Religious Attendance and the Disability Trajectories of Older Mexican Americans

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Objectives: In this paper, we test whether disability trajectories vary according to level of religious attendance in the elderly Mexican American population. **Methods:** Using six waves of data from the Hispanic Established Populations for the Epidemiologic Study of the Elderly (H-EPESE), we estimate a series of growth curve models to assess variations in multiple disability trajectories, including activities of daily living (ADL), instrumental activities of daily living (IADL), and performance oriented mobility assessment (POMA). **Results:** Our central finding is that higher levels of religious attendance are associated with slower rates of functional decline (ADL, IADL, and POMA) over the fourteen-year study period. **Discussion:** Additional research is needed to formally explain religious variations in disability trajectories and to establish the social conditions under which religious attendance is more or less protective.

Introduction

A number of epidemiological studies conducted over the last four decades report significant associations between religious involvement and better health. In a review of the literature published over a decade ago, Koenig et al. (2001) concluded that there was sufficient evidence to support the claim that religious involvement accounts for better health and lower mortality rates for community dwelling adults over time. For example, Goldman et al.'s (1995) examination of mortality rates between 1984 and 1990 shows that church attendance (e.g., individuals that did not attend church in the past two weeks) predicted greater mortality, net of other important correlates of mortality. Similarly, findings from a study of religious influences on all-cause mortality in a 28 year follow-up of 5,286 participants in California reveals that frequent attendance was associated with a 36 percent reduction in mortality (Strawbridge et al. 2000).

More recent work has addressed pathways between religion and health, and specifically the consistency of religion to shape health outcomes over time. Strawbridge et al. noted that attendees of religious services were less likely to engage in risky behaviors (e.g., smoking and/or drinking) than non-attendees. In addition to decreasing individual's engagement in risky behaviors, studies show that religious involvement is associated with larger networks (Ellison and George 1994; Gray 2009; Hill et al. 2008), psychological resources (Ai et al. 2002; Ardelt and Koenig, 2006; Krause 2003; Dillion and Wink 2007), better mental health (Braam et al. 2004; Carr 2003; Cicirelli 2002; Hill et al. 2007; Levin et al. 1996; Van et al. 2003), self-rated health (e.g., Benjamins 2004; Krause 1998; Park et al. 2008), as well as other predictors that improve health outcomes over time.

Although the cross-sectional associations between religion and health are well documented, scholars continue to debate the extent to which religion prevents the onset of other health outcomes, such as functional impairment, over time. Some scholars argue that connections between religion and health are robust; and go as far as to claim that "religious involvement rival nonsmoking and exercise" as a predictor of physical health over time (e.g., Myers 2006:38; Benjamins 2004; Idler and Kasl 1997a; 1997b). Other scholars contend that a.) church attendance improves some, but not all levels of physical health (Koenig and Vaillant [2009]), b.) church attendance does not effect self-rated functional health (Kelley-Moore and Ferraro [2001]), and/or c.) religious influences on functional limitations do not persist over time (Park et al. [2003]). Perhaps this is the reason why Ellison et al. (2010:327) described the for a link between religion and physical health as "inconclusive."

Despite recent advances in research on religion, health, and functional limitations, scholars have only begun to explore these relationships among racial and ethnic minority populations. Although there is some evidence to suggest that religious involvement is associated with a reduction in functional limitations among African American adults and elders (see Chatters [2001] for review) it is unclear whether this pattern exists among Hispanics. To our knowledge, there have been no published studies of the relationship between religious involvement and a range of physical limitations among Hispanics living in the United States.

The aim of the analyses presented here was to examine the cross-sectional and longitudinal association between religious attendance and three domains of functional status— activities of daily living (ADL), instrumental activities of daily living (IADL) and performance oriented mobility assessment (POMA)— among a sample of Hispanic Americans over time. Our first aim was to quantify the cross sectional relationships between religious involvement and

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functional status within one sample of older Hispanics. A second aim was to determine whether each dimension of religious involvement was a predictor of functional change over the course of fifteen years. For the cross-sectional analyses, we hypothesized that higher levels of religious participation would be associated with fewer impairments in function. Similarly, for the longitudinal analyses, we hypothesized that religious attendance would protect against functional decline across all domains of physical functioning.

Methods

Description of the Sample

The data used were from the Hispanic Established Populations for the Epidemiologic Study of the Elderly (H-EPESE). The H-EPESE survey is based on a probability sample of 3,050 Mexican-origin individuals aged 65 and older who reside in Texas, California, New Mexico, Arizona, and Colorado. Respondents were surveyed in 1993–1994, 1995–1996, 1998–1999, 2000–2001, 2004-2005, and 2007-2008. The response rate at baseline was 86%. The surveys included detailed information on health and functioning, immigration history, and demographic characteristics.

Measures

Physical Functioning, the dependent variables of interest, was assessed across three domains. We measure ADLs with seven items. Respondents were asked to indicate whether they could do any of the following activities by themselves or without any help from anyone else: (a) walk across a small room, (b) take a bath or shower, (c) perform personal grooming, (d) dress, (e) eat, (f) get from a bed to a chair, and (g) use the toilet. We coded respondents as (1) if they needed help or were unable to accomplish any of the seven activities, and as (0) otherwise.

IADL refers to at least one limitation in performing instrumental activities of daily living.

Respondents were asked to indicate whether they could do any of the following activities by themselves or without any help from anyone else: (a) using the telephone, (b) driving a car or riding a bus, (c) shopping for groceries or clothing, (d) preparing a meal, (e) doing light housework, (f) managing household finances, and (g) taking medications. Original response categories were coded (1) for yes and (0) for no. All of the items were summed to form an IADL index, with scores ranging from (0) to (7).

POMA measurement of physical functioning is based on three tasks: standing balance (semitandem and side by side), a timed 8-ft walk at a normal pace (gait speed), and a timed test of five repetitions of rising from a chair and sitting down. Each assessment was coded (0) unable to complete task, (1) poor, (2) moderate, (3) good, and (4) best. Respondents who received a score of (0) included those who tried but were unable to complete the task and those who did not attempt the task for safety reasons. POMA scores range from (0) to (12).

Religious Participation was measured by asking, "About how often do you go to mass or services?" Preserving the original response categories for this item, we coded religious attendance into five dummy variables: (a) more than once a week, (b) almost every week, (c) once or twice a month, (d) several times a year, and (e) never or almost never. In our main analysis, nonattendance (i.e., never or almost never) is the reference value against which all other levels of church attendance are compared.

Mental Health was measured by using the Center for Epidemiologic Studies Depression scale (CES-D) to measure depressive symptoms. The CES-D measures responses to 20 items. Respondents were asked to indicate the frequency of depressive symptoms experienced in the past week. We coded the original response categories for these items as (1) rarely or none of the time, (2) some of the time, (3) occasionally, and (4) most or all of the time. The final CES-D

measure represents a summed index of the 20 items.

Health Behaviors were measured using two variables. The first was a measure for smoking behavior as quantified in the number of cigarette packs smoked per year. The second measure was based on respondents' answer to the following question: "In the past month, have you had any beer, wine, or liquor?" We coded response categories for these items as (1) for yes and as (0) otherwise.

Background factors and social characteristics included controls for age, sex, education, financial strain English proficiency, and social disengagement. Age is a continuous variable, ranging from (65) to (96). We coded sex as (1) for females and (0) for males. We coded education as (1) for high school diploma or greater and as (0) otherwise. *Financial strain* was measured with two items. Respondents were asked, "How much difficulty do you have in meeting monthly payments on your bills?" Response categories for this item were coded (1) none, (2) a little, (3) some, and (4) a great deal. Respondents were also asked, "At the end of the month, do you usually end up with some money left over, just enough to make ends meet, or not enough to make ends meet?" Response categories for this item were coded (1) some money left over, (2) just enough to make ends meet, and (3) not enough money to make ends meet. We measure financial strain as the mean response to these two items. Note that these items have been standardized to account for metric differences.

We measured several aspects of social disengagement, including marital status, monthly contact with family and friends, secular group memberships, and living arrangements. Marital status was coded as (1) for unmarried and as (0) otherwise. Monthly contact was coded as (1) for no monthly contact and as (0) otherwise. We coded secular group membership as (1) for no memberships and as (0) otherwise. Finally, we coded living arrangements as (1) for living alone

and as (0) otherwise. Our final measure of social disengagement represents a summed index of these four items.

Occupation was measured by asking occupational status before retirement was based on 1990 US Census Bureau occupational codes, which were combined into (1) managerial, (2) technical, (3) service, (4) farming, (5) laborer, and (6) unemployed (which is our reference group).

Nativity and age at migration included four nativity status and age at migration groups of Mexican Americans: Group 1 represents those who were born in the United States. Group 2 represents those who born in Mexico and migrated to the United States before the age of 19. Group 3 represents those who were born in Mexico and migrated to the United States between the ages of 20 and 49 years. Finally, Group 4 represents those who were born in Mexico and migrated to the United States between the ages of 50 and 90 years. In our main analysis, United States-born Mexican Americans (Group 1) serve as the reference category against which the Mexico-born groups (Groups 2-4) are compared.

Physical health and functioning included a number of chronic conditions including diabetes, hypertension, stroke, and heart attack. Our measures of these conditions are based on self-reports. Respondents were asked to indicate whether a doctor had ever told them that they had any of the aforementioned conditions. We coded response categories for these items as (1) for yes and as (0) otherwise. Research shows that functional limitations are associated with lower levels of physical functioning. With this concern in mind, subsequent analyses control for ADLs, IADLs, and POMA at baseline.

Statistical Procedures

We use linear growth curve modeling to describe and predict limitations in physical

functioning trajectories over the fifteen-year study period. Standard lagged endogenous dependent variable models are well suited to predict changes in physical functioning over two points in time; however, these kinds of models are limited to indirect assessments of change across three or more waves. In contrast, growth curve analysis may directly describe and explain individual change over several waves of data (Raudenbush and Bryk 2002). In the present study, we use hierarchical linear modeling (HLM) to estimate and predict individual growth curves. Growth curve analysis represents a two-stage model of change. Individual's repeated measures are modeled as a function of an individual growth trajectory. In the second stage, individual growth trajectories are permitted to vary as a function of individual background characteristics (e.g., frequency of church attendance).

Results

Descriptive Statistics

Table One shows the characteristics of the sample at baseline by each dimension of religious involvement. At baseline, the sample averaged few ADL, IADL, and POMA limitations. The sample was predominately female, had less than a high school degree, English speaking adults, and reported a mean age of 72. Half of the respondents were obese and expressed low forms of social engagement. Results from this analysis also indicate that a total of 17% of the sample never attended religious services. Nearly 20% of respondents attended religious services at least once a year, while only 12% of the sample attended religious services on a monthly basis. Forty-two percent of respondents acknowledged that they attended religious services on a weekly basis while 10% stated they attend religious services more than once a weekly.

<TABLE 1 ABOUT HERE>

<TABLE 2 ABOUT HERE>

Predictors of Trajectories of ADL Difficulties

Our main analysis began with the standard unconditional model, which estimates the average growth rate and tests whether there is significant variation in individual growth rates. Table 2 presents the results of the unconditional model for IADL. The results for the mean growth rate indicate that, on average, susceptibility to ADL decreased by 1.68 points about every two years over the course of the study. It should be emphasized, however, that the random effect estimate for the individual growth parameters (i.e., growth rate variance) suggests that there is significant variability in individual rates of susceptibility to ADL. In other words, many respondents declined either faster or slower than the average growth rate.

Next, we estimated a conditional model predicting variation in the individual growth rates. Model 1 also tests for the total association between religious attendance and the individual growth rates. In comparison to those who never attended religious services, yearly, monthly, weekly, or more than weekly attendees had fewer ADL difficulties over time. Although we observe statistically significant results for church attendance, corresponding effect sizes vary in their consequences (0.16–0.30).

Predictors of Trajectories of IADL Difficulties

Model 2 of Table 2 presents the results of the unconditional model for IADL. The results for the mean growth rate indicate that, on average, susceptibility to IADL increased by 1.13 points about every two years over the course of the study. The random effect estimate for the individual growth patterns suggests that many respondents declined either faster or slower than the average growth rate. We also test for the total association between religious attendance and

the individual growth rates. Although the IADL functioning trajectories of yearly and monthly churchgoers resemble those of individuals who never attend church, respondents who attend church monthly, weekly, and more than weekly tend to exhibit slower rates of susceptibility to IADL than those who do not attend church.

Predictors of Trajectories of POMA Difficulties

Model 3 of Table 2 estimates the average growth rate and tests whether there is significant variation in individual growth rates in susceptibility to POMA limitations. The results for the mean growth rate indicate that, on average, susceptibility to POMA increased by 2.20 points about every two years over the course of the study. It should be emphasized, however, that the growth rate variance for the individual growth parameters suggests that many respondents' susceptibility to POMA declined either at a faster or slower rate than the average growth rate. Following this, we estimated a conditional model predicting variation in the individual growth rates. Model 3 tests for the total association between religious attendance and the individual growth rates. In comparison to those who never attended religious services, yearly, monthly, weekly, or more than weekly attendees were more likely not to experience difficulties over time.

Discussion

Despite recent advances in research on religious involvement, health, and functionality health, scholars have only begun to explore these relationships among racial and ethnic minority populations. Although there is some evidence to suggest that religious involvement is associated with a reduction in the risk of functional limitations among black adults and elders, there have been no analyses of the relationship among Hispanics living in the United States. Building on prior research, we examined the association between religious attendance and the risk of

functional limitations among older Mexican Americans.

Our results suggest that religious attendance is associated with a reduction in the susceptibility to ADL, IADL, and POMA functional limitations among older Mexican Americans. Although other factors such as poor mobility and activity limitations seem to account for functional limitations among our sample, attendees of religious organizations continued to exhibit a significant reduction in the risk of functional limitations as compared with those who never attend religious services. While most studies show that functional limitations tend to discourage religious attendance, these results strongly suggest that functional limitations in late life may also explain the health benefit of attending religious services.

It is important to note that we considered the potential mediating influence of social integration, health behaviors, mental health, and physical health. Whereas age, social engagement, heavy drinking, smoking, and depression are important correlates of functional limitations, the effect of church attendance on functional health is independent of these factors. Our results for religious influences on functional limitations are consistent with some studies (e.g., Idler and Kasl 1997a; 1997b) that show the importance of religion in protecting Americans against functional decline over time. To our knowledge, we are the first to have examined the relationship between religion and multiple measures of physical functioning among Hispanic Americans over time.

The results of our investigation are quite intriguing; however, much remains to be investigated. Although religious attendance has a strong independent impact on functional health, it is probably associated with other factors not controlled for in these analyses. For example, studies show that religious involvement is inversely associated with anger and hostility and positively associated with happiness, hope, and optimism (Koenig et al. 2001). If these

variables predict mortality or other important risk factors such as cardiovascular health, they may at least partially mediate the relationship between religious involvement and functional health. It may also be important to control for more specific religious practices and devotional activities. In this report, we find that general social engagement has no mediating influence. More specific measures of church-based social support might help to explain some of the association.

Despite the limitations of the data, our results show that religious attendance is associated with a reduction in the risk of experiencing functional limitations among older Mexican Americans. Moreover, we find that the benefits of regular attendance are especially robust, persisting with statistical adjustments for sociodemographic characteristics, cardiovascular health, functional limitations, social support, health behaviors, mental health, and physical health.

Table 1: Baseline Descriptive Statistics for Predictors (H-EPESSE, 1993-1994)

	MEAN	SD	MINIMUM	MAXIMUM
Religious Involvement				
Never	0.17	0.37	0	1
Yearly	0.19	0.39	0	1
Monthly	0.12	0.33	0	1
Weekly	0.42	0.49	0	1
Greater than Weekly	0.10	0.30	0	1
Mental Health				
CESD	14.70	7.25	0	54
Health Behaviors				
Cigarette Packs Smoked in a Year	374.48	701.99	0	4680
Drinker	0.18	0.39	0	1
Background Factors and Social Characteristics				
Age	72.10	5.97	65	96
Female	0.51	0.50	0	1
Education	0.11	0.31	0	1
Financial Strain	-0.01	0.89	-1.51	1.5
English Proficiency	2.40	1.14	1	4
Social Disengagement	1.69	0.98	0	4
Occupation				
Manager	0.03	0.17	0	1
Technical	0.08	0.28	0	1
Service	0.18	0.38	0	1
Farming	0.35	0.48	0	1
Laborer	0.22	0.42	0	1
Unemployment	0.13	0.34	0	1
Strain	-0.01	0.89	-1.51	1.5
Nativity Status				
US-born	0.57	0.49	0	1
Immigrant (1-19)	0.14	0.34	0	1
Immigrant (20-49)	0.21	0.41	0	1
Immigrant (50-90)	0.08	0.27	0	1
Physical Health and Functioning				
Heart	0.10	0.30	0	1
Stroke	0.05	0.22	0	1
Pressure	0.42	0.49	0	1
Diabetes	0.27	0.44	0	1
ADLs ($\geq$1)	0.21	0.91	0	7
IADLs ($\geq$1)	1.39	2.15	0	10
POMAs ($\geq$1)	7.21	3.12	0	12

Notes: H-EPESE: Hispanic Established Populations for the Epidemiological Study of the Elderly, n=2,286.

Table 2: Unconditional and Conditional Physical Functioning Trajectories (H-EPESE, 1993-2008)

| | ADL | | | IADL | | | POMA | | |
	Model 1			Model 2			Model 3		
Baseline Predictors	Coeff.		S.E.	Coeff.		S.E.	Coeff.		S.E.
Religious Involvement									
Yearly	-0.16	***	0.05	-0.14		0.08	0.21	***	0.08
Monthly	-0.16	***	0.05	-0.10		0.09	0.26	***	0.09
Weekly	-0.18	***	0.05	-0.24	***	0.07	0.32	***	0.07
Greater than Weekly	-0.30	***	0.05	-0.37	***	0.09	0.42	***	0.09
Mental Health									
CESD	0.00		0.00	0.00		0.00	0.00		0.00
Physical Health and Functioning									
Heart	0.00		0.05	0.02		0.08	-0.07		0.08
Stroke	0.12		0.08	0.12		0.12	-0.15		0.12
Pressure	0.00		0.03	0.00		0.04	0.02		0.05
Diabetes	0.16	***	0.03	0.32	***	0.05	-0.37	***	0.05
ADLs (≥1)	0.24	***	0.03						
IADLs (≥1)				0.07	***	0.02			
POMAs (≥1)							0.04	***	0.01
Health Behaviors									
Cigarette Packs Smoked in a Year	0.00		0.00	0.00	*	0.00	0.00		0.00
Drinker	-0.08	***	0.03	-0.11		0.06	0.21	***	0.06
Background Factors and Social Characteristics									
Age	0.03	***	0.00	0.06	***	0.00	-0.05	***	0.00
Female	0.04		0.04	0.12	*	0.06	-0.19	***	0.06
Education	0.03		0.05	0.02		0.08	0.03		0.08
Financial Strain	0.02		0.02	0.02		0.02	-0.03		0.03
Social Disengagement	-0.01		0.01	-0.02		0.02	-0.02		0.03
Subjective Class Identification									
Manager	-0.11		0.09	-0.06		0.14	-0.07		0.15
Technical	0.02		0.07	-0.06		0.10	-0.06		0.11
Service	-0.05		0.05	-0.07		0.07	-0.04		0.08
Farming	-0.13	***	0.05	-0.16	**	0.08	-0.03		0.08
Laborer	-0.04		0.05	-0.06		0.08	-0.06		0.08
Strain	0.02		0.02	0.02		0.02	-0.03		0.03
English Proficiency	-0.04		0.01	-0.08	***	0.02	0.04		0.03
Nativity Status									
Immigrant (1-19)	0.01		0.05	-0.07		0.08	0.03		0.08
Immigrant (20-49)	-0.01		0.04	-0.04		0.06	-0.08		0.06
Immigrant (50-90)	-0.03		0.06	0.03		0.09	-0.02		0.09
Model Statistics									
Mean Growth Rate	-1.68	***		1.13	***		2.20	***	
Growth Rate Variance	0.17	***		0.39	***		0.37	***	

Notes: H-EPESE = Hispanic Established Populations for the Epidemiologic Study of the Elderly. n = 2,286. Shown are unstandardized coefficients with standard errors. *p<.05, **p<.01, ***p<.001 (two-tailed tests).

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