Church-Based Social Support and Mortality

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Objectives. The purpose of this study was to see if support provided and received from fellow church members reduced the deleterious effects of financial strain on mortality in late life.

Methods. Interviews were conducted with a nationwide sample of 1,500 older adults in 2001 and 2004. Participants were asked in 2001 about financial strain, church-based social support, and a range of private and public religious practices. Mortality status was determined at the follow-up interview in 2004.

Results. The findings indicated that providing social support to fellow church members reduced the effects of support providers’ own financial problems on mortality. In contrast, the data suggested that receiving support from people at church did not have the same stress-buffering effect.

Discussion. Finding ways to help older adults become more involved in providing support to others at church may form the basis for developing interventions aimed at improving their quality of life.

A GROWING number of studies suggest that greater involvement in religion is associated with better physical and mental health (Koenig, McCullough, & Larson, 2001). Some of the most compelling evidence for these findings comes from studies that use mortality as an outcome. This body of work suggests that people who attend religious services on a regular basis are less likely to die over the study follow-up period than individuals who do not attend worship services on a regular basis (e.g., Hummer, Rogers, Nam, & Ellison, 1999). Although this research has made a major contribution to the literature, it is difficult to know what the study findings mean, because attending religious services is a complex construct that encompasses a number of different attitudes, beliefs, and behaviors. For example, when people attend worship services, they often pray, engage in rituals, interact with their fellow congregationalists, listen to sermons, and participate in the singing of religious hymns. Any—or all—of these factors might explain the relationship between attending worship services and mortality. Because providing a credible explanation is an important criterion for establishing causality (Bradley & Schaefer, 1998), it is imperative that researchers strive to identify the underlying factor(s) that are at work.

Researchers have conducted a small cluster of studies in an attempt to explain the relationship between the frequency of attending religious services and mortality, but these efforts have been largely unsuccessful. For example, Musick, House, and Williams (2004) examined the effect of attending religious services on mortality after controlling for a number of factors, including health behaviors, social interaction, and several indicators of subjective religiousness. They reported that the impact of attending worship services on mortality remained largely unchanged after they had taken into account the effects of these mediating variables (see also Ellison, Hummer, Cormier, & Rogers, 2000). This suggests that researchers have yet to evaluate empirically the core aspects of religious attendance that are responsible for the lower mortality risk. The purpose of the present study was to see if church-based social support may help explain the link between attendance at worship services and mortality in late life.

There are at least three reasons why it is important to focus specifically on church-based social support. First, a number of the grand masters in sociology, psychology, psychiatry, and philosophy have argued that social relationships lie at the very heart of religion. For example, Georg Simmel (1898/1997), a classic sociologist, maintained that “The faith that has come to be regarded as the essence and substance of religion is first of all a relationship between human beings . . .” (p. 108, emphasis in the original). Josiah Royce was a well-known philosopher of his time and a close personal friend of William James. Royce wrote a volume in 1912 in order to overcome what he felt were serious oversights in James’s classic treatise on religion, The Varieties of Religious Experience (1902/1997). Chief among these oversights was the emphasis placed by James on the role of unconscious processes in the genesis of religious feelings and religious insights. Royce maintained that instead of arising from within the individual, the impetus for religious experiences and sentiments was decidedly social in nature. More specifically, he argued that “. . . our social experience is our primary source of religious insight. And the salvation that this insight brings to our knowledge is salvation through the fostering of human brotherhood. Such salvation accrues to the individual so far as he gives himself over to the service of man” (Royce, 1912/2001, p. 58).

The empirical work of contemporary researchers points to the second reason why it is important to study church-based social support. Levin (2001) summarized this research when he set out to explain why more frequent attendance at religious services is associated with better health. He concluded, “I believe that supportive relationships provided through religious fellowship best explains the findings we have examined” (p. 58). Research by Ellison and George (1994) helps show why this may be so. These investigators maintained that social relationships in religious communities are more extensive, denser, and more satisfying than social relationships in the secular world. Presumably, greater social cohesiveness in religious institutions arises in part from shared religious beliefs. In particular, the tenets of every major religion encourage people to love one another, take care of those who are in need, and forgive other people for the things they have done.

Secular research on interpersonal ties points to the third reason why it is important to focus on social relationships in religious institutions. This vast body of work indicates that people who maintain strong ties with others tend to enjoy better physical and
mental health than individuals who are not tightly integrated into a supportive social network (Cohen, 2004).

Some investigators have examined the impact of social relationships on mortality in an effort to see if these relationships help explain the influence of attending worship services on mortality (e.g., Musick et al., 2004). But they have been unable to find that social relationships are an important mediating factor. In fact, Musick and colleagues reported that more social support from family and friends is actually associated with an increased mortality risk. The authors explained this unanticipated finding by suggesting that people who have poor health consequently receive more assistance from members of their social network. Although this is certainly possible, there is another way to think about their results.

Researchers have known for some time that support from significant others helps older adults cope more effectively with the deleterious effects of stress (Krause, 2001). Consequently, the best model may be one in which researchers see if church-based support offsets, or moderates, the noxious effects of stress on mortality. It may be especially important to evaluate this type of specification when trying to explain the effects of attending worship services, because researchers have argued for decades that one of the primary functions of religion is to help people deal with adversity. For example, writing nearly 80 years ago, Cooley (1927, p. 254) noted that religion “… often exists without our being aware of it, until some crisis brings it out” (see also Pargament, 1997).

Based on this rationale, the first goal of the present study was to test the following hypothesis: Church-based social support will offset the pernicious effects of stress on mortality in late life. Although this appears to be the first time that a researcher has examined the relationships among these constructs in the literature, these analyses may not go far enough.

In order to see what needs to be done, it is helpful to return to Royce’s (1912/2001) quotation. He maintained that “…salvation accrues to the individual so far as he gives himself over to the service of man” (p. 58). Simply put, this observation suggests that the benefits of religion may arise not from receiving support, but from providing it to others. A small but growing cluster of studies conducted in secular settings tends to support Royce’s views. In the process, these studies help extend research on helping others into the health arena. More specifically, this research suggests that helping others tends to enhance the health and psychological well-being of older support providers (e.g., Krause, Herzog, & Baker, 1992).

In his widely cited paper on helping behavior, Reissman (1965) provided three reasons why support providers benefit from giving assistance to those in need. First, Reissman argued that helping other people enhances the self-esteem of the support provider. Providing assistance to those who are less fortunate makes a clear and unambiguous statement about the support provider because it highlights basic aspects of his or her character that are admired widely in American culture. This is an important consideration when a support provider is grappling with his or her own difficulties because a number of studies suggest that stress operates, in part, by reducing feelings of self-worth in late life (Krause & Borawski-Clark, 1994). Second, Reissman maintained that helping others provides a psychological respite from the support provider’s own difficulties: It shifts the focus away from the self and the problems one often wrestles with. This is noteworthy because being able to temporarily escape one’s own problems may have beneficial effects on health and well-being, especially when stressors do not dissipate quickly (Gottlieb, 1997). Third, Reissman argued that seeing support recipients overcome problems with assistance they have been given tends to make support providers believe they may overcome their own difficulties with similar efforts. Viewed more broadly, helping others may increase feelings of control in the help provider. This is important because a vast literature links strong feelings of personal control with better health in late life (Krause, 2003).

Although Reissman (1965) conducted his research in a secular setting, there is reason to believe that the benefits of helping others may be especially evident among those who attend worship services often. In order to see why this may be so, it is important to delve more deeply into the process of helping others. At the most basic level, one person cannot provide effective assistance to another without first understanding the situation of the individual who is in need. Otherwise, the support that is provided may be either inappropriate or, at best, ineffective. Although a number of factors may come into play, there is some evidence that help-giving is more effective when support providers view the objective circumstances of the support recipient with empathy and compassion. In fact, this approach to helping others formed the cornerstone of Carl Rogers’s approach to psychotherapy. Based on years of clinical experience, he concluded that effective help-giving in the therapeutic setting is contingent upon the empathy, caring, and compassion of the therapist (Rogers, 1989). These virtues are important because, as Wuthnow (1991) pointed out, they lie at the heart of biblical teachings. More specifically, Wuthnow observed, “The biblical tradition teaches compassion as a duty to divine law, as a response to divine love, and as a sign of commitment to the Judeo-Christian ethic” (p. 50). If empathy and compassion are essential for effective helping, and these virtues are strongly supported by religious teachings, then the health-related effects of helping others should be especially evident among those who attend worship services often.

This discussion of help-giving leads to the second major hypothesis that was examined in this study: The impact of stress on mortality will be reduced for older study participants who provide support to the people they worship with.

Methods

Sample

The data for this study came from my nationwide longitudinal survey of older Whites and older African Americans. I defined the study population as all household residents who were either White or Black, noninstitutionalized, English speaking, and at least 66 years old. Geographically, I restricted the study population to eligible persons residing within the coterminous United States (i.e., residents of Alaska and Hawaii were excluded). Finally, I restricted the study population to people who were currently practicing Christians, individuals who were Christian in the past but who no longer practiced any religion, and people who had not been affiliated with any faith at any point in their lifetime. I excluded individuals who practiced a religion other than Christianity (e.g., Jews or Muslims) because it would have been too difficult to devise a set of religion measures that would have been suitable for use with persons of all faiths.

The sampling frame consisted of all eligible persons contained in the Centers for Medicare and Medicaid Services database. I used a five-step process to draw the sample from the Centers for Medicare and Medicaid Services file. I provide a detailed discussion of these steps in another article (Krause, 2002).
Table 1. Core Study Measures

1. Mortality status—informant report of death from all causes*
2. Emotional support received from fellow church membersb
   A. Other than your minister, pastor, or priest, how often does someone in your congregation let you know they love and care for you?
   B. How often does someone in your congregation talk with you about your private problems and concerns?
   C. How often does someone in your congregation express interest and concern in your well-being?
3. Emotional support provided to fellow church membersb
   A. How often do you show someone in your congregation that you love and care for them?
   B. How often have you talked with someone in your congregation about their private feelings and concerns?
   C. How often have you expressed interest and concern in the well-being of someone in your congregation?
4. Chronic financial strain
   A. How much difficulty do you have in meeting the monthly payments on your bills?
   B. In general, how do your finances work out at the end of the month?
d
5. Organizational religiousnessa
   A. How often do you attend religious services?
   B. How often do you attend adult Sunday School or Bible study groups?
   C. How often do you participate in prayer groups that are not part of regular worship services or Bible study groups?
6. Private religiousnessa
   A. How often do you pray by yourself?
   B. When you are at home, how often do you read the Bible?
7. Self-rated health
   A. How would you rate your overall health at the present time?
   B. When you are at home, how often do you read the Bible?

   B. How often do you read the Bible?

   C. How often do you participate in prayer groups that are not part of regular worship services or Bible study groups?

8. Self-rated health status—informant report of death from all causes*
   A. Other than your minister, pastor, or priest, how often does someone in your congregation let you know they love and care for you?
   B. How often does someone in your congregation talk with you about your private problems and concerns?
   C. How often does someone in your congregation express interest and concern in your well-being?

   B. How often do you read the Bible?

   C. How often have you expressed interest and concern in the well-being of someone in your congregation?

*This variable was scored in the following manner (coding in parentheses): reported as having died (1); not known to have died (0).

These variables were scored in the following manner: never (1); once in a while (2); fairly often (3); very often (4).

This variable was scored in the following manner: none (1); only a little (2); some (3); a great deal (4).

This variable was scored in the following manner: money left over (1); just enough (2); not enough money to make ends meet (3).

These variables were scored in the following manner: never (1); less than once a year (2); about once or twice a year (3); several times a year (4); about once a month (5); 2–3 times a month (6); nearly every week (7); every week (8); several times a week (9).

These variables were scored in the following manner: never (1); less than once a month (2); once a month (3); a few times a month (4); once a week (5); a few times a week (6); once a day (7); several times a day (8).

This variable was scored in the following manner: poor (1); fair (2); good (3); excellent (4).

This variable was scored in the following manner: worse (1); about the same (2); better (3).

Interviewing for the baseline survey took place in 2001. All interviews were conducted face to face in the homes of the study participants. Harris Interactive (New York, NY) performed the data collection. A total of 1,500 interviews were completed. Elderly Blacks were oversampled, and, as a result, the final sample consisted of 748 Whites and 752 African Americans. The overall response rate for the Wave 1 survey was 62%.

The Wave 2 survey was conducted in 2004. A total of 1,024 of the original 1,500 study participants were successfully re-interviewed; 75 persons refused to participate, 112 could not be located, 70 were too ill to participate, 11 had moved to a nursing home, and 208 were deceased. Not counting those who had died or who had been placed in a nursing home, the re-interview rate for the Wave 2 survey was 80%.

The social support measures used in the analyses presented in the Results section assessed assistance that older study participants exchanged with their fellow church members. When the Wave 1 questionnaire was being developed, the research team decided it did not make sense to ask older people questions about church-based social support if they attended religious services no more than twice a year. Based on this decision, the church-based social support measures were not administered to 374 Wave 1 study participants. These individuals were, therefore, excluded from the analyses presented below. After listwise deletion of cases that included item nonresponse, the analyses presented below are based on 976 cases. Preliminary analysis revealed that 46% of these study participants were older Whites, and 54% were older Blacks. The average age of these individuals was 74.2 years at the baseline survey (SD = 6.2 years). Approximately 39% were older men. Finally, the older adults in this group indicated they had successfully completed an average of 11.7 years of schooling (SD = 3.4 years). These descriptive data, as well as the results presented below, are based on data that have been weighted.

Measures

Table 1 contains the core measures that were used in this study. The table footnotes describe the procedures used to code these items.

Mortality status.—Mortality status at the Wave 2 interview was determined by informant report. Because no effort was made to determine why study subjects had died, this measure reflects death from all causes. This indicator is coded so that 1 denotes those who had died and 0 denotes those who were not known to have died at the time of follow-up interview.

Many studies use death certificates to verify mortality. Even so, there are three reasons why informant reports of mortality are useful. The first is found in a study by Wolinsky and Johnson (1992). Using data from the Longitudinal Study on Aging, these investigators compared informant reports of death against data contained in the National Death Index (compiled by the Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, Atlanta, GA). Wolinsky and Johnson found virtually no difference in the study results when informant reports were used in place of National Death Index data. Therefore, they concluded that informants provide valid data on mortality. The second reason why informant reports are useful may be found in the results that will be presented later in this article. These data will show that the pattern of findings and the magnitude of the relationships involving well-known correlates of mortality (e.g., self-rated health status) are similar to estimates derived in studies that verified mortality with death certificates. Finally, the present study is not the first to use informant reports of death. Several other investigators have used informant reports to conduct meaningful research into the correlates of mortality in late life (e.g., Bernard et al., 1997; Borawski, Kinney, & Kahana, 1996; Wolinsky & Johnson).

Church-based emotional support.—As is shown in Table 1, three indicators were used to measure how often older study participants had received emotional support from their fellow church members during the year prior to the baseline survey (M = 8.363, SD = 2.586). Similarly, three additional indicators were used to assess how often the older people in this study had provided emotional support to the people with whom they worshipped (M = 8.674, SD = 2.584). It is especially important to point out that the
substance of these helping behaviors was identical across the two scales. The items differed only with respect to whether support was received or provided. This helped ensure that differences in the effects of these measures could be attributed specifically to whether the respondent gave or received support. I devised all six indicators, as described in another article (Krause, 2002). A high score on either scale denoted more frequent emotional support. The internal consistency reliability measure for the scale assessing support received was .787, whereas the corresponding estimate for the scale assessing support provided was .843.

Preliminary analysis revealed that the two church-based social support measures were significantly related ($r = .714; p < .001$). When viewed at the bivariate level, this means that one measure explained approximately 50% of the variance in the other measure, and an equal proportion of the variance was explained by other factors. This suggests that the two church-based support measures assessed related, but conceptually distinct, constructs.

**Chronic financial strain.**—Ongoing economic problems were evaluated with two items that came from the work of Pearlin and colleagues (Pearlin, Menaghan, Lieberman, & Mullan, 1981; $M = 3.374$, $SD = 1.530$). A high score on these measures denoted having greater financial difficulty. The correlation between the two items was .625 ($p < .001$).

**Organizational religiousness.**—Three indicators were used to assess the extent to which older study participants were involved in church. The first measured the frequency of attendance at worship services ($M = 7.114$, $SD = 1.567$), the second assessed how often older study participants attended adult Sunday School or Bible study groups ($M = 4.502$, $SD = 3.147$), and the third gauged how often the older people participated in prayer groups that were not part of regular worship services or Bible study groups ($M = 3.210$, $SD = 2.805$). A high score on each item represented more frequent involvement in organized religion. Because most studies have focused solely on the frequency of church attendance, the three indicators of organizational religiousness were treated as separate independent variables in the analyses presented below.

**Private religiousness.**—Two indicators of private religious practices were included in the analyses to further pinpoint the aspects of religion that are associated with a lower mortality risk. The first assessed how often older people prayed when they were alone ($M = 7.224$, $SD = 1.286$), whereas the second reflected how often they read the Bible when they were at home ($M = 5.106$, $SD = 2.397$). A high score on either measure represented greater private involvement in religion.

**Self-rated health.**—Global self-rated health was assessed with two indicators. The first asked respondents to rate their overall health as excellent, good, fair, or poor. The second asked study participants to compare their health at the time of the interview to their health a year before the interview. A high score on either measure denoted better self-rated health. The correlation between the two indicators was .271 ($p < .001$).

**Demographic control variables.**—The relationships among stress, the religion measures, and mortality were assessed after the effects of age, gender, education, and race were controlled statistically. Age was scored in a continuous format. Similarly, education was coded in a continuous format denoting the total number of years of completed schooling. In contrast, gender ($1 = male, 0 = female$) and race ($1 = White, 0 = Black$) were represented with binary indicators.

### Table 2. Church-Based Social Support and Mortality

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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<td>.116</td>
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<td>-.358***</td>
<td>-.363***</td>
<td>-.363***</td>
</tr>
<tr>
<td>Church attendance</td>
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<td>-.150*</td>
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<td>-.127</td>
<td>-.127</td>
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<td>-.021</td>
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<td>.006</td>
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<tr>
<td>Read Bible at home</td>
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<td>-.009</td>
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<td>.144</td>
<td>.1178</td>
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<td>-.083*</td>
<td>.991</td>
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</table>

Notes: For the table, $N = 976$. Data presented are logistic regression coefficients; odds ratios are presented in parentheses. *$p < .05$, **$p < .01$, ***$p < .001$. 

**RESULTS**

I evaluated the hypotheses for this study by using a hierarchical logistic regression analysis. Table 2 shows the findings. I centered all independent variables on their means prior to analysis. The analysis consisted of five steps. I present the results obtained at each step in the discussion that follows. Following this, I present some supplementary analyses that I have not discussed up to this point.

**Church Attendance and Mortality**

I conducted the first step in the hierarchical analysis (see Model 1 in Table 2) in order to see if older people who attended church more frequently had a lower mortality risk. Consistent with the results of a number of other studies (e.g., Musick et al., 2004), the data suggested that more frequent church attendance was associated with a lower mortality risk ($b = -.140$; odds ratio [OR] = 0.870; $p < .05$). In addition, the results further revealed that older respondents ($b = .064$; OR = 1.066; $p < .001$), individuals with less education ($b = -.064$; OR = 0.938), and study participants with less favorable health ratings at the baseline interview ($b = -.392$; OR = 0.676) were more likely to die during the course of the study follow-up period. This latter set of findings is important because it provides evidence that results based on informant reports of death
are quite similar to results from studies where deaths have been verified with death certificates (e.g., Hummer et al., 1999).

**Additive Effects of Other Religion Measures**

I estimated Model 2 in order to see if adding other measures of religious involvement (i.e., attending Bible study and prayer groups, private prayer, private Bible reading, and the additive effects of church-based social support) to the equation helped explain the relationship between church attendance and mortality. Two important findings emerged from this model. First, consistent with the findings reported by Musick and associates (2004), the data indicated that older people who received more emotional support from the people they worshipped with had an elevated mortality risk \((b = .159; OR = 1.173; p < .01)\). Second, the results revealed that the effects of church attendance on mortality were not diminished after the additive effects of other religion measures had been taken into account \((b = -.160; OR = 0.852; p < .05)\).

**Received Support, Financial Strain, and Mortality**

I estimated Model 3 in order to see if emotional support provided by fellow church members offset or buffered the effects of financial strain on mortality in late life. I evaluated these stress moderating effects by testing for a statistical interaction effect between financial strain and emotional support received from fellow church members on mortality. The data derived from estimating Model 3 suggested that a statistically significant interaction effect was present in the data \((b = -.073; OR = 0.930; p < .01)\). The sign of this relationship revealed that as the level of support received increased, the impact of financial strain on mortality decreased. The data in Model 3 further revealed that the effects of church attendance on mortality were no longer statistically significant once the stress-buffering effects of church-based emotional support had been taken into account \((b = -.130; OR = 0.878; ns)\).

**Support Provided to Others, Financial Strain, and Mortality**

The second hypothesis proposed for this study stated that providing emotional assistance to others would reduce the deleterious effects of financial strain on mortality. I estimated Model 4 in order to evaluate this possibility. As in Model 3, I assessed stress-buffering effects by including a multiplicative term in the model. However, in the case of Model 4, I included the cross-product term in order to capture the interaction between financial strain and providing emotional support to fellow church members on mortality. The data provided by Model 4 suggested that the impact of financial strain on mortality was reduced for older people who provided more emotional support to the people in their church \((b = -.093; OR = 0.911; p < .001)\).

**Assessing the Relative Effects of Support Received and Support Provided**

The findings up to this point suggest that both support received and support provided appear to offset the pernicious effects of financial strain on mortality in late life. But it is important to know if receiving support is more important than providing support, or whether both affect an older person’s mortality risk. I conducted the final step in the hierarchical logistic regression analysis (see Model 5) in order to address this issue. I entered two multiplicative terms into the equation in order to assess the stress-buffering effects of support received and support provided, respectively. The data provided by Model 5 revealed that emotional support provided by older study participants to their fellow church members offset the noxious effects of financial strain on mortality \((b = -.083; OR = 0.920; p < .05)\), whereas emotional support received by the participants failed to have similar stress-buffering effects \((b = -.015; OR = 0.985; ns)\).

Although the data provided by Model 5 suggest that the multiplicative term associated with providing emotional support to others is statistically significant, it may be somewhat difficult to determine if the interaction effect is in the hypothesized direction. Fortunately, it is possible to clarify the nature of these results by performing two sets of calculations by hand. The first involves deriving separate estimates of the effects of financial strain on mortality at selected levels of emotional support provided to others (see Hosmer & Lemeshow, 2000, for a discussion of these calculations). The second set of computations will show if the estimates derived in the first set differ significantly from zero. If the interaction effect is in the proposed direction, then the effects of financial strain on the odds of dying should become weaker at progressively higher levels of support. I could have performed the calculations with any value of support provided to others. The raw scores on this measure ranged from 3 to 12. Therefore, I selected the following equally spaced levels of support for the computations: 3, 6, 9, and 12.

The additional computations (not shown here) suggested that exposure to financial strain significantly increased the odds of dying for older people who provided little emotional support to the people they worship with (i.e., those with the lowest provided-support score: 3; \(b = .615; OR = 1.850; p < .005)\). This is important because 44 older adults had the lowest possible score on the scale that assessed emotional support provided to others. The additional calculations further revealed that financial strain was still associated with an elevated mortality risk for older people with a provided-support score of 6, but the deleterious effects of financial strain had been reduced by approximately 40% \((b = .366; OR = 1.442; p < .005)\). A value of 6 on the provided-support scale fell very close to -1 standard deviation below the mean support value (-1 SD = 6.089). The stress-buffering effects of helping others at church were especially evident for older people with a provided-support value of 9 \((b = .117; OR = 1.124; ns)\). The pernicious effects of financial strain on mortality were completely offset at this level. This is noteworthy because the average score on the scale that assessed emotional support provided to fellow church members was 8.674. Finally, the results revealed that financial strain also failed to exert a significant effect on the odds of dying for older people with the highest possible provided-support score (i.e., 12; \(b = -.132; OR = 0.876; ns)\).

**Supplementary Analyses**

In the Sample section, I reported that some study participants had been excluded from the analyses because they attended church no more than twice a year. In order to place the main study findings in a more complete context, it was helpful to provide some descriptive data on these individuals. I accomplished this by creating a variable contrasting those who went to church twice a year or less (scored 0) with those who went to church more often (scored 1). Then, by using logistic regression, I regressed this binary outcome on the following indicators: age, gender, race, health, financial strain (Wave 1) and mortality status (Wave 2). The data (not shown here) suggested that compared with those who went to church often, those who went twice a year or less were more likely to be men \((b = .487; p < .001)\), less highly educated \((b = -.086; p < .001)\), White \((b = .916; p < .001)\), current smokers \((b = .916; p < .001)\), and had lower levels of financial strain \((b = .487; p < .001)\).
more likely to encounter less financial strain (independent variables in the model. In contrast, statistically significant differences emerged with respect to age and mortality status at the follow-up interview.

A second group of study participants was excluded from this study because they were lost to follow-up. More specifically, they either refused to participate in the Wave 2 interview, could not be located for the follow-up interview, had moved into a nursing home, or were too ill to participate in the second survey. Once again, it was helpful to provide some descriptive data on these individuals. I accomplished this by creating a variable that contrasted those who were lost to follow-up (scored 1) with those who either participated in the Wave 2 survey or were dead (scored 0). Then, by using logistic regression, I regressed this binary outcome on the Wave 1 measures of age, gender, education, race, health, financial strain, church attendance, and private prayer. The findings (not shown here) indicated that no statistically significant differences existed between the two groups for any of the independent variables in the model.

DISCUSSION

The findings from the present study suggest that greater involvement in religion is associated with a lower mortality risk. A number of other investigators have reached this general conclusion (McCullough, 2001). However, what sets the present study apart from other work in the field is the greater specificity of the results. So far, the wide majority of studies have focused primarily on the relationship between the frequency of attendance at religious services and mortality. The data provided here move beyond this by tracing the potentially beneficial effects of religious attendance to social relationships that tend to thrive in church settings. More specifically, the findings reveal that providing emotional support to fellow church members tends to lessen the deleterious effect of the support provider’s own economic problems on mortality. However, researchers must take care when interpreting the findings involving church attendance. Recall that the measures of church-based support were administered only to older adults who attended church more than twice a year. This means that providing support and financial strain appear to explain the relationship between church attendance and mortality, but this conclusion only applies to older people who attend church more than twice a year. Nevertheless, this approach is justified; if something about involvement in the church affects longevity, then researchers must look at what takes place within the church for the answer.

There are two reasons why greater confidence may be placed in the results of this study than in results from existing studies in this area. First, I observed these findings after including a number of indicators of private and public religiousness in the model. Second, I juxtaposed the potentially beneficial effects of giving support to others with the effects of receiving support from fellow church members, and only providing support emerged as a significant factor. This appears to be the first time that anyone has examined empirically the stress-buffering function of providing support to others in church and mortality.

Other researchers have tried to discover if social support can explain the connection between church attendance and mortality, but their efforts have been largely unsuccessful. There are at least three reasons why this may be so. First, researchers have typically used measures that assess support from a person’s entire social network. This includes assistance that arises from both inside as well as outside the church (e.g., Musick et al., 2004). One could argue that this approach is justified because a strong commitment to one’s faith should affect relationships inside as well as outside the church. However, as Ellison and George (1994) pointed out, relationships within the church may be especially close because they arise from a shared set of values and beliefs. The second reason why previous studies may have failed to show that social relationships play a significant role in explaining the connection between church attendance and mortality has to do with the nature of the models that have been tested. Until now, investigators have focused exclusively on the additive effects of social support without taking stress into consideration. But as the data provided here reveal, the potentially beneficial effects of social ties only become evident when they are viewed in conjunction with stress. Put in more technical terms, researchers may not have been testing for the correct functional form of the relationship between social support and mortality. Third, previous studies have been concerned solely with support received from others. However, as the findings from the present study indicate, providing assistance to fellow church members may be more consequential than receiving it.

Although the results provided here may be thought provoking, a great deal of work remains to be done. To begin with, this study focused on only one kind of stressful experience: chronic financial strain. As a result, it is not possible to tell whether the protective function of providing support to others extends to other kinds of stressors as well. In addition, it would be helpful to see how the potentially beneficial effects of providing support to others at church arise. A number of intervening mechanisms were identified above (e.g., self-esteem and personal control), but I did not evaluate these factors empirically in this study. Finally, researchers need to identify the factors that influence the provision of support in the church in the first place (i.e., they need to treat providing support to others at church as a dependent variable).

As research on the religion–health relationship continues to mature, some investigators have moved beyond epidemiological studies to the development and testing of religiously based interventions. Researchers have made important strides in areas involving forgiveness (Worthington, Mazzeo, & Canter, 2005), religious coping responses (Pargament, 1997), and prayer (Harris et al., 1999). If the findings from the present study can be replicated, then researchers may also want to develop interventions that focus on helping older church members become more effective support providers in their place of worship. Rosow (1976, p. 467) spoke of aging as a “roleless-role.” He meant that as people go through late life, they tend to exit a number of important social roles. For example, they become widowed, they retire from the workforce, and their children grow up and leave the home. At the same time, people often find few opportunities to fill this void with new roles and activities. The results from the present study suggest that finding ways to become more involved in helping people at church may be an important option. A number of interventions have been developed to promote the help-giving process in secular settings (see Hogan, Linden, & Najarian, 2002), but there do not appear to be any that focus specifically on helping older people provide support to others in religious settings.

Implementing interventions in religious settings must be done with great care and sensitivity because ethical issues arise that are not typically encountered in other contexts. Specifically, the United States Constitution clearly calls for the separation of church and state. This raises vital questions about whether it is appropriate to use state and federal funds for the purpose of implementing church-based social support interventions.

Alfred Adler was a noted psychiatrist. The construct of social feeling and social interest occupied a pivotal position in his
theoretical perspective. Social feeling involves a sense of community, empathy, solidarity, and interest in others. Adler believed these social feelings formed the basis of religion: “The primal energy which was so effective in establishing regulative religious goals was none other than that of social feeling. This was meant to bind human beings more closely to one another” (Adler, 1933/1956, p. 462). The findings from the present study suggest that Adler may have been right. Moreover, these results reaffirm, and reinforce, a rich intellectual tradition that spans a number of disciplines and stretches out across a century.

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REFERENCES


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