

CONGREGATIONAL SUPPORT NETWORKS, HEALTH
BELIEFS, AND ANNUAL MEDICAL EXAMS: FINDINGS FROM
A NATIONWIDE SAMPLE OF PRESBYTERIANS

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Explanations for associations between religious involvement and preventive health care utilization remain poorly understood. Using 2007 data from a nationwide sample of members of the Presbyterian Church U.S.A., we develop and test several hypotheses concerning religious beliefs, congregational practices, and informal church-based networks in shaping the likelihood of obtaining annual medical checkups. Members of churches with higher levels of formal health activities and those who discuss health matters within informal member networks are more likely to have checkups. At least part of this association reflects the role of doctor recommendations from church members. Surprisingly, beliefs in the sanctity of the body are inversely associated with the likelihood of obtaining checkups. Several dispositional factors (planfulness, conformity, social desirability) are considered and dismissed as explanations for the observed patterns.

INTRODUCTION

The relationships between religion, health, and mortality have elicited considerable attention from researchers, practitioners, and the public. A substantial literature has investigated these issues, and while this remains highly controversial in some circles (e.g., Sloan 2006), a number of studies link religious involvement—often gauged in terms of the frequency of attendance at religious services—with desirable health outcomes

(Chatters 2000; Koenig, McCullough, and Larson 2001). Although a range of outcomes has been examined (e.g., hypertension, cardiovascular disease, self-rated health), perhaps the most consistent findings involve mortality risk (Hummer *et al.* 2004; McCullough *et al.* 2000). Indeed, several dozen studies, primarily based on samples of community-dwelling adults, have reported that religious involvement is inversely related with the risk of subsequent mortality, a pattern that is broadly consistent across a range of specific causes of mortality (Hummer *et al.* Ellison 1999; Oman *et al.* 2002; Rogers, Krueger, and Hummer 2007), across different types of communities and populations (Hummer *et al.* 2004), and across diverse racial and ethnic groups (Ellison *et al.* 2000; Hill *et al.* 2005).

Although the evidence of salutary religious effects on mortality continues to accumulate, researchers differ regarding the most plausible explanations for these patterns. Most high-quality studies in this area include statistical controls for certain health behaviors (e.g., smoking, drinking, body mass index), as well as social ties and support, baseline health status, and various sociodemographic variables (Strawbridge *et al.* 1997; Hummer *et al.* 1999; Musick, House, and Williams 2004). This has led investigators to speculate about the role of other factors, including unobserved psychosocial mechanisms such as coping and resilience in the face of stress, hope and optimism, sense of coherence, forgiveness, and others (Ellison and Levin 1998; George, Ellison, and Larson 2002). Others have discussed the potential significance of the duration of exposure to religious faith and practice in reducing allostatic load¹ and the cumulative protective effects of religious involvement over the life course. Still other researchers have focused on identifying possible physiological explanations for the religion-mortality link, including potential influences of religion and spirituality on stress hormones, immune function, and other systems in the body (e.g., Seeman, Dubin, and Seeman 2003).

One interesting possibility is that studies of religion, health, and mortality have not fully considered the role of various health behaviors and lifestyle factor, which may be influenced by religious involvement. To be sure, there is strong evidence of religious differentials in use of tobacco and alcohol (Gillum 2005; Koenig *et al.* 1998; Strawbridge *et al.* 2001), although the associations with body mass (BMI) are less clear (Cline and Ferraro 2006). However, recent studies also suggest broader links between religious factors, and especially frequency of attendance at services, and a much broader array of behavioral and lifestyle factors, ranging from exercise and diet quality, to sleep quality, to the regular use of seat belts, vitamins, and other protective and preventive measures (Hill *et al.* 2006; Hill *et al.* 2007). Of particular importance is a small but growing literature demonstrating that more religious persons tend to enjoy greater continuity of care than others (King and Pearson 2003), and report greater use of various preventive health services, including mammograms, cholesterol screening, and others (Benjamins and Brown 2003; Benjamins 2005, 2006a; Benjamins, Trinitapoli, and Ellison 2006). It is conceivable that early detection of serious chronic conditions could help more religious persons manage diseases more effectively, leading to a higher quality of life in later years, as well as a reduced risk of premature mortality. Thus, it is important to examine more carefully the reasons for the associations between religious factors and preventive care use. To date, however, work in this area remains in its early stages, and a number of promising potential explanations for associations remain unexplored.

Our study begins to address this gap in the literature. Briefly, after outlining three mechanisms via which religious involvement may promote preventive care use—beliefs, formal

congregational initiatives, and informal church-based support—we test relevant hypotheses using data from lay respondents from the January 2007 wave of the Presbyterian Panel Survey, a nationwide sample of PCUSA elders and rank-and-file laypersons. Our study focuses on one particular preventive health activity, obtaining an annual general medical examination (*i.e.*, checkup), because it is: (a) perhaps the most common type of preventive health care; (b) a gateway to various types of diagnostic tests, *e.g.*, for chronic conditions such as hypertension, diabetes, heart disease, and others; and (c) a way for persons to build ongoing relationships with primary health care providers, who can assess their individual risks and vulnerabilities over time and can advise them about ways to enjoy better health as they age. After presenting our findings, we discuss their significance for future research on religion and health, as well as the possible implications for practitioners.

THEORETICAL AND EMPIRICAL BACKGROUND

The Evidence: Previous Studies

Although a number of studies over the years have explored the possible role of religious factors in shaping patterns of acute care use, length of hospital stays, and related outcomes (Koenig 1995; Koenig and Larson 1998; Schiller and Levin 1988), the focus on preventive care use is a relatively recent development. Much of this research has centered on middle-aged and older adults, for whom preventive care is more common and arguably more important from a medical standpoint. As a result, certain preventive health services have received a good deal of consideration from religion-health researchers.

In particular, several studies now report that religious involvement—chiefly gauged in terms of the self-reported frequency of attendance at services—bears a positive association with preventive care practices among women. One important type of screening is mammogram utilization to detect possible breast cancer (Benjamins and Brown 2003; Benjamins 2006a; Miller and Champion 1993). At least one study among women from Los Angeles churches found no link between religious behaviors and mammogram use; on average, however, these church women were more likely to receive mammography than women in a comparison group drawn from the wider Los Angeles community (Fox *et al.* 1998). There is at least some evidence that members of certain religious traditions, primarily Jews and Mainline Protestants (including members of the Presbyterian Church USA), are more prone to avail themselves of mammograms than others (Benjamins 2006a). Taken together, such results suggest an association between religious group membership and/or participation and mammogram utilization, although the mechanisms underlying this association remain unclear. One study focusing exclusively on PCUSA women found a significant association between certain religious beliefs, notably the belief that spiritual health and physical health are connected, and the likelihood of mammogram use (Benjamins *et al.* 2006), perhaps suggesting a role for specific religious health beliefs in accounting for these broad patterns.

Religious involvement also appears to be positively linked with the likelihood of using other preventive health services as well, such as cholesterol screening and flu shots, as well as pap smears for women, and prostate exams for men (Benjamins and Brown 2003; Yi 1994, 1998). In particular, a study of older adults found that those who attended religious services, and especially regular attenders, were more likely to obtain cholesterol screening than their non-attending counterparts (Benjamins 2005). Here again, members of Mainline Protestant denominations such as the PCUSA were somewhat more likely than other per-

sons to report having a recent cholesterol screening (Benjamins 2005). These findings are noteworthy because they lend additional support to the hypothesis that religious involvement is linked with increased use of preventive health services. According to these patterns, frequent or regular attendance at religious services may foster or facilitate such preventive care, and it is possible that other aspects of religion, including affiliation and beliefs, may also contribute to these practices.

The role of religious factors in shaping tendencies to have general annual medical examinations has rarely been examined. However, individuals who attend religious services regularly are not only more likely to continue seeing the same health care provider over time (King and Pearson 2003), but are also inclined to express greater trust and confidence in physicians than persons who are less religiously active (Benjamins 2006b). In light of these findings that religion may influence how individuals perceive and utilize their doctors, it is reasonable to expect that religion may also be linked with the likelihood of receiving a physical examination from a doctor or other provider. However, few empirical studies have assessed this relationship. In a rare exception to this general pattern of neglect, Hill and colleagues (2006) reported that Texas residents who attend religious services regularly were more likely to receive a general health checkup than persons who attend less often, or not at all. To date, however, the generalizability of this pattern and the possible mechanisms that may explain this observed association have not been explored. This previous literature leads, then, to the first hypothesis of this study:

H1: Frequency of attendance at religious services will be positively associated with the likelihood of obtaining an annual medical examination.

Three Possible Mechanisms

How and why might religious involvement influence the use of preventive care services? One important type of explanation may be theological. Practicing Christians may have distinctive ideas and attitudes concerning the physical body and the meaning of health. For example, in First Corinthians, the apostle Paul referred to the body as a "temple of God" and exhorted the faithful to care for their physical well-being (1 Cor. 6:15, 19-20). Several empirical studies of religious variations in preventive care use cite this scriptural passage as a potential motivation for religious persons to lead healthier lifestyles and engage in positive preventive practices. In addition, the Bible contains numerous other passages that may hold implications for physical health and wellness, ranging from: (a) the teaching that humans are created in the image of God, to (b) Old Testament injunctions about dietary and other health practices, to (c) New Testament accounts of miraculous healing and recovery from illness (e.g., Sweet 1994). Although various expressions of Christian faith throughout history have embraced sharply contrasting views of the physical body, including those that have emphasized the "mortification of the flesh," Christian teaching also offers a basis for valuation and preservation of health as a gift from God (Benjamins 2007). Moreover, a pragmatic orientation toward physical health has also been advocated by some theologians. For example, John Wesley argued that Christians should maintain their health not only as an end in itself, but also because physical vigor was essential in order to fulfill other responsibilities. For example, he pointed out that God uses the physical body to accomplish His will and purposes. Health enables believers to evangelize and

spread the Gospel, to witness and minister to others, and to serve the needs of their communities. In addition, physical health allows older adults to participate fully in and enjoy the blessings of family life. Healthy adults are better able to raise and nurture their children and grandchildren, to provide companionship to their spouses, and to avoid burdening their loved ones or others in their communities in later life (Ott 1991). Thus, for all of these reasons, Christians are often enjoined to value their physical health and to take reasonable, prudent steps to preserve their own well-being. This body of work leads to the second hypothesis of this study:

H2: Beliefs about the sanctity of the physical body will be positively associated with the likelihood of obtaining an annual medical examination.

A second explanation may involve congregational sponsorship of health-related programs and other activities. Briefly, churches may be sites for various types of health promotion efforts (DeHaven *et al.* 2004; Olson *et al.* 1988). Clergy members may use sermons to encourage their members to avoid negative health behaviors or adopt positive lifestyles; this could include efforts to raise awareness about the potential value of preventive health care services. Congregations may distribute literature on health and health issues, or may show videos, sponsor guest speakers, or encourage discussion of these issues in religious education classes or other settings. Some congregations may also sponsor informal groups dedicated to health issues, as well as weight loss groups, exercise classes, athletic teams, or other activities geared toward enhancing the health of their members (Davis *et al.* 1994; Voorhees *et al.* 1996). As a number of studies have documented, churches may foster health education and intervention efforts directly, for example by sponsoring health education efforts (*e.g.*, on diet, exercise, *etc.*), screening for various health problems (*e.g.*, diabetes, hypertension, cholesterol, breast cancer) on-site, and other types of interventions to assist members and other persons in the community (*e.g.*, Fox *et al.* 1998; Kumanyika and Charleston 1992; Voorhees *et al.* 1996; Wiist and Flack 1990). Although formal church-based health programs developed by African American congregations have received disproportionate attention from scholars and practitioners, data from the National Congregations Study show that other denominations report similar levels of health-related programming (Trinitapoli, Ellison, and Boardman 2002). The cumulative impact of church-based health promotion activity may be to encourage discussion about health and to foster awareness about the importance of checkups and other preventive steps. Even in churches that do not directly promote preventive care, it is reasonable to expect that other health-related emphases by a congregation or its pastor might spark some members to seek regular medical examinations, and to undergo regular screening for major chronic health problems. Thus, the third hypothesis for this study is as follows:

H3: Persons who belong to congregations that sponsor more health-related activities will be more likely to obtain an annual medical examination.

Yet a third mechanism by which religious involvement may lead to greater preventive care use may involve informal church-based support networks. Although it is now widely recognized that congregations are network-driven institutions (Cornwall 1987; Olson 1989), social scientists have only recently begun to study church-based support processes sys-

tematically (Krause 2002, 2006; Krause, Ellison, and Wulff 1998; Krause, Ellison, and Marcum 2002). Briefly, religious groups bring together like-minded others—*i.e.*, persons who share common values, interests, and activities—on a regular basis to engage in activities to which they tend to ascribe sacred purpose. In addition to collective worship activities, churches provide fertile ground for the cultivation of long-term friends and associates (Ellison and George 1994). These persons can form valuable networks of discussion partners who chat before and after services and at other congregational events about a host of topics. Because many individuals and families remain members of a single congregation for years and religious settings encourage prosocial conduct, trust, and reciprocity, church-based networks can yield support convoys, or accumulations of supportive relationships over the life course (Ellison and George 1994). They are sites of caring, sharing, and collective memory. Taken together, these characteristics of religious communities may result in conversations about health. This suggests another hypothesis:

H4: Levels of informal church-based social support, especially surrounding health issues, will be positively associated with the likelihood of obtaining an annual medical examination.

To be sure, most studies of religious support networks have focused on the role of church members in providing goods and services (*e.g.*, Taylor and Chatters 1988), or emotional assistance (Krause 2006; Krause, Ellison, and Wulff 1998) to their coreligionists. Although we are aware of no studies that investigate this issue directly, it is well-known that social networks can provide another valuable resource: information. Within religious communities, for example, individuals—especially older adults—may share information about their own health status, and may also learn about the well-being and health experiences of fellow members, and their loved ones and friends. It is reasonable to expect that such discussions may spur awareness about the need for preventive care, as members receive sympathy, comfort, and reassurance on health matters. For example, they may be exhorted by friends in the congregation to take care of themselves and, conversely, hearing about the problems of others may alert them to the unfortunate consequences of failing to do so. Indeed, studies have shown that one of the strongest factors preventing older adults from receiving preventive care is lack of information about the need for such services (Drociuk 1999), and it may be that simply (a) being urged to seek preventive care, or (b) knowing (or hearing about) someone who has benefited from such care can impel individuals to seek relevant services, including a general medical examination. Moreover, given the importance of social networks in medical help-seeking behavior (*e.g.*, Pescosolido 1992), it is possible that church-based health discussions may provide recommendations for doctors, clinics, and other health care providers. The feedback of one's coreligionists may be taken seriously, due to shared attitudes and expectations about physicians' competence, values, deportment, and "bedside manner." This previous work on church-based networks results in the last hypotheses to be tested in this study:

H5a: Persons who receive recommendations from church members for specific doctors, clinics or other health care providers will be more likely to obtain an annual medical examination.

H5b: Controlling for such recommendations will reduce or eliminate the estimated net effects of congregational health activities and/or informal congregational health discussions on the likelihood of obtaining an annual medical examination.

DATA

We analyze data from a national panel survey conducted among representative samples of two populations affiliated with the Presbyterian Church, USA (PCUSA): (1) active elders, *i.e.*, active members who have been ordained as an elder in a Presbyterian congregation and who are currently serving on the session, or governing board, of a Presbyterian congregation; and (2) other active members, *i.e.*, all active members minus the subset of active elders.

Elders were sampled in a two-stage process (Research Services 2006). First, all PCUSA congregations (N=11,019) were classified into strata based on region, racial/ethnic composition, and size of the session. A sample of 400 congregations was then drawn, with the number in each stratum proportional to the number of elders currently serving on session in the congregations of that stratum. Random sampling was used within strata to select the specific congregations. Second, each selected congregation was contacted by mail and: (a) if the session size was eight or fewer, was asked to provide the names of all active elders; or (b) if larger, was asked to sample eight names by matching eight pre-assigned random numbers to a numbered list of the session. In all, 206 congregations (51% of the original sample) cooperated, providing a total of 1,471 names.

The sample of regular members was also drawn in two stages. First, congregations were allocated to strata based on region, racial/ethnic composition, and membership size. Then a sample of 500 was drawn from the population of congregations, with the number selected in each stratum proportional to the membership total of congregations within that stratum. Random sampling was used within strata. Second, sampled congregations were contacted by mail and asked to provide eight member names by matching eight pre-assigned random numbers to a numbered list of active members. In all, 273 congregations (54% of the original sample) cooperated, providing 1,892 names.

The individuals in each sample were mailed a questionnaire in the fall of 2005. A total of 1,163 elders (79%) and 1,099 members (58%) returned this screening survey. These respondents comprise the panel (Research Services 2006). We use data on sociodemographic characteristics and church participation from the screening survey and on all other variables from the fifth wave, administered in January 2007. Because of attrition, the number of participants in each panel sample had declined slightly by the fifth wave: (a) to 1,135 elders, of whom 693 (61%) responded; and (b) to 1,037 members, of whom 557 (53%) responded. For this analysis, data from the two samples are combined.

MEASURES

Dependent Variable

The dependent variable in this study is annual exams. Respondents were asked: "Have you had a general physical exam by a doctor or other health professional when you were feeling well in the past 12 months?" Responses were coded 1=yes, 0=no.

Key Independent Variables

Sanctity of the Body. Respondents were asked to indicate their (dis)agreement with each of the following statements: (a) My body is a temple of God, (b) God uses my body to do God's will, (c) My body is a gift from God, (d) My body is created in God's image. Answers were coded 1=strongly disagree, 2=disagree, 3=tend to disagree, 4=neutral or not sure,

5=tend to agree, 6=agree, 7=strongly agree. Responses were summed to create a scale tapping beliefs regarding the sanctity of the body ($\alpha=.90$).

Church-based Health Activities. We created a measure of health activities sponsored by the congregation, based on responses to several items. Respondents were asked: "During the past 12 months ... (a) Has someone given a sermon at your church that included the topic of health or health-related activities? (b) Has your church held any classes or informal groups related to health issues? (c) Has your church distributed any printed material related to health issues? (d) Has your church sponsored any programs or services related to health care?" Each item was coded 1=yes, 0=no; answers were summed to create a measure of the number of types of health activities that were sponsored by the respondent's church.

Church Support. Support is measured in terms of the frequency of health-related discussions with fellow church members. Respondents were asked: "During the past 12 months, how often have you (a) discussed your own health-related problems with someone at your church? (b) discussed someone else's health-related problems with someone at your church?" Response categories were 1=never, 2=rarely, 3=sometimes, 4=often. The two items were correlated at $r=.485$, $p<.001$; answers were summed to create an index of the frequency of health-related discussions.

Health-Care Recommendations at Church. Respondents were also asked whether, during the 12 months prior to the survey, they "received a recommendation for a certain doctor, dentist, optometrist, clinic, or other health-care provider from someone at ... church." Answers to this question were coded 1=yes, 0=no.

Control Variables

Our analyses also controlled for a number of other factors that may influence the likelihood that individuals obtain regular physical checkups from health professionals. These include: gender (1=female, 0=male); age (measured in years); education (1=graduate degree, 1=some graduate work, 1=less than a four-year degree, 0=college degree, BA or BS); marital status (1=married, 0=not married); and frequency of church attendance (1=more than weekly, 1=weekly, 0=less than once per week).² In addition, individuals were asked "During the past five years, how often have you avoided or postponed going to the doctor or obtaining medical care because of a lack of sufficient health insurance?" Based on the responses, we created dummy variables for "most or all of the time" (1=), "once or twice" (1=), with never (0=) serving as the reference category in our analyses.³ Finally, to control for possible dispositional planfulness, another potential explanation for the observed patterns between religious involvement and preventive health care use, we included several items from the Barratt Impulsiveness Scale (Patton, Stanford, and Barratt 1995). Respondents were asked to indicate how often the following statement(s) describe them: (a) I am a careful thinker, (b) I like to think about complex problems, (c) I plan tasks carefully, (d) I plan trips well ahead of time. Each item was coded as follows: 1=rarely/never; 2=occasionally; 3=often; 4=always/almost always. Responses were summed to create an index of planfulness ($\alpha=.65$).

Missing Data

For most predictor variables, missing data do not pose a significant problem, and the small numbers of missing values are handled via listwise deletion. However, to retain as

much of the original sample as possible in our analyses, we imputed values on missing cases for two of the key explanatory variables on which more than 5% of cases lacked valid responses: (a) mean substitution was used for congregational health activities, which is a continuous (count) variable; and (b) modal substitution was used for health care recommendations from church members, which is a dichotomous variable. Dummy variables are used to flag those cases for which information was originally missing; the estimated net effects of these dummy variables were consistently non-significant, and therefore are not displayed in Table 2. Ancillary analyses (not shown) indicate that the results do not change in any meaningful way when all cases that originally had missing values are deleted.

RESULTS

Descriptive Statistics

We begin by presenting descriptive statistics on all variables used in this analysis in Table 1. The vast majority (nearly 83%) of respondents in this sample report having a general physical examination within the 12-month period preceding the survey. Most respondents were female (57%) and married (77%), and the average respondent was approximately 60 years old. Nearly one-third of Presbyterian Panel Survey respondents hold a graduate degree, while another 35% have at least an undergraduate degree. Not surprisingly, since respondents were drawn from congregational membership lists, levels of self-reported church attendance are quite high compared with those in general population surveys. Around 35% of the respondents report attending religious services at least once a week, and most of the rest of these respondents attend "nearly every week." Given the reputation of the PCUSA as an upper-status denomination, it is not surprising that most respondents have adequate health insurance; fewer than 15% of these persons had to delay seeking medical care due to insufficient medical insurance, and this was a chronic problem for only a small percentage (around 3.5%) of persons in our sample. Respondents also receive relatively high scores on our planfulness measure, with an overall mean score of nearly 12.5 on a scale that ranges from 4-16. Similarly, respondents tend to endorse beliefs regarding the sanctity of the physical body (*e.g.*, "the body is the temple of God"); this scale ranges from 4-28, and the average score is nearly 23. Levels of congregational health support are moderate, with average scores falling around the midpoint of the scale. According to these respondents, their PCUSA congregations are only somewhat active in sponsoring health-related initiatives (*e.g.*, sermons, programs, classes). Finally, slightly more than one-fourth of the respondents (27%) report receiving a recommendation for a specific health care provider from someone at church during the year prior to the survey.

Multivariate Findings

Table 2 presents findings from a series of multivariate logistic regression models, estimating the net effects of religious variables and other predictors on the odds of having received a general medical examination (or checkup) within the year preceding the survey. Results are presented as odds ratios. Several specific patterns are especially noteworthy. Contrary to H1, we find no association between the frequency of religious attendance and the odds of having an annual checkup in any of our models. In model 2, we add a measure tapping belief in the sanctity of the physical body, and the results run directly counter to H2: Higher scores on this scale are inversely linked with physical exams. Specifically, each

TABLE I
DESCRIPTIVE STATISTICS FOR VARIABLES OF INTEREST, PCUSA 2007

Variable	Mean	Std. Dev.	Min	Max
Dependent Variable				
Annual exam	0.827	--	0	1
Independent Variables				
Sanctity of the body	22.825	5.089	4	28
Church-based health activities	1.367	1.352	0	4
Church support	5.014	1.564	2	8
Health-Care Recommendation at Church	0.270	--	0	1
Control Variables				
Age	60.047	13.591	18	96
Female	0.568	--	0	1
Married	0.775	--	0	1
Education				
Less than college	0.325	--	0	1
College degree	0.242	--	0	1
Some graduate work	0.107	--	0	1
Graduate degree	0.325	--	0	1
Church attendance				
Low: less or equal to 2-3 times a month	0.183	--	0	1
Medium: nearly every week	0.469	--	0	1
High: weekly	0.348	--	0	1
Insurance problem				
Never	0.835	--	0	1
Once or Twice	0.107	--	0	1
Most or all of the time	0.034	--	0	1
Planfulness	12.431	2.150	4	16
N	1,107			

one-unit increment on the "sanctity of the Body" scale is associated with a decrement of roughly 5% in the odds of having had a checkup during the preceding year.

On the other hand, our expectations regarding the estimated net effects of congregational networks and processes are generally supported. In model 3, we find that individuals who belong to churches that sponsor health promotion initiatives (e.g., sermons by clergy, health education programs) are more likely to receive annual medical exams than other persons. According to our estimates, each additional type of congregational health initiative (a count variable that ranges from 1-4) is associated with an increment of roughly 14% (OR=1.136, $p < .05$) in the odds of reporting an annual physical examination, a pattern that is consistent with H3. Model 4 shows that each one-unit increment in our measure of informal health-

TABLE 2
ESTIMATED NET EFFECTS OF KEY INDEPENDENT VARIABLES AND CONTROL VARIABLES ON ANNUAL EXAM
(PRESBYTERIAN PANEL STUDY, HEALTH SUPPLEMENT, 2007)^a

	Annual Exam					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age (Continuous)	1.048***	1.046***	1.049***	1.046***	1.048***	1.046***
Gender (male)						
Female	1.311	1.305	1.315	1.239	1.249	1.196
Marital status (not married)						
Married	1.142	1.192	1.121	1.138	1.108	1.153
Education (college degree)						
Less than college	0.956	0.982	0.979	0.965	0.973	1.030
Some graduate work	1.051	1.074	1.040	1.035	1.063	1.065
Graduate degree	0.960	0.967	0.959	0.962	0.949	0.963
Church attendance (low)						
Medium: nearly every week	0.934	1.012	0.944	0.860	0.867	0.912
High: weekly	0.910	1.065	0.912	0.823	0.861	0.967
Insurance problem (never)						
Most or all of the time	0.348**	0.333**	0.339**	0.335**	0.316**	0.286***
Once or Twice	0.753	0.754	0.756	0.746	0.695	0.694
Planfulness (continuous)	1.097*	1.105*	1.092*	1.089*	1.090*	1.088*
Sanctity of the body (continuous)		0.951*				0.946**
Church-based health activities (continuous)			1.136*			1.096
Church support (continuous)				1.132*		1.103+
Health-Care Recommendation at Church (no)					2.150***	1.958**
Yes						
-2 Log likelihood	934.9	928.1	930.5	929.6	920.9	907.9
N	1,107					

^a Logistic regression odds ratios.
* $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .1$.

related discussions among church members is linked with a 13% increment (OR=1.132, $p<.05$) in the odds of an annual checkup. Thus, per H4, compared with persons who receive the minimum score (2) on this measure of informal church support, the odds of a regular physical examination are approximately 80% greater among their counterparts who receive the highest possible score (8) ($[8-2] \times 1.132 = 1.792$).

As anticipated (H5a), the findings in model 5 reveal that respondents who have received recommendations for specific health care provider(s) from persons in their congregation are slightly more than twice as likely (OR=2.15, $p<.001$) to have obtained an annual checkup than those who did not. In the full model (model 6), the receipt of a specific health care recommendation at church remains a robust predictor of annual physical checkups (OR=1.958, $p<.01$). However, the estimated net effects of congregational health activities and informal health-related discussions are reduced to statistical non-significance (OR=1.10, ns) and marginal significance (OR=1.103, $p<.10$), respectively. This pattern of findings raises the possibility that the apparent benefits of congregational health initiatives and informal health discussions are due to advice about good doctors or clinics—or perhaps those to be avoided—that may emerge from congregational health activities. This pattern of results appears consistent with H5b.

Closer inspection reveals another important finding: In ancillary analyses (not shown), we distinguish between the two components of our measure of “church support” and estimate their net effects individually. When we do this in the full model (model 6), the estimated net effect of talking with church members about the health problems of others is unrelated to the likelihood of having an annual medical checkup (OR=0.96, ns). However, the other item in this index—talking with church members about one’s own health issues—bears a strong positive relationship to this outcome; indeed, each one-unit increase in this measure of congregational health support is associated with a 40% increase in the odds of getting a checkup (OR=1.40, $p<.001$). Thus, despite the moderately high correlation between the two items in the church support index, they relate differently to the likelihood of obtaining annual medical exams.

Given the scarcity of information about other factors that may affect the receipt of annual medical checkups, we also briefly note several other patterns in our data. First, age (measured in years) is by far the strongest predictor; each year is associated with an increase of approximately 4-5% in the odds of receiving an annual health exam. We find no evidence of meaningful variations in this outcome by gender, marital status, or education level. Respondents who report persistent lack of health insurance—as noted earlier, this is only a small percentage of persons in this sample—are approximately 70% less likely than their well-insured counterparts to avail themselves of this type of preventive health care. Finally, it appears that the odds of getting a preventive health examination are linked with dispositional factors as well: Each one-unit increment in our measure of planfulness is associated with an increment of nearly 10% in the odds of receiving an annual medical checkup.

Additional Analyses

In addition to these main effects models, we also considered several other possible relationships in ancillary analyses (not shown). First, one potential explanation for the counterintuitive association between (a) beliefs about the sanctity of the body and (b) the annual general checkup might involve the conviction that God has control over personal health and well-being. This belief that health is in the hands of God could lead some persons to believe

that proactive or preventive health care services are not necessary. To investigate this possibility, we used an index of God locus of health control based on seven items (e.g., "Most things that affect my health happen because of God," "Whether or not my health improves is up to God") ($\alpha=.91$). However, although there is a moderate positive correlation between beliefs about the sanctity of the Body and the God locus of health control measure ($r=.148, p<.001$), these beliefs about God control are entirely unrelated to our item on general physical examinations ($r=-.006, ns$). Thus, this sense that God controls health cannot explain the unexpected finding contra H1 that we reported above.

Second, we considered the possibility that respondents may seek regular checkups in part because they are concerned about maintaining their independence and wish to avoid becoming a burden to loved ones. This focus on personal independence was measured with responses to the following item: "How concerned are you about being unable to be independent and take care of yourself and your affairs in the future?" However, this item was unrelated to reports of getting a physical examination ($r=-.037, ns$).

Third, although one of our strongest findings involves the role of church members in recommending specific physicians or clinics, it is conceivable that this is confounded with the presence of health care providers within the congregation. Thus, in ancillary analyses we included a dummy variable indicating that the respondent is aware of doctors, nurses, or other health professionals within his/her congregation. However, this variable was consistently unrelated to the likelihood of obtaining an annual physical exam, and consequently it was dropped from the final analyses.

Fourth, an emerging body of work links religious involvement with trust in physicians, and in the health care system overall (e.g., Benjamins 2006b). This may be a reflection of the generally higher levels of social trust among many religious persons. Because this could help to explain the observed association between church-based health care recommendations and the likelihood of getting an annual medical examination, we also added a single item tapping levels of (dis)agreement with the following statement: "All in all, I have complete trust in my doctor." However, this was unrelated to the chances of having an annual checkup.

Finally, we considered the possibility that our main findings result from unmeasured dispositional factors, such as social desirability bias or conformity bias. Therefore, in ancillary analyses we included (a) several measures from Paulhus' (1991) Balanced Inventory of Desirable Responses (BIDR), designed to tap impression management and self-deception tendencies, and (b) five items from the Conformity Scale, as reported by Mehrabian and Stefl (1995) (e.g., "I often rely on, and act on, the advice of others," "Basically, my friends are the ones who decide what we do together") ($\alpha=.54$). However, controls for these variables never approached statistical significance and never altered the main relationships of interest in this study. Therefore, they were dropped from subsequent models.

DISCUSSION

Over the past two decades, a burgeoning literature has examined relationships between religion, health, and mortality. As investigators explore possible reasons for the salutary effects of religious involvement, one promising direction appears to involve the tendency of more religious persons to use preventive care more often than others. Although several studies have documented this association, however, the reasons and mechanisms underlying this pattern remain unexplored. This study has focused on annual medical checkups,

perhaps the most basic type of preventive care. We have examined four possible mechanisms—and have considered others in ancillary analyses—using data on a nationwide sample of members of the Presbyterian Church USA, a Mainline Protestant denomination which, according to several previous studies, has relatively high levels of preventive care utilization.

Several findings are particularly noteworthy. Overall, the findings underscore the importance of the social organization of religious congregations in promoting this type of preventive care among church members. Previous work on church-based social support has focused on members as sources of informal aid, emotional comfort, and assurance. In addition, our results show that these networks may provide valuable social cues and practical information regarding health issues and health care providers. More than one-quarter of PCUSA members in our sample received recommendations for specific health care providers from persons in their congregation during the year preceding the survey, and the recipients were roughly twice as likely to obtain a general medical examination as their counterparts who did not receive such information. Church members may trust the judgments and advice of their fellows for several reasons. Congregations tend to be relatively homogeneous with regard to status characteristics, and members have shared interests, activities, and values. Thus, church networks may be perceived as reliable sources of information about the competence, professionalism, deportment, and sensitivity of health care providers. Further, informal discussions with church members (in Mainline denominations such as the PCUSA, many of whom tend to be middle-aged or older adults) can sensitize individuals to the need for vigilance concerning chronic conditions. Learning about the health problems of others may offer cautionary tales about the consequences of failing to seek preventive care. More importantly, however, conversations with fellow church members about one's own health issues may encourage or confirm one's decision to obtain a medical examination.

In light of these findings, future studies should explore the role of religious networks in help-seeking behavior in greater detail. The use of church members as sources of such information may vary depending upon congregational size and composition, as well as duration and intensity of membership and participation, and other factors. Further, the likelihood of receiving recommendations for health care providers and the influence of such suggestions may depend upon the closeness of the interpersonal relationships involved or the expertise or experience of the person giving the reference. It is also possible that social sanctions from others in the congregation—negative interaction, criticism, or chiding—might spur individuals to take better care of themselves as well.

On the other hand, religious beliefs about the sanctity of the body—which have been suggested as promising explanations for observed links between religion and preventive care use—do not appear to contribute to the use of medical exams. Surprisingly, our results suggest that such beliefs are significantly inversely associated with annual checkups. The reasons for this counterintuitive pattern are not clear. One plausible explanation is that persons who hold these beliefs most fervently may also feel that God is in control of their physical well-being, and may therefore perceive less need to engage in proactive health behaviors; however, this association with God control did not emerge in our ancillary analyses. It is not clear why beliefs about the sanctity of the body might undermine the tendency to visit primary care providers regularly; perhaps this pattern is linked with biblical inerrancy and thus may be reflecting the influence of unmeasured facets of theological conservatism that stress proscriptions against negative health behaviors (*e.g.*, drinking, smoking) rather than

the adoption of positive ones. In any case, this surprising finding deserves further exploration in the future. It would also be useful to know whether such beliefs may promote other health behaviors that do not involve the formal health care sector, such as diet, exercise, and other self-care activities.

Another empirical pattern in our data warrants mention: Although observers have suggested that links between religious involvement and preventive health care use may be spurious, resulting from the influence of dispositional factors—such as planfulness and self-discipline, tendencies toward social conformity, or the tendency to provide socially desirable responses—our data do not support this claim. With the exception of planfulness, which does bear a modest positive association with medical checkups, we find no association between these dispositional factors and self-reports of annual medical exams. Further, the other dispositional variables were unrelated to checkups. Thus, our study contributes to a growing body of evidence showing that links between religion and behavioral outcomes cannot be attributed to such factors (Regnerus and Smith 2005).

Our results open a fresh direction in the literature on religion and health, and they also hold practical relevance for clergy and other practitioners in religious settings. Given this evidence about the importance of congregations as sources of health information, clergy members and lay leaders might do more to encourage this, particularly in congregations made up primarily of middle-aged and older members, for whom health issues loom large and for whom preventive care may be especially important and valuable. Our findings suggest that congregations with health activities (*e.g.*, sermons, distribution of printed materials, seminars, *etc.*) can have beneficial outcomes, spurring members to pay closer attention to their physical well-being and to exchange information on their experiences with health care providers. This is yet another way in which religious communities and their leaders can contribute to the quality of life among members and their families.

Future research might profitably investigate the interplay of religiously-grounded health beliefs and congregational mechanisms in shaping other types of preventive care use and other facets of healthy lifestyles. Indeed, recent studies link religious attendance with a broad array of positive health behaviors (Hill *et al.* 2006, 2007), and it is important to learn more about the reasons for these associations. These reasons will become clearer as researchers incorporate the relevant items in studies that collect longitudinal data on large, representative samples. This will also make it possible to explore patterns across diverse religious communities (besides the PCUSA), racial/ethnic differences in relationships between religion and health behaviors, and variations in these links across the life course. Finally, studies of religion and health should take these findings concerning regular checkups, other types of preventive care use, and other links with health behavior and lifestyles into account more fully, as potential explanations for observed religious differentials in health status, functional trajectories, and mortality risk.

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NOTES

¹Allostatic load specifically refers to a composite index of cumulative strain on organs that accumulates from the wear and tear associated with acute shifts in physiological activity in response to negative stimuli—ed.

²In preliminary analyses we also included dummy variables for race (1=nonwhite, 0=white) and church status (1=elder, 0=rank-and-file layperson). However, these variables were consistently unrelated to the outcome, and in the interest of parsimony they were dropped from the final models. We also dropped measures of the frequency of prayer for the same reason.

³We also investigated the functional form of the estimated net effect of age, by including a series of dummy variables in preliminary models (1=under 40, 1=40-49, 1=60-69, 1=70 and over, 0=50-59). The results of these analyses confirmed that the odds of getting an annual checkup increase in monotonic fashion across age categories. Thus, we opted to include the continuous measure of age (measured in years) in the final models.

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