of rates which are examined. While there were exceptions and while many of these studies had not been designed to focus specifically on religion, this summary finding emerged in one of two forms.

First, when comparing religious groups, there appears to be relatively lower risk in more behaviorally strict religions or denominations (e.g. Mormons, Seventh-day Adventists, Orthodox Jews, clergy of all faiths). This is true for cardiovascular disease, hypertension, stroke, uterine and cervical cancer, numerous other cancer sites, colitis and enteritis, general health status indicators, and overall and cause-specific mortality [1]. A subsequent review [17], which focused specifically on studies of cancer in Mormons, Adventists, Amish and Hutterites, came to the same general conclusion. A third review [18], which gave careful scrutiny to that subset of studies dealing with religion and mortality rates, also concurred. Some evidence also exists that even within such behaviorally strict religious groups there may be a health-related gradient on the basis of religious involvement. For example, a study of Mormons [19] found that the age-standardized incidence of lung cancer was considerably lower in women with strong adherence to church doctrines relative to religiously inactive women. Similar results were found for Mormon men with respect to lay priesthood level and several cancer sites [20]. This study found that the higher the level of priesthood attained, the lower the incidence of cancer—despite the fact that priesthood level rises with age, a known correlate of increased cancer incidence.

Second, when ordinal-level indicators of religious behaviors or attitudes or experiences are used in analyses, there is a trend toward better health and less morbidity and mortality, across the board, in the presence of higher levels of religiosity. For example, in a review of 27 studies of the effects of the most popularly used religious indicator, frequency of religious attendance, 22 of the studies revealed a positive and statistically significant relationship with health [5]. Outcomes included hypertension, trichomoniasis, cervical cancer incidence, tuberculosis case rate, atherosclerotic and degenerative heart disease, neonatal mortality, subjective health, overall mortality, and many other disease entities and conditions. These findings were so striking that the authors of the review proposed the development of an "epidemiology of religion" [5].

More specialized reviews, focusing on studies of specific diseases, have supported both of these general findings. For example, a review of studies of religious effects on hypertension [21] found relatively lower
rates among groups such as observant Sephardic Jews, Benedictine Monks, Adventists, Mormons, Baptist clergy, and Zen Buddhist priests. It also found that the greater the level of religiosity, the lower the blood pressure—regardless of how religiosity was operationalized (e.g. religious attendance, church membership, subjective self-ratings of religiosity, father's years of Yeshiva). Several reviews have documented similar findings in relation to other health problems, notably affective states related to the psychological well-being of the elderly [22–24].

In summary, the question, “Is there an association?” can be answered with a guarded “yes.” This implies no endorsement of an as yet unidentified explanatory mechanism. Nor does this even imply that this summary finding is methodologically valid (i.e. not due solely to chance, bias, and/or confounding). However, the presence of hundreds of published studies which, collectively, have examined scores of diseases and types of rates; have used a variety of religious indicators; have occurred in settings throughout the world and throughout the past century, to the present day; have included subjects of both genders and of nearly all racial and ethnic groups, from infants to the elderly; and consistently have pointed to a salutary effect of religion provides substantial empirical evidence for an association between religion and health.

**IS IT VALID?**

Once an association is identified, it must then be determined whether or not it is valid—that is, whether the association is real as opposed to merely an artifact due to chance or bias or confounding. Only if these can be confidently ruled out is validity proposed for an epidemiologic association [16]. Whether or not a valid association is ‘causal’ is a separate matter altogether.

It is difficult to accurately assess the validity of the apparent association between religion and health. Hundreds of studies are involved and there is great diversity in their designs, sampling frames, settings and populations, as well as in health indicators and religious measures. Further, as epidemiologists are aware, null results from one good study generally outweigh positive findings from 100 poorly designed and executed studies.

**Chance and bias**

In ruling out chance and bias, however, this diversity and the sheer volume of studies may actually work to the advantage of validity. Since so many hundreds of studies have been published, and these overwhelmingly report statistically significant, positive religion-health associations or health differences across religious groups, and since most of these studies were epidemiologic censuses of entire populations or surveys of randomized samples, it is unlikely that this summary result is due solely to chance. At the level of individual studies, these results can probably be trusted, for the most part; at a literature-wide level, it would require thousands of unpublished null findings to produce anything like a ‘file-drawer’ problem.

This diversity in studies suggests that bias may also be safely ruled out. A significant, positive religious effect on health was found in prospective and retrospective studies; in cohort and case-control studies; in studies of children and of older adults; in studies of U.S. White and Black Protestants, European Catholics, Parsis from India, Zulus from South Africa, Japanese Buddhists and Israeli Jews, among others; in studies from the 1930s and studies from the 1980s; and in studies of self-limiting acute conditions, of fatal chronic diseases and of illnesses with lengthy, brief, or absent latency periods between exposure and diagnosis and mortality.

**Confounding**

Confounding is more difficult to assess. This involves determining whether or not the observed association between religion and health is spurious due to its being explained by one or more unaccounted for variables which do not represent functions or characteristics of religion. ‘Explanation’ is a loaded term, and raises interesting epistemological issues. While the influence of psychosocial factors, generally, can be understood in terms of biological processes or mechanisms [25], this does not imply that psychosocial variables are not meaningfully related to health. For example, while there is greater mortality among lonely widows and single men, it is hardly sufficient to say that this is fully explained by psychoneuro-immunologic factors, even though the process of mortality is reducible to certain physiological and biochemical events. Granting explanatory primacy to one particular level of the human system (cultural, social, psychological, organ systems, cellular, molecular, etc.) is arbitrary; human biology is itself ‘explained’ by the activity of molecules and, ultimately, to paraphrase Democritus, everything is just atoms and empty space. Yet no one would suggest that research in subatomic physics will yield the best approach for improving the life expectancy of lonely or bereaved people.

In order to more fully understand these anomalous findings linking measures of religion and health, a list of alternative hypotheses or explanations was developed [21]. They seek to account for observed associations which are presumed to be due to the effects of characteristics or functions of religion, and not to chance or bias. These hypotheses are meant to explain the effects of religion and health in the sense of elucidating its pathways and mechanisms of influence, not in the sense of ‘explaining it away.’ Religion, as a social institution, and religiosity, as a component or dimension of our psychological make-up and interpersonal life, are real phenomena—or at least as real as any other psychosocial construct. It
would be reductionistic to define as a religious effect only something of a mystical or supernatural nature which, depending upon one's scientific perspective, is either nonexistent or must logically be explained away by a natural mechanism. The following alternative hypotheses are summarized in greater detail elsewhere [4, 21].

**Behavior.** Certain health-promotive life styles or health-related behaviors are sanctioned by particular religions or religious denominations. These proscriptions and prescriptions govern alcohol, tobacco, drugs, diet, exercise, and general hygiene [26], and help to explain why morbidity and mortality rates are lower among certain religious groups (e.g. Mormons, Seventh-day Adventists). The holding of particular religious beliefs or practice of particular religious behaviors thus directly leads to adoption of health-promoting behaviors. Indeed, the congruence of many religious and health-related behaviors [26] suggests that the conceptual compartmentalization of certain behaviors as 'religious' or 'health-related' may be artificial.

**Heredity.** Morbidity and mortality might be higher (or lower) in a particular religious group due to genetic risk (or protection) for certain diseases. For example, Tay Sachs disease seems to be most incident among Ashkenazi Jews; hypercholesterolemia disproportionately strikes Dutch Reformed Afrikaaners; and sickle cell anemia is likely to be more prevalent among members of the National Baptist Convention of America (which is predominately Black) than among members of the Southern Baptist Convention (which is predominantly White). While these findings are distinctly religious in origin in that they are attributable to genetic characteristics of religious group membership, they are clearly not due to, say, religious differences in theology or polity or worship practices. In such studies, reported religious differences are best understood in terms of those geographic, biological, ethnic, and cultural characteristics of people which happen to vary by religious group membership.

**Psychosocial effects.** Frequent religious involvement and greater intensity of religious experience may be associated with better health due to religion's promotion of social support, a sense of belonging, and convivial fellowship. A long tradition of research in social epidemiology has demonstrated the salutary nature of these psychosocial influences [27] which serve to buffer the adverse effects of stress and anger, perhaps via psychoneuroimmunologic pathways. Religious activity or commitment thus may trigger a multifactorial sequence of biological processes [28] leading to better health.

**Psychodynamics of belief systems.** The salient beliefs of particular religious traditions may engender peacefulness, self-confidence, and a sense of purpose; alternatively, they may produce guilt, self-doubt, shame, and low self-esteem. Such feelings, in turn, have been shown to be related to health beliefs and, thus indirectly, to subjective perceptions of health. Certain religious beliefs or theological worldviews even seem to converge with respective health beliefs or personality styles. For example, descriptions of the well-known Protestant work ethic are quite similar to descriptions of the Type A behavioral pattern, and the distinction between the psychological constructs of internal and external locus of control appears to mirror the distinction between free-will and more Calvinistic theological perspectives. Both Type A and locus of control have been found in numerous studies to modify risk for certain health outcomes.

**Psychodynamics of religious rites.** The public and private cultic rituals of religious worship and spiritual practice may serve to ease anxiety and dread, defeat loneliness, and establish a sense of being loved and appreciated. These psychological outcomes of religious practice, as well as the actual physiological markers of emotional arousal during worship and prayer, are believed to be associated with healing and health and well-being. These salutary effects have been characterized as psychic beta-blockers or emotional placebos [21].

**Psychodynamics of faith.** The mere belief that religion or God is health-enhancing may be enough to produce salutary effects. That is, significant association between measures of religion and health, especially in prospective studies, may, in part, present evidence akin to a placebo effect. Various scriptures promise health and healing to the faithful, and the physiological effects of expectant beliefs such as this are now being documented by mind-body researchers [29, 30].

**Multifactorial explanation.** It is possible that a combination of some or all of the above explanations best explains statistically significant associations between religion and health. For example, many studies show that Seventh-day Adventists are considerably healthier than the members of other religious groups, especially with regard to hypertension. Taking into account the previous explanations, in order, this religious effect may be attributable to the following confluence of factors:

the avoidance of meat (leading to low levels of dietary fat and cholesterol); the discouragement of intermarriage (supporting a trend toward selecting out of the population those persons predisposed to hypertension); an emphasis on family solidarity and religious fellowship (buffering the adverse physiological consequences of life stress and anxiety); a theological emphasis on self-responsibility and positive health-directedness (encouraging self-care and beneficial health-related behavior); a sense of trust and peace engendered both through expectations of God's directly transforming the world and through ritual experience of transformation through divine power (preventing or ameliorating state anxiety, hassles and uplifts, anger, etc.); and a sense of purpose and well-being because the worldview and piety of Adventists is believed to be promotive of health (reinforced by the relative lack of hypertension-related morbidity among co-religionists) [21, p. 75].

**Superempirical force.** While the previous explanations engage social, psychological, and biological
phenomena or processes generally accepted by scientists, this explanation suggests that religious practice or belief or worship in some way taps or accesses a pantheistic, discarnate force or power. The term "superempirical" is used to distinguish it from the supernatural, which by definition cannot be measured by scientists since it is outside of nature. Superempirical is used to denote those phenomena which, ultimately, may not be supernatural at all, but which are currently subject to controversy or mystery. Such a force or power goes by various names (prana, chi, orgone, life force, etc.) and its operation is central to health-related claims made by proponents of New Age healing [31] or other unconventional forms of medicine which postulate the existence of nadis (or acupuncture meridians) and chakras (or etheric energy centers), as well as the efficacy of pranayama (or yogic breathing exercises), Reiki healing, and various types of "vibrational medicine" [32]. These types of practices [33] may not be as principally health-related as they might appear. They are often embedded within a religious context, and thus the practice of a particular holistic technique seeking to balance or control this superempirical force may be conceived of as part of a spiritual quest (see Ref. [34]). Some scientists [35] claim recent success in measuring this force, so perhaps in the near future it will no longer be considered superempirical but empirical—a natural force or energy tapped or triggered by religious pursuits.

In summary, the question, "Is it valid?", can be answered with a "probably." That is to say, according to current evidence and the nature of existing data, it appears that the observed association between religious and health indicators is not solely due to chance or to biased studies. Further, the possibility of an effect of religion on health seems to make sense in light of the known health-relatedness of several characteristics and functions of religion. However, a disappointing aspect of validity is that one can rarely be certain on the basis of observational research; some as yet undiscovered construct or mechanism, neither a characteristic nor function of religion, may fully account for the positive associations revealed in the studies in this literature. Thus, confounding is an unlikely but still real possibility. Because hardly any of these studies are based on experimental designs, but are instead observational studies, this cannot be ruled out.

**IS IT CAUSAL?**

To summarize, research has established a religion-health association, and it is probably, although not definitely, valid. Is it casual? That is, do religious experiences or the practice of religion lead to or 'cause' salutary outcomes? Since the concept of causation as used in epidemiology is controversial and there is no true consensus [36], it is possible that this question cannot be answered, or at least answered to universal satisfaction. There appear to be two schools of thought, and in certain ways they are diametrically opposed.

Falsificationists, in the tradition of Popper, do not accept that causal inference is logically possible; hypotheses can be refuted but never definitively proven [37]. Verifikationists, in the tradition of Hill, seek to build a case of supporting evidence on the basis of a study or studies which report an association possessing certain characteristics or qualities that one would expect to find in cause-and-effect relationships [38]. Hill [39] proposed a list of nine such qualities, often wrongly referred to as criteria, but actually different bases or viewpoints for considering causation. According to Hill, "None of my nine viewpoints can bring indisputable evidence for or against the cause-and-effect hypothesis and none can be required as a sine qua non" [39, p. 299]. The practical application of either of these two approaches to causality is challenging, but required, because the interplay of modern chronic diseases and their many biopsychosocial precursors point to a multifactorial web of causation, and the application of older, more deterministic approaches to causality such as Koch's postulates is thus not entirely helpful.

**Causal evidence**

Keeping in mind the falsificationist caveat that causation cannot be completely established, Hill's causal characteristics will be used as rough guidelines to assess the available evidence for a cause-and-effect relationship between religion and health. Hill's nine causal features, familiar to epidemiologists, include strength, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, and analogy.

**Strength.** There is no single meta-analytic review available for all of the hundreds of published studies in this area. Furthermore, too few epidemiologic studies have been designed to focus explicitly on the effect of religion for this overview to reliably gauge its magnitude. However, moderate to strong associations have been found in several studies. For example, Comstock and Partridge [14] examined the relative risk of infrequent church attendance for cause-specific mortality and found significant risk ratios as high as 3.9 for certain diseases. King and Locke [40], in a series of studies comparing the health of clergy and lay people, found significant standardized mortality ratios for clergy as low as 9 for certain causes of death. Levin and associates [41] found that particular dimensions of religious involvement exerted significant standardized regression effects on a composite health status measure as high as 0.419.

**Consistency.** According to Hill, consistency addresses whether an association has "been repeatedly observed by different persons, in different places, circumstances and times" [39, p. 296]. On this point, there can be no argument. As noted earlier, a positive association between religion and health has been
observed in hundreds of studies of various designs, conducted by scores of researchers in different countries, at different times throughout this century, using a multiplicity of independent and dependent variables, and including subjects exhibiting great diversity by race, ethnicity, gender, age, social class, nationality, religious affiliation, and disease status.

**Specificity.** This refers to whether or not an exposure or independent variable (e.g. religion) has effects specific to just one disease, and whether rates of this disease vary only by that exposure. Clearly, this is not the case for religion and health. The literature reveals significant religious effects on scores of indicators of both morbidity and mortality. Therefore, the religion-health association does not exhibit specificity. According to Hill, “We must not, however, over-emphasize the importance of [this] characteristic” [39, p. 297]. In dealing with chronic diseases, multiple causation is common (e.g. for heart disease), and certain causal factors (e.g. tobacco smoking) are common to multiple disease outcomes.

**Temporal.** Most of the studies reporting significant associations between religion and health are retrospective or cross-sectional in design. Fewer are prospective, and fewer still are panel studies. The provocative Byrd [15] study provides rare experimental evidence. Therefore, it has not been conclusively demonstrated that cause (religion) precedes effect. In dealing with chronic diseases, multiple causation is common (e.g. for heart disease), and certain causal factors (e.g. tobacco smoking) are common to multiple disease outcomes.

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**Biological gradient.** This refers to the existence of a dose–response curve. The Mormon studies discussed earlier [19, 20] suggest such a gradient, but no one has yet examined all of the existing literature with this in mind. A careful meta-analysis was conducted several years ago of a subset of this literature dealing with older adults [20]. However, it is uncertain whether a dose–response relationship can be directly inferred from these analyses.

**Plausibility.** The alternative explanations described earlier demonstrate that the idea of a religious factor in health is biologically plausible. That is, it is consonant with current knowledge in human physiology and health, especially with findings from behavioral medicine, social epidemiology, and psychoneuroimmunology. While an explanation based on an unproven ‘superempirical’ force was broached, this was done more for the sake of completeness; an understanding of religion-health associations does not hang on this hypothesis.

**Coherence.** According to Hill, a causal interpretation of an association “should not seriously conflict with the generally known facts of the natural history and biology of the disease” [39, p. 298]. Because of the multiplicity of diseases and health outcomes for which a significant religious factor has been identified, it is barely possible to assess this feature as a causal criterion for this literature. Nevertheless, perhaps coherence is partly supported by research which suggests that elements of the proposed explanations (e.g. health behaviors, social support, health beliefs, emotional arousal) are associated with many of the disease outcomes examined in this literature in terms of risk, etiology, pathogenesis, and prognosis.

**Experiment.** The Byrd [15] study offers striking experimental evidence of a religiously oriented effect on health. However, the nature of the exposure variable he studied (distant prayer) is substantively quite different from the other religious variables considered in this literature, namely public and private religious behaviors, attitudes, and affiliations. For these measures, no experimental evidence exists.

**Analogy.** A causal relationship between religion and health is supported by other research which shows that psychosocial constructs in general variously increase or decrease risk for many of the diseases examined throughout the religion and health literature. For example, Type A behavior is believed to be related to heart disease (or at least it used to be), so why not religion? Both are psychosocial variables. According to Hill, this reasoning by analogy provides the weakest evidence for causation.

In summary, the question, “Is it causal?”, can be answered with a “maybe.” Notwithstanding the falsificationist assertion that the answer, by definition, cannot ever be yes, examining the evidence in light of Hill’s guidelines is inconclusive, but promising. Judging this literature in terms of consistency, plausibility, and analogy, the answer is yes. In terms of coherence, the answer is probably yes, but one cannot be certain. In terms of temporality and biological gradient, there is insufficient evidence, but recent gerontological findings may change this to a yes. In terms of specificity and experiment, there is insufficient evidence. Finally, specificity does not seem to be applicable.

**CONCLUSION**

In sum, hundreds of published empirical studies have reported findings bearing on a possible relationship between religion and health. On the basis of the critique presented here, there does appear to be an association, this association is probably but not definitely valid, and there is only mixed evidence at the present time that this relationship is ‘causal.’
A fourth question can now be posed: "Is this area worthy of further scientific inquiry?" This answer to this question is a confident "yes." However, one reservation should be noted. It is important that investigation into these issues be conducted with care and with emphasis on the limitations of findings. Too often, partisans have trumpeted particular findings as "proof" that religious practice causes better health. This does a disservice to scientists and physicians who are interested in this area yet are put off by claims that are based more on extrapolation and wishful thinking than on systematic research using representative samples, prospective designs, reliable and meaningful measures, and a hypothesis-testing approach.

Finally, the approach taken in this review can be—and probably should be—applied by researchers when writing up results of individual studies. In order for this subject to be intelligently explored, researchers need to carefully scrutinize associations suggestive of a religious effect. Chance, bias, and confounding ought to be discussed explicitly, and an attempt made to rule them out. Alternative explanations ought to be proposed for positive findings, and some effort ought to be made to address the issue of causality, such as by stepping through Hill's guidelines. Further, this field must begin to take a more multidisciplinary approach to what is clearly a multifactorial issue. As Vaux [42] encouraged many years ago, empirical studies of religion and health need to better account for the interaction and interplay of biochemical, endocrinological, metabolic, hormonal, and immunological processes with social, behavioral, and psychological patterns—a complex but intrinsic characteristic of human beings. Finally, little attention has been given to delineating the clinical and public health applications of these findings (e.g. Ref. [6]). Without such careful scrutiny of findings and discussion of their therapeutic relevance, the exploration of potential religious factors in health will remain and should remain, a marginal issue for epidemiology and medicine.

Acknowledgements—This work was supported by the National Institute on Aging under NIH FIRST Award (R29) Grant No. AG09462 and NIH Research Project (R01) Grant No. AG10135. The author would like to thank two anonymous reviewers for their helpful comments.

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