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Trajectories of disability in older adulthood and social support from a religious congregation: A growth curve analysis

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Abstract

This study examined the role of congregational support as a mechanism by which religious involvement may slow the decline of functional ability during late life. Disability was tracked longitudinally over a 4-year period in a national sample of 805 Black and White older adults from the Religion, Aging, and Health Survey. Individuals with more extensive disability reported receiving greater amounts of tangible support from their congregations. However, receiving higher levels of tangible support was also associated with a slower trajectory of increase in disability over time. The relationship between congregational support and disability did not differ significantly between Blacks and Whites. Results support the hypothesis that social support networks based in the religious group are responsible for some of the association between religious involvement and reduced risk of late life disability.

Keywords

disability; religion; social support; race; growth curve analysis

Late life disability, although broadly declining in recent decades, remains a serious problem and a major contributor to high public expenditures on health care (Manton et al., 2006). Moreover, there is a great deal of variability in the trajectories of disability that individuals follow, with steeper declines being related to earlier mortality (Christensen et al., 2008). Participation in a religious organization is one factor that has been found to be related to lower levels of functional disability in older adults (Idler & Kasl, 1997; Koenig et al., 2004). Though these studies suggest that the religious community plays a protective role in relation to late life disability, the specific elements of group membership responsible for this relationship have not been thoroughly examined. Questions regarding the directionality of this relationship also remain; since increasing disability creates barriers to participation in group activities of all types, those with more severe physical limitations may decrease their level of organized religious activity. In order to understand the role that religious communities may be able to play in reducing the burden of disability, it is necessary to address these issues.

There is a large and growing body of evidence that religiousness tends to be associated with better health outcomes, particularly among older adults. Relatively few of these studies have focused specifically on physical functioning and disability, but those that have done so have generally found that individuals who are more engaged in religion tend to have lower levels of disability (Powell et al., 2003). Religion, however, is a complex and multifaceted construct, entailing both private and public elements. Studies examining both have generally

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shown that it is only public religiousness that is linked with disability status. In a series of studies using data from a longitudinal epidemiological study, Idler and Kasl showed that more frequent attendance at religious services was associated with lower levels of physical disability both contemporaneously (Idler, 1987) and after a period of up to 11 years (Idler & Kasl, 1992, 1997), though in each case private religiousness was unrelated to disability. Another study found that, similarly, more frequent participation in a range of organizational religious activities, including classes and prayer groups in addition to worship services, was cross-sectionally related to lower levels of physical disability among older hospital patients, but that engaging in religious activities on one's own was unrelated to extent of disability (Koenig et al., 2004). In contrast to these findings, a smaller study of medical rehabilitation patients of all ages found no relationship between baseline levels of either organizational or private forms of religious activity and extent of disability after four months (Fitchett et al., 1999).

There has been little research aimed at isolating the particular elements of organized religious participation that might explain its apparent relationship with disability. Religious coping is one of the few constructs that has been examined in this regard, but the results illustrate the difficulty of the task of determining directionality. One cross-sectional study found that older medical patients who more frequently used religious coping techniques – whether positive or negative – tended to suffer from more severe disability (Pargament et al., 1998). Another study found a longitudinal relationship between negative religious coping and worse rehabilitation outcomes after four months (Fitchett et al., 1999). However, since disability status is likely to be highly correlated across time, it is difficult to separate the effects of increased disability on coping from any beneficial effects that coping may have on later disability.

Given that previous research points towards the influence of organizational rather than private religiousness, social elements of belonging may have more explanatory potential than psychological mechanisms, such as coping, with respect to its relationship with disability. One of the central pathways by which religious groups provide benefits to their members is through the various forms of social support relationships that arise between group members (Krause, 2002a). The importance of this congregational support intensifies later in life, as people tend to withdraw from other longstanding social networks, while simultaneously developing more needs for physical support (Krause, 2008). Though the congregation may serve as the nexus for many types of support, it is tangible support – receiving help with practical activities like transportation or housework – that is most germane to the challenges posed by physical disability. Having a social network to draw upon for these types of needs may slow the course of disability by providing the support to be able to continue to do some activities of daily living, thus helping older adults to maintain a greater degree of independence for a longer period of time. This possibility is subject to the same directional complexities as those described for coping. More severely disabled older adults have greater needs for tangible support, making it difficult to separate increases in support prompted by that need from the benefits of receiving support that may accrue over time.

The role of the religious congregation may also intersect with racial disparities in risk of late life disability. African Americans suffer from worse health outcomes across the lifespan, compared with their White counterparts, and this gap widens in older adulthood (Levine et al., 2001; Williams, 2005). Recent research has demonstrated that African Americans experience onset of disability at younger ages, on average, and that the cumulative effects of lifelong disparities in health and access to care account for much of this inequality (M. G. Taylor, 2008). At the same time, religion appears to play a particularly important role in the well-being of older African Americans (Krause, 2004). For a number of well-established

historical and social reasons, the African American church continues to occupy a unique and central role as a cultural institution and nexus of support (R. J. Taylor et al., 2004). Several empirical studies have found that congregational support relationships in the African American church are both stronger and more closely related to health, compared with other groups (Krause, 2002b, 2006). Given the elevated centrality of the church, alongside the cumulative impact of lifelong unequal access to other support resources, it is likely that congregational support plays a larger role in protecting against late life disability among African Americans than among Whites.

In an effort to disentangle the relationship between tangible congregational support and functional disability in late life, this study uses longitudinal data collected over the course of five years using linear growth curve modeling. Based on previous findings regarding disability and religious group participation, combined with theory surrounding the role of congregational support, we derive three hypotheses. First, there will be a positive relationship between extent of disability and tangible support received from the congregation at the same point of measurement, as increasing need elicits a greater amount of social support. Second, there will be a negative relationship between tangible support and the age-related slope representing change over time in disability; that is, those who receive more support will experience less rapid deterioration in ability. Third, the ameliorative relationship between tangible support and change in disability severity will be stronger among African Americans than among Whites, as a consequence of the cultural centrality of the African American church as a nexus of support, as well as more limited access to alternative forms of support among older African Americans.

Method

Sample

Data for this study come from waves two, three, and four of an ongoing longitudinal survey of religion, aging, and health. The sample was drawn randomly from the beneficiary list of the Centers for Medicare and Medicaid Services in 2001, and is representative of the US population aged 66 and older (excluding residents of Alaska and Hawaii). Screening of the sample was conducted to limit the pool of respondents by race and religion. To allow for oversampling of African Americans, and to facilitate group comparisons based on minority status, only those older adults who self-identified as either Black or White were included in the survey. Restriction of the sample based on religious background was carried out so that measures of religious constructs validated only within Christian samples could be used with all respondents. In the context of the current study, the concept of the congregation may also be less relevant to groups arising from other cultural backgrounds. Therefore, respondents were limited to those whose religious affiliation fell into one of the following categories: currently Christian, formerly Christian but currently practicing no religion, or had never been affiliated with any religion. Questions regarding congregational support were asked only of those participants who reported attending church regularly (i.e., at least “about once a month” on a scale of attendance frequency ranging from “never” to “several times a week”), which further limits the sample used in these analyses.

All data were collected via in-person interview, conducted in respondents’ homes, by Harris Interactive (New York). Because functional status was not assessed in the first wave, the analyses presented in this paper begin in Wave 2. The baseline survey (Wave 1) was conducted in 2001, and included a total of 1,500 completed interviews, with 752 African American and 748 White respondents; the overall response rate was 62%. Wave 2 was conducted in 2004, and resulted in 1,024 complete interviews, with a re-interview rate of 80% after excluding respondents who had died or become ineligible (due to

institutionalization) in the interim. Wave 3 followed in 2007 (N = 969, 75% re-interview rate), and Wave 4 in 2008 (N = 718, 88% re-interview rate).

Measures

Functional disability—Functional disability was measured using a 15-item activities of daily living index (see Table 1). For each activity on the checklist, respondents indicated whether or not they had difficulty with the task. A higher score on this measure indicated a greater degree of disability.

Congregational support—Tangible support received from the congregation was measured with a 4-item scale (see Table 1 for question wording). Higher scores indicate higher reported levels of tangible support from other members of the congregation.

Demographics—Additional demographic measures included in this study include sex (0 = male, 1 = female), race (0 = Black, 1 = White), education (in years), and age.

Model Specification

This study uses hierarchical linear modeling approach to the analysis of growth curves (Curran et al., 2010; West et al., 2007). This method treats each participant as a cluster within which individual data points, corresponding to measurements at each survey wave, are nested. Treating age and the intercept as random effects, a model of average intra-individual age-related change is derived based on weighted composites of between and within-person age effects and trajectory information for each participant, including those with only a single point of observation, and those who entered the sample after the first wave or left before the final wave. Analyses were conducted in SPSS 19 using the linear mixed modeling procedure, applying a variance components covariance matrix. Preliminary analysis of the showed that the Black and White samples differed substantially in their distributions of several key variables in the model, particularly including congregational support (see Table 2). Therefore, models were fit separately for Black and White participants.

Fixed effects were added to the model in two steps. First, an unconditional growth model was constructed, including only an age effect. This model describes mean within-person change in extent of disability, expressed by the following formula:

$$disability_{ij}=\beta_0+\beta_1 Age_{ij}+u_{0i}+u_{1i}Age_{ij}+\varepsilon_{ij}$$

where $disability_{ij}$ is the score on the ADL measure for respondent i at age j; β_0 is the intercept for age, centered on the grand mean of all age values across all waves of 78.73 years; β_1 is the rate of linear change in ADL level; u_{0i} is the random intercept, representing intra-individual variation in mean ADL level; $u_{1i}Age_{ij}$ is the random effect of age, allowing for intra-individual variation in the age slope around the population mean rate of change; ε_{ij} is the random error term for individual i at age j.

The full model added explanatory variables, including gender, education, and tangible support from the congregation. For each of these explanatory factors, two terms were fitted: a main effect, representing the relationship of the variable with the within-person mean level of disability, and an interaction with age, indicating its relationship with the trajectory of change in disability over time. Thus, the full model can be represented with the following formula:

$$disability_{ij}=\beta_0+\beta_1 Age_{ij}+\beta_2 Gender_i+\left(\beta_3 Gender_i\times Age_{ij}\right)+\beta_4 Education_i+\left(\beta_5 Education_i\times Age_{ij}\right)+\beta_6 Support_{ij}+\left(\beta_7 Support_{ij}\times Age_{ij}\right)+u_{0i}+u_{1i}Age_{ij}+\varepsilon_{ij}$$

Gender and education are treated as constant across time within individuals, and $support_{ij}$ denotes the time-varying value of tangible support provided by the congregation for individual i at age j. The main effects, $\beta_2 Gender_i$, $\beta_4 Education_i$, and $\beta_6 Support_{ij}$ indicate the estimated mean association between each of the model variables and extent of disability when age is equal to the grand mean of the sample (78.73 years). The corresponding multiplicative effects indicate the estimated change in the rate of growth (expressed in units of disability per year) associated with an increase of one unit in the model variable. In these analyses, gender is a dichotomous variable (Male = 0, Female = 1), and education and support are each centered on their grand means.

Results

Listwise deletion of cases due to item nonresponse on the variables in the model resulted in the exclusion of 4.8% of otherwise eligible observations. This left a total of 1,729 observations from 805 individuals (426 Black, 379 White). The mean number of observations per participant was 2.08, with 225 having a single observation, 236 having two observations, and 344 with observations in all three waves. Descriptive statistics by wave and race for all variables in the model are presented in Table 2, along with tests for mean differences between Black and White participants. Note that the total sample size in wave 2 is smaller than the 805 individuals in the total sample. This is because some participants attended church too infrequently to receive congregational support questions in wave 1, but subsequently increased their attendance and were included in one or both of the following waves.

Table 3 presents fixed and random effects coefficients and model statistics for the unconditional growth curve models. Functional limitations increased significantly with age (White: $b = 0.14$, 95% CI [0.09, 0.19], $p < .001$; Black: $b = 0.12$, 95% CI [0.08, 0.17], $p < .001$). Significant random effects variance indicated that there was between-individual variation in both mean levels of disability (White: $b = 4.51$, 95% CI [3.43, 5.93], $p < .001$; Black: $b = 4.51$, 95% CI [3.42, 5.93], $p < .001$) and in the slope of change over time (White: $b = 0.03$, 95% CI [0.01, 0.08], $p = .033$; Black: $b = 0.04$, 95% CI [0.02, 0.08], $p = .014$).

Results of the full conditional growth curve model are presented in Table 3. Mean extent of disability was higher among women (White: $b = 0.82$, 95% CI [0.29, 1.35], $p = .003$; Black: $b = 0.92$, 95% CI [0.35, 1.50], $p = .002$), and those receiving more tangible support from their religious congregation (White: $b = 0.21$, 95% CI [0.14, 0.28], $p < .001$; Black: $b = 0.12$, 95% CI [0.06, 0.18], $p < .001$). More education was associated with lower mean disability only among African Americans ($b = -0.08$, 95% CI [−0.17, −0.004], $p = .040$). Extent of disability showed mean within-individual increase with age (White: $b = 0.12$, 95% CI [0.03, 0.20], $p = .006$; Black: $b = 0.09$, 95% CI [0.008, 0.17], $p = .031$). Of the variables in the model, only tangible support from the congregation had a significant effect on the slope for age (White: $b = -0.01$, 95% CI [−0.03, −0.0003], $p = .044$; Black: $b = -0.02$, 95% CI [−0.03, −0.009], $p < .001$), indicating that people receiving more tangible support experienced slower rates of increase in disability. Random effects variance indicated that between-individual variation in both mean levels of disability (White: $b = 3.67$, 95% CI [2.72, 4.96], $p < .001$; Black: $b = 4.13$, 95% CI [3.10, 5.50], $p < .001$) and in the slope of change over time (White: $b = 0.04$, 95% CI [0.02, 0.08], $p = .011$; Black: $b = 0.03$, 95% CI

[0.01, 0.07], $p = .024$). Reduction in the Bayesian Information Criteria in comparison to the corresponding unconditional models indicates that the conditional models provide a better fit with the data.

Discussion

These results help to clarify the relationship between religion and functional disability in older adults. Consistent with our first two hypotheses, receiving more tangible support from the congregation was associated with more functional limitations measured contemporaneously, but was also associated over time with a less rapid worsening of disability. This is consistent with the idea that increasing disability serves to elicit congregational support, which in turn is effective at slowing the increase of further disability. The third hypothesis was not fully supported. Although a comparison of model coefficients suggests that tangible support from the congregation has a stronger impact on the course of changes in disability status among African Americans than among Whites, the difference between groups is not statistically significant. Taken together, this suggests an important role for congregational support in maintaining functional ability in late life, regardless of race.

These findings build upon previous studies examining religion and disability. In particular, they may help to elaborate on a series of analyses of the relationship of attendance at organized religious activities and subsequent change in disability status (Idler & Kasl, 1992, 1997; Idler, 1987). Congregational support is predicated at least to a certain extent upon organizational participation, in that an individual needs to have some degree of exposure to other group members in order to have the opportunity to receive tangible support. More broadly, congregational support relationships may develop and strengthen over the course of many years, meaning that more frequent participation earlier in life may have implications for support received in older adulthood. Beyond simply providing exposure to other group members and opportunities to engage in support relationships, attendance may also serve as an indicator of the extent of personal group involvement, and of fit between personal and group ideals. Previous research regarding the dynamics of religious congregations suggests that both of these factors are associated with receiving more congregational support (Hayward & Elliott, 2011). Taken together, these findings suggest that congregational support may serve as a pathway by which various facets of group belonging and participation may work over time to help older adults retain a higher level of functional ability for a longer period. Although the difference between races in these effects did not rise to the level of statistical significance, the trend towards a stronger protective effect among African Americans may call for closer examination in future studies. Congregational support may provide the greatest benefits to members of the most vulnerable groups, and to those who may suffer from limited access to other support resources.

Limitations of this study include issues surrounding the interpretation of longitudinal data. The period observed for each individual is relatively short, compared with the total range of ages covered by the sample, making it difficult to examine potential interactions between age, period, and cohort effects. Though the possibility of curvilinear change in functional ability was assessed, a longer period of longitudinal data collection, as well as more frequent measurements, would improve the sensitivity of the analyses to such a pattern of change. Future research should seek to follow older adults over longer periods of time.

Some time ago, Cassel (1964) argued that, "… greater attention must be given to the possibility that those sets of 'causes' which are responsible for the onset of conditions may be very different from those responsible for the lack of recovery from those conditions" (p. 1486). He went on to lament that the study of social factors that either promote or inhibit

recovery, "… have not yet found general acceptance" (p. 1486). Unfortunately, the observations that were made nearly half a century ago are still true with respect to research on the relationship between religion and health. The wide majority of studies in this field are solely concerned with the relationship between various aspects of religion and the onset of physical or mental health problems. Viewed at the broadest level, the intent of the current study has been to redress this imbalance in the literature by showing that church-based social support influences the course or progression of functional disabilities over time. Considering the highly detrimental impact of late life disability on individuals' quality of life and longevity, as well as the burden and costs of care it places on families and communities, understanding factors that may even incrementally slow its progression is extremely valuable. We hope the findings from the current study encourage other researchers to delve more deeply into the aspects of religious involvement that many influence the course of physical as well as mental health problems.

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Table 1

Item wording for scale measures

A. Activities of Daily Living[a]
A.1. Shopping for personal items, such as toilet items or medicines
A.2. Using the telephone
A.3. Bathing yourself
A.4. Climbing 2 – 3 flights of stairs
A.5. Walking about ¼ miles
A.6. Doing heavy work around the house, such as shoveling snow or washing walls
A.7. Taking a train or bus by yourself
A.8. Standing or being on your feet for about 2 hours
A.9. Stooping, crouching, or kneeling
A.10. Reaching over your head
A.11. Using your fingers to grasp or handle
A.12. Lifting or carrying something as heavy as 25 pounds
A.13. Dressing and undressing yourself
A.14. Feeding yourself
A.15. Getting in or out of bed
B. Tangible Support Received[a] (Cronbach's α = .801)
B.1. How often does someone in your congregation give you a ride to church services?
B.2. How often does someone in your congregation provide you with transportation to other places, like the grocery store or doctor's office?
B.3. How often does someone in your congregation help you with things that need to be done around your home, such as household chores or yard work?
B.4. How often does someone in your congregation help out when you or a member of your family are ill?

[a] Responses (scores): No (0), Yes (1)

[b] Responses (scores): never (1), once in a while (2), fairly often (3), very often (4)

Table 2

Descriptive statistics by wave and race

	Wave 2			Wave 3			Wave 4		
	White	**Black**	***p***	**White**	**Black**	***p***	**White**	**Black**	***p***
N	301	346		299	304		231	248	
Age, mean (SD)	76.92 (5.66)	76.84 (5.99)	.372	78.61 (5.36)	78.59 (5.58)	.566	80.10 (5.11)	80.27 (5.12)	.858
ADL, mean (SD)	2.22 (2.97)	3.11 (3.42)	< .001	2.84 (3.09)	2.98 (3.12)	.600	2.85 (3.10)	3.15 (3.24)	.334
Education, mean (SD)	13.05 (2.82)	10.48 (3.38)	< .001	12.85 (2.95)	10.84 (3.15)	.068	13.09 (2.99)	10.89 (3.26)	.107
Congregational Support, mean (SD)	5.63 (2.59)	6.68 (3.17)	< .001	6.03 (2.67)	7.07 (3.14)	.005	5.72 (2.69)	6.69 (3.30)	< .001

NOTES: ADL Activities of Daily Living Scale, *p*-values are for independent samples *t*-tests between White and Black participants for each measure within wave

Table 3

Unconditional growth models for functional limitation, stratified by race

	White			Black		
	b	**95% CI**	***p***	***b***	**95% CI**	***p***
Intercept	2.71	[2.44, 2.99]	< .001	3.21	[2.94, 3.48]	< .001
Age slope	0.14	[0.09, 0.19]	< .001	0.12	[0.08, 0.17]	< .001
Random Effects Variance						
Age	0.03	[0.01, 0.08]	.033	0.04	[0.02, 0.08]	.014
Intercept	4.51	[3.43, 5.93]	< .001	4.51	[3.42, 5.93]	< .001
Residual	3.97	[3.45, 4.57]	< .001	4.73	[4.14, 5.40]	< .001
Information Criteria						
BIC		4,048			4,497	

Table 4

Conditional growth models for functional limitation, stratified by race

	White			Black		
	b	**95% CI**	***p***	***b***	**95% CI**	***p***
Intercept	2.45	[2.00, 2.89]	< .001	2.49	[2.01, 2.97]	< .001
Age slope	0.12	[0.03, 0.20]	.006	0.09	[0.008, 0.17]	.031
Sex	0.82	[0.29, 1.35]	.003	0.92	[0.35, 1.50]	.002
x Age slope	−0.03	[−0.12, 0.07]	.600	0.07	[−0.03, 0.17]	.162
Education	−0.06	[−0.14, 0.03]	.207	−0.08	[−0.17, −0.004]	.040
x Age slope	0.008	[−0.008, 0.02]	.330	0.0004	[−0.01, 0.01]	.958
Tangible support	0.21	[0.14, 0.28]	< .001	0.12	[0.06, 0.18]	< .001
x Age slope	−0.01	[−0.03, −0.0003]	.044	−0.02	[−0.03, −0.009]	< .001
Random Effects Variance						
Age	0.04	[0.02, 0.08]	.011	0.03	[0.01, 0.07]	.024
Intercept	3.67	[2.72, 4.96]	< .001	4.13	[3.10, 5.50]	< .001
Residual	3.91	[3.40, 4.51]	< .001	4.67	[4.09, 5.33]	< .001
Information Criteria						
BIC		4,027			4,484	