

Religion, Health, and Psychological Well-Being in Older Adults

Findings From Three National Surveys

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This study examines the impact of religious involvement on health status and psychological well-being using data on older adults from three national probability surveys: the Myth and Reality of Aging ($N = 2,797$), the Quality of American Life ($N = 1,209$), and Americans' Changing Lives ($N = 1,669$) studies. Constructs are measured by single items and indices that vary across data sets. A proposed theoretical model specifies direct effects of religiosity on health and well-being and indirect effects on well-being through health. Analyses consist of structural-equation modeling of confirmed measurement models using weighted least squares estimation in LISREL 8.03. The model is analyzed first as specified and is then rerun controlling for the effects of six exogenous constructs: age, gender, race, marital status, education, and geographical region. Findings reveal excellent overall fit in all three samples and the presence of statistically significant religious effects, notably positive net effects of organizational religiosity, in all three samples. These results build on those of prior studies based mostly on samples limited regionally or methodologically or to particular racial or ethnic groups. This study also underscores the value of replicated secondary data analysis as a strategy for gerontologists seeking to confirm or examine a given structural model. Finally, an agenda is proposed for future research in this area.

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Psychological well-being is an umbrella construct comprising various affective and cognitive dimensions such as positive and negative affect, happiness, life satisfaction, congruence between expected and achieved life goals, psychosomatic symptoms, and mood (see George, 1981). Along with constructs such as self-esteem, self-efficacy, and personal control or mastery, psychological well-being is a component of subjective well-being, a metaconstruct encompassing personal evaluations of the responses of individuals to their life experiences (Okun, 1995). Subjective well-being and its counterpart, objective well-being (e.g., functional capacity, health status, socioeconomic status), in turn make up an even more encompassing construct known as quality of life, a term more commonly used in clinical medicine and social indicators research (see Lawton, 1991). As an indicator of the quality of life of older adults, psychological well-being has been a focus of empirical study by gerontologists for decades.

Several salient correlates or determinants of psychological well-being have emerged consistently in reviews of this field. These include health status (George & Landerman, 1984; Okun, Stock, Haring, & Witter, 1984), both objective measures of activity and physical functioning and more subjective self-ratings of global health (Chatters, 1988); socioeconomic status (Diener, 1984), notwithstanding some variation observed in the effects of particular component indicators (Larson, 1978); and age, although early findings of an inverse association (Diener, 1984) have tended to give way to null results in later studies (McNeil, Stones, & Kozma, 1986) and suggestions that positive findings may be confounded by cohort effects (Larson, 1978). Other constructs have been found to predict psychological well-being, although not as consistently or in as many studies. These include ethnicity, retirement, widowhood, and various indicators of social contact or interaction and psychosocial status, such as social support, life events, bereavement, coping, and self-esteem (see Levin & Tobin, 1995).

Despite the presence of associations with these constructs, little of the variance in psychological well-being is typically explained in given studies (see Levin & Tobin, 1995). This may reflect inadequacies in the theoretical underpinnings of existing research, which has emphasized implicitly that happiness, emotional adjustment, and satisfaction with life principally reflect a combination of biological

parameters (e.g., age), an ability to function physically (e.g., health status), and financial resources (e.g., socioeconomic status). Occasional consideration of other factors is encouraging, such as the interface of the individual with his or her social environment (e.g., studies of the effects of racial discrimination or social support). Investigation of effects on psychological well-being of qualities of one's inner life has less often been considered. Substantive issues related to personality, worldview, meaning, values, spiritual development, and religious involvement until recently have not typically been conceived as salient influences on the well-being of older adults (McFadden, 1996).

*RESEARCH ON RELIGION AND
PSYCHOLOGICAL WELL-BEING*

Religious characteristics have not always been overlooked as correlates or determinants of psychological well-being. Research dating back to the early 1950s consistently documents the impact of religious involvement on personal adjustment and well-being (see reviews by Levin, 1995; Moberg, 1990). In the past few years, especially, gerontologists have revisited this work, bringing to it more sophisticated measures and methodologies (e.g., Chatters, Levin, & Taylor, 1992) and more fleshed-out theoretical perspectives, such as from developmental psychology (see McFadden, 1996). Recent reviews document the many positive findings on religion from empirical studies conducted by gerontologists and geriatricians just in the past decade (Koenig, 1995), much of them published in top-line journals (Levin, 1997). These findings are also summarized in the many scholarly books on this topic that have appeared in the past few years (see Moberg, 1996). Practice-based observations (Tobin, 1991) and results of qualitative studies (e.g., Thomas, 1991) also have served to encourage consideration of religious involvement as a possible influence on well-being. For example, Thomas's (1991) research on elderly renunciates in India led him to "a clear impression of the irrelevancy of much of the research on the correlates of life satisfaction conducted in [the U.S.]" (p. 225). Despite poor health, low socioeconomic status, and an absence of social support, his respondents "would have bumped the top off of any scale of life satisfaction" (p. 225).

This existing research has shown that religious involvement, variously assessed, has positive associations or, in epidemiologic terms, protective effects, with respect to a wide range of well-being-related outcomes (see reviews by Levin, 1989; Witter, Stock, Okun, & Haring, 1985). These include life satisfaction (Anson, Antonovsky, & Sagy, 1990; Levin, Chatters, & Taylor, 1995), depressive symptoms (Idler, 1987; Koenig, Moberg, & Kvale, 1988; Strawbridge, Shema, Cohen, Roberts, & Kaplan, 1998), happiness (Poloma & Pendleton, 1990), chronic anxiety (Koenig, Moberg, & Kvale, 1988), and emotional adjustment (Blazer & Palmore, 1976). Salutary religious effects also have been found in relation to other psychosocial and health-related outcomes, including coping (Pargament et al., 1990), self-esteem and mastery (Krause & Tran, 1989), subjective health (Levin & Markides, 1986), physical symptomatology (Hannay, 1980), and functional disability (Idler, 1987; Idler & Kasl, 1992, 1997). Although there have been excellent studies, such as those noted, gerontological research on religion and psychological well-being as a whole nonetheless suffers from key limitations, mostly methodological, which limit the generalizability and persuasiveness of findings (see Koenig, 1990; Koenig & Futterman, 1995; Levin, 1989, 1995; Levin & Tobin, 1995).

First, studies typically include single religious dimensions or measures (e.g., religious attendance), yet seek to infer effects or noneffects for "religion" in general. As often noted, religious involvement is not so much a particular construct or variable as a domain of constructs (Levin, Taylor, & Chatters, 1995), and validated measures of many different religious dimensions have been developed by sociologists and psychologists of religion (see Payne, 1982). Second, psychological well-being, too, is a meta-construct with component affective and cognitive dimensions that may not relate in identical fashion to antecedent constructs (see George, 1981). Third, much of the empirical research in this area is based on small, nonrandom, unrepresentative samples. Studies based on some type of randomized, probability, or systematic sampling procedure are infrequent, and findings from nationally representative samples are especially lacking (see Koenig & Futterman, 1995). Fourth, only rarely have theoretical models explicitly been tested. The work of Krause (1991, 1992, 1993, 1995) is a notable

exception to the tendency of gerontological and geriatric research on religion to rely on "exploratory" analysis of unspecified relationships. Fifth, positive findings are typically based on bivariate or zero-order analyses (see Levin & Markides, 1986). Published findings typically fail to control for the effects of standard sociodemographic correlates of religious involvement, health status, or psychological well-being or to test structural models positing effects of multiple endogenous constructs (e.g., studies omitting health from a predictive model of well-being).

A PROPOSED MODEL

The present study seeks to expand investigation of religion, health, and well-being among older adults while addressing some of the limitations of prior research. Specifically, this study intends to examine the generalizability of a simple, multifactorial structural model of religious involvement, health status, and psychological well-being through a strategy of replicated secondary analysis across race (Black and White respondents), period (samples from the early 1970s to the late 1980s), and the particular observed indicators used as measures of each endogenous construct. A general model will be tested using data from three large-scale national probability surveys of older adults, each of which contains both Black and White respondents and one or more measures each of psychological well-being and health status, and two or more dimensions of religious involvement. A simple, parsimonious theoretical model is proposed to guide analyses in this study (see Figure 1). This model specifies effects of multiple intercorrelated religious dimensions on measures of health and well-being, as well as an effect of health on well-being supported by numerous reviews (e.g., George & Landerman, 1984).

This model represents an elaboration of what epidemiologists refer to as an indirect-effects model, whereby religiosity is posited to affect well-being both directly as well as indirectly through health. Within the religion, aging, and well-being field, this has been referred to as a prevention model (Koenig & Futterman, 1995), in that religious involvement is hypothesized to benefit well-being in part through preventing physical morbidity, itself a well-known risk factor for psychological distress (George & Landerman, 1984). Just how religious

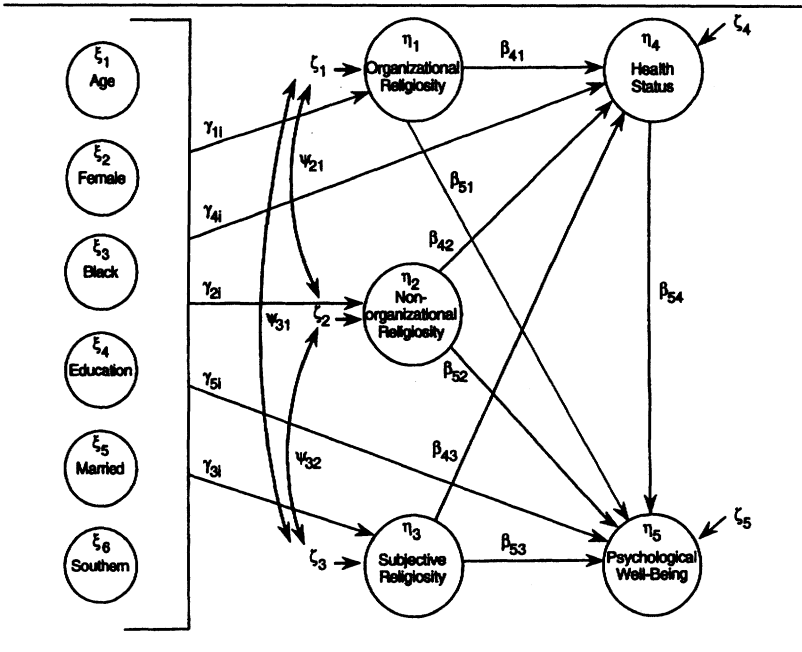


Figure 1. The proposed structural model, including both endogenous and exogenous constructs.

involvement serves to reduce the risk of subsequent morbidity has been the subject of increasing speculation. It has been suggested that dimensions of religiosity impact health by some combination of encouraging positive health-related behaviors, facilitating receipt of social support, engendering stress-reducing emotional states, fostering health-promoting beliefs, and enhancing an optimistic outlook (Levin & Vanderpool, 1989). Research on possible “mechanisms” underlying significant religious effects requires prospective cohort data and valid measures of each mediating construct, and is thus beyond the scope of the present study.

Differentiating religious dimensions is supported by mid-range theory in religious gerontology. The multidimensional disengagement perspective (Mindel & Vaughan, 1978) suggests that as older adults age, and on average, begin to disengage from public religious behavior due to increasing incidence of functional limitations, private religious activities may be substituted, take on greater meaning, or

grow in salience for well-being. Cross-sectional research offers mixed support for a half dozen competing perspectives (see Levin, 1989), but multidimensional disengagement seems most persuasive in light of existing findings.

The proposed model is also consistent with epidemiologic findings on the primary-preventive effects of religion for physical health (Levin & Schiller, 1987). In this literature of more than 200 studies, religious affiliation and involvement are associated with lower levels of a variety of diagnosed and self-reported conditions. One review found that religious attendance, a principal measure of organizational religiosity, was positively associated with health or lower morbidity in 22 of 27 studies (Levin & Vanderpool, 1987). Other reviews point to positive associations between religious measures and indicators of mental health and well-being (Gartner, Larson, & Allen, 1991), especially among older adults (Koenig, 1990). Published findings also point to the persistence of a religious effect on well-being in older adults net of the effects of health but in samples limited methodologically, geographically, and/or ethnically (e.g., Levin & Markides, 1988; Williams, Larson, Buckler, Heckmann, & Pyle, 1991).

Implicit in the proposed model are specific expectations regarding relationships among religion, health, and well-being. The following hypotheses are tested in the present study:

Hypothesis 1: Dimensions of religious involvement, especially organizational religiosity, are positively associated with health status. Participation in organized religious activities, such as church or synagogue attendance, may provide access to social and psychological resources that buffer the deleterious impact of life stress and facilitate coping (Ellison, 1994) and thus lead to better health. Alternatively, frequent attendance, especially among older adults, may reflect better functional health than nonattenders (Levin, 1989). Naturally, the directionality of this effect cannot be proven in a cross-sectional analysis. Recent longitudinal findings, however, suggest that regular attendance indeed is protective against subsequent illness-related outcomes, including functional disability (Idler & Kasl, 1997) and even mortality (Strawbridge, Cohen, Shema, & Kaplan, 1997).

Hypothesis 2: Organizational religiosity is positively associated with well-being net of the effects of health. For the same reasons identified in Hypothesis 1 (i.e., provision of tangible and emotional

resources, buffering of stress, facilitation of coping), public religious participation is expected to be a significant factor in personal well-being. In addition, active religious involvement in a community of believers provides continuity across life-course stages by emphasizing life's intrinsic and enduring meaning and fostering a sense of being blessed by God (Tobin, 1991). A recent systematic review of gerontological research published since 1980 found a dozen studies in which measures of organized religious activity were positively associated with life satisfaction or other indicators of well-being (Levin, 1997).

Hypothesis 3: Nonorganizational and subjective religiosity are associated with health and well-being, although the direction of effect is uncertain due to the much observed phenomenon of private religious involvement increasing among older adults in response to health-related declines in public religious activities (see Comstock & Tonascia, 1977; Levin, 1989; Witter et al., 1985). A positive association is supported for several reasons. Personal religious faith promotes mental health and well-being among older adults by emphasizing interpersonal relations, stressing forgiveness, providing hope for change, promoting a sense of self-control and self-determination, and promising life after death (Koenig, 1994). Private religious observances, such as prayer or daily devotions, may activate attachment processes that connect people to a larger religious community and to their conception of God or a higher spiritual force (McFadden & Levin, 1996).

Recent empirical evidence offers some support for the proposed model, using data from the National Survey of Black Americans (NSBA) (Levin, Chatters, & Taylor, 1995). Multiple observed indicators were used to measure each of five latent constructs: life satisfaction, physical health status, and organizational, nonorganizational, and subjective religiosity. Findings revealed that organizational religiosity was associated with both health and life satisfaction, subjective religiosity was associated with life satisfaction, and nonorganizational religiosity was associated inversely with health (the latter finding perhaps due to confounding, as described above). When the model was rerun controlling for the effects of several exogenous con-

structs, the significant association between organizational religiosity and life satisfaction remained. Interestingly, the magnitude of the standardized net effect for this relationship was comparable to the net effect of health on life satisfaction. This is intriguing because health status is generally considered the principal determinant of general well-being.

Methods

DATA SOURCES

Data for this study are from three large-scale national probability surveys of older adult Americans conducted in the 1970s and 1980s. Each of these surveys either contains a sample or oversample of exclusively older adults or contains a large number of older adult respondents within a broader sample. Each survey also contains both males and females, and Black and White respondents. The present study represents a replicated secondary data analysis (George & Landerman, 1984), a strategy by which a single research question or structural model is examined using data from multiple sources. The advantages of such a strategy include the opportunity to provide evidence for the robustness of a particular model across both different samples and different measures of particular constructs. Replicated secondary data analysis has been used infrequently but successfully in social-gerontological research, notably in studies of psychological well-being (e.g., Liang, Levin, & Krause, 1989).

The Myth and Reality of Aging survey was conducted by Louis Harris and Associates for the National Council on Aging (NCOA) in 1974 (National Council on Aging, 1979). Data on general issues and perceptions of aging were obtained from a stratified national sample of the civilian population, oversampling for adults 55 years of age and older and for African Americans 65 and older. Overall, there were 2,797 respondents at least 65 years of age. The available sample for the present analyses, after listwise deletion of missing values, contains 2,183 respondents. In this sample, respondents averaged 73.0 years of age and 9-11 years of education, 61.5% were females, 17.5% were

African Americans, 45.7% were married, and 31.4% lived in the South.

The second Quality of American Life (QAL) survey was conducted by Campbell and Converse (1984) at the University of Michigan in 1978. They collected data on social-psychological conditions and life needs and expectations using a national probability sample of adults ranging in age from 18 to 96. The sample consists of 3,692 respondents, 1,209 of whom were at least 55 years of age. With listwise deletion, the available sample contains 1,056 respondents. In this sample, respondents averaged 66.1 years of age and 10.6 years of education, 63.1% were females, 8.4% were African Americans, 54.2% were married, and 34.8% lived in the South.

The Americans' Changing Lives (ACL) study, the first wave of which was conducted by House (1989) at the University of Michigan in 1986, is a survey of at least two dozen wide-ranging social, psychological, and health-related topics. The ACL study used a national, multistage, stratified area-probability sample of adults 25 years of age and older, oversampling for African Americans and respondents over the age of 60. The sample consists of 3,617 respondents, 1,669 of whom are at least 60 years of age. With listwise deletion, the available sample contains 1,553 respondents. In this sample, respondents averaged 70.0 years of age and 10.4 years of education, 67.4% were females, 29.6% were African Americans, 51.4% were married, and 38.2% lived in the South. In the ACL data set, data for age, race, and education were cleaned, recoded, and imputed (House, 1989).

The slight differences among these data sets as to the cutoff ages that were used to denote older adulthood (i.e., 55, 60, 65) were based on practicality. Because these studies used special stratified sampling methods, such as oversampling of older adults, it was deemed best not to deviate from the cutoff ages used for these purposes in each respective survey in order not to compromise the representativeness of these samples. In no way do the choices of age cutoffs represent any substantive judgment as to what constitutes "old age." These same age cutoffs have been used in previous research on religion and aging that compared findings across these data sets (Levin, Taylor, & Chatters, 1994).

MEASURES

The proposed structural model (see Figure 1) posits interrelationships (signified by ψ s) among organizational (η_1), nonorganizational (η_2), and subjective (η_3) religiosity, and structural effects or associations (signified by β s) among religiosity, health status (η_4), and psychological well-being (η_5). The particular observed indicators of each of these latent constructs vary across the three samples, but each includes some indicators of these constructs. The one exception is that nonorganizational religiosity is only available in the ACL sample, but all three samples contain at least two intercorrelated religious dimensions. This underscores the inherent pitfalls of replicated secondary data analysis. The benefits of replicating a (mostly) common model across multiple data sets, however, are surely not negated by the presence of three rather than two religious dimensions in one of the data sets.

In the NCOA study, organizational religiosity is measured by frequency of religious attendance, subjective religiosity by a self-rating of the importance of religion, health status by two items in which respondents report how much of a problem health presents, and psychological well-being by summary scores of the Affect Balance Scale (ABS) and Life Satisfaction Index-Z (LSIZ) scale. In the QAL study, organizational religiosity is assessed by frequency of religious attendance, having a religious affiliation, and receiving religious instruction when growing up; subjective religiosity by a self-rating of religiousness; health status by a subjective self-rating of health, a health satisfaction item, and a derived item that combines information on the presence of a health problem and concomitant activity limitation; and psychological well-being by two items representing the respective positive and negative dimensions of the ABS scale. In the ACL study, organizational religiosity is measured by frequency of religious attendance, having a religious affiliation, and religious volunteer work; nonorganizational religiosity by reading religious books and watching religious programs; subjective religiosity by a self-report of religiousness and receiving spiritual comfort from religion; health status by a subjective self-rating of health, health satisfaction, two items assessing activity limitation and functional health, and a summary score of the number of chronic diseases experienced in the past year;

and psychological well-being by a life satisfaction item, a four-item index from the Life Satisfaction Index-A (LSIA) scale, and a two-item positive affect index from the Center for Epidemiologic Studies Depression (CES-D) Scale. Bivariate intercorrelations among the four or five latent constructs (η s) in each respective data set show a mixed pattern of associations.¹

DATA ANALYSIS

All analyses are conducted using the weighted least squares (WLS) estimator in LISREL 8.03 (Jöreskog & Sörbom, 1993b), and WLS coefficients are reported for parameter estimates. In conjunction with both polyserial and asymptotic covariance matrices created by PRELIS 2.03 (Jöreskog & Sörbom, 1993a), WLS is recommended for use with data of mixed measurement levels, which include ordinal indicators (Jöreskog, 1990), such as the items in this study, when one wishes to relax the assumption that data are multinormal (see Morris, Bergan, & Fulginiti, 1991). This is because findings suggest that maximum-likelihood estimation may be inappropriate for use with nonnormal data and may yield incorrect standard errors and biased overall fit (e.g., Finch & Zautra, 1992). A strategy of WLS estimation was also recommended by preliminary analyses using PRELIS 2.03 (Jöreskog and Sörbom, 1993a) and KANT 1.0 (MacIntosh, 1991), which revealed statistically significant levels of multivariate nonnormality, kurtosis, and skewness in these data.

In these analyses, two models are examined—one providing “gross” effects among endogenous constructs, the other presenting “net” effects (i.e., accounting for effects of exogenous constructs). In Model 1, three intercorrelated dimensions of religious involvement are hypothesized to be associated directly with both health status (β_{41} , β_{42} , β_{43}) and psychological well-being (β_{51} , β_{52} , β_{53}), as well as indirectly with well-being through its association with health (β_{54}). Model 2 represents a reestimation of Model 1 controlling for the effects of several exogenous constructs (ξ s) known from prior studies to be associated with the endogenous constructs, with paths (γ s) estimated from each exogenous to each endogenous construct. Exogenous constructs include age (in years), gender (0 = male, 1 = female), race (0 =

education (in years of school completed), and geographical region (0 = non-Southern, 1 = Southern). These effects are estimated in the presence of a full, free phi (ϕ) matrix, which, in nontechnical terms, means that the natural intercorrelation among these sociodemographic constructs is accounted for, thus ensuring more reliable parameter estimates.

These analyses use single items for each exogenous construct, with factor loadings and error terms scaled according to known reliabilities derived from the U.S. Bureau of the Census's (1975) Index of Inconsistency and modified by a commonly used algorithm (Mutran, Campbell, & Parker, 1980). This approach gives a more realistic assessment of exogenous effects, as perfect reliabilities (i.e., factor loadings of 1.0) no longer have to be presumed, and is increasingly used in gerontological research (see Krause, Liang, & Yatomi, 1989; Levin, 1994). The following standardized loadings are used: age (.94), gender (.99), marital status (.94), and education (.71). Geographical region was coded ecologically, so its respective factor loading is fixed to 1.0, as is the factor loading for race.

Results

Findings in Table 1 reveal excellent overall fit for all three gross-effects models (each Model 1) according to a variety of indices of overall fit. For the GFI, AGFI, NFI, NNFI, CFI, IFI, and RFI indices, scores above .900 are believed to indicate a satisfactory fit (Hoyle & Panter, 1995). In all three samples, all of these indices are well above this level, most approaching 1.0. For the RMSEA index, scores below about .05 are believed to indicate a good fit (Sugawara & MacCallum, 1993). Again, in all three samples, scores easily meet this criterion. Finally, for the relative likelihood ratio (χ^2/df), scores below about 3 or 4 are thought to indicate an acceptable overall fit (Carmines & McIver, 1981). This is a less consistently reliable fit index, as it is apparently influenced by sample size and other considerations (Marsh & Balla, 1994; Marsh, Balla, & McDonald, 1988). In all three samples, however, this index points to a good overall model fit.

Also presented in Table 1 is the overall fit for all three net-effects models (each Model 2). Because these models are more complex,

Table 1
Overall Fit of the Proposed Model

Fit Indices	NCOA (N = 2,183)		QAL (N = 1,056)		ACL (N = 1,553)	
	1	2	1	2	1	2
χ^2	7.97	151.12	14.49	311.10	155.39	2,144.46
df	5	17	20	56	68	130
<i>p</i>	.158	.000	.883	.000	.000	.000
χ^2/df	1.59	8.89	.72	5.56	2.29	16.50
GFI	.999	.997	.999	.997	.992	.960
AGFI	.997	.985	.997	.993	.987	.935
NFI	.998	.995	.997	.997	.979	.943
NNFI	.998	.984	1.002	.995	.984	.922
CFI	.999	.996	.000	.997	.988	.947
IFI	.999	.996	1.001	.997	.988	.947
RFI	.994	.982	.995	.994	.972	.917
RMSEA	.017	.060	.000	.066	.028	.099

Note. Model 1 represents gross estimates; Model 2 represents net estimates (i.e., controlling for effects of exogenous constructs).

involve estimation of considerably more parameters, and thus have greater degrees of freedom (*df*), the overall fit for each Model 2 would not be expected to attain the same high levels as for its respective Model 1. Nevertheless, findings generally support the overall fit of these models, which is excellent according to most indices.²

Findings in Table 2 represent structural parameter estimates (i.e., multiple regression coefficients) obtained through WLS estimation for both the gross (1) and net (2) models analyzed using each data set. In the NCOA study, organizational religiosity exhibits a strong, positive, and statistically significant association with health status ($\beta = .439$, $p < .001$). Subjective religiosity is inversely associated with health ($\beta = -.268$, $p < .001$), perhaps reflecting the much-observed phenomenon of infirm elders turning to more private, subjective forms of religious expression to compensate for disengagement from more public, behavioral forms of participation (e.g., religious attendance) due to declining health or physical functioning (see Levin, 1989). After controlling for the effects of the exogenous constructs, the positive effect

Table 2
WLS Estimates of Structural Parameters (β s and SEs) in the Proposed Model

Parameters	NCOA (N = 2,183)		QAL (N = 1,056)		ACL (N = 1,553)	
	1	2	1	2	1	2
	β_{41} : Organizational religiosity \rightarrow Health	.439*** (.115)	.210*** (.064)	.045 (.028)	.015 (.045)	.387*** (.116)
β_{51} : Organizational religiosity \rightarrow PWB	.125 (.097)	.035 (.076)	.022 (.023)	.093* (.042)	.068 (.062)	.053 (.042)
β_{42} : Nonorganizational religiosity \rightarrow Health	—	—	—	—	.484* (.225)	.058 (.086)
β_{52} : Nonorganizational religiosity \rightarrow PWB	—	—	—	—	-.144 (.134)	.042 (.059)
β_{43} : Subjective religiosity \rightarrow Health	-.268*** (.064)	-.023 (.062)	-.043 (.043)	.114* (.045)	-.264 (.207)	.121 (.101)
β_{53} : Subjective religiosity \rightarrow PWB	.137 (.087)	-.006 (.062)	.015 (.034)	.052 (.039)	-.033 (.118)	.136* (.066)
β_{54} : Health \rightarrow PWB	.677*** (.139)	.218* (.098)	.225*** (.055)	.206*** (.056)	.888*** (.046)	.608*** (.022)

Note. Model 1 represents gross estimates; Model 2 represents net estimates (i.e., controlling for effects of exogenous constructs). Coefficients represent WLS regression estimates, with standard errors below in parentheses.
* $p < .05$ (2-tailed). ** $p < .01$. *** $p < .001$.

of organizational religiosity on health remains statistically significant ($\beta = .210, p < .001$). In the QAL study, religiosity is not associated with either health or well-being at the gross level, but results of the net analyses provide evidence of a moderate suppressor effect. After controlling for exogenous effects, there are positive, statistically significant associations between organizational religiosity and well-being ($\beta = .093, p < .05$) and between subjective religiosity and health ($\beta = .114, p < .05$). In the ACL study, results reveal strong, statistically significant associations with health for both organizational ($\beta = .387, p < .001$) and nonorganizational ($\beta = .484, p < .05$) religiosity. After controlling for exogenous effects, the positive effect of organizational religiosity on health remains ($\beta = .252, p < .001$), and a positive effect of subjective religiosity on well-being emerges ($\beta = .136, p < .05$). In all three data sets, health is significantly associated with well-being at both the gross and net levels.

Finally, Table 3 presents the effects of the six exogenous constructs on the endogenous constructs in the proposed model. Because of differences among the three data sets (e.g., in sociodemographic characteristics, sample size, age range), the pattern and magnitude of statistically significant exogenous effects vary across samples. Several findings, however, are generally consistent across all three samples, including largely uniform patterns of effects for race, gender, and marital status on endogenous constructs. Higher levels of religiosity among African Americans are noted for all three religious dimensions across all three data sets, and being African American is modestly associated with a lower level of psychological well-being in the ACL data set. Female gender is associated with higher levels of religious involvement in all three data sets, and findings from the NCOA data set indicate that women report poorer health than men. Findings for marital status depend on which data set is examined. Positive effects of marriage are noted for religious involvement in all three data sets, but in the QAL data set being married is associated with lower levels of both organizational and subjective religiosity. Married individuals are advantaged with respect to both well-being in all three data sets and with respect to health in both the QAL and ACL data sets. Effects for the remaining exogenous constructs (age, education, and region) are more modest and less consistent across data sets.

Table 3
WLS Estimates of Exogenous Effects in the Proposed Model

Exogenous Constructs	Sample	Endogenous Constructs				
		Organizational Religiosity (η_1)	Nonorganizational Religiosity (η_2)	Subjective Religiosity (η_3)	Health Status (η_4)	Psychological Well-Being (η_5)
Age (ξ_1)	NCOA	-.033	—	.081	-.176*	.047
	QAL	-.953***	—	-.088	-.771***	-.206
	ACL	.012	.061	.045***	-.012	-.008
Female (ξ_2)	NCOA	.286***	—	.554***	-.287***	-.069
	QAL	.140**	—	-.001	.140	-.109
	ACL	.095***	.220***	.223***	.028	.001
Black (ξ_3)	NCOA	.357*	—	.199**	-.168	-.065
	QAL	.492***	—	.165***	-.031	-.089
	ACL	.199***	.459***	.304***	.023	-.052*
Married (ξ_4)	NCOA	.145	—	.194***	-.249*	.141*
	QAL	-.778***	—	-.141***	.202***	.312***
	ACL	.254***	.322***	.187***	.235***	.126***
Education (ξ_5)	NCOA	.228	—	-.079	.190	.284
	QAL	.292***	—	-.097	.309***	-.099
	ACL	.348***	.203***	.028	.118*	.006
Southern (ξ_6)	NCOA	.037	—	.186	-.149	.125
	QAL	.446***	—	.304***	.087	-.169
	ACL	-.018	.094***	.078***	.020	.002

Note. Sample sizes: NCOA ($N = 2,183$), QAL ($N = 1,056$), ACL ($N = 1,553$).
* $p < .05$ (2-tailed). ** $p < .01$. *** $p < .001$.

Discussion

These findings provide mixed support for the three study hypotheses, with Hypothesis 1 (an association between organizational religiosity and health status) faring best. In general, results suggest that (a) religious involvement is moderately and significantly associated with health status and psychological well-being; (b) these associations withstand controlling for effects of key sociodemographic constructs such as age, race, and gender; (c) these associations emerge across a variety of indicators; and (d) results are present, though inconsistent, across samples drawn from three large-scale national probability surveys conducted in the 1970s and 1980s. Most notable is the presence of statistically significant, positive net associations between organizational religiosity and health or well-being in all three samples. These results partly confirm earlier findings from the NSBA (Levin, Chatters, & Taylor, 1995). The results of the present replicated secondary data analysis point to positive effects of organizational religiosity (a) in three multiracial samples, (b) with data collected both well before and well after the NSBA, and (c) using a diversity of observed indicators of a set of common latent constructs. Although these findings are based on cross-sectional data, this study offers conceptual and methodological advances over previous work and provides useful new information based on multivariate analyses of national probability data.

Specifically, one or more significant associations between religious constructs and health status or psychological well-being were demonstrated in each of the data sets examined, including at the net level. Across data sets, statistically significant findings were obtained for each of the three religious constructs, highlighted by significant net findings for organizational religiosity in all three data sets and for subjective religiosity in two of three data sets. In the NCOA and the ACL studies, organizational religiosity was positively associated with better health at the gross and net levels, and in the QAL study this construct was positively associated with greater well-being at the net level. In the ACL study, a positive association between nonorganizational religious involvement and health was found at the gross level. Subjective religiosity was positively associated with health in the QAL study and with well-being in the ACL study, both at the net level.

Despite a general consistency in results, each data set's findings reveals a somewhat different configuration of structural linkages among endogenous constructs. In the NCOA data, findings show an association between organizational religious involvement and health status but no significant association with psychological well-being, whereas subjective religiosity is unrelated to either outcome at the net level. In the QAL and ACL data, by contrast, findings indicate more extensive connections among religious constructs, health, and well-being. In both data sets, religious effects were evident on both outcomes. In the QAL data, subjective religiosity was associated with health and organizational religiosity was associated with well-being, both at the net level. In the ACL data, this pattern of relationships was reversed, plus nonorganizational religiosity was associated with health at the gross level.

In evaluating the impact of religious involvement on health status, it is important to acknowledge that for all three data sets used in the present study, health was measured by one or more subjective self-assessments. Recent discussion of the substantive significance of positive religion-health associations suggests competing causal interpretations (Idler, 1995). One perspective holds that religious involvement is protective of physical health; structurally, this would imply that religious involvement precedes health. A second perspective holds that when measures of health incorporate subjective experiences (i.e., self-ratings of health or measures of health satisfaction), they may reflect central aspects of one's personal identity, including a spiritual or religious identity (Idler, 1995). Under these circumstances, a person clinically defined as having poor health may report a positive self-assessment. Such individuals, through use of religious cognitions or other religious means, may be able to reframe the personal meaning of poor health and physical limitations. This may result in positive subjective health assessments and thus a positive relationship between religion and health. A third perspective holds that individuals faced with health problems may employ religion as a coping resource (e.g., use of religious ritual, solicitation of support from religious associates). In such cases, the association between religion and health would be negative; structurally, health would precede religious involvement. These perspectives suggest that different processes

may underlie the connections often observed between religious involvement and nonclinically assessed health status indicators in cross-sectional analyses.

The distinct patterns of associations found in this study provide further evidence that religious factors may have stronger effects on health status and psychological well-being than has been conventionally accepted within gerontology. In the study of African Americans noted earlier (Levin, Chatters, & Taylor, 1995), with similar religious constructs to the present study, a positive association was found between organizational religiosity and well-being ($\beta = .260, p < .05$, and $\beta = .240, p < .01$, in split-sample analyses) net of the effects of health, sociodemographic constructs, and the other religious constructs. Effect-size comparisons indicated that this net association between organizational religiosity and well-being actually exceeded the gross association between health and well-being. In the present study, the statistically significant net associations between organizational religiosity and health ($\beta = .210, p < .001$, in the NCOA, and $\beta = .252, p < .001$, in the ACL) are comparable in magnitude to the net findings involving organizational religiosity in the earlier study.

The emergence in the ACL data of a positive association between subjective religiosity and psychological well-being may reflect the inclusion in the former (along with a self-rating of religiosity) of the observed indicator "receives spiritual comfort from religion." In the NCOA and QAL data sets, subjective religiosity was represented by single indicators of either self-rated religiosity or self-rated importance of religion, without reference to the spiritual and psychological benefits afforded by religion. The assessment of the positive and functional aspects of subjective religious experience may relate in specific ways to psychological well-being, most likely with respect to the affective components of well-being evaluations (Chatters, 1988). It is useful to remember that, across the three data sets, respective religious, health, and well-being constructs are measured by a diverse set of indicators. Given that evidence concerning the associations between multidimensional measures of religious involvement, health status, and psychological well-being is still developing, the interpretations offered here regarding the pattern of results and their meaning should be regarded as preliminary.

AN AGENDA FOR RESEARCH

To advance research on religion, aging, and well-being, several next steps can be identified. These include (a) expanding the multifactoriality of theoretical models, (b) specifying types of religious involvement that are salutary for particular health and well-being outcomes, (c) emphasizing panel analysis, and (d) conducting more epidemiologic analyses.

First, researchers in this area have begun to explore the potential mediating or moderating effects of various psychosocial constructs. In several notable studies (e.g., Ellison, 1995; Krause & Tran, 1989; Williams et al., 1991), models investigating religious effects on well-being-related outcomes have also incorporated measures of known psychosocial and behavioral correlates of well-being, such as self-esteem, mastery, life events stress, and subjective social support. Constructs such as self-esteem and social support represent resources that may be expected to buffer the impact of deleterious stressors; alternatively, they may reflect or be attributed in part to the influence of particular religious characteristics.

Second, researchers need to specify better which dimensions of religious participation are beneficial to which outcomes. Religion is a "multifaceted health-related phenomenon" (Levin & Vanderpool, 1992) constituting an amalgam of public and private behaviors, affects, cognitions, experiences, and values that may not realistically be expected to relate similarly to disparate outcomes (e.g., depression, positive affect, life satisfaction, subjective health). Particular religious dimensions may exert their influence through respective pathways that invoke very different salutogenic mechanisms than other religious dimensions.

With respect to religious effects on health, Levin (1996) proposed a model of such mechanisms. For example, public religious involvement may benefit health through providing social support that facilitates integration in networks that buffer stress and enhance coping and adaptation. Religious worship or prayer may benefit health through engendering positive emotions that stimulate salutary psychoneuro-immunologic or psychophysiological processes. Religiously committed attitudes may benefit health through encouraging positive health-

related behaviors and lifestyles that lower the risk of disease. Similarly for psychological well-being, it should be possible to craft hypotheses that link particular domains or facets of religious life to particular dimensions of well-being in ways that more precisely suggest other associated endogenous constructs to include in a given structural model.

Third, panel analyses are needed to establish the correct temporal sequence between religious involvement and health and well-being in structural models. With respect to the relationship between organizational religiosity and functional health, for example, the possible confounding between measures of these constructs (i.e., between frequency of religious attendance and extent of activity limitations due to disability) has been much commented on by gerontologists (going back, at least, to Steinitz, 1980). Likewise, for relationships between respective religious constructs and psychosocial outcomes whose measures are less obviously confounded (e.g., behavioral measures of religious involvement and measures of the affective domain of well-being), determining conclusively which constructs antecede which outcomes cannot be accomplished through analyses of cross-sectional data.

Recent longitudinal findings partly echo the results of the present study, without the potential ambiguity of indeterminate temporal sequence. These findings also exemplify the benefits of separately examining the impact of particular religious dimensions on particular dimensions of well-being. Anson et al. (1990) found a longitudinal effect of religious ritual observance on subsequent life satisfaction, but not on subsequent health status or psychological distress, among Israeli retirees. Williams and associates (1991) found a buffering effect of religious attendance, but not religious affiliation, on subsequent mental health, in New Haven, Connecticut. Idler and Kasl (1992) found protective effects of public religious involvement against subsequent disability and of private religious involvement against subsequent depression, also in New Haven. Levin, Markides, and Ray (1996) found a protective effect of frequent religious attendance on subsequent depressed affect, but no effect on subsequent positive affect or life satisfaction, among Mexican Americans from San Antonio.

As Idler (1995) has noted, accurate depiction of the health effects of religious involvement is complicated and requires longitudinal epidemiologic analysis to make sense of associations that appear contradictory cross-sectionally. For example, besides the potential confounding of public religious behavior with functional health, which by now is anticipated by researchers, inverse associations between public or private religiosity and health and well-being in prospective studies with short follow-up periods may also be expected (Idler, 1995). Such results may reflect a tendency of physically ill or emotionally distressed individuals (not necessarily older adults) to turn to religion in order to benefit from the psychosocial coping resources that it provides (Ellison, 1994). This possibility underscores a need for greater theoretical justification of the lag between waves of data collection in multiwave studies.

Fourth, longitudinal analyses would benefit from a more epidemiologic context. Investigation of religious effects on clinically meaningful outcomes within the framework of prospective cohort or retrospective case-control designs would enable explicit estimation of relative risk or protection for diagnosable conditions, and thus might encourage further exploration of specific etiologic or salutogenic mechanisms. Recent epidemiologic studies have identified protective effects of aspects of religious involvement on mortality (Bryant & Rakowski, 1992; Kark et al., 1996; Oxman, Freeman, & Manheimer, 1995), for example, and the expression of this finding in standard epidemiologic conventions (i.e., in terms of population-wide rates, relative risk or odds, covariate-adjusted rates) seems to more powerfully underscore the health-related consequences of religiosity in language meaningful to both public health scientists and physician-researchers. Furthermore, most existing research focuses on the primary preventive effects of religious involvement (see Levin, 1996); the possibility of a therapeutic effect later on in the natural histories of physical illnesses or of psychological distress is of keen interest to geriatricians, geropsychiatrists, and psychiatric epidemiologists (see Koenig et al., 1992), but has not yet been systematically explored. A medical-outcomes research or clinical-epidemiologic approach to religion, aging, and health would thus represent another important frontier for this field.

NOTES

1. Intercorrelations among latent constructs were calculated in LISREL 8.03 using the WLS estimator. In this note, the following abbreviations are used: organizational religiosity (OR), nonorganizational religiosity (NR), subjective religiosity (SR), health status (HS), psychological well-being (PWB). NCOA results: OR-SR (.574), OR-HS (.335), OR-PWB (.203), SR-HS (-.019), SR-PWB (.075), HS-PWB (.734). QAL results: OR-SR (.569), OR-HS (.017), OR-PWB (-.019), SR-HS (-.019), SR-PWB (-.002), HS-PWB (.544). ACL results: OR-NR (.811), OR-SR (.801), OR-HS (.630), OR-PWB (.589), NR-SR (.849), NR-HS (.638), NR-PWB (.548), SR-HS (.528), SR-PWB (.451), HS-PWB (.993).

2. The high values for the likelihood and relative likelihood ratios (i.e., χ^2 and χ^2/df) and the RMSEA index reported in Table 1 for ACL Model 2 are reduced considerably by freeing several correlated exogenous construct measurement-error (θ_6) parameters (notably those linking gender, education, race, and marital status). In these analyses (unreported in Table 1), freeing combinations of these parameters reduced these overall fit indices to more generally acceptable levels (as low as $\chi^2 = 610.01$, $\chi^2/df = 4.73$, and RMSEA = .049 in certain runs) without appreciably changing any of the other indices or the statistical significance or magnitude of individual parameter estimates. Some of the best combinations of freed parameters (in terms of χ^2/df), however, presented intractable problems for model convergence.

The respecification of such parameters on purely empirical grounds is encouraged in some quarters (e.g., Byrne, 1989) but is otherwise controversial and discouraged (Bentler & Chou, 1987; MacCallum, Roznowski, & Necowitz, 1992). Furthermore, inflated values for χ^2 , χ^2/df , and RMSEA are not uncommon in the presence of highly nonmultinormal data, and researchers are thus urged to avoid the temptation "to make inappropriate, nonreplicable modifications in theoretically adequate models to achieve traditional standards of fit" (West, Finch, & Curran, 1995, p. 73). With all of these considerations in mind, and with the somewhat elevated values for χ^2 , χ^2/df , and RMSEA placed in context, the results for the overall fit of ACL Model 2 presented in Table 3 are those of the original, theoretically specified model.

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