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Religious Participation and DSM-IV Disorders among Older African Americans: Findings from the National Survey of American Life (NSAL)

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Abstract

Objectives—This study examined the religious correlates of psychiatric disorders.

Design—The analysis is based on the National Survey of American Life (NSAL). The African American sample of the NSAL is a national representative sample of households with at least one African American adult 18 years or over. This study utilizes the older African American sub-sample (n=837).

Methods—Religious correlates of selected measures of lifetime DSM-IV psychiatric disorders (i.e., panic disorder, agoraphobia, social phobia, generalized anxiety disorder, obsessive compulsive disorder, posttraumatic stress, major depressive disorder, dysthymia, bipolar I & II disorders, alcohol abuse/dependence, and drug abuse/dependence) were examined.

Participants—Data from 837 African Americans aged 55 years or older are used in this analysis.

Measurement—The DSM-IV World Mental Health Composite International Diagnostic Interview (WMH-CIDI) was used to assess mental disorders. Measures of functional status (i.e., mobility and self-care) were assessed using the World Health Organization Disability Assessment Schedule-Second Version (WHODAS-II). Measures of organizational, non-organizational and subjective religious involvement, number of doctor diagnosed physical health conditions, and demographic factors were assessed.

Results—Multivariate analysis found that religious service attendance was significantly and inversely associated with the odds of having a lifetime mood disorder.

Conclusions—This is the first study to investigate the relationship between religious participation and serious mental disorders among a national sample of older African Americans. The inverse relationship between religious service attendance and mood disorders is discussed. Implications for mental health treatment underscore the importance of assessing religious orientations to render more culturally sensitive care.

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Keywords

Church Attendance; Depression; Mood Disorder

Over the last several years, increasing attention has been devoted to examining religious correlates of mental health among various groups of the population (1-4). This literature includes focused epidemiologic studies; large-scale general surveys of the population; smaller, geographically-situated community studies; and research conducted within clinical settings (5-11). This extensive body of research is characterized by differences in theoretical orientations and conceptualizations and measurement of religious involvement and mental health, as well as in research methods, study samples and analytic approaches. Despite these differences, the data overall indicate largely positive associations between various forms of religious involvement (e.g., service attendance, private prayer, religious coping) and diverse indicators of mental health and well-being (i.e., life satisfaction and happiness) and lower rates of depression, suicide, anxiety disorders and other psychiatric outcomes among religious adherents (2). Associations between religious participation and psychiatric disorders likely vary across populations, with particularly robust findings for vulnerable populations such as the elderly, the medically ill and persons experiencing high levels of stress (2).

The majority of research examining religious involvement and mental health has involved samples of the non-Hispanic White adult population. However, separate literatures in gerontology (5-9), as well as research specifically addressing religious involvement and mental health in samples of African American adults, indicate that these issues are particularly relevant for older Black adults (12-14). First, consistent across a number of studies, older adults report higher rates of religious participation than their younger counterparts (4). African Americans and older Blacks in particular, are more religiously inclined than their non-Hispanic White counterparts, even after controlling for demographic factors (e.g., gender, region) known to be associated with religious involvement (15-17). Among older African Americans, religious involvement and faith-based social networks and institutions are particularly important in promoting psychological well-being, fostering social connection and integration, and serving as a resource for coping with life difficulties (4,14,15). Accordingly, religion may be particularly important for the mental health of older African Americans who are disproportionately affected by stressful situations and life circumstances (e.g., low incomes, poor health) that may contribute to poorer mental health status (18).

This study examines the relationships between diverse measures of religious involvement and psychiatric disorders among a national sample of African Americans age 55 and older. Prior research on religious correlates of the mental health of older African Americans has focused on measures of psychological distress and well-being (e.g., life satisfaction, happiness, depressive symptoms). We know of no study, to date, that examines religious involvement in connection with diagnosable mental disorders within this group. The focus on mental disorders is important because they are qualitatively different from distress and well being in that they are more serious and more specific. Therefore, studying mental disorders within the context of religious involvement provides an additional empirical test of the mental health effects of religiosity with a set of conditions for which there is professional consensus regarding their importance precisely because of the attendant personal suffering and debilitation, impacts on work productivity and, as a result, financial costs to government and private industry.

The current investigation builds upon a recent study of the prevalence of DSM-IV mental disorders among older African Americans which found that 23% of older African Americans met criteria for at least one lifetime disorder (19). We examine religious correlates of these psychiatric disorders (i.e., anxiety, mood, and substance use disorders) using a number of

indicators of various dimensions of religious involvement (20) including organizational participation (i.e., service attendance), nonorganizational religious involvement (e.g., prayer, use of religious media), and subjective religiosity (e.g., self-assessed religiousness).

In this analysis we have also adjusted for functional status and burden of physical illness. In research on religion and mental health it is important to adjust for these variables because religious service attendance may be an indicator of an individual's physical capacity to participate in activities including religious services (21,22). Additionally, poor health is associated with depression and other disorders (23,24) and thus a potential confounder in the relationship between religion and psychiatric disorders.

Based upon the findings of previous research (2-4) we anticipate that religious involvement will be inversely associated with the prevalence of psychiatric disorders. In particular, we expect that religion serves as a protective factor and that older respondents with higher levels of religious participation will have a lower prevalence of psychiatric disorders. We further expect that the relationship between religious participation and psychiatric disorders will be maintained despite functional limitations and physical health problems. Given the dearth of research focused on this topic, this study represents an important initial investigation of the religious correlates of mental disorders within a national probability sample of older African Americans.

METHODS

Sample

The National Survey of American Life: Coping with Stress in the 21st Century (NSAL) was collected by the Program for Research on Black Americans at the University of Michigan's Institute for Social Research from 2001 to 2003. A total of 6,082 face-to-face interviews were conducted with persons aged 18 or older, including 3,570 African Americans, 891 non-Hispanic whites, and 1,621 Blacks of Caribbean descent. There are 837 African Americans aged 55 years or older which comprise the sample used in this paper.

The African American sample is the core sample of the NSAL. The core sample consists of 64 primary sampling units (PSUs). Fifty-six of these primary areas overlap substantially with existing Survey Research Center National Sample primary areas. The remaining eight primary areas were chosen from the South in order for the sample to represent African Americans in the proportion in which they are distributed nationally. The African American sample is a national representative sample of households located in the 48 coterminous states with at least one Black adult 18 years or over who did not identify ancestral ties in the Caribbean.

The interviews were face-to-face and conducted within respondents' homes. The overall response rate was 72.3%. This is excellent given the difficulty and expense of survey fieldwork and data collection among African Americans (especially lower income African Americans) and Caribbean Blacks who are more likely to reside in major urban areas. Respondents were compensated for their time. Design and sample characteristics of the NSAL are described in more detail elsewhere (25). This study has been approved by the University of Michigan Institutional Review Board.

Measures

The present analysis assesses the main effects of organizational, non-organizational, and subjective religious participation on the presence and number of DSM-IV mental disorders. Five dependent variables are examined in this analysis. Four of them involve the likelihood of having: 1) any lifetime mental disorder, 2) a mood disorder, 3) an anxiety disorder, or 4) a substance disorder, while the fifth variable is the number of reported disorders. The DSM-IV

World Mental Health Composite International Diagnostic Interview (WMH-CIDI), a fully structured diagnostic interview, was used to assess a wide range of mental disorders. The mental disorders sections used for NSAL are slightly modified versions of those developed for the World Mental Health project initiated in 2000 (26) and the instrument used in the NCS-R (27). The thirteen mental disorders examined in the present analysis include anxiety disorders (panic disorder, agoraphobia, social phobia, generalized anxiety disorder, obsessive compulsive disorder, posttraumatic stress disorder), mood disorders (major depressive disorder, dysthymia, bipolar I & II disorders), and substance disorders (alcohol abuse, alcohol dependence, drug abuse, drug dependence). Obsessive compulsive disorder was assessed using the CIDI-Short Forms (28).

The measures of religious involvement used in the present analysis are based on prior research indicating the importance of multiple indicators that assess organizational, non-organizational and subjective religiosity (20). Frequency of service attendance is utilized as the measure of organizational religious participation in this analysis. Frequency of religious service attendance is measured by combining two questions: "Other than for weddings or funerals, have you attended services at a church or other place of worship since you were 18 years old?" (YES/NO) and "How often do you usually attend religious services?" The categories for this combined variable are: *attend nearly everyday*, *attend at least once a week*, *a few times a month*, *a few times a year*, *less than once a year* and *never*. In the bivariate analysis only, regular attendees are defined as those attending services nearly everyday or at least once a week. Infrequent attendees are defined as those who attending services a few times a month or less.

Non-organizational religious participation is comprised of five items: reading religious books or other religious materials, watching religious programs on TV, listening to religious programs on the radio, praying, and asking someone to pray for you. Respondents were asked how often they engaged in each of these activities: nearly everyday, at least once a week, a few times a month, at least once a month, a few times a year or never. These five items were summed into an index (Cronbach's alpha =0.74). Subjective religiosity is comprised of four items: importance of religion while growing up, importance of parents taking or sending their children to religious services, importance of religion in the respondent's life, and self-reported religiosity. The first three items had four categories ranging from very important to not important at all; the fourth item had four categories ranging from very religious to not religious at all. These four items were summed into an index (Cronbach's alpha =0.88). For purposes of bivariate analysis only, low, medium, and high levels of non-organizational and subjective religious participation were derived from tertiles of the indices.

The demographic variables used in this analysis include age, gender, marital status, education, employment status, family income, and region of residence. Missing data for family income and education were imputed using an iterative regression-based multiple imputation approach incorporating information about age, sex, region, race, employment status, marital status, home ownership, and nativity of household residents. Region was dichotomized into South versus the Non-South (West, Midwest, and Northeast regions of the U.S.).

Potential confounders, functional status and number of physical health problems were also included in the analysis. Two measures of functional status—mobility and self-care—were assessed using the World Health Organization Disability Assessment Schedule-Second Version (WHODAS-II) (29). These measures were transformed to a scale ranging from 0=completely impaired to 100=no impairment. Number of physical health problems was measured by respondents' reports of the number of doctor-diagnosed physical conditions they had.

Analysis Strategy

First, bivariate associations between religious participation and lifetime disorders are tested with a design-based F statistic from cross-tabulations and bivariate negative binomial regression analysis using STATA 9.2. Multivariate analyses of DSM-IV mental disorders included four sets of regressions for each dependent variable with selected religious involvement measures as the main effects for reported lifetime disorders. In the first three models, each of the religious involvement measures was entered separately in the model adjusting for covariates; while in the fourth model, all three religious involvement measures were included with adjustment. Logistic regression was used with the dichotomous dependent variables (report of any lifetime disorder, any mood disorder, any anxiety disorder, any substance disorder); Negative Binomial regression (30) was used with the dependent count variable (number of lifetime disorders). The regression coefficients and standard errors take into account the complex multistage clustered design of the NSAL sample, unequal probabilities of selection, nonresponse, and poststratification.

RESULTS

Descriptive characteristics of the older African American sample (N=837) are presented in Table 1. The average age of the respondents is 66.6 years (S.D. = 7.3). Roughly 40% are male and about one-third employed. The average household income is \$32,853 (S.D. = \$32,730), and the average number of years completed in school is 11.5 (S.D.=3.0). Around 40% of the respondents are married or living with a partner, 32% are widowed, and 28% are never married, divorced, or separated. More than half (55.6%) of the respondents resided in the South. With regards to mobility and self care respondents were very high functioning scoring over 90 on a scale where 100 indicates no impairment. Respondents averaged two and a half physical health problems.

Table 2 presents the prevalence of a lifetime DSM-IV mental disorder by levels of religious service attendance, non-organizational religiosity, and subjective religiosity. The prevalence of any disorder, any mood disorder, and any substance disorder was higher among those respondents who attended services less frequently compared to those who were regular attendees. The number of disorders was greater among the infrequent church attendees compared to the regular attendees. The presence of any anxiety disorder did not differ by frequency of church attendance.

There was a higher prevalence of any substance use disorder among respondents who reported lower levels of non-organizational religiosity. Those who reported lower levels of subjective religiosity had a higher prevalence of any disorder and any substance disorder. The overall number of mental disorders was higher among respondents with lower levels of subjective religiosity.

Table 3 presents multivariate logistic regression analyses for the relationship of lifetime DSM-IV mental disorders with religious service attendance, non-organizational religiosity, and subjective religiosity. Religious service attendance (Model 1) and subjective religiosity (Model 3) were significantly associated with the odds of having any lifetime DSM-IV disorder, but these relationships did not retain significance when controlling for all three religious participation variables (Model 4). Religious service attendance was significantly associated with the odds of having any mood disorder, both in the model which investigates the impact of service attendance only (Model 1), as well as when controlling for the other religiosity variables (Model 4). The odds of having any mood disorder were lower among those who attend services regularly. Non-organizational religiosity was not significantly related to the presence of any lifetime DSM-IV disorder overall or any of the specific classes of disorders examined.

Table 4 presents a negative binomial regression analysis for the relationship between the number of lifetime DSM-IV disorders and religiosity. Both religious service attendance (Model 1) and subjective religiosity (Model 3) were significantly related to the number of lifetime DSMIV disorders, but these relationships did not retain significance when controlling for all three religious participation variables (Model 4).

DISCUSSION

The present analysis examined three dimensions of religious involvement to assess their association with DSM-IV disorders among a sample of older African American adults. This analysis controlled for two indicators of functional status, and the number of physical health problems, which are potential confounders in the relationship between religion and psychiatric disorders. Similar to previous research (2), service attendance (i.e., organizational religious participation) was an especially important predictor and was associated with a lifetime disorder of any type (unadjusted for other religious factors), number of lifetime DSM-IV disorders overall (unadjusted for other religious factors), and lifetime mood disorder. Subjective religiosity was significantly associated with the odds of any lifetime disorder (unadjusted for other religious factors), and the number of lifetime disorders (unadjusted for other religious factors). In contrast, nonorganizational religiosity was not a significant predictor for any lifetime disorders, specific classes of disorders, or overall number of disorders.

Overall, all of the significant relationships between religious participation and the dependent variables were in the expected direction. That is both service attendance and subjective religiosity were inversely associated with the prevalence of psychiatric disorders. When all of the religious participation variables were included together (Model 4) only the relationship between service attendance and lifetime mood disorder remained significant. This is likely due to two things. First, there is a fair amount of collinearity between the three religion variables (attendance and non-organizational $r=.48$; attendance and subjective $r=.38$, non-organizational and subjective $r=.53$). Secondly, the magnitude of the relationships between the religiosity variables and psychiatric disorders was not very large. The largest relationship was between service attendance and lifetime mood disorder ($OR=.74$) and this is the only relationship that remained significant when adjusting for the other religion variables.

The observed relationship between service attendance and mood disorders indicated that respondents who attended religious services more frequently were less likely to have had a lifetime mood disorder. Additional analysis (not shown) also indicates that service attendance was significantly associated with 12-month mood disorders. Overall, these findings are consistent with a large body of previous research which has found that service attendance is inversely associated with depressive symptoms and mood disorders (2,3). The inverse relationship between religiosity and depressive symptoms is consistent in both cross-sectional and longitudinal studies (2).

This study found that religious service attendance was a more important correlate of disorders than non-organizational religiosity. Research on religiosity and mental and physical health notes the importance of utilizing multi-dimensional measures of religious participation (2,4, 7,13,14). However, previous studies have consistently shown that service attendance is a positive correlate of health and mental health outcomes (22) and, in many cases, a stronger correlate of various outcomes than nonorganizational religiosity (2,6). For instance, Koenig's review of the literature (2) indicates that nonorganizational religious involvement is a weak and inconsistent correlate of depression. Similarly, McCullough and Larson's review indicates that organizational religiosity is a consistent protective factor for depression, while nonorganizational religiosity is not (31). Our findings are consistent with other research which indicates that service attendance is a particularly robust indicator of religious involvement that

incorporates a number of mechanisms (e.g., interaction and social support from church members) that are generally beneficial to mental health (32). In contrast, non-organizational participation (i.e., private religious behaviors) represents a more narrowly circumscribed (i.e., non-social) feature of religiosity.

It is important to note that there is the potential for selection bias to influence the findings of this analysis, especially because this is a cross-sectional design. This is a common issue in research on the impact of religiosity on mental and physical health outcomes (33). For example, the findings that religious service attendance is inversely associated with the presence of a major mood disorder may reflect an actual protective effect for service attendance. Respondents with major mood disorders may be less likely to engage in social activities of any sort (including attending religious services). Controlling for functional limitations and chronic health problems addresses a major aspect of potential selection bias as it relates to physical health.

For several of the disorders examined, religious involvement may be an important aspect of the recovery process itself. For instance, for individuals with mood disorders, going to church may be an important component of their informal help-seeking process. Attending religious services may reconnect them with a supportive network of church members (i.e., support mobilization), as well as provide spiritual and emotional uplift (i.e., emotional regulation). Similarly, religion and spirituality are important components of many substance abuse programs (e.g., 12-Step Programs). Thus, persons with prior substance abuse problems or major depression may employ religion as part of their recovery process, reflected in increased rates of service attendance.

The fact that religious involvement potentially has rehabilitative, as well as preventive influences may reduce the magnitude of the coefficients in the present analysis. For instance, there may be individuals who have had a history of substance abuse, but now have high levels of religious participation (e.g., individuals involved in faith-based or 12-step recovery programs). The profile for these persons would indicate a prior lifetime substance abuse problem, coupled with high levels of religious involvement (indicating a positive association between substance abuse and religion). Despite these issues, the finding of a salutary effect of religious service attendance on having a mood disorder is consistent with previous research and suggests that religion may have an important protective influence for mood disorders among older African Americans (13,34).

Several limitations of this study need to be addressed. First, because several segments of the population such as homeless and institutionalized individuals were not represented, our findings are not generalizable to these subpopulations. Second, disorder-specific symptoms and behaviors may be underreported (potentially resulting in lower prevalence rates) due to item non-response to sensitive questions which is a common issue in survey interviewing. Third, the number of cases for several of the lifetime disorders is low and, consequently, we are unable to conduct disorder-specific analyses. Fourth, causal inferences are an issue with cross-sectional data and longitudinal data are preferred. Based upon previous research, we believe that our estimates of the impact of religious participation are conservative (2). Nonetheless, the significant advantages of the sample provided the first opportunity to examine the impact of religious participation on psychiatric disorders among older African Americans.

Conclusion

These findings are potentially important for mental health treatment in several ways. A large body of literature documents that religious belief systems have important influences on personal theories (cause and appropriate treatment) of physical and mental disease, as well as the vocabulary of distress that is employed to communicate with physicians (2,35). Knowledge

of the patient's religious worldview would be especially useful for clinicians who are interested in gaining a deeper understanding of the patient's point of view and in establishing rapport (2,35). Finally, codes of professional conduct and practice endorse the clinical value of religious orientations (35) and promote knowledge of these orientations as a means to enhance cultural sensitivity.

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Table 1Demographic and Health Distribution of the Older African American Sample (n=837) [†]

Demographic Variables	Means (S.D.) or N (%)
Age	66.62 (7.26)
Gender	
Male	300 (40.43)
Female	537 (59.57)
Employment Status	
Employed	277 (33.87)
Unemployed	39 (4.69)
Not in Work Force	512(61.44)
Imputed Family Income	32,853.14 (32,730.11)
Years of Education	11.50 (2.97)
Marital Status	
Married/Partner	252 (39.71)
Widowed	299 (31.82)
Never Married, Divorced, Separated	276 (28.47)
Region	
South	525 (55.62)
Non-South	312 (44.38)
Mobility	93.22 (14.74)
Self Care	98.75 (6.48)
# of Chronic Health Problems	2.46 (1.63)

[†] Data are given as means (weighted standard deviation) for continuous variables and frequencies (weighted percentages) for categorical variables.

Table 2
Bivariate associations of religious involvement and lifetime DSM-IV mental disorder[†]

	Any Disorder n (%)	Any Mood Disorder n (%)	Any Anxiety Disorder n (%)	Any Substance Disorder n (%)	Number of Disorders Mean (SD)	N
Service Attendance						
Infrequent Attendees	63 (28.10)	18 (8.35)	31 (14.06)	32 (15.60)	0.56 (0.95)	213
Regular Attendees	120 (20.99)	38 (5.57)	75 (12.92)	41 (7.88)	0.35 (0.72)	624
<i>F</i> df=1,33	11.72**	4.23*	0.24	8.57**	10.81**	
Non-organizational Religiosity						
Low	36 (29.59)	10 (7.45)	13 (11.03)	19 (16.98)	0.52 (0.86)	131
Medium	66 (21.17)	17 (4.53)	40 (11.90)	31 (11.01)	0.35 (0.74)	300
High	81 (21.90)	29 (7.35)	53 (15.19)	23 (6.58)	0.41 (0.80)	405
<i>F</i> df=2, 32	1.38	2.28	0.69	3.88*	1.48	
Subjective Religiosity						
Low	34 (35.7)	8 (7.68)	17 (18.13)	16 (17.88)	0.65 (0.95)	110
Medium	88 (24.61)	33 (8.28)	48 (12.60)	36 (11.53)	0.42 (0.79)	334
High	61 (17.09)	15 (3.96)	41 (12.30)	21 (5.83)	0.31 (0.73)	381
<i>F</i> df=2, 32	5.45***	1.94	0.78	6.52**	3.98*	

[†] Frequencies and weighted percentages are presented Tests of association are presented as design-based *F* statistics

* $p < .05$

** $p < .01$

*** $p < .001$

Table 3

Presence of Any Lifetime DSM-IV disorder, Mood Disorder, Anxiety Disorder, and Substance Disorder regressed on religious involvement measures[†]

	Model 1	Model 2	Model 3	Model 4
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Any Lifetime Disorder				
Service Attendance	0.86 (0.75,0.98) *	--	--	0.89 (0.76,1.04)
Non-organizational Religiosity	--	0.98 (0.94,1.02)	--	1.01 (0.96,1.07)
Subjective Religiosity	--	--	0.88 (0.79,0.99) *	0.90 (0.77,1.04)
<i>F</i>	4.58 **	6.57 ***	5.11 ***	5.53 ***
Degrees of freedom	15, 19	15, 19	15, 19	17, 17
N	774	774	773	773
Any Lifetime Mood Disorder				
Service Attendance	0.74 (0.59,0.92) **	--	--	0.74 (0.58,0.94) *
Non-organizational Religiosity	--	0.97 (0.91,1.04)	--	1.02 (0.97,1.09)
Subjective Religiosity	--	--	0.88 (0.73,1.06)	0.91 (0.75,1.11)
<i>F</i>	3.77 **	3.56 **	3.55 **	3.32 **
Degrees of freedom	15, 19	15, 19	15, 19	17, 17
N	774	774	773	773
Any Lifetime Anxiety Disorder				
Service Attendance	0.93 (0.79,1.10)	--	--	0.94 (0.79,1.12)
Non-organizational Religiosity	--	1.00 (0.95,1.05)	--	1.02 (0.97,1.09)
Subjective Religiosity	--	--	0.91 (0.78,1.05)	0.89 (0.74,1.07)
<i>F</i>	2.50 *	2.41 *	2.13	1.94
Degrees of freedom	15, 19	15, 19	15, 19	17, 17
N	774	774	773	773
Any Lifetime Substance Disorder				
Service Attendance	0.86 (0.69,1.08)	--	--	0.92 (0.70,1.23)
Non-organizational Religiosity	--	0.96 (0.92,1.02)	--	0.98 (0.90,1.07)
Subjective Religiosity	--	--	0.92 (0.81,1.04)	0.96 (0.83,1.12)
<i>F</i>	2.12	2.65 *	2.45 *	2.49 *
Degrees of freedom	15, 19	15, 19	15, 19	17, 17
N	774	774	773	773

[†] Odds ratios and 95% confidence intervals are presented; models are adjusted for age, gender, education, income, marital status, employment status, and region, mobility, self-care, and number of physical health problems. Significance of the coefficients are based on design-corrected t-tests with 33 degrees of freedom.

*
p < .05

**
p < .01

p < .001

Table 4Number of Lifetime DSM-IV mental disorders regressed on religious involvement measures[†]

	Model 1	Model 2	Model 3	Model 4
Service Attendance	0.86 (0.77,0.97) [*]	--	--	0.88 (0.76,1.02)
Non-organizational Religiosity	--	0.98 (0.95,1.01)	--	1.01 (0.97,1.06)
Subjective Religiosity	--	--	0.90 (0.83,0.98) [*]	0.91 (0.83,1.01)
<i>F</i>	6.22 ^{***}	7.45 ^{***}	5.84 ^{***}	7.10 ^{***}
Degrees of freedom	15, 19	15, 19	15, 19	17, 17
N	774	774	773	773

[†] Rate ratios and 95% confidence intervals are presented; models are adjusted for age, gender, education, income, marital status, employment status, region, mobility, self-care, and number of physical health problems. Significance of the coefficients are based on design-corrected t-tests with 33 degrees of freedom.

*
p < .05

**
p < .01

p < .001