

The Religion-Health Connection: Evidence, Theory, and Future Directions

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The volume and quality of research on what we term the *religion-health connection* have increased markedly in recent years. This interest in the complex relationships between religion and mental and physical health is being fueled by energetic and innovative research programs in several fields, including sociology, psychology, health behavior and health education, psychiatry, gerontology, and social epidemiology. This article has three main objectives: (1) to briefly review the medical and epidemiologic research on religious factors and both physical health and mental health; (2) to identify the most promising explanatory mechanisms for religious effects on health, giving particular attention to the relationships between religious factors and the central constructs of the life stress paradigm, which guides most current social and behavioral research on health outcomes; and (3) to critique previous work on religion and health, pointing out limitations and promising new research directions.

Interest in the religion-health connection has grown markedly in recent years, by virtually any indicator. A decade ago, and even more recently, the suggestion that religion might influence mental or physical health outcomes was greeted with skepticism and even hostility by many medical researchers, and it evoked images of faith healers and charlatans among the general public. Increasingly, however, this topic has "caught on." Physicians such as Chopra,¹ Dossey,² and Benson³ have produced best-selling volumes on spirituality, wellness, and healing for popular audiences; grace TV and radio talk shows; and command handsome fees on the lecture circuit. These issues have also captured the attention of the media and the imagination of the general public, as demonstrated by the recent cover story on the healing power of prayer in Time magazine.

In academic circles, this interest is being fueled by energetic and innovative research programs in several fields, including sociology, psychology, health behavior and health

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education, psychiatry, gerontology, and social epidemiology. The quality of work on the religion-health connection has increased rapidly, and while some investigators specialize in this specific area, the topic is now engaging prominent scholars who are known primarily for their accomplishments in other areas of health research. Furthermore, studies exploring the links between religion and health have appeared in top-tier health journals such as the *American Journal of Public Health*, the *American Journal of Psychiatry*, the *Journal of the American Medical Association*, the *Journal of Gerontology*, the *Journal of Psychosomatic Medicine*, and leading journals devoted to medical sociology and the sociology of religion. Funding opportunities for such research have proliferated as well. Among federal agencies, the National Institute on Aging (NIA) has funded several competitive R01 research grants, as well as R29 FIRST Award grants for younger scholars, focused on religion and health. Foundations, including the Templeton Foundation and the Fetzer Institute, have also funded work in this area. Such developments suggest that the religion-health connection may remain a dynamic research field in the foreseeable future.

Our article has several objectives: (1) to review (very briefly) the medical and epidemiologic research on religious factors and both physical health and mental health; (2) to identify the most promising explanatory mechanisms for religious effects on health, giving particular attention to the relationships between religious factors and the central constructs of the life stress paradigm, which guides most current social and behavioral research on health outcomes; and (3) to critique previous work in this area, pointing out limitations and promising new research directions.

EMPIRICAL RESEARCH

Physical Health, Morbidity, and Mortality

How strong is the empirical evidence linking religious involvement and health outcomes? In the late 1980s, a series of review articles summarized evidence concerning religious effects on morbidity and mortality to that point.⁵⁻¹⁰ These reviews drew on several hundred studies containing one or more religious indicators and one or more physical health outcomes, some dating back to the 1800s. Taken together, they present convincing evidence that rates of morbidity and mortality vary across religions and religious denominations, as well as less, but still somewhat consistent, evidence that, on average, high levels of religious involvement are moderately associated with better health status. These findings have appeared in samples of men and women, in samples drawn from numerous racial and ethnic groups, in samples of persons from a wide range of religions (Christian and non-Christian groups, in Western and non-Western settings), and among individuals at various stages of the life cycle and persons from diverse social class backgrounds. In the language of epidemiologists, it appears that religion, in a broad sense, represents a protective factor that offers a small but significant primary-preventive effect against morbidity in populations.

While some of the best-known studies in this field have focused on denominational differences in morbidity and mortality (e.g., comparisons involving Mormons, Adventists, and other sectarian groups), a substantial body of literature reports what appear to be generally desirable effects of other aspects of religious involvement (e.g., frequency of attendance, subjective religiosity) on a wide range of health outcomes. Among the diseases examined in this body of research are heart disease, hypertension and other circulatory ailments, stroke, cancer (various sites), and gastrointestinal disease, as well as over

all self-rated health, physical disability, and self-reported symptomatology. Despite variations across studies in the particular health outcome(s) examined and the religious measures used, most of the studies summarized in these reviews tend to show statistically significant salutary effects of religious involvement on health.⁶

In recent years, a growing literature has analyzed prospective or panel data, employing more rigorous methods and more exhaustive statistical controls than the low-order analyses characteristic of the descriptive epidemiologic surveys conducted in the past. A few examples of this new generation of studies include (1) a study by Oxman and colleagues,¹¹ who report that the risk of 6-month mortality among patients undergoing elective open heart surgery is significantly higher among those who do not receive strength and comfort from their religious faith, as compared with more religious patients; (2) the study, by Strawbridge and colleagues,¹² who indicate that religious attendance reduces 28-year mortality risk among community-dwelling residents of Alameda County (California), due partly to enhanced social ties and improved health behaviors; (3) the recent study of Hummer and colleagues,¹³ who show strong effects of religious attendance on 8-year mortality risk in a large national sample of elders in the United States; and (4) the analysis by Idler and Kasl¹⁴ who find evidence that community-dwelling elders in New Haven (Connecticut) may actually postpone the timing of their death until the conclusion of major religious holidays. In these studies, salutary effects of religious involvement persist despite an impressive array of statistical controls for social ties, health behaviors, and sociodemographic variables.

Mental Health and Psychological Well-Being

Considerable controversy has surrounded the relationship between religious involvement and mental health. While some psychologists and psychiatrists (e.g., Jung, Frankl, Maslow, Fromm) have waxed positive about this association over the years, their theories are frequently overshadowed by more critical evaluations, especially those of contemporary skeptics.^{15,16} A substantial body of research has explored the links between various aspects of religious involvement on a wide range of mental health outcomes—personality variables, distress scores, symptom counts (e.g., depression, anxiety), and clinical or simulated diagnoses of various psychiatric disorders (e.g., major depressive episodes, generalized anxiety disorders). Contrary to the assertions of critics, who base their claims primarily on anecdotal accounts of religion's pathological effects, systematic reviews of the research literature over the years have consistently reported that aspects of religious involvement are associated with desirable mental health outcomes.¹⁷⁻²⁰ Perhaps the most comprehensive review of the field was the analysis of 200 psychiatric and psychological studies published through 1989, in which the authors reached a similar conclusion.²¹ As with physical health, there is at least some evidence of mental health benefits of religion, on average, among men and women, persons of quite different ages (e.g., adolescents and college students, elders, and representative samples of the general U.S. population), various racial and ethnic groups (e.g., African Americans, Latinos), and individuals from various socioeconomic classes and geographical locations.

Until recently, studies of religion and mental health were often characterized by sampling and analytic limitations, such as small, unrepresentative samples; cross-sectional data; and lack of appropriate statistical controls. But several recent studies that overcome these methodological problems also report that aspects of religious involvement have salutary mental health consequences. Examples of this new generation of longitudinal

research include (1) the work by Levin and colleagues,²² who show that religious attendance reduces depression in a prospective study of Mexican Americans from three generations, and (2) the studies of Ellison and colleagues²³ who show that African Americans who attend religious services more than once per week and those who report receiving a great deal of guidance from religion in their daily lives enjoy reduced psychological distress and reduced risk of major depressive disorders over the course of a 3-year prospective study. These and other recent studies control for physical health status, social ties, stressors, and an exhaustive battery of relevant covariates.

A more specialized research literature focuses on the links between religious involvement and aspects of psychological well-being (e.g., life satisfaction, happiness, and related constructs), with particular attention to the elderly. While most (but not all) studies are based on cross-sectional data, the evidence clearly points toward religious benefits.^{24,25} The strongest evidence in this vein indicates that religious attendance is positively associated with psychological well-being; indeed, this is the nearly unanimous conclusion of scorers of studies. Several prominent analyses also report that indicators of personal piety, religious devotion (e.g., frequency of prayer, feelings of closeness to God), and subjective religious identity are linked with well-being.^{26,27} Several others report that religiously inspired meaning, purpose, and certainty are positively associated with indicators of well-being.²⁸ A handful of studies also report that members of relatively conservative churches (e.g., Baptists and nondenominational charismatics) enjoy greater life satisfaction, on average, than others.²⁸ As in the research reviewed earlier, the apparent religious benefits extend to men and women and to persons from various socioeconomic categories and social locations, although there is some evidence that religious variables are more closely related to psychological well-being among elders and African Americans than other segments of the population.^{28,29}

EXPLANATORY MECHANISMS

For the past decade, researchers have been seeking to identify characteristics, functions, expressions, or manifestations of practicing religion or being religious that exert health-related effects.³⁰ Several researchers have proposed that particular types or modes of religious expression or identification may be associated with certain respective biobehavioral or psychosocial constructs that, independently of religion, are known or believed to be related to health.^{7,31-33} Building on these insights, we outline several possible explanatory mechanisms via which aspects of religious involvement may lead to positive health outcomes. These mechanisms involve a variety of behavioral and psychosocial constructs that are quite commonly encountered in health education, theory, and practice. They include (1) regulation of individual lifestyles and health behaviors, (2) provision of social resources (e.g., social ties, formal and informal support), (3) promotion of positive self-perceptions (e.g., self-esteem, feelings of personal mastery), (4) provision of specific coping resources (i.e., particular cognitive or behavioral responses to stress), (5) generation of other positive emotions (e.g., love, forgiveness), (6) promotion of healthy beliefs, and (7) additional hypothesized mechanisms, such as the existence of a healing bioenergy. Although the focus here is on ways in which religious involvement may yield positive outcomes and reduce the risk of negative outcomes, clearly under certain circumstances, religious involvement may have undesirable consequences. We return to this issue later in the article.

Health Behaviors and Personal Lifestyles

Religious involvement, especially participation in religious communities, may promote mental and physical well-being by regulating health-related conduct in ways that decrease the risk of disease. This includes (1) discouraging certain behaviors that increase the risk of health problems and (2) encouraging positive, low-stress lifestyle choices. In perhaps the best example of this, numerous studies document an inverse relationship between some aspects of religious involvement (e.g., attendance and affiliation with conservative or sectarian groups, notably Mormons and Adventists) and alcohol, tobacco, and substance use and abuse.^{34,35} Consequently, these religious groups have significantly lower rates of many chronic diseases, such as cancer.³⁶ Similar religious factors are also inversely related to risky sexual behaviors (e.g., premarital intercourse, promiscuity). Certain religious groups (e.g., Adventists) also encourage distinctive dietary practices, such as avoidance of meat and spicy foods, which may confer health benefits.⁹

But the potential impact of religious involvement on individual lifestyles may extend well beyond these well-known links with specific health behaviors.³³ Some observers argue that a wide range of religious groups tend to encourage moderation and frown upon "extreme" or risk-taking behaviors.³⁷ Moreover, most religious communities have moral and ethical teachings, discouraging many forms of deviant or illegal conduct. While the evidence is clearly complex, a number of studies link aspects of religious involvement with lower levels of crime and juvenile delinquency.^{38,39} Many religious groups also provide moral guidance and practical advice about family life, including marriage and child rearing. So, for instance, empirical research links aspects of religious involvement—chiefly religious attendance and marital homogamy—with greater marital quality and reduced risk of marital conflict and disruption.^{40,41} Thus, within the domain of marital and family life, religious involvement may enhance health and well-being in two ways: (1) by lowering the risk of stress and problems and (2) by increasing access to supportive intimate relations with spouses and other family members (see the discussion of social integration and support, below). Furthermore, religious communities help to mold values and shape behavior in other domains as well (e.g., work and financial dealings, interpersonal relations, etc.) in ways that may tend to reduce the risk of stressful events and conditions.

Religious involvement may influence health behaviors and lifestyles in several ways.^{38,42} First, individuals may internalize strong religio-ethical norms; the prospect of violating these internalized religious norms may evoke feelings of guilt and shame or even fear of divine punishment ("hellfire"). Second, members of religious communities may conform to religious norms because they fear the threat of embarrassment and possible social sanctions, sometimes formal (e.g., rebukes from clergy) but more often informal (e.g., gossip, ridicule, ostracism by their fellows). Third, religious persons may alter their lifestyles to make them consistent with those of reference group members—that is, persons (e.g., influential church members) they consider worthy of emulation.³⁴ In some cases, religious activities and networks may simply reduce exposure to deviant behaviors or unhealthy lifestyles. Others suggest that observed religious variations in lifestyles reflect selection mechanisms: Many persons involved with religious communities may be predisposed toward risk-averse lifestyles and comfortable with social control or be immersed in nuclear families, which have been shown to promote positive health behaviors.

Social Integration and Social Support

An extensive research literature documents the salutary effects of various types of social resources on mental and physical health outcomes. This research typically distinguishes between social integration—that is, network size and frequency of interaction, objective support (e.g., enacted or received support, from both formal and informal sources), and subjective support (e.g., satisfaction with support, anticipated support).^{43,44} Although few studies have examined this issue directly and the evidence remains somewhat mixed, it is widely asserted that at least part of the observed relationship between religious involvement and health outcomes results from the role of religious communities in providing social ties and support.^{12,31,45}

Both theory and empirical evidence suggest that regular attenders at religious services enjoy (1) larger and denser social networks among their members and (2) more frequent and varied exchanges of goods, services, and information than less frequent attenders.^{46,47} Friendships develop most readily between persons who share values, interests, and activities. Religious services and related activities tend to bring together persons with common faith commitments and often broadly similar social and political values on regular occasions. Thus, congregations offer fertile terrain for the cultivation of friendships, which can be developed further in other, secular settings.

Furthermore, religious communities are often conduits for various kinds of social support, tangible or instrumental aid (e.g., goods and services), and socioemotional assistance (e.g., companionship). Indeed, compassion and kindness, especially toward the less fortunate, are theological imperatives in most major religious traditions, and helping behavior is central to the rhetoric and rationale of many religious communities. One important avenue of support provision involves congregational programs, service and outreach initiatives for members and others with special needs. Although most churches and synagogues have at least some programs of this type, formal programs may be more numerous and more important in African American and other minority congregations." While the most common initiatives and ministries in these churches seek to ameliorate the effects of poverty and to address the needs of families and youths, a growing literature documents the importance of church-based efforts to disseminate a wide range of health information and services (e.g., programs to help individuals manage hypertension, control weight, and improve dietary practices and to address the needs of HIV/AIDS patients and their caregivers).⁵⁰⁻⁵² In addition to formal programs, many individuals also avail themselves of pastoral advice and counseling on a host of personal, family, and spiritual.⁵³⁻⁵⁵ issues .

Church members can also serve as valuable sources of informal support.^{46,56,57} These informal exchanges among coreligionists can involve tangible aid, such as money, goods, and services (e.g., providing meals, transportation, etc.), and information (e.g., about other sources of aid). Church members may provide informal socioemotional support to their fellows, boosting morale through confiding and companionship, as well as visitations to shut-ins, comfort for the bereaved, and in other ways. In addition, a handful of studies discuss the importance of spiritual support (e.g., sharing of religious thoughts and insights, praying for others).^{57,58} Somewhat surprisingly, however, only a handful of studies to date have attempted to quantify and disentangle these various types of support delivered through congregational networks. Furthermore, some studies suggest that the experiences of volunteering and assisting others can benefit support providers as well as

the recipients. To the extent that many religious communities strive to encourage informal support provision among their members, this may be yet another way in which they promote mental and physical health/well-being.

While social integration and enacted support clearly have implications for health outcomes, subjective perceptions of support (e.g., the satisfaction with supportive relationships and the anticipation that support is available when needed) may be especially important predictors of mental and physical health status and mortality risk.^{43,44} Churches and synagogues, as well as the small groups they engender, may enhance these perceptions of support by fostering a sense of community that leads individual members to feel, loved, cared for, valued, and integrated.^{46,59} One reason for this is that supportive relationships are often most beneficial when they involve persons with common status characteristics, experiences, and values. As we noted earlier, religious groups are often relatively homogeneous along some or all of these dimensions. Moreover, religious congregations offer a context for the development of support convoys or accumulations of supportive ties over the individual life course. Individuals who provide support to their fellows can be confident that their "credits" are likely to be honored, if necessary, in the future due to shared norms of altruism and reciprocity.

In addition, some have speculated that social support delivered through religious channels may also differ in content from that provided through other, nonreligious sources.³³ Support attempts are more likely to succeed when both provider and recipient share similar interpretations of stressors, as well as common beliefs about (1) proper motivations for helping behavior, (2) the "fit" between stressors and supportive behaviors, and (3) other key issues.⁶⁰ Shared values within religious communities may provide the basis for a common discourse and set of shared meanings concerning human suffering, adjustment, and support.^{33,58} Coreligionists may assist their fellows with "meaning work" (e.g., helping them to place their life experiences within broader interpretive frames, reducing the sense of threat and uncertainty through messages of hope, etc.). Thus, religious involvement may enhance the quality, as well as the quantity, of social resources available to individuals. To date, few if any studies have explored the distinctive character of religious support or compared the benefits of religious support with those of support from various secular sources. However, given the theoretical and practical importance of these issues, they should be key priorities for future research.

Self-Esteem and Personal Efficacy

Various aspects of religious involvement may promote better health by enhancing feelings of self-esteem, or the sense of intrinsic moral self-worth, and feelings of efficacy, or perceptions that one can master or have control over one's personal affairs. These two important dimensions of self-perception may affect health-related behaviors, beliefs, and attitudes and thus influence patterns of health care use. Furthermore, they have been directly associated with a wide range of mental and physical health outcomes.^{61,62} As we noted earlier, however, considerable controversy has swirled around the relationship between religiosity and self-perception. Based largely on anecdotal accounts, some behavioral scientists have long contended that certain aspects of religiosity—particularly beliefs in original sin and divine omnipotence—undermine self-esteem and feelings of personal mastery.^{15,16} While there may be a grain of truth in these narrow claims,⁶³ researchers have documented modest but positive associations between various aspects of religious involvement—most notably, religious attendance and private piety—and self-esteem and, in some cases, personal efficacy.^{18,19} Although these studies are limited

by heavy reliance on cross-sectional data, recent work has reported similar findings based on varied operationalizations of religious involvement and diverse samples and populations: adolescents and college students,⁶³ U.S. elders,⁶⁴ African American elders,⁶⁵ and African Americans of all ages.⁶⁶

How might religious involvement enhance these important dimensions of self-perception? Several interesting hypotheses have emerged in recent literature. In brief, through devotional activities (e.g., prayer, scriptural studies) and other spiritual practices and pursuits, individuals may construct personal relationships with a "divine other" in much the same way that they develop relationships with concrete social others.^{26,33} By identifying with figures portrayed in religious texts and media, individuals may come to define their own life circumstances in terms of a biblical figure's situation and then begin to interpret their situations from the point of view of the "God-role" (i.e., what a divine other might expect in the way of human conduct). Thus, individuals may gain a sense of self-worth and control by developing a close personal relationship with a potent divine other who loves and cares for each person unconditionally and can be engaged interactively in a quest for solace and guidance. They may also enjoy a sense of vicarious control over their affairs through their alliance with an omniscient, omnipotent deity (e.g., "with God all things are possible").⁶⁷

The quality of fellowship generated within some religious congregations, an extension of the subjective social support discussed earlier, may also contribute to positive self-perceptions.^{64,66,68} For churchgoers, regular interaction with like-minded others from similar backgrounds may reinforce basic role identities, role expectations (e.g., definitions of a "good" parent, spouse, Christian), and role commitments. Individuals may gain affirmation that their lifestyles and values, as well as their responses to personal events and community affairs, are reasonable and appropriate.⁶⁶ More generally, churches may provide an interpersonal context in which members are evaluated by coreligionists and hence come to see themselves in reference to distinctive criteria that are not rooted in material, educational, or occupational attainments or in physical capabilities or appearance.^{66,69} These criteria may include (1) their inherent uniqueness and worth as individuals, (2) their sociability and service to others, and (3) their spiritual qualities, such as wisdom and morality.

Coping Resources and Behaviors

According to Lazarus and Launier,⁷⁰ coping refers to "efforts, both action-oriented and intra-psychic, to manage (that is, master, tolerate, reduce, minimize) environmental and internal demands, and conflicts among them, which tax or exceed a person's resources" (p. 288). Although researchers interested in coping overlooked the role of religion for years, there is mounting evidence that religious cognitions and behaviors can offer effective resources for dealing with stressful events and conditions.⁷¹ Coping with stress, in turn, has been shown to be a powerful factor in both preventing disease and hastening recovery from illness.

Religious coping is especially popular and apparently effective for certain social groups (e.g., African Americans, elders, women).⁷² In addition, religious cognitions and behaviors, especially those centering on prayer, meditation, and other devotional pursuits, seem to be especially valuable in dealing with serious health problems (both acute and chronic) and bereavement.^{69,71,73} Health crises and bereavement are events and conditions that (1) may lack clear or satisfying worldly explanations, (2) may constitute "boundary experiences" in that they challenge fundamental premises of existence (or,

indeed, threaten existence itself), (3) may undermine commonsense notions that the world is just and that people "get what they deserve" (e.g., premature or violent deaths, unexpected accidents), and (4) may require emotion management as well as, or instead of, pragmatic problem-solving efforts.^{33,71}

Although the expanding literature on religious coping defies easy summary, several generalizations are possible.⁷¹ It is believed that religious cognitions and practices may aid in coping with stressors in several ways. Prayer and other intrapsychic religious coping efforts may alter primary appraisals, leading religious persons to reassess the meaning of potentially problematic conditions as opportunities for spiritual growth or learning, or as part of a broader divine plan, rather than as challenges to fundamental aspects of personal identity.⁷⁴ Certain "styles" of religious coping (e.g., perceived collaboration with a divine other) appear to bolster feelings of (secondary) control, enhancing confidence in the ability to manage difficulties and producing desirable health outcomes, while other religious coping styles seemingly contribute to pathological outcomes.^{75,76} According to some studies, religion can help individuals to adjust the self-concept so that physical frailties and other problems are less threatening to personal identity.⁶⁹ Along with the comfort and solace obtained via private religious activities, individuals also receive help in managing emotions (and solving problems) through pastoral counseling, as well as through formal church programs and church-sponsored small groups, as discussed above.

Positive Emotions

Religiously engendered emotions may provide another possible linkage with health status. The practice of religion—particularly prayer and worship, either alone or collectively—may lead to the experience or expression of certain emotions that, through psychoneuroimmunological or neuroendocrine pathways, could affect physiological parameters. Religious involvement may lead to positive emotions such as forgiveness,⁷⁷ contentment, and love, as well as to negative emotions such as guilt and fear. Researchers continue to find evidence that emotions, through complex sequences of events, can cause responses in a variety of physiological systems.^{78,79} Although systematic studies are few, it has been suggested that congregations with ecstatic worship services (e.g., some African American and Pentecostal churches) may give rise to positive emotions by providing outlets for the release of negative emotions and stimulating catharsis among participants.^{80,81} In another, quite different linkage between religion and psychophysiological mechanisms, preliminary evidence suggests that a particular religious motivation, intrinsic religiosity, is positively associated with absorption,⁸² which is a traitlike correlate of "self-soothing" coping abilities and a proxy for the ability to enter an altered state of consciousness.

Healthy Beliefs

Whether any of the above-mentioned pathways operate in particular situations, simply believing or expecting religious practice to benefit health or expecting God to reward expressions of piety, devotion, observance, or obedience with health and well-being may be enough to account for positive health outcomes among more religiously committed populations or groups of respondents. Constructs such as learned optimism, "positive illusions,"⁸³ and hope and optimism⁸⁴ have been proposed to account for the psychological mediation of positive mental attitudes on health status. Koenig⁸⁵ discusses how,

especially for older adults, religious faith can provide a sense of hope that offers both emotional and tangible means of promoting well-being. In a more clinical context, Dossey describes how the cognitive expectations of patients and their physicians can influence prognosis, therapeutic efficacy, course of treatment, and even the clinical endpoint (i.e., recovery or mortality). In other words, the popular conception that "we make our own reality," at least when it comes to health,⁸⁶ may have partial empirical validation.

Additional Hypothesized Mechanisms

Finally, the growing literature of experimental and quasi-experimental studies of prayer and healing suggest a couple of additional possible mechanisms or pathways for a religion-health connection that may extend beyond the current conceptual and methodological bounds of sociomedical research but that, for the sake of completeness, deserve mention. More than 150 studies, many of them randomized controlled trials (RCTs) of various sorts, have investigated the efficacy of prayer and other forms of spiritual healing, energy healing, therapeutic touch, and the like on a variety of biological systems not limited to human beings.⁸⁷ Notable among these is Byrd's⁸⁸ well-known double-blinded RCT of distant prayer for hospitalized cardiac care patients, in which prayed-for patients had a hospital course that was statistically significantly better than non-prayed-for patients according to several parameters (e.g., use of diuretics, use of antibiotics, cardiopulmonary arrest, pneumonia, intubation/ventilation). For findings such as these, neither the behavioral and psychosocial constructs discussed above nor the possibility of a salutary placebo effect seem to offer feasible explanations. A variety of more unusual hypotheses have been proposed to account for these findings on prayer and healing, including the operation of subtle bioenergies, morphogenetic fields, psi effects, nonlocal consciousness, and "divine" or supernatural influences.^{89,90} The discourse on these topics as they relate to the interface of spirituality, health, and healing is becoming a prominent feature of conferences and publications in the field of complementary and alternative medicine.

THE ROAD FROM HERE

Conceptualizing and Measuring Religion

After reviewing these hypothesized linkages between religion and health, some of the limitations of the empirical literature (especially in the medical and epidemiologic research traditions) become more apparent. One of the major problem areas has been the conceptualization and measurement of religion, religiosity, and religious involvement.^{91,92} These have been important issues in sociology and psychology for more than 35 years.⁹³ Researchers in both disciplines have recognized that religion is a complex and multidimensional domain of human life comprising behaviors, attitudes, beliefs, experiences, values, and so on. However, few health researchers in clinical medicine, epidemiology, health behavior and health education, or gerontology have capitalized on these developments. In addition to their unfamiliarity with social-scientific research on religion, they have been hindered by unfamiliarity with the few reliable instruments that are both content valid (i.e., that encompass a broad range of religious dimensions or types of expression) and, at the same time, are validated in reasonably short forms that can be accommodated in epidemiologic surveys or clinical research. Furthermore, of the recent

advances in the conceptualization and measurement of religious involvement, few have addressed those religious dimensions that bear the closest theoretical relationship to health (e.g., religious support, coping, and meaning).

We believe that it is crucial to distinguish between *behavioral and functional* aspects of religious involvement. Because most epidemiologic data sets contain mainly behavioral indicators of religion (e.g., frequency of religious attendance, prayer, media consumption), these become the focus of most research reports. Yet, if we find what seem to be "effects" of religious attendance, for example, we are still left with numerous plausible but conceptually distinct explanations for these patterns. That is, frequent attenders may be healthier by virtue of some or all of the mechanisms discussed above and perhaps others as well. They may benefit from positive health behaviors and low-stress lifestyles, larger social ties and church-based support networks, high self-esteem and/or confidence, effective coping strategies, positive emotions, healthy beliefs, and so on. But because these functions of religion are rarely measured directly, there is usually no way to see which (if any) of these mechanisms might account for the widely observed salutary effect of religious attendance on health.

Not only does this problem of data limitation constrain our knowledge of the religion-health connection, but it can also impoverish our thinking about these issues. Obviously, analyses of existing secondary data can proceed only with the available religious indicators; these, in turn, influence the construction of hypotheses and the discussions of findings. And with behavioral religious indicators now reasonably well established as predictors of health outcomes, investigators often plan new data collection efforts to include only these "tried-and-true" religious indicators in their instruments, excluding many richer functional items that might specify aspects of the religion-health connection more accurately.

The stakes may be higher than we recognize. Because commonly used measures of religious behavior(s) may tap poorly or not at all the mechanisms via which religion really influences mental and physical health, the evidence for religious effects on health outcomes remains somewhat mixed, as we noted earlier. But while there are often modest effects of frequency of attendance and other behavioral measures in these studies, imagine what we might learn by measuring the proximate (functional) mechanisms linking religion and health directly. A real danger is that researchers who do not find attendance or denominational effects on certain health outcomes may be tempted to dismiss, erroneously, the entire domain of religion as a fruitful area for further inquiry.

These concerns dictate that we should move quickly toward the development and validation of appropriate functional indicators and that such measures should be included in epidemiologic and clinical studies as soon as possible. Fortunately, this issue is now receiving recognition and funding from public and private sources, especially from the NIA and the Fetzer Institute. In collaboration, they have convened a working group of specialists from various academic disciplines, charged with the task of developing long and short forms of a standard survey instrument to tap those dimensions of religious involvement that seem most germane to mental and physical health. This instrument includes items on church-based support, religious coping (building on the prodigious item development programs of Pargamen⁷¹ and his associates), and other functional and behavioral religious items. The short form of this battery is now being circulated by NIA and Fetzer, and it is also included in the 1998 National Opinion Research Center's General Social Survey.⁹⁴

Testing Alternative Theoretical Models

A common research approach to the religion-health connection is to include one or more religious indicators in a multivariate model consisting of "established" sociodemographic, biological, psychosocial, and/or other predictors of a given health outcome to see whether these new additions enhance the predictive power of that model. If they do not, they are often dropped from subsequent analyses in the interests of parsimony. The problem: In many studies, the only religious indicators are behavioral (e.g., frequency of religious attendance), and their effects on health outcomes may well be indirect. For example, as we noted above, attendance may have salutary health effects by enhancing social support, strengthening self-esteem, promoting constructive coping responses, encouraging positive health behaviors, or promoting healthy beliefs. If researchers focus only on main effects and neglect to explore these complex relationships, they may be tempted to conclude erroneously that "religion" has little or no effect on health. And even when the addition of religious variable(s) does improve the predictive power or fit of statistical models, researchers who focus solely on direct effects may still seriously underestimate the total influence of religious involvement on health and well-being.

A complementary approach to investigating religion-health linkages specifies various direct and indirect effects of various dimensions of religious involvement on health outcomes. Once satisfactory measures of both behavioral and functional aspects of religious involvement are widely available (as they often are not, at this point), these relationships can be estimated via hierarchically organized regression models, path-analytic techniques, or, perhaps best of all, structural equation models, with formal decomposition of the total and indirect effects of religious variables. This will permit researchers to test alternative, theoretically grounded models. The following list of proposed models is suggestive but certainly not exhaustive.

1. Prevention. In this model, religious behaviors such as attendance and prayer benefit health primarily indirectly, directing lifestyle choices and health behaviors in constructive ways. While behavioral and functional aspects of religious involvement may also have direct salutary effects on health outcomes, this model anticipates that the major benefits result from decreased risk or exposure to stressors. For instance, positive health behaviors (e.g., avoidance of tobacco products or alcohol abuse) may reduce the risk of certain types of health problems, while other beneficial lifestyle choices may reduce the risk of family problems, financial and legal hassles, and other stressors that can erode physical and mental health.

2. Stressor Response. In this model, stressors (e.g., bereavement, family problems, or even health problems at baseline) prompt individuals to increase the frequency of their religious behaviors, that is, to attend church, pray, or read religious materials more often than they did before. Adversity may also influence functional aspects of religious involvement, perhaps leading individuals to mobilize support from church members or to rely on religious faith in the coping process. Taken together, behavioral and functional aspects of religiosity then have positive effects on health outcomes. This Stressor response model is consistent with the arguments and qualitative findings in the religious coping literature.

3. Stressor Effects. Contra the Stressor response model, the Stressor effects model hypothesizes that stressors (e.g., marital troubles, job loss, or health problems) discourage

or prevent certain religious activities. This disruptive impact may involve religious attendance in particular, but it may also affect private religious behavior and identity. In turn, this stress-induced decrease in religiosity makes it more difficult to elicit support from church members and undermines other religious functions that could, under other conditions, yield salutary health consequences.

4. *Moderator.* This model represents the relationships between stressors, religiosity, and health as contingent or interactive. No direct effects of behavioral or functional aspects of religious involvement are assumed. Rather, this model hypothesizes that indicators tapping functional aspects (e.g., support, coping, meaning) benefit individual health mainly by reducing the otherwise harmful effects of stressors. According to this model, the greatest health benefits of religious support, coping, and perhaps other dimensions accrue to persons who encounter high levels of stress. As we noted earlier, one suspects that this model may be especially relevant in the context of certain types of stressful events and conditions (e.g., bereavement, health problems), perhaps more so than for other stressors. Religion may have fewer positive consequences among individuals who are stress free.

5. *Offsetting or Counterbalancing Effects.* In contrast to the moderator model just described, the counterbalancing effects model hypothesizes that religious behaviors, and perhaps health-relevant religious functions (e.g., support, meaning), have independent salutary effects on health outcomes. Their benefits are assumed to be consistent across levels of stress, and their salutary impact at least partly offsets the damaging consequences of stressors.

Of course, definitive testing of any or all of these models requires high-quality panel or prospective data. Such empirical assessment should also take seriously the possibility that apparent religious effects on health are spurious due to (1) the differential location of religious persons across social categories (e.g., social class, age or birth cohort), (2) undetected health selection effects, or (3) other unmeasured variables or selection mechanisms.

Exploring Negative Effects of Religion

This list of alternative models does not exhaust the possible ways that religion and health may be related. Each of the five models identified above assumes that religious effects will be largely positive—that is, that religious participation, experience, belief, and values will have mainly beneficial influences on health outcomes. But as we mentioned earlier, precisely the opposite is widely assumed in certain disciplines (e.g., psychology). Furthermore, epidemiologic findings regarding religion have been dramatically misinterpreted in some quarters. The finding of statistically significant population-level protective effects does not mean that (1) religion benefits everyone's health, (2) religion benefits most people's health, (3) there is little evidence that religion exerts harmful or null effects on health, or (4) we know for sure what it is about religion that is good for health or precisely for whom it is beneficial. Existing findings tell us simply that rates of morbidity and mortality in certain population groups defined religiously are, on average, somewhat lower than among "all others" or nonreligious groups or among less religious people. This is a potentially important finding in its own right, with possible implications for both disease prevention and perhaps even disease etiology. Overinterpretation, how

ever, must be discouraged to eliminate unrealistic assumptions about the place of God, faith, and spirituality in health and healing.³⁰

At one level, given the skepticism and hostility in the medical and social sciences, it is easy to understand why investigators have concentrated almost exclusively on demonstrating positive religious effects. However, researchers now confront a difficult, threefold task: (1) to avoid seeming like cheerleaders on behalf of religion, and we must take care to design our research and report our findings in a nonsectarian fashion; (2) to offer respectful correctives of popular media accounts that distort the thrust or exaggerate the conclusions of scientific research, thereby threatening the scientific credibility of the enterprise;³⁰ and (3) to strive for a balanced account of the multifaceted role of religion, one that allows for (and reports plainly) the harmful effects of certain manifestations of religious belief and practice.

A few promising examples of such research already exist in the research literature. For instance, while Pargament and his students^{75,76} have identified some coping styles that yield quite positive results (e.g., coping in collaboration with a divine other), they also find that other religious coping styles (e.g., passively leaving the responsibility for resolving crises entirely up to divine intervention) yield pathological health-related consequences.⁷¹ Maladaptive coping responses (i.e., those that are poorly matched with the features and requirements of specific stressful situations) can be particularly destructive. Pargament and colleagues⁹⁵ have also documented other unproductive or counterproductive religious coping responses, such as those that focus on "righteous anger" and prayers for divine vengeance and feelings of divine abandonment.

Certain of these findings are consistent with a broader psychological critique of orthodox Christian religion. Recall that among the key complaints of critics is the claim that belief in original sin and belief in an omnipotent, omniscient deity may erode self-esteem and divert attention away from productive problem solving or emotion management. Sounding a similar theme, Watson and colleagues⁶³ have analyzed data on samples of college undergraduates that show that beliefs in original sin are inversely correlated with self-esteem but that these effects are offset by beliefs in (or perceptions of) divine grace and forgiveness. Similarly, other religious worldviews may be consonant with specific personality styles or behavioral patterns that, again independent of religion, are known to affect health.⁹⁶ For example, some observers have remarked on parallels in the descriptions of Weber's "Protestant ethic" and of Type A behavior.⁹⁷

Earlier we suggested that social pressures within religious congregations may reduce the risk of exposure to unhealthy lifestyles. However, it is also possible that these social norms and pressures can also increase the negative consequences of certain stressors when they do occur (e.g., by framing them as "sin" and thus ascribing responsibility for events or conditions to the flawed character of the individuals involved rather than to the interplay of contextual or other factors).³³ Specifically, such framing effects might affect health adversely (1) by fostering feelings of guilt and shame; eroding feelings of competence, self-worth, and hopefulness; and distracting persons from more productive coping responses (e.g., through excessive worry) and (2) by encouraging or tacitly condoning the withdrawal of community support.^{98,99}

In less dramatic ways, religious congregations can be sources of stress as well as support. Some religious groups are "greedy institutions," demanding substantial investments of time, energy, money, and other precious resources, potentially at high cost to families, work, and leisure pursuits. Congregational conflicts (e.g., over clergy, finances, policies, theological issues, or attempts to mediate disputes among individual coreligionists) may also take their toll.¹⁰⁰ Furthermore, annoyance over gossip and judgmental attitudes

within some congregations, along with the desire to live up to perceived expectations and idealized notions of family life, spirituality, and moral and ethical conduct, may also cause distress for some individuals. These possibilities dovetail nicely with recent discussions of negative support and negative interactions in the gerontological literatures.^{100,102} These and other potentially undesirable consequences of religious involvement clearly merit further investigations.¹⁰³

Variations by Sociodemographic Subgroups

Now let us turn to another issue that is frequently neglected in studies of religion and health: the potential for contingent or interactive relationships. While we noted earlier that evidence of religious benefits has been found in samples of diverse populations, this does not mean that these effects are equivalent for all social groups. Religion may "work" differently in shaping health outcomes for different segments of the population (i.e., across gender and racial/ethnic lines, social classes, age groups, etc.).

A few examples of meaningful contingent patterns already exist in the literature. Depending on the outcome and sample in question, religion may be more or less important for African Americans than for their white counterparts, and within the African American population, religion may be a weaker predictor of health-related outcomes for Southerners than for non-Southerners.^{29,104,105} This is the case despite, or perhaps because of, the fact that African Americans, especially black Southerners, have higher levels of religious involvement (particularly church attendance) than other persons. This is partly a methodological dilemma: It is difficult to discern religious "effects" when the independent variable has limited range and is coarsely categorized (e.g., frequency of attendance), even more so in highly religious populations with limited dispersion on that independent variable. Note that this may also be a problem in other populations, such as elderly Southern residents (both white and black). But it is also a substantive problem, in that the cultural meanings associated with religious participation may vary across these populations. For instance, religious involvement—especially church participation—is deeply embedded in African American life, particularly in the rural South.¹⁰⁴ Indeed, church attendance is virtually ubiquitous among some African American samples, and decisions about how often to attend may be influenced by social expectation and community ethos, as well as by personal religious motivations.

Does this occasional failure to detect religious "effects" in models of their mental health outcomes mean that churches are unimportant in the individual or collective lives of African Americans in these areas? Certainly not. But it may argue for alternative measurement strategies—aimed at capturing the "true" dispersion of patterns of congregational involvement and at specifying the features of congregational life that are most salient for health and well-being. Clearly, cultural differences in the meanings associated with various types of religious participation and the norms guiding individual decision making in the public religious sphere should be taken into account in other settings as well.

Turning briefly to another example of contingent religious effects on health, several recent studies have reported that the benefits of religious involvement (especially prayer, coping, and religious certainty) are greatest for persons with lower levels of education. This general pattern has surfaced in studies of psychological well-being (e.g., happiness, life satisfaction, and related outcomes) in cross-sectional samples of the national population^{26,28} and self-esteem among U.S. elders⁶⁴ and in one prospective study of mortality risk in a national panel survey of elders.¹⁰⁶ Religious symbols and beliefs offer only one of many types of tools for constructing a sense of meaning and coherence¹⁰⁷ and only

one of many types of resources for adjusting to stressful events and conditions. For persons with "restricted symbolic codes" and perhaps with few other resources, religious faith may offer an especially compelling framework for interpreting daily experiences and major life events alike.²⁸ Interactive effects involving religious variables and education levels have not been rigorously explored in connection with other health-related outcomes, but these and other contingent relationships merit careful attention in future work.

Other Methodological Issues

In addition to the need to address the mostly theoretical and substantive concerns outlined above, it will also be important for researchers interested in religion and health to focus on several methodological issues. First, future research should be sensitive to the likelihood that the effects of religion on morbidity and mortality may vary across specific diseases and disorders. At present, we lack a comprehensive picture of the relationships between particular behavioral and functional religious domains and various mental and physical health outcomes. Moreover, as with social support,¹⁰⁸ the role(s) of religious support, coping, and other aspects of religious involvement may shift over the natural history or course of any given disease or disability^{30,109} in ways that are poorly understood at present. It will be important to distinguish between the role of various aspects of religious involvement in reducing specific morbidity and in the treatment of, and recovery from, particular diseases and disorders. Furthermore, it will be important to compare the possible effects of religious behaviors and functions (e.g., support, coping) with those of their secular counterparts to gain a more complete understanding of the role of religion in shaping patterns of mental and physical health and morbidity. Clearly, careful investigation along these lines will require more high-quality prospective data. Multiwave data would be ideal because even two panels are sometimes inadequate to test sophisticated, complex theoretical arguments such as those that have developed regarding the associations between religious involvement and health.

Furthermore, the usefulness of qualitative data in research on religion and health should not be overlooked. Because we are still working to validate measures of spirituality, religious coping styles, and other important constructs, in-depth interviews and focus groups may be crucial in clarifying the multiple, complex ways in which religion is involved in shaping various health outcomes. In an excellent recent example of this genre of research, Idler⁶⁹ used careful qualitative data to identify a number of important ways in which religion helps disabled persons to refashion their "sense of self," partly by deemphasizing physical definitions of the self (e.g., based on physical abilities and accomplishments) and increasing the salience of other aspects of personal identity. More studies of this sort can yield a richer portrait of religious effects and would nicely complement the types of epidemiologic studies (discussed elsewhere in this article) that have, for understandable reasons, dominated the literature on the religion-health connection.

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