Published in final edited form as:

Int J Disabil Hum Dev. 2007 December 1; 6(4): 431. doi:10.1901/jaba.2007.6-431.

Alcohol use and older adults: A little goes a long way

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Abstract

We examined the relationships between alcohol use, cognitive and affective variables, and the potential differential benefits of training for older adults drinkers and non-drinkers who participated in a randomized trial implemented between 2001–2006. Participants, who were living independently in the community, were randomly assigned to either twelve hours of memory training or health promotion classes. Outcomes included depression, health, cognition, verbal, visual, memory, and performance-based IADLs. The sample was 79% female, 17% Hispanic and 12% African-American. The typical participant had an average age of 75 years with 13 years of education. In the memory intervention group, there were 135 individuals (63 drinkers, 72 non-drinkers). In the health promotion condition, there were 129 individuals (58 drinkers and 71 non-drinkers). At baseline, drinkers scored higher on cognition, verbal memory, and lower on depression than non-drinkers. Alcohol use was positively related to physical health at baseline as measured by the Physical Component Summary Score of the Medical Outcomes Health Scale (SF-36). We found significant effects for the time*drinking*treatment group interaction in the repeated measures ANCOVA for the Mini Mental Status Examination, the Hopkins Verbal Learning Test, and the SF-36 Mental Health sub-scale. The time*drinking*group interactions were not statistically significant for any of the other outcomes; This study demonstrated that older adults benefited from targeted psychosocial interventions on affective, cognitive and functional outcomes. In addition, the SeniorWISE study provides empirical support to the research evidence emphasizing the health benefits of moderate alcohol consumption in older adults.

Keywords

Elderly; alcohol use; psychosocial intervention; memory training; cognitive function; instrumental activities of daily living

INTRODUCTION

The recommended 2003 Healthy Eating Pyramid released by the United States Department of Agriculture now includes the moderate daily consumption of alcohol, unless contraindicated, as a 'brick' within the healthy choices (1). This change in the food pyramid was influenced by studies that documented the preventive cognitive and physical health benefits of moderate alcohol consumption (2–4).

Depending upon the setting and quantity of consumption, moderate alcohol use among adults over age 65 has been reported to be between 23% and 31% (5–6). Older adults are more likely to engage in the moderate regular use of alcohol rather than in binge or problem drinking (7–

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Financial Disclosure. None of the authors have any conflict of interest related to this work.

8). Older adult drinkers including almost equal numbers of Hispanic and non-Hispanic white men and women obtained better cognitive test scores than did those participants who abstained (9). Women who consumed moderate amounts of alcohol had higher levels of cognitive function than non-drinkers and were less likely to develop cognitive impairment over a follow-up period of 24 to 48 months (10–11).

The findings from numerous health intervention studies have demonstrated that such health-related activity as exercise, mental stimulation, and social engagement may prevent disability and improve health and function (12–13). The Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) trials demonstrated that mental stimulation through targeted cognitive training improves cognitive abilities and prevents the cognitive decline that would have occurred in older adults without dementia, with the gains being maintained for 5 years (14). McDougall and his associates (15) found that including content on stress inoculation, health promotion, memory self-efficacy, and memory strategy in a psychosocial intervention study assisted community dwelling elderly to maintain their cognitive function over 2 years, and the intervention was of most benefit to the minority elders with low literacy. Alcohol consumption, however, does not uniformly protect older adults and may lead to mental health problems, cognitive impairment, and dementia (16–17). Depression and problems with alcohol vary by gender. In women the depression tends to precede alcohol use, whereas in men alcohol use typically precedes depression (18). A subsequent study failed to confirm this finding, however (19)—for females; depressive symptoms predicted subsequent alcohol problems over 3 and 4 years, but not at 7 years; whereas no evidence was found for such a relation in males.

Elders admitted to a psychiatric facility with a dual diagnosis of depression and substance abuse were 6 times more likely to make a suicide attempt before admission, and this increased risk of suicide continues through 85 years of age (20). Gazmararian and associates reported that 8.8% of moderate drinkers experienced depressive symptoms, whereas 15% of non-drinkers and 18.5% of heavy drinkers reported depression (21). The results of that study were supported 6 years later by Kirchner and associates (5) who identified an incidence of depression as 15% in older adults that drank moderately compared with non-drinkers (21%), or heavy drinkers (25%).

In the present secondary analysis, we examined the relations between alcohol use and cognitive performance, instrumental activities, depression, and health in a group of nondemented older adults. Furthermore, because only two intervention studies focused on the differential benefits of a psychosocial intervention, we were interested in the possible differential benefits of memory and health training between drinkers and non-drinkers over time (22–23).

METHODS

A Phase III randomized clinical trial tested two interventions—memory training versus health promotion. In the community, the study was advertised as SeniorWISE (Wisdom Is Simply Exploration). Participants received 12 hours of classroom learning content and met twice a week for 1.5 hours each; lectures were delivered with PowerPoint presentations. Individuals were post tested within 2 weeks after completing the classes.

Interventions

Health promotion—The health intervention emphasized successful aging based on three focus groups conducted in the community with older adults. The topics included Exercise, Spirituality and Health, Alternative Medicine, Weight Management, Getting the Most from Your Doctor Visit, Caring for the Caretaker, Healing Foods, Drug Interactions, Osteoporosis, Maintaining Relationships, Health Myths, Consumer Fraud, Nutrition, Leisure Activities,

Writing Family Stories, Health Monitoring Tests for Home Use, and Buying Drugs in Foreign Countries.

Memory training—The memory-training curriculum emphasized stress and relaxation, memory strategies for everyday activities, confidence building, and problems and expectations related to aging memory. Based on self-efficacy theory, performance accomplishments, practice, homework assignments, encouragement, and persuasion were woven into the classroom lectures by the facilitator, a septuagenarian licensed counselling psychologist.

Study sample

A total of 346 independent adults were recruited from a metropolitan area in Central Texas via print and TV media, as well as by direct recruitment at city-run senior activity centers, churches, health fairs and festivals. A total of 81 individuals were excluded, 21 did not meet inclusion criteria, 38 declined, and 22 were couples, of which the female spouse was excluded from the testing so that adequate numbers of males would be represented in the sample. The final sample (N=264) was 71% Non-Hispanic White, 17% Hispanic, and 11% African American. The average age was 75 years. The majority of the participants were female (77%). Table 1 describes the demographics of the participants in each group.

Randomization to the memory or health intervention occurred within each of 9 different community sites and consisted of 11 groups. One hundred thirty-five individuals were assigned to the memory and 130 were assigned to the health groups. Each intervention was delivered in a small group format. No group was smaller than 4 individuals or larger than 15; however we strove for an average group composed of 12 individuals. The memory intervention and health promotion group did not differ significantly at baseline on either the study variables or the demographics.

Screening and eligibility

We evaluated sensory loss and visual and hearing acuity with an in-person eligibility screening by evaluator observation and by a self-report checklist developed for this study. Other eligibility criteria included age (≥ 65), ability to speak and understand English, and reliable transportation. Diagnoses such as Alzheimer's disease or other dementia, Hodgkin's disease, neuroblastoma, or cancer of the liver, lung, or brain were considered exclusionary criteria. Participants were also screened with the Mini-Mental State Examination (MMSE) with scores > 23 , and were also required to pass Trails A and/or Trails B at or above the 10th percentile for their-age group.

Study variables

Alcohol consumption—On the health questionnaire, we asked participants to self-report whether they drank alcohol with a Yes/No response to the interviewer. If they answered in the affirmative, then we asked them to state how many drinks they consumed in a given period of time, usually a day, a week, or a month. We did not offer the participants any prompts to indicate comparisons among the types or quantities of alcohol, such as beer, wine, spirits, etc.

Cognition—Cognitive function was evaluated with the *Mini Mental State Exam*, a screening instrument with a range of possible scores between 0 and 30. Generally, a score between 23 and 30 classifies an individual into the nonimpaired range. We included individuals with scores greater than or equal to 23, although eight minority participants were admitted with MMSE scores ≥ 20 .

Verbal Memory—Verbal memory performance was tested with the *Hopkins Verbal Learning Test-Revised (HVLTR)*, which assesses immediate recall, delayed recall, and recognition memory. The Delayed Recall Subscale, was used for this analyses.

Visual Memory—Visual memory performance was determined with the *Brief Visuospatial Memory Test-Revised (BVMT-R)*, in which the individual is asked to reproduce a series of geometric designs.

Everyday Memory—*The Rivermead Everyday Behavioral Memory* test bridges laboratory-based measures of memory and assessments obtained by self-report and observation. The standardized profile score (SPS) has a possible range from 0–24.

Instrumental Activities—*The Direct Assessment of Functional Status (DAFS)* measured performance in the instrumental activities of daily living. The DAFS included specific tasks such as addressing a letter, writing a check, balancing the check register, identifying and calculating money, making change from a grocery purchase, reading a prescription label and dialing the pharmacy to order a refill, dialing a telephone number, and remembering a grocery list given orally given and reading from the book. The DAFS has demonstrated high interrater and test-retest reliabilities for both patients presenting to a memory disorder clinic (English and Spanish speaking) and for normal controls.

Depression—*The Centers for Epidemiologic Studies Scale (CES-D)* evaluated depressive symptoms. Somatic complaints are emphasized on this measure to which individuals respond on a 4-point Likert scale.

Health—*The Medical Outcomes Study Health Scale. (SF-36)* was our measure of health status from the individual's point of view. Individuals respond to 36 items on a 5-point Likert scale ranging from poor to excellent and from much worse too much better. In addition to the eight health subscales, we have also included the Physical and Mental component summary scales (24).

Statistical analysis

For each dependent variable of interest, we sought to answer two major questions. First, we wanted to know how alcohol use might be associated with participants' baseline scores on outcomes related to affect, cognition, memory, instrumental activities, and mental and physical health. To answer this question, we regressed each outcome of interest at baseline on age, education, ethnicity (with separate dummy variables indicating Black or Hispanic status), and alcohol use. Alcohol use was coded as a dichotomous variable (drinker = 1, non-drinker = 0). Some of the results were previously reported for men and women separately, but here we present similar analyses with both genders combined (25–26).

Second, we wanted to determine the differential benefits, if any, of memory training for drinkers vs. non-drinkers over time (i.e., from baseline to post-classes). This research question was investigated by conducting separate repeated measures ANCOVAs for each dependent variable from baseline to post-classes, controlling for age, education, and ethnicity (again with separate dummy variables indicating Black or Hispanic status). Alcohol use (drinker = 1, nondrinker = 0) and treatment (memory group = 1, health group = 0) were between subjects factors, providing tests involving the interaction of these two factors with time (i.e., baseline and post-class). The test of the interaction between time, alcohol use, and treatment was of primary concern because it indicated whether there might be differential benefits of training from baseline to post-classes.

RESULTS

The analytic sample consisted of 265 randomized participants at baseline and 249 at post-test. In the memory intervention group, 135 individuals (63 drinkers, 72 non-drinkers) participated. In the health promotion condition, 129 individuals (58 drinkers and 71 non-drinkers) participated (see table 1). Ninety-four percent of participants completed the memory treatment, and 87% completed the health intervention (six or more of the eight training sessions). Consequently, the analyses of differential benefits of training described below exclude the 16 individuals who did not have post-intervention scores.

Drinking and baseline performance

Of the sixty male participants, 35 (58%) reported some degree of alcohol consumption; of the 182 females, 43% acknowledged drinking alcohol. Drinkers in both the health-intervention and cognitive-intervention groups were more likely to be married, male, and non-Hispanic whites. Whereas the average age was similar across the groups, those who drank had a higher education level. The means and standard deviations for study variables are shown in table 2. Drinkers generally outscored non-drinkers except on the CES-D, where a high score indicates more depressive symptoms. Many of these differences on the SF-36 tended to be more pronounced at baseline than following the intervention, particularly in the memory group.

Memory performance measures

Table 3 presents standardized regression coefficients for each dependent variable of interest at baseline, and these beta weights provide effect estimates for predictors in each equation. Note that including age, education, ethnicity, gender, and marital status variables as predictors along with alcohol usage is the same as controlling for these variables. Self-reported alcohol use was a statistically significant, positive predictor of performance on the cognition (MMSE) and verbal memory (HVLTL). Drinkers would be expected to score approximately 0.62 points higher than non-drinkers on the MMSE and 5.19 points higher on the HVLTL ($p < .05$ and $p < .01$, respectively). Though not statistically significant, alcohol was also a positive predictor of scores for visual memory (BVMT), everyday memory (Rivermead SPS score), and instrumental activities (DAFS).

Depressive symptoms

Self-reported alcohol consumption was a statistically significant, negative predictor of scores for depression ($p < .01$). Drinkers would be expected to score approximately 2.80 points lower than nondrinkers on this measure of depression, net of the covariates in the model. Twenty-three percent of non-drinkers, compared with 12% of drinkers scored 16 or above on the CESD, the cut-point for depressive symptomatology.

Physical and mental health—Alcohol use was positively related to participants' physical health at baseline as measured by the SF-36 Physical Component Summary Score ($p < .01$). Drinkers would be expected to score 4.56 points higher than non-drinkers. Alcohol use was positively related to participant's mental health as measured by the SF-36 Mental Component Summary Score, but this was not statistically significant ($p = .33$).

Possible differential benefits of training—We found statistical significance for the time*drinking*treatment group effect in the repeated measures ANCOVA for only three variables: the MMSE, the HVLTL, and the SF-36 Mental Health sub-scale. Graphs of these interactions over time are shown in figure 1. While the pattern varies somewhat across these three outcomes, non-drinkers in the health intervention tended to score lowest. On the two memory outcome measures, non-drinkers in the memory condition are gaining, but do not quite

catch up with the drinkers in this group. The drinkers in the memory intervention decreased their SF-36 Mental Health scores more than the other groups from baseline to end of classes.

DISCUSSION

In national samples, 23% to 31% of older adults have reported consuming moderate amounts of alcohol (5–6), and this result often depends on the type of recruitment site. Of the participants in the SeniorWISE study, 43% of females and 58% of male participants reported drinking moderate amounts of alcohol. Older adults are more likely to engage in moderate regular use of alcohol rather than binge or problem drinking, and the majority of our sample reported similar use patterns (6–7). The majority (65%) of the non-drinker women in Senior WISE were minorities. As previous research has suggested that Hispanic respondents may under-report drinking, this subgroup may not adequately represent their cohort.

When controlling for age, gender, education, marital status, and race/ethnicity, drinking status was a statistically significant predictor in half the 16 baseline analyses. In all cases, drinkers outperformed non-drinkers. Although few of the interactions between drinking status and intervention group were statistically significant across time, it appears as though the abstainers in the memory group are catching up to the drinkers as a result of the memory intervention, whereas in general, drinkers in the health group seem to benefit more than abstainers in the health group, either in terms of gaining or not declining.

The SeniorWISE participants scored higher on all subscales of the SF-36 compared with the other community-based elderly (2,24). However, we should note that previous studies have included clinic samples, whereas our participants were recruited from the community and were living independently. Our findings on health are supported by large-scale national and international samples of older adults whose alcohol consumption was in the moderate range (9–11).

Nationally, 9% to 15% of moderate drinkers experienced depressive symptoms (5,21). Among SeniorWISE drinkers, 12% had CES-D scores above 16, the cut-off for depressive symptomatology. Other investigators have reported that abstainers and heavy drinkers were more likely than moderate drinkers to identify symptoms of depression and anxiety (6,24). In the current study, 23% of the non-drinkers had CES-D scores above 16.

Strengths and limitations

A major strength of this study was the inclusion of a triethnic sample of minority elderly with 21 (10%) African-Americans, 34 (17%), Hispanics, and 77 (29%) males. The convenience sample was highly motivated to take action for their self-reported memory concerns. Alcohol use was reported with a simple question that was part of the larger health questionnaire, and because an interviewer was administering this measure, there may have been responses that were socially desirable. The participants in this study were a robust group of older adult volunteers with an average age of 75 years with 13 years of education, with many individuals working and volunteering in the community.

A major strength of the SeniorWISE study was the comprehensive cognitive and memory testing battery implemented over twenty-four month study period. Each testing might have taken between two to three hours. Even though previous studies included large samples and longitudinal designs, cognitive function was evaluated in two of the four studies with screening instruments, either the MMSE or the Telephone Instrument for Cognitive Status (TICS) for a general measure of cognition, whereas this study included a comprehensive battery of neuropsychological measures (10–11). We extend this research by utilizing multiple memory measures, including everyday, verbal, and visual. We noted that the two memory performance

measures in which drinkers scored significantly higher than nondrinkers involve the auditory presentation of stimuli. Future research should investigate why drinking status might be more related to some memory measures than to others.

The results of this study could help to deepen our understanding of the value of moderate alcohol consumption for older adults. We found that the affective, cognitive, and functional outcomes did not differ and were therefore not intervention-specific. Neither the drinkers nor the non-drinkers, regardless of their assignment to the health group or to the memory group, tended to improve based on their baseline alcohol consumption. Two studies of community-residing older adults that found differential benefits of training were available for comparison. Losada and colleagues (23) found that the family caregiver group that was taught cognitive behavioral skills rather than problem-solving skills to deal with a relative having dementia reported less stress and behavioral problems. Katula et al (22) demonstrated that a psychological empowerment intervention added to traditional strength training had a positive influence on social cognitive outcomes.

This study extends the empirical support that psychosocial interventions targeted to older adults have demonstrated—namely, that outcomes focused on health promotion, mental stimulation, social engagement, and leisure enjoyment may prevent cognitive decline, improve health, and prevent functional decline (12–13,22). In addition, the SeniorWISE study provides empirical support to the cognitive aging literature, emphasizing the health benefits of moderate alcohol consumption in older adults.

Acknowledgments

The study was supported by Grant R01 AG15384 from the National Institutes on Aging. Concerning author contributions: Graham J. McDougall Jr responsible for content, literature review, study concept and design, acquisition of data, analysis and interpretation of the data, preparation of the manuscript, supervision, and obtaining funding, critical manuscript review, final manuscript approval. Heather Becker: design, statistical expertise, accuracy, analysis and interpretation of data, manuscript refinement. Carol L. Delville: manuscript drafting, literature review, data analysis and interpretation, critical manuscript review. Phillip W. Vaughan: statistical expertise, accuracy, analysis and interpretation of data, manuscript drafting, data extraction, critical manuscript review. Taylor W. Acee: data collection, data extraction analysis and interpretation, critical manuscript review. All authors contributed to the writing of the manuscript. Sponsor's role: None.

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Fig. 1.
Change over time by group and drinking status

Table 1

Demographic characteristics of drinkers and non-drinkers in health and cognitive intervention groups

Characteristics	Health Intervention (n=130) Mean (SD)		Cognitive Intervention (n= 135) Mean (SD)	
	Nondrinker(n=71)	Drinker (n=58)	Nondrinker (n= 72)	Drinker (n=63)
Age (years)	74.87 (6.36)	74.67 (6.1)	75.18 (5.95)	74.13 (5.48)
Education (years)	12.68 (3.81)	15.22 (3.12)	13.03 (4.35)	13.8 (3.29)
n(%)				
Gender				
Females	58 (82)	41 (71)	60 (83)	45(71)
Males	13 (18)	17 (29)	12 (17)	18 (29)
Race				
White	39 (55)	53 (91)	39 (54)	57 (90)
Black	13 (18)	2 (3)	14 (19)	1 (2)
Other	19 (27)	3 (5)	19 (26)	5 (8)
Ethnicity				
Hispanic	19 (27)	3(5)	19(26)	5(8)
Non-Hispanic	52 (73)	55 (95)	53(74)	58 (92)
Marital Status				
Married	16 (23)	21 (36)	19 (26)	26 (41)
Never Married	2 (3)	1 (2)	2 (3)	3 (5)
Divorced	16 (23)	10 (17)	12 (17)	13 (21)
Widowed	37 (52)	26 (45)	38 (53)	20 (32)

Table 2

Means and standard deviations for outcome measures for groups and drinking status

	Health Intervention Mean(SD)				Memory Intervention Mean (SD)			
	Time 1		Time 2		Time 1		Time 2	
	Non-drink (n=71)	Drink (n=58)	Non-drink (n=70)	Drink (n=53)	Non-drink (n=72)	Drink (n=63)	Non-drink (n=66)	Drink (n=60)
Instrumental Activities	79.87 (7.17)	83.69 (3.36)	80.59 (7.10)	84.79 (3.30)	81.45 (4.84)	83.41 (4.01)	81.81 (5.19)	84.63 (3.75)
Depression	11.11 (7.30)	7.56 (5.78)	11.09 (8.28)	8.52 (6.32)	10.74 (6.70)	7.29 (6.28)	9.56 (6.72)	7.85(7.13)
Cognition	27.10 (2.44)	28.62 (1.62)	26.84 (2.74)	28.66 (1.47)	27.47 (2.22)	28.59 (1.63)	27.81 (2.08)	28.78 (1.32)
Memory								
Everyday	16.89 (4.99)	19.52 (3.37)	17.39 (5.06)	20.15 (3.51)	18.08(3.97)	19.70 (3.07)	19.12 (3.78)	20.43 (2.79)
Verbal	42.8 (10.88)	51.50 (9.75)	42.47 (11.28)	53.38 (9.81)	45.05 (11.61)	51.86 (9.94)	47.24 (11.33)	52.62 (8.11)
Visual	39.48 (14.69)	46.47 (14.19)	37.39 (13.44)	46.15 (12.99)	40.07 (13.57)	45.43 (13.30)	39.36 (13.72)	52.62 (8.11)
Health: SF-36 Scales								
Physical Function	58.40 (26.51)	71.35 (24.93)	60.92 (24.02)	71.92 (21.05)	62.10 (29.60)	72.12 (24.06)	62.95 (27.60)	73.22 (21.45)
Role-Physical	59.04 (43.52)	71.93 (36.31)	53.52 (40.55)	74.04 (35.34)	64.93 (37.92)	81.35 (29.09)	67.05 (36.99)	71.61 (38.69)
Bodily Pain	70.15 (25.39)	75.55 (21.63)	64.56 (24.24)	71.74 (23.16)	68.79 (23.37)	73.16 (22.08)	74.42 (23.42)	72.23 (20.05)
General Health	64.46 (19.65)	76.88 (16.65)	62.70(17.92)	76.02 (16.43)	68.79 (20.96)	78.65 (17.11)	69.31 (21.35)	79.29 (16.40)
Vitality	59.93 (19.20)	68.97 (16.48)	59.21 (20.97)	66.51 (16.60)	64.86 (16.36)	71.51 (16.84)	64.23 (19.71)	66.50 (18.94)
Social Function	83.45 (21.83)	89.01 (16.40)	81.84(22.71)	86.06 (18.13)	88.37 (19.83)	93.25 (13.99)	87.12(18.60)	86.25 (19.76)
Role Emotional	77.46 (35.08)	86.55 (26.62)	67.20 (40.38)	82.69 (29.88)	77.00(36.77)	86.24 (25.14)	76.26 (35.45)	79.66 (33.91)
Mental Health	79.09(16.22)	83.66 (12.36)	75.88 (17.33)	82.79 (12.71)	82.06 (14.00)	85.52 (11.73)	82.29 (13.80)	80.27 (17.98)
Physical Component Score	40.90(11.38)	45.81 (10.51)	40.71 (9.77)	45.71 (9.03)	42.17(11.14)	46.72 (9.18)	43.23 (10.15)	46.82 (9.17)
Mental Component Score	54.15(8.92)	56.24 (7.57)	51.87(10.52)	54.86 (7.91)	55.51 (7.88)	57.16 (6.61)	54.91 (7.91)	53.74 (9.49)

Table 3

Standard regression coefficients to predict outcome measures at baseline

	Cognition		Memory		Everyday		Verbal		Visual		Instrumental Activities		Depression	
	β	β	β	β	β	β	β	β	β	β	β	β	β	β
Age	-.03	-.21 [†]		-.05		-.23 [†]		-.16 [†]		.07				
Education	.42 [†]	.25 [†]		.26 [†]		.24 [†]		.36 [†]		-.14				
Hispanic	-.10	-.21 [†]		-.08		-.20 [†]		-.02 [†]		-.04				
Black	-.23 [†]	-.29 [†]		-.27 [†]		-.28 [†]		-.26 [†]		.06				
Male	-.16 [†]	-.06		-.30 [†]		-.17 [†]		-.08		-.04				
Married	.04	.01		.33		.06		-.07		-.11				
Drinker	.14 [*]	.06		.23 [†]		.04		.09		-.21 [†]				

Health: SF-36

	General Health		Physical Function		Role Physical		Vitality		Pain		Social Function	
	β	β	β	β	β	β	β	β	β	β	β	β
Age	-.07	-.14 [*]		-.16 [*]		-.18 [†]		-.13 [*]		-.02		
Education	.05	.16		.07		.04		.01		.06		
Hispanic	-.04	.11		.11		.15		.03		.07		
Black	-.15 [*]	-.01		0		.13 [*]		-.12		-.03		
Male	-.01	-.07		-.02		-.07		-.07		-.01		
Married	.06	.14 [*]		.03		.07		.08		.01		
Drinker	.23 [†]	.19 [†]		.20 [†]		.21 [†]		.07		.13		

	Role Emotional		Mental Health		Physical Component Score		Mental Component Score	
	β	β	β	β	β	β	β	β
Age	-.11	-.02		-.16 [†]				-.26
Education	.1	.15 [*]		.07				0.08
Hispanic	.04	-.06		.09				-.01
Black	-.14 [*]	.03		-.05				-.01
Male	.11	.03		-.08				.08

	Role Emotional	Mental Health	Physical Component Score	Mental Component Score
Married	.07	.11	.09	.05
Drinker	.06	.08	.21 [†]	.07

* p < .05

[†] p < .01; Cognition = Mini Mental State Examination; Everyday Memory = Standard profile score from the Rivermead Behavioral Memory Test; Verbal Memory = Delayed recall T score from the Hopkins Verbal Learning Test-Revised; Visual Memory = Delayed recall T score from the Brief Visuospatial Memory Test-Revised; Instrumental Activities = Direct Assessment of Functional Status; Depression = Center for Epidemiological Diseases-Depression.