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Close Companions at Church, Health, and Health Care Use in Late Life

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Abstract

Objectives—To see whether there are age variations in the relationships between having a close companion friend at church, health, and outpatient physician visits.

Method—The data come from two waves of interviews in a nationwide survey of older adults. These data are analyzed with ordinary least squares multiple regression analyses.

Results—The findings reveal that older people who have a close companion friend in the place where they worship are more likely to rate their health in a favorable way over time. However, these health-related benefits emerge only among the oldest-old study participants. The data results further indicate that having a close friend at church is associated with fewer outpatient physician visits over time, but once again, the results are observed only among the oldest-old.

Discussion—The results from this study provide preliminary insight into one way in which spiraling health care costs may eventually be curtailed.

Keywords

close friends; health; health care use

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The average health care expenses in 2005 for people age 65 and over were nearly three times that of individuals under the age of 65 (Centers for Disease Control and Prevention, 2008). And among older adults, the highest health care costs were incurred by people age 85 and over. Specifically, the average annual health care costs in 2004 for individuals between the ages of 65 and 74 were approximately \$9,000 compared to nearly \$22,000 for people age 85 and over (Federal Interagency Forum on Aging Related Statistics, 2008). Because public policy makers and health care providers have become increasingly concerned about finding ways to curtail rapidly escalating health care costs, these data suggest that focusing specifically on members of the oldest-old age group (i.e., people aged 85 and over) may be an important place to begin their efforts. One obvious way to lower health care costs is to improve the health of the oldest-old. Although this may be accomplished in a number of ways, a burgeoning literature suggests that enhancing interpersonal relationships in late life may be an important point of departure (Cohen, 2004).

As the literature on social relationships has matured, researchers are finding that the health-related benefits of social relationships may depend, in part, upon the social context in which they arise. One promising line of research suggests that social relationships that emerge in religious institutions are especially noteworthy because they may be more efficacious than

social relationships in the wider secular world (Krause, 2008). This work reveals, for example, that emotional support from fellow church members is more likely to reduce the deleterious effects of stress on health than assistance that is provided by people outside the church (Krause, 2006).

Although research on church-based social support has captured the interest of many investigators in the field, a number of researchers have argued that it is important to study other kinds of interpersonal relationships that may also be found in the church (Krause, 2008). One such relationship forms the focal point of the current study B church-based companion friendships. Rook (1987) defines companionship as social relationships that involve "... shared leisure activities that are undertaken primarily for the intrinsic goal of enjoyment" (p. 1133). This type of social relationship warrants further consideration because even a moment's reflection reveals that interaction among people at church involves much more than crisis management. Instead, a good deal (if not most) of the time spent with fellow church members is likely to involve issues that fall outside the stress process. Moreover, the study of church-based companionship is important because, as the discussion that is provided below will suggest, there is reason to suspect that this type of social relationship may have a beneficial effect on the health of older adults. Even so, there appear to be only two studies that focus specifically on church-based companion friendships in late life.

The first study was conducted by Krause and Cairney (forthcoming). Their research suggests that older adults who have a close companion friend at the place where they worship tend to rate their health more favorably than older people who do not have a close friend in their congregation. Although these investigators provide potentially important insights into the factors that influence health in late life, at least three limitations may be found in their work. First, when the data for this study were analyzed, all people aged 65 and older were pooled into a single group. This data analytic strategy rests on the implicit assumption that social and religious development cease at age 65. However, because more people are now living to age 100, it seems unlikely that change fails to take place during the 35-year period that spans late life. Moreover, if the ultimate purpose of studying social relationships and health is to reduce health care costs, then it makes sense to focus on individuals who incur the greatest health care expenditures B members of the oldest-old age group. Second, even though Krause and Cairney assess the relationship between close companion friends at church and health, they do not directly evaluate the ways in which health problems may lead to greater health care expenditures. One way to address this issue involves assessing whether church-based companion friendships influence outpatient physician visits. It is important to differentiate between health and health care use because researchers have known for some time that some people who are in poor health do not necessarily use health care services (Krause, 1990). Third, the study by Krause and Cairney relies on cross-sectional data. When data have been gathered at two or more points in time, researchers are able to relax one of the key prerequisites for determining causality: that the putative cause comes before the presumed effect (Greenberg, 2008).

The second study on close companion friends found in the literature was conducted by McFadden, Knepple and Armstrong (2003). The purpose of their study was to see if the degree of emotional closeness is higher among close friends at church or close friends in the secular world. These investigators found little difference in emotional closeness between friends in the two social settings. Although the study by McFadden et al. provides a number of valuable insights into the nature of close relationships in late life, it was not designed to see whether having a close friend at church is associated with better health.

The primary goal of the current study is to confront the problems in the studies by Krause and Cairney (forthcoming) and McFadden et al. (2003). This is accomplished by assessing the

relationship between close companion friends at church and health as well as the relationship between church-based companion friendships and outpatient health care utilization. Moreover, these analyses are based on data that have been gathered at more than one point in time. But more importantly, an effort is made to see if the relationships between church-based companion friends and health and health care use vary over the course of late life. There do not appear to be any studies in the literature that focus on companionship in the church and medical care nor are there any studies that assess age differences in the relationship between church-based companion friendships and health within late life.

Before turning to the study findings, it is important to discuss the ways in which close companion friends at church may influence the health of older people. In the process, an effort will be made to explain why the relationships between these constructs may change as people go through the final decades of life.

Close Companion Friends at Church and Health in Late Life

There are at least three ways in which close companion friends at church may help bolster and maintain the health of older people. Specifically, church-based companion friendships may provide a forum for self-disclosure, facilitate self-expression, and promote a sense of belonging in a congregation (see Krause, 2008, for other potentially important intervening mechanisms).

Self-disclosure is defined as revealing information about oneself to another individual (Collins & Miller, 1994). The importance of self-disclosure was discussed some time ago by Cooley (1902/2003), who maintained that, "Everyone, in proportion to his natural vigor, necessarily strives to communicate to others that part of his life which he is trying to unfold in himself. It is a matter of self-preservation, because without expression thought cannot live" (p. 94). But self-disclosure is risky because revealing too much about oneself may make a person feel vulnerable. And depending upon the nature of the relationship with a social network member, self-disclosure may not always be appropriate. Perhaps it is for this reason that Cooley believed that self-disclosure is a key function of close companion friendships. He argued that a person "... needs to express himself, and a companion enables him to do so" (Cooley, 1902/2003; p. 85). These early insights into the nature of companion friendships are important because a number of studies reveal that self-disclosure may be associated with better health. For example, Larson and Chastain (1990) report that high self-concealment (i.e., low self-disclosure) is associated with more symptoms of physical illness and psychological distress. In addition, an experimental study by Tardy (2000) indicates that high self-disclosure is associated with lower blood pressure while low self-disclosure is related to higher blood pressure.

In the last book he wrote (*Life and the Student*, 1927), Cooley boldly asserted that he had identified the most essential element in life: "I can only say that I have found self-expression to be in fact, as it is in principle, the heart of life" (1927; p. 47–48). In using the term 'self-expression,' Cooley did not mean the ability to convey thoughts and feelings in an articulate manner. Instead, he was referring to the expression of talents and abilities. Given the emphasis that Cooley places on self-expression, it is surprising to find that relatively little attention has been given to it in the gerontological literature. This is unfortunate because Rook (1987) argues that sharing interests and hobbies is a hallmark of close companion friendships. Further support for this view may be found in the work of Cocking and Kennett (1998), who maintain that companion friends help bring out the best in each other by nurturing the talents and abilities that are possessed by their partner. There do not appear to be any studies in the literature that assess the relationships between close companion friends, self-expression, and health in late life. However, a study by Krause (2007) suggests that self-expression may be associated with psychological well-being among older people. The findings from this study indicate that older people who are able to express their talents and abilities are more likely to find a sense of

meaning in life, and older adults who have derived a sense of meaning report fewer symptoms of depression.

Another important benefit of having a close companion friend at church arises from the fact that this type of relationship may make an older person feel that he or she belongs in their place of worship. This benefit is noteworthy because Maslow (1954) identified belonging as one of the most basic human needs. Although a sense of belonging arises in a number of social settings, Baumeister (1991) argues that one of the most important functions of religion is to help people find a place where they feel they belong (i.e., in the church). Even though close companions in church may contribute to an older person's sense of belonging in a congregation, it is important to show that belonging is, in turn, associated with health. Based on data from a nationwide survey of religiously-diverse congregations Krause and Wulff (2005) report that individuals who feel they belong in their congregation tend to be more satisfied with their health than people who do not feel they belong in the place where they worship. However, it is important to emphasize that this study involved adults of all ages. Fortunately, the relationships between close companion friends, belonging, and health in late life was investigated by Krause and Cairney (forthcoming). The conceptual model that was developed for their study suggests that, in part, older people who have a close companion friend at church are more likely to feel they belong in their congregation, and people who feel they belong in their congregation, in turn, tend to rate their health more favorably.

Companion Friendships at Church and Health among the Oldest-Old

Although having a close companion friend is likely to benefit people of all ages, a core premise in the current study is that these benefits are most likely to be enjoyed by the oldest-old (i.e., people aged 85 and older). Evidence of this may be found by reviewing and extending the work of two developmental theorists. The first is Carstensen (1992). According to her theory of socioemotional selectivity, as people go through late life, they become increasingly aware they have relatively little time left to live. This awareness promotes a re-evaluation of their social relationships. As Carstensen points out, older people begin to place a greater preference for relationships that are emotionally close, while disengaging from more peripheral social ties. However, some older adults are closer to death than others. More specifically, research reveals that under current mortality conditions, people who survive to age 65 can expect to live an average of nearly 19 more years, whereas people who live to 85 can expect to live only about 6 more years (Federal Interagency Forum on Aging Related Statistics, 2008). So, if close relationships become more important as people draw nearer to death, then the oldest-old should value close social ties more highly than the young-old (aged 64–74) or the old-old (aged 75–84).

The work of Baltes and Smith (1999) may also be extended to show why close companion friends may be especially beneficial for members of the oldest-old age group. As Rosow (1976) pointed out some time ago, aging is a “role-less role.” This means that as people enter late life they often lose a number of important roles. For example, they retire, many become widowed, and their children reach adulthood and move out of the home. At the same time, society provides few new roles to fill the void created by these role exits. The essence of this problem was captured by Baltes and Smith (1999), who argue that “... relatively speaking, old age is young; therefore neither biological nor cultural evolution has had sufficient opportunity to evolve a full and optimizing scaffolding ... for the later phases of life” (p.158). These investigators go on to point out that this difficulty is especially pronounced for people who are in the fourth age, which begins around age 80. If close companion friends foster self-disclosure, self-expression, and promote a sense of belonging, then it follows that the health-related benefits of these functions may be especially beneficial for the elderly people who need them the most (i.e., members of the oldest-old age group).

Reviewing other benefits of close-companion friendships provides further support for the perspective that was developed by Baltes and Smith (1999). As Rook (1987) points out, companion friends share plans, hopes, and dreams. Moreover, as noted earlier, Cocking and Kennett (1998) maintain that close companion friends nurture each other and bring out the best in each other. As these insights reveal, close companion friendships involve giving as well as receiving. The opportunity to help others is likely to make older people feel useful and it should help them feel they have a purpose in life. If society provides few opportunities for involvement and fulfillment in the fourth age, then the health-related benefits associated with helping and nurturing others should be especially evident among people in the oldest-old age group.

The perspective that has been developed in this section leads to the following study hypotheses: (1) having a close companion friend at church will be associated with beneficial changes in self-rated health over time; (2) people in the oldest-old age group will be more likely than the young-old or the old-old to enjoy the health-related benefits associated with companion friendships; (3) having a close companion friend at church will be associated with fewer outpatient medical visits; and (4) individuals in the oldest-old age group who have a close companion will make fewer visits for outpatient medical care than older adults in other age groups who have a companion friendship.

Methods

Sample

The data for this study come from an ongoing nationwide survey of older whites and older African Americans. The study population was defined as all household residents who were either black or white, noninstitutionalized, English-speaking, and at least 66 years of age. Geographically, the study population was restricted to all eligible persons residing in the coterminous United States (i.e., residents of Alaska and Hawaii were excluded). Finally, the study population was restricted to currently practicing Christians, individuals who were Christian in the past but no longer practice any religion, and people who were not affiliated with any faith at any point in their lifetime. This study was designed to explore a range of issues involving religion. As a result, individuals who practice a faith other than Christianity were excluded because members of the research team felt it would be too difficult to devise a comprehensive battery of religion measures that would be suitable for individuals of all faiths.

The sampling frame consisted of all eligible persons contained in the beneficiary list maintained by the Centers for Medicare and Medicaid Services (CMS). A five-step process was used to draw the sample from the CMS Files (see Krause, 2002, for a detailed discussion of these steps).

The baseline survey took place in 2001. The data collection for all waves of interviews was conducted by Harris Interactive (New York). A total of 1,500 interviews were completed, face-to-face, in the homes of the study participants. Older African Americans were over-sampled so that sufficient statistical power would be available to assess racial cultural differences in religion. As a result, the Wave 1 sample consisted of 748 older whites and 752 older African Americans. The overall response rate for the baseline survey was 62%.

The Wave 2 survey was conducted in 2004. A total of 1,024 study participants were re-interviewed successfully, 75 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 moved to a nursing home, the re-interview rate for the Wave 2 survey was 80%.

A third wave of interviews was completed in 2007. A total of 969 older study participants were re-interviewed successfully, 33 refused to participate, 118 could not be located, 17 were too

sick to take part in the interview, and 155 older study participants had died. Not counting those who had died, the re-interview rate was 75%.

Wave 4 was completed in 2008. A total of 718 older study participants were re-interviewed successfully, 61 refused to participate, 92 could not be located, 77 were too sick to take part in the interview, and 153 had died.

The analyses presented below are based on data from the Wave 3 and Wave 4 surveys. These data collection points are used because the presence of church-based companion friends was assessed at Wave 3 only. Data on companion friends at church was obtained from some, but not all study participants, during the third wave of interviews. Some respondents indicated they either never go to church or they go only once or twice a year. The members of the research team felt it was not appropriate to administer questions about companion friends at church to these individuals. Consequently, 220 subjects were eliminated from the analyses presented below. After using listwise deletion to deal with item non-response, complete data were available from between 444 and 450 older study participants. Preliminary analysis of the sample comprising 450 participants reveals that 37.2% are older men, 50.4% are older whites, and 44.2% were married at the time the Wave 3 interviews took place. The average age of the respondents in this group at Wave 3 was 79.2 ($SD = 5.1$ years). Moreover, the participants in this study reported that they had successfully completed an average of 12.1 years of schooling ($SD = 3.2$ years). These descriptive statistics, as well as the findings that are presented below, are based on data that have been weighted.

Measures

Self-rated health—Participants in the Wave 3 and Wave 4 surveys were asked to rate their health as excellent, good, fair, or poor. A high score on this widely used measure denotes better health. The mean health rating at Wave 3 was 2.737 ($SD = .750$) and the mean at Wave 4 was 2.722 ($SD = .807$).

Outpatient health care visits—The following question was administered in the Wave 3 and 4 surveys: “Other than when you were in a hospital or nursing home, how often have you seen a medical doctor in the past three months?” Responses to this question reflect the total number of physician visits in the three months prior to each interview. The mean number of outpatient physician visits at Wave 3 was 1.976 ($SD = 2.326$) and the mean number of visits at Wave 4 was 2.020 ($SD = 2.886$).

Close companion friends at church—The following item was administered at the Wave 3 interviews to determine if a study participant had a close companion in the place where they worship: “Not counting your minister, pastor, or priest, is there someone in your congregation you feel especially close to B someone who is a very good friend or valued companion?” Responses to this question are coded in a binary format (1 = yes; 0 = no). 66.3% of the respondents reported that they had a close companion friend at church.

Age—When the theoretical rationale for this study was developed, the age of study respondents was discussed in terms of the young-old, old-old, and oldest-old categories. However, when the data are analyzed below, age is treated as a continuous measure. This decision is based on a vast literature which suggests that a range of statistical problems may arise when continuous data are partitioned into ordinal categories (Blalock, 1982).

Religion control variables—Researchers have known for some time that religion is a vast, multidimensional construct. As a result, the various facets of religion are correlated, sometimes highly (Idler et al., 2003). Therefore, in order to obtain better estimates of the relationship

between church-based companion friends and health, it is important to statistically control for the influence of other dimensions of religion. This is why two religion control measures are included in the current study. Both indicators are taken from the Wave 3 survey. The first item assesses how often study participants attend religious services. A high score stands for more frequent church attendance. The mean at Wave 3 was 7.491 ($SD = 1.309$). The second religion control variable measures how often older people pray when they are alone. A high score reflects more frequent prayer. The mean at Wave 3 was 7.365 ($SD = 1.061$).

Demographic control variables—The relationships among church-based companion friendships, health, health care use, and the religion control variables were evaluated after the effects of sex, race, marital status, and education were controlled statistically. Education was scored in a continuous format, whereas sex (1 = men; 0 = women), marital status (1 = currently married; 0 = otherwise), and race (1 = white; 0 = black) were scored in a binary format.

Assessing Sample Attrition

As the data from the sample description reveal, some older people who participated in the Wave 1 survey did not participate in the Wave 4 interviews. A preliminary analysis was conducted to see if those who remained in the study differ significantly from older people who had either died or who dropped out but were presumed to be alive. The results (not shown here) indicate that compared to people who remained in the study, individuals who dropped out but were still alive were more likely to be older ($b = .053$; $p < .001$; odds ratio = 1.055), they attended church less often ($b = -.116$; $p < .001$), and they were less likely to rate their health in a favorable way ($b = -.200$; $p < .05$; odds ratio = .819). The findings further indicate that compared to older people who remained in the study, respondents who died during the follow-up period tended to be older ($b = .095$; $p < .001$; odds ratio = 1.000), they were more likely to be men ($b = .530$; $p < .001$; odds ratio = 1.700), they attended worship services less often ($b = -.134$; $p < .000$; odds ratio = .875), and they rated their health in a less favorable manner ($b = -.578$; $p < .000$; odds ratio = .561). Unfortunately, there is considerable controversy over the effects of non-random sample attrition (Little & Rubin, 2002; Groves, 2006; Graham, 2009). Consequently, the potential influence of this non-random pattern of subject attrition should be kept in mind as the substantive findings from this study are examined.

Results

Companion Friends at Church and Change in Health

Table 1 contains the findings from the first set of substantive analyses that were performed for this study. These analyses were designed to see if having a close companion friend at church is associated with better health over time and whether the relationship between these constructs varies by age. If the theoretical rational that was devised for this study is valid, then the health-related benefits of having a close companion at church should become increasingly evident at successively older ages. Stated in a more technical way, this hypothesis predicts that there will be a statistical interaction effect between having a companion friend at church and age on change in self-rated health over time. Tests for this interaction were performed with a hierarchical ordinary last squares multiple regression analysis that consisted of two steps. In the first step (see Model 1, Table 1), the Wave 3 measures of church-based companion friendships, age, health, and the other control variables were entered into the equation. Then a multiplicative term was added to the model in the second step (Model 2). This cross-product term was formed by multiplying the companion friend measure by the age of the study participant. This multiplicative term is used to test for the proposed interaction effect. All of the independent variables were centered on their means prior to estimating Models 1 and 2. In addition, the multiplicative term was formed by multiplying the centered values of age and having a companion friend at church.

The data in the left-hand column of Table 1 seem to suggest that having a close companion friend at church is not significantly associated with change in self-rated health over time ($Beta = .067$; ns). Based on these results alone, it might appear as though close companion friendships offer few health benefits. However, as the findings in the right-hand column of Table 1 (see Model 2) indicate, this may not be an accurate conclusion.

The data that were provided by estimating Model 2 reveal that there is a statistically significant interaction effect between having a close companion friend at church and age on change in self-rated health ($b = .061$; $p < .001$; unstandardized coefficients are presented when discussing interaction effects because standardized estimates are not meaningful when the cross-product term has been created from centered variables). Although the data suggest there is a statistically significant interaction effect in the data, it may be somewhat difficult to determine if it is in the predicted direction. Two steps are taken to clarify these findings. First, formulas provided by Aiken and West (1991) are used to estimate the effect of having a companion friend at church on change in health at select ages. Although any age could be used for this purpose, the following ages were selected for this purpose: -1 standard deviation below the mean age, the mean age, and $+1$ standard deviation above the mean age. Second, an additional formula is used to see if these estimates are statistically significant (see Aiken & West, 1991).

The additional calculations (not shown in Table 1) indicate that having a close companion friend at church is not significantly associated with change in self-rated health for older study participants who are approximately 74.2 years of age (i.e., -1 SD below the mean age; i.e., the young-old) ($Beta = -.105$; $b = -.179$; ns). The same is true for study participants who are about 79.2 years of age (i.e., at the mean; i.e., the old-old) ($Beta = .076$; $b = .129$; ns). However, in contrast to these results, the data further reveal that having a close companion friend at church is associated with a more favorable health rating over time for study participants who are approximately 84.3 years of age (i.e., at $+1$ SD above the mean; i.e., the oldest-old) ($Beta = .256$; $b = .437$; $p < .001$).

Companion Friends at Church and Change in Outpatient Physician Visits

The goal of the analyses that are reported in this section is to see whether having a church-based companion friend is associated with fewer outpatient physician visits over time, and to determine if members of the oldest-old age group are especially likely to enjoy the benefits associated with having a close friend at church. However, based upon the findings that have emerged up to this point, a more complex issue must be addressed. And a result, a departure from the original study hypotheses must be made. The data presented in the previous section suggest that having a close companion friend at church is associated with change in self-rated health. Researchers have known for decades that older people are more inclined to make an outpatient visit to a physician if they believe they are ill (i.e., if they are in poor health) (Evashwick et al., 1984). Because there is a significant interaction between age and having a close friend in church on health, self-rated health should therefore mediate the interaction between age and companion friendship on change in outpatient physician use. This is known in the literature as a mediated moderation effect (see Edwards & Lambert, 2007). Although there are several ways to assess a mediated moderation effect, the three-step strategy reported by Baron and Kenny (1986) is implemented below.

The first step involves assessing whether there is a significant interaction effect between age and having a close companion friend at church on change in outpatient physician visits over time. Recall that since an interaction effect is involved in this hypothesis, two models must be estimated. Model 1 contains the Wave 3 measures of church-based companion friendships, age, the number of physician visits, and the control variables. Then, the multiplicative term is entered in Model 2. It is important to point out that a measure of health is not included in either Model 1 or Model 2 at this point. If a mediated moderation effect is present in the data, then

interaction between age and church-based companion friendships on change in outpatient physician use should be statistically significant.

The second step in testing for the mediated moderation effect involves seeing whether the interaction between age and having a church-based companion friend is associated with change in health over time. In essence, the analyses that were presented in the previous section serve this function. And more importantly, as these findings reveal, there is significant interaction effect in the data. This satisfies the second criteria for demonstrating whether a mediated moderation effect is present.

The third step that is recommended by Baron and Kenny (1986) involves once again testing for an interaction between age and having a close companion friend in church on change in outpatient physician visits. However, in this instance, the Wave 3 and Wave 4 measures of self-rated health are included in the model as independent variables. Both measures of health are entered into the analysis because the findings from step two reveal that the interaction between age and having a companion friend at church is associated with *change* in self-rated health (i.e., the mediator in this instance is *change* in self-rated health). Assessing the effect of health at Wave 4 controlling for health at Wave 3 captures change in self-rated health over time (see Greenberg, 2008). If a mediated moderation effect is present, the interaction between age and church-based companion friendships on change in outpatient physician use should either be no longer statistically significant (i.e., indicating a fully mediated moderation effect) or the magnitude of the interaction effect should be reduced substantially (i.e., indicating a partially mediated moderation effect). Because a statistical interaction is involved, two models must be used to estimate this effect: Model 3, that does not contain a multiplicative term, and Model 4, that includes the cross-product term. The findings from the tests of the proposed mediated moderation effect are provided in Table 2.

The results that emerge from estimating Model 1 reveal that having a close companion friend at church does not appear to be associated with change in outpatient physician visits over time for the sample taken as a whole ($\text{Beta} = -.056$; *ns*). However, as the data provided by Model 2 reveal, a statistically significant interaction effect between age and companion friendship on change in outpatient physician use is present in the data. Once again, the procedures recommended by Aiken and West (1991) are used to illustrate the nature of this relationship. The relationship between companion friendships on change in outpatient use is computed at 1 standard deviation below the mean age, at the mean age, and 1 standard deviation above the mean age. These calculations (not shown in Table 2) indicate that having a companion friend at church fails to exert a statistically significant effect on change in outpatient use for members of the young-old age group ($\text{Beta} = .065$; $b = .399$; *ns*) and for study participants in the old-old age group ($\text{Beta} = -.062$; $b = -.385$; *ns*). Even so, the data further reveal that members of the oldest-old age group who have a close companion friend at church appear to make fewer outpatient physician visits over time ($\text{Beta} = -.191$; $b = -1.169$; $p < .001$).

Taken as a whole, the findings that have been presented satisfy both the first and second conditions for demonstrating that a mediated moderation effect is present in the data. As discussed above, the third and final criterion involves repeating the previous set of analyses after self-rated health at Wave 3 and self-rated health at Wave 4 are included in the models. The findings provided by Model 3 indicate that older people who rate their health more favorably over time tend to make fewer outpatient physician visits over time than older adults who rate their health in a less favorable way ($\text{Beta} = -.274$; $p < .001$). However, health at Wave 3 does not appear to be significantly associated with change in outpatient physician visits ($\text{Beta} = .021$; *ns*). Two general conclusions may be drawn from these results. First, the data indicate that change in health over time is associated with change in physician use over time but there do not appear to be any lagged effects of health at Wave 3 on outpatient physician use. Although

these data provide interesting insight into the nature of the relationship between health and health care use, more important results emerge when tests are repeated for the interaction between age and the presence of a close companion at church on change in physician use. Specifically, the data reveal that when change in health is included in the model, the interaction between age and church-based companion friendships is no longer statistically significant ($b = -.090$; ns). As discussed above, these results provide some evidence that change in health fully mediates the moderating effect between age and close companion friends at church on change in outpatient medical use over time.

Conclusions

The purpose of this study was to highlight the way in which a largely overlooked type of social relationship in the church (i.e., having close companion friends in church) may influence the health and health care use of older adults. Three potentially important findings emerged from the data. First, the analysis suggests that older people who have a close companion friend in the place where they worship tend to rate their health more favorably than older adults who do not have a close friend at church. However, a more fine grained examination of these data suggests that only members of the oldest-old age group appear to enjoy these health-related benefits. Second, the data further reveal that older people who have a close companion at church report making fewer outpatient physician visits over time than older individuals who do not have a close companion in their congregation. But once again, further analysis suggests that the benefits associated with having a close friend at church emerge only in the oldest-old age group. Third, the results indicate that the interaction between age and having a companion friend at church on change in outpatient physician visits disappears once change in health is added to the model. This suggests that the reason why members of the oldest-old age group who have a church-based companion use less medical care may be entirely attributed to the fact that having a close friend at church improves self-rated health.

There are several reasons why these results emerging from this study are noteworthy. To begin with, the conclusions are based on data that were gathered at more than one point in time. In addition, linking involvement in religion with health care use helps underscore a largely overlooked way in which involvement in religion is associated with health-related outcomes. Although other investigators have shown that involvement in religion is associated with outpatient health care use, they have largely been concerned with how religion promotes healthy lifestyles. As a result, these researchers typically focus on outpatient visits specifically for preventive health examinations, such as mammographies (see, for example, Benjamin et al., 2006). This strategy fails to take outpatient visits for illness into account and as a result, it provides an incomplete view of the ways in which religion may help curtail medical care costs. Finally, the findings from this study are important because this appears to be the first time that the age variations within the course of late life, religion, and health have been evaluated empirically. This is important because, for far too long, many researchers have assumed that all older adults constitute one large undifferentiated group. This practice is especially widespread in research on religion, aging and health. This is ironic because, as Levin (2001) points out, many insights into the relationship between religion and health have come from studies that focus especially on older people. It is unfortunate that researchers tend to pool all older people into a single group because by doing so, they overlook potentially important variations in efficacy of social resources, such as church-based companion friendships. If the analyses for the current study had been solely concerned with the relationships between companion friends on health and health care use, for all older people taken together, then it would have been erroneously concluded that this particular type of church-based social relationship is of little consequence in late life. And in the process of arriving at this conclusion, researchers would be overlooking one potentially important way of offsetting spiraling health

care costs among the older people who incur the greatest medical expenditures (i.e., the oldest-old).

Although the findings from the current study may break new ground, a significant amount of work remains to be done. For example, the results reveal that close companion friends at church may be especially beneficial for the oldest-old, but it is not entirely clear how these benefits arise. According to the theoretical rationale that was devised earlier, these benefits may arise from the fact that close companion friends at church provide a safe haven for self-disclosure, they encourage and nurture self-expression, and they foster a sense of belonging. But, these intervening linkages were examined empirically. Clearly, these as well as other potentially important intervening mechanisms must be evaluated in the future. In addition, researchers need to know whether the health-related benefits of having a companion friend are unique to friendships within the church or whether the same advantages are provided by close friends in the secular world. Such analyses, however, will be complicated by the fact that older people who have close friends at church may also be the same individuals who have close companions in the secular world. If this obstacle can be overcome, and if the health-related benefits associated with companion friends are especially evident in the church, then even more specific guidance for designing effective interventions would be available.

In the process of examining these as well as other issues, it is important for researchers to pay close attention to the limitations in the current study. Two shortcomings should be considered carefully. First, even though the analyses were based on data that were gathered at more than one point in time, it still cannot be concluded that church-based companion friendships “cause” better health. Such conclusions can only be based on data from studies that employ a true experimental design. Second, variations by age emerged from the data. These results were interpreted as arising from age-related change. However, it is not possible to distinguish between age and cohort effects with the data that are available in the current study.

Many people are familiar with the following quotations from work of Ralph Waldo Emerson. First, Emerson (1841/1983), who was an ordained minister, observed that “... a friend may well be reckoned to be the masterpiece of nature” (p. 348). Second, Emerson argued that, “The first wealth is health” (p. 972). However, Emerson never put the two insights together. By showing that friends at church may be associated with health and health care use, the findings from the current study suggest that Emerson may have been justified in doing so. Linking the two constructs in thoughtful and well-designed studies may help bring research on religion and health further into the heart of the debate over one of the most challenging issues of our time B reducing health care costs.

References

- Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.
- Baltes, PB.; Smith, J. Multilevel and systemic analysis of old age: Theoretical and empirical evidence for a fourth age. In: Bengtson, VL.; Schaie, KW., editors. Handbook of theories of aging. New York: Springer; 1999. p. 153-173.
- Baron RM, Kenny D. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 1986;51:1173–1182. [PubMed: 3806354]
- Baumeister, RF. Meanings of life. New York: Guilford; 1991.
- Benjamin MR, Trinitapoli J, Ellison CG. Religious attendance, health maintenance beliefs, and mammography utilization: Findings from a nationwide survey of Presbyterian women. *Journal for the Scientific Study of Religion* 2006;45:597–607.
- Blalock, HM. Conceptualization and measurement in the social sciences. Beverly Hills, CA: Sage; 1982.

- Carstensen LL. Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging* 1992;7:331–338. [PubMed: 1388852]
- Centers for Disease Control and Prevention. Health in the United States, 2008: Special excerpt: Trend tables on 65 and older population. Washington, DC: U.S. Government Printing Office; 2008.
- Cocking D, Kennett J. Friendship and the self. *Ethics* 1998;108:502–527.
- Cohen S. Social relationships and health. *American Psychologist* 2004;59:676–684. [PubMed: 15554821]
- Collins NL, Miller LC. The disclosure-liking link: From meta-analysis toward a dynamic conceptualization. *Psychological Bulletin* 1994;116:457–475. [PubMed: 7809308]
- Cooley, CH. Human nature and the social order. New Brunswick, NJ: Transaction Publishers; 1902/2003.
- Cooley, CH. Life and the student. New York: Alfred A. Knopf; 1927.
- Edwards JR, Lambert LS. Methods for integrating moderation and mediation: A general analytic framework using moderated path analysis. *Psychological Methods* 2007;12:1–22. [PubMed: 17402809]
- Emerson, RW. Ralph Waldo Emerson: Essays and lectures. New York: Literary Classics of the United States; 1841/1983.
- Evashwick C, Rowe G, Diehr P, Branch L. Factors explaining the use of health care services by the elderly. *Health Care Services Research* 1984;19:357–382.
- Federal Interagency Forum on Age Related Statistics. Older Americans 2008: Key indicators of well-being. Washington DC: U.S. Government Printing Office; 2008.
- Graham JW. Missing data analysis: Making it work in the real world. *Annual Review of Psychology* 2009;60:549–576.
- Greenberg, D. Causal analysis with nonexperimental panel data. In: Menard, S., editor. *Handbook of longitudinal research: Design, measurement, and analysis*. New York: Academic Press; 2008. p. 259–278.
- Groves RM. Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly* 2006;70:646–675.
- Idler E, Musick M, Ellison CG, George LK, Krause N, Levin JS, Ory M, Pargament KI, Powell LH, Williams DR, Underwood Gordon L. National Institute on Aging/Fetzer Institute Working Group brief measures of religiousness and spirituality. *Research on Aging* 2003;25:327–365.
- Krause, N. Illness behavior in late life. In: Binstock, R.; George, LK., editors. *Handbook of aging and the social sciences*. New York: Academic Press; 1990. p. 227–244.
- Krause N. Church-based social support and health in old age: Exploring variations by race. *Journal of Gerontology: Social Sciences* 2002;57B:S332–S347.
- Krause N. Exploring the stress-buffering effects of church-based social support and secular social support on health in late life. *Journal of Gerontology: Social Sciences* 2006;61B:S35–S43.
- Krause N. Self-expression and depressive symptoms in late life. *Research on Aging* 2007;29:187–206.
- Krause, N. *Aging in the church: How social relationships affect health*. West Conshohocken, PA: Templeton Foundation Press; 2008.
- Krause N, Cairney J. Close companion friends at church and health in late life. *Review of Religious Research*. Forthcoming.
- Krause N, Wulff KM. Church-based social ties, a sense of belonging in a congregation, and physical health status. *The International Journal for the Psychology of Religion* 2005;15:73–93.
- Larson DG, Chastain RL. Self-concealment: Conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology* 1990;8:439–455.
- Levin, JS. *God, faith, and health: Exploring the spirituality-healing connection*. New York: Wiley; 2001.
- Little, RJ.; Rubin, DB. *Statistical analysis with missing data*. New York: Wiley; 2002.
- Maslow, AH. *Motivation and personality*. New York: Harper; 1954.
- McFadden SH, Knepple AM, Armstrong JA. Length and locus of friendship influence, church members' sense of social support, and comfort with sharing emotions. *Journal of Religious Gerontology* 2003;15:39–55.

- Rook KS. Social support versus companionship: Effects on life stress, loneliness, and evaluations by others. *Journal of Personality and Social Psychology* 1987;52:1132–1147. [PubMed: 3598859]
- Rosow, I. Status and role change through the life span. In: Binstock, RH.; Shanias, E., editors. *Handbook of aging and the social sciences*. New York: Van Nostrand Reinhold; 1976. p. 457-482.
- Tardy, CH. Self-disclosure and health: Revisiting Sidney Jourard's hypothesis. In: Petronio, S., editor. *Balancing the secrets of private disclosure*. Mahwah NJ: Lawrence Erlbaum; 2000.

Table 1

Church-Based Companion Friends, Age, and Self-Rated Health (N = 450)

Independent Variables	Model 1	Model 2
Age	-.105 ^{**a} (-.017) ^b	-.139 ^{***} (-.022)
Sex	.138 ^{**} (.230)	.135 ^{**} (.226)
Race	-.009 (-.014)	.002 (.003)
Marital status	-.008 (-.013)	-.014 (-.024)
Education	.023 (.006)	.034 (.009)
Church attendance	-.023 (-.014)	-.026 (-.016)
Prayer	.007 (.005)	.032 (.024)
Companion friend	.067 (.114)	.076 (.129)
(Companion friend × age)	---	---
		(.061) ^{***}
Self-rated health - Wave 3	.483 ^{***} (.520)	.467 ^{***} (.503)
Multiple R ²	.269	.296

^a standardized regression coefficient^b metric (unstandardized) regression coefficient*
 $p < .05$;**
 $p < .01$;***
 $p < .001$

Table 2

Church-Based Companion Friends, Age, and Outpatient Physician Visits

	Model 1	Model 2	Model 3	Model 4
Independent Variables	(N = 444)	(N = 444)	(N = 443)	(N = 443)
Age	.065 ^a	.086	.030	.044
	(.037) ^b	(.049)	(.017)	(.025)
Sex	-.060	-.059	-.021	-.023
	(-.359)	(-.350)	(-.127)	(-.135)
Race	.056	.050	.067	.063
	(.320)	(.289)	(.386)	(.364)
Marital status	.041	.044	.044	.046
	(.237)	(.257)	(.258)	(.270)
Education	.070	.064	.102*	.097*
	(.064)	(.059)	(.094)	(.089)
Church attendance	.112*	.117*	.118**	.120**
	(.249)	(.259)	(.262)	(.267)
Prayer	.027	.010	.033	.023
	(.074)	(.028)	(.091)	(.063)
Companion friends	-.056	-.063	-.043	-.048
	(-.345)	(-.385)	(-.263)	(-.291)
Health (Wave 3)	---	---	.021	.020
	---	---	(.082)	(.077)
Health (Wave 4)	---	---	-.274***	-.259***
	---	---	(-.977)	(-.923)
(Companion × age)	---	---	---	---
	---	(-.156)**	---	(-.090)
Physician visits (Wave 3)	.333***	.330***	.305***	.304***
	(.413)	(.409)	(.378)	(.377)
Multiple R ²	.151	.164	.215	.220

^a standardized regression coefficient^b metric (unstandardized) regression coefficient* $p < .05$;** $p < .01$;*** $p < .001$