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Abstract

The primary goals of this research study were to examine the relation between volunteerism and health in older adults, to expand upon the outcomes of volunteerism in previous research to include cognitive functioning, and to determine the mechanisms and moderators behind such relations. Forty-nine participants (aged 74 and older) from the Pittsburgh area were interviewed in-person for their recent volunteer history and health in the Spring of 2014 and then again about 5 months later in the Fall. The independent variables were the various aspects of recent volunteer history (i.e., volunteer hours in the past year or since the last session, total number of volunteer activities, and the percent of activities that were social), and the dependent health variables were mental health, physical health, and cognitive functioning. The effect of moderator variables, such as volunteer motives, on the relation between volunteering and health were also examined. Contrary to hypotheses, good health predicted a decline in volunteering rather than volunteering predicting improved health. That is, those with better mental health and cognitive functioning at baseline volunteered less over time. Additionally, the volunteer motives of esteem enhancement and distraction from personal problems were most impactful in that those who volunteered more exhibited generally worse mental health and cognitive functioning if they reported high levels of these two motives. Taken collectively, results suggest that volunteer work may be a coping mechanism rather than an activity that benefits health.

Introduction

The population of adults aged 65 years or older in the United States will rise to 89 million by 2050 – greater than twice the number of older adults in 2010 (Centers for Disease Control and Prevention, 2013). Given that Americans are living well into their 70s, 80s, and 90s, the prevalence of mental health issues observed in the elderly becomes a rising concern. According to a recent report by the Centers for Disease Control and Prevention and National Association of Chronic Disease Directors (2008), 20% of adults aged 55 years or older suffer from mental health issues, including anxiety, cognitive impairment, and depression. It is estimated that 10 to 20 percent of Americans aged 65 years and older suffer mild cognitive impairment (Alzheimer’s Association, 2015), often a precursor to Alzheimer’s disease or another type of dementia. Thus, cognitive decline in the rapidly growing population of older adults in America is a pressing issue, and effective methods to combat this issue must be investigated.

Increased age and specific genetic factors make certain people more likely to suffer from cognitive impairment, as does limited participation in physically, mentally, or socially stimulating activities (Mayo Clinic Staff, 2012) – the latter of which can be addressed. Older adults, in particular, are often faced with the issue of social isolation. Social circles can easily diminish with age, thus decreasing the number of opportunities for the elderly to participate in socially stimulating activities. Previous research has revealed social isolation to be detrimental to cognitive functioning among the elderly. For example, a cross-sectional study found that social isolation was correlated with decreased cognitive functioning in a sample of Appalachian older adults ($M = 78.5$ years; DiNapoli, Wu, & Scogin, 2014). A longitudinal study of older adults ($M = 65.6$ years at baseline) in England revealed that social isolation at baseline was associated with

decreased memory (immediate and delayed recall) and executive function (verbal fluency) 4 years later (Shankar, Hamer, McMunn, & Steptoe, 2013).

Volunteer work can offer older adults a means to participate in socially stimulating activities, which may help to preserve cognitive function. This may be especially true for those who have retired from full- or part-time professions that connected adults to social activities and mental stimulation. Below I briefly review the extensive research that has been conducted on the beneficial effects of volunteerism for older adults' physical and mental health. Then I discuss the potential mechanisms and moderators of the relation between volunteerism and health, and lastly outline the procedure and hypotheses of the present study.

Volunteerism and Health

In terms of mental health, a meta-analysis of 37 studies showed that older adult volunteers reported a higher quality of life than their non-volunteer counterparts (Wheeler, Gorey, & Greenblatt, 1998). One longitudinal study of a national sample of adults that oversampled those over age 60 showed that engagement in more hours of volunteer work was associated with reduced depressive symptomology three years later (Thoits & Hewitt, 2001). Older adult volunteers report greater life satisfaction than older adult non-volunteers (Gottlieb & Gillespie, 2008), and the number of volunteer hours has been linked to greater life satisfaction (Thoits & Hewitt, 2001). The beneficial effects of volunteerism on the mental health of older adults are thus evident from previous research.

The association between volunteerism and aspects of physical health has also been examined. Analysis of longitudinal data from a national survey of older adults ($M_{\text{age}} = 70$ years) revealed that a greater number of volunteer hours predicted better self-rated health and less functional dependency on others between 3 to 5 years later (Tang, 2009). Mortality risk has

garnered particular attention. In a longitudinal study of adults aged 55 years or older, volunteer involvement with two or more organizations predicted lower mortality risk an average of 4.9 years later (Oman, Thoresen, & McMahon, 1999). Another longitudinal study found that modest volunteer activity (volunteering for one organization for 40 hours or less in the past year) predicted lower mortality risk in a sample of older adults aged 65 years or older after an average of 7.5 years follow-up (Musick, Herzog, & House, 1999).

Cognitive impairment is an increasingly serious issue among the elderly, but few studies of volunteerism have given this outcome specific attention. Two intervention studies showed that volunteering was related to cognitive function and brain activity. In one study, mostly African American, female older adults ($M_{\text{age}} = 69$ years) were randomly assigned to an intervention that involved providing literacy support, library support, and conflict resolution support for 15 hours per week for elementary school children during the academic year or a control group that did not participate in the program (Carlson et al., 2008). Executive function (i.e., organizational, inhibitory, and working memory skills) was measured with cognitive tests at baseline and post-treatment between 4 and 8 months later. The intervention group improved on all of the cognitive tests, whereas the control group showed declines in most cognitive tests scores. Moreover, the results revealed that those at risk for cognitive impairment at baseline benefitted most from this high-activity volunteer experience.

The second study tested the same intervention ($M_{\text{age}} = 68$ years, 100% women, 100% African American), but utilized fMRI to measure brain activity while participants completed a cognitive test at baseline and following the intervention (Carlson et al., 2009). The intervention group showed a greater improvement in the cognitive test results than did the control group, and only the intervention group showed an increase in brain activity in all three regions previously

determined to be activated by the cognitive test. The results of these two studies show that engagement in mentally stimulating volunteer work improved cognitive outcomes in older adults.

Mechanisms: Explaining the Link Between Volunteerism and Health

There are several potential explanations for the relation of volunteering to health. Research has linked volunteering to enhanced self-esteem (McDonald, Chown, Tabb, Schaeffer, & Howard, 2013; Thoits & Hewitt, 2001), increased purpose in life (McDonald et al., 2013), greater mastery (Kahana, Midlarsky, & Kahana, 1987), and increased positive affect (Kahana et al., 1987). In a recent study, adult volunteers (median age = 77 years) were asked the extent to which volunteer work had affected their life (McDonald et al., 2013). Participants reported that their engagement in volunteer work increased their sense of accomplishment, feelings of purpose in life, and sense of self. Another explanation for the link between volunteerism and health is social integration (Oman et al., 1999). Engaging in volunteer work provides older adults with an opportunity to expand their social network, as volunteers frequently work with other volunteers who have similar interests. Those with larger social networks may be more likely to take care of themselves, as others, in addition to themselves, can notice declines in their health.

Moderators: Qualifiers of the Relation of Volunteerism to Health

Some people may benefit more from volunteerism than others. One moderator variable that has been examined is an individual's motives for volunteering. Volunteers have reported various reasons for performing unpaid activities, and research suggests that those who express certain motives benefit more from performing volunteer work than those who express other motives. The Volunteer Functions Inventory identifies six overarching themes for the various motivations to volunteer: protective (a way to shield oneself from negative feelings), values (a

way to express one's humanistic values), career (a way to obtain career-relevant skills), social (a way to build relationships with others), understanding (a way to experience new things or learn more about oneself), and enhancement (a way to develop oneself in a more self-centered way; Clary et al., 1998). One longitudinal study found that adult volunteers ($M_{\text{age}} = 36.4$ years) from an AIDS service organization volunteered for longer durations when they reported self-oriented motives for volunteering (e.g., personal development, esteem enhancement) compared to motives pertaining to community concern or values (Omoto & Snyder, 1995). Relatedly, another study using data from a statewide survey found that those with self-oriented motives benefitted less from volunteerism in terms of physical health than those with other-oriented motives (Konrath, Fuhrel-Forbis, Lou, & Brown, 2012). Specifically, older adults ($M_{\text{age}} = 69.16$ years) with self-oriented motives had a higher mortality rate than their other-oriented counterparts 4 years later.

Limitations of Previous Research and Introduction to the Present Study

Many of the previous studies are limited because they are cross-sectional. Thus, it is not clear if engagement in volunteer work causes better health outcomes or if those in better health are more likely to volunteer. Much of the longitudinal research has utilized national surveys, which are limited in their ability to obtain detailed information regarding participants' volunteer work. There are many dimensions of volunteer work that could be examined, such as whether the volunteer activities involve interacting with other people. Finally, the outcomes of cognitive functioning and cognitive impairment, in particular, have received surprisingly little attention.

In the present study, 49 adults aged 75 years or older were interviewed in-person in the spring/summer of 2014. The past year's volunteer work was assessed as well as current physical and mental health, cognitive functioning, and the proposed mediators (i.e., self-esteem and social participation). Participants were interviewed a second time, on average 5 months later, and all of

the variables except the mediators were reassessed. The study had three primary goals. First, we examined the relation of volunteering to health in general and to cognitive functioning in particular. We hypothesized that participants who spent more hours volunteering and volunteered with more organizations would exhibit less cognitive decline and greater mental and physical health between the first and second interviews. Second, we examined potential mechanisms that might explain the relation of volunteerism to health. We hypothesized that volunteering would lead to more self-esteem and greater social participation, both of which would then be linked to better health. Third, we examined potential moderators of the relation of volunteering to health, specifically participants' motives for volunteering, baseline cognitive impairment, and social participation. We expected that those with other-oriented motives for volunteering (i.e., values) would reap more health benefits from volunteering than those with self-oriented motives (i.e., esteem enhancement, distraction from one's own problems). Although research has shown that AIDS volunteers with self-oriented motives volunteered for longer periods of time (Omoto & Snyder, 1995), duration of volunteering is not necessarily a health outcome. Our hypothesis was based on the finding that lower mortality risk was observed in volunteers with other-oriented motives (Konrath et al., 2012). We hypothesized that those with greater cognitive impairment at baseline would benefit more from volunteering than those with less cognitive impairment at baseline as the cognitive benefit of an often mentally-stimulating activity like volunteering would simply be more pronounced in older adults with a noticeable level of cognitive impairment than in older adults with little to no cognitive impairment. We hypothesized that those who were more socially integrated (i.e., higher rates of social participation) would benefit more from volunteering because such individuals should exhibit more social competence compared to those who are less socially integrated; older adults lacking a certain degree of social

competence might not be able to successfully integrate themselves within their volunteering environment and thus not fully reap the expected health benefits from volunteer work. Lastly, we hypothesized that cognitive decline between these interviews would be less for those who volunteered primarily in social activities compared to nonsocial activities, because volunteering that involves human interaction would be mentally more stimulating than solitary activities.

Method

Participants

Forty-nine older adults (32 women, 17 men), average age 82.4 years ($SD = 5.55$, range = 74-93), from the Pittsburgh, Pennsylvania area were recruited for participation in this study during the spring and early summer of 2014. The only requirement was the participants be at least 74 years of age. Participants were all White and highly educated, as a combined 75.5% either graduated from a 4-year college or received post-graduate training. Just over one-third (36.7%) of the sample was married, and 44.9% were widowed. The majority of participants (81.6%) were not employed at the start of the study. Complete demographics for the sample are shown in Table 1.

Recruitment. The majority of participants learned about the study from the Osher Lifelong Learning Institutes affiliated with Carnegie Mellon University and the University of Pittsburgh. Requests to advertise this study were frequently made to these two education programs because of the age demographic of the program and their coordinators' cooperation to advertise the study. The study was also advertised at the Jewish Community Center of Greater Pittsburgh, and some participants distributed flyers about the study to their friends and posted them in their living residences.

Procedure

Participants were first interviewed in person (Time 1 [T1]) at either Carnegie Mellon University campus ($n = 39$) or the Jewish Community Center facility ($n = 10$) between February and June of 2014. After obtaining consent from participants, a structured interview was conducted. Interviews lasted no more than one hour, and participants were paid \$10 and reimbursed for any parking fees. In the four cases where couples arrived together, two researchers interviewed each member separately. Contact information was obtained at the end of each interview, and participants were notified that they would be contacted around five months later for a second interview.

The second set of interviews commenced in July of 2014 (Time 2 [T2]). All 49 participants from T1 were re-interviewed at T2. These interviews were scheduled to occur an average of 5 months (+ or – 2 weeks) after the first interviews and were again held at the CMU campus and Jewish Community Center. Interviews took place on average 155.12 days (or approximately 5.10 months) later, with a range from 141 to 198 days (or 4.63 to 6.51 months). These interviews lasted no more than 40 minutes. Again, structured interviews were conducted, and participants were paid another \$10 (plus reimbursement for parking fees) at the end of the interviews.

Measures

Volunteerism. Regarding formal volunteerism, participants were asked at T1 whether or not they had volunteered for a specific organization within the past year. If they responded that they had, they were then asked to list each of the organizations for which they volunteered. For each of the organizations listed, participants indicated how much time they spent volunteering (in hours per week), whether the activity involved interacting with other people, whether they had to

spend their own money to participate in the activity, and whether or not the work was mentally challenging. Finally, participants were asked how personally important each of the volunteer activities listed were to them on a 5-point scale, ranging from 1 = not at all important to 5 = very important. At T2, participants were asked the same set of questions about volunteerism but were asked to recall specific volunteer activities that had occurred since T1. The volunteering variables of primary interest in the present paper were the number of hours volunteered per week, the total number of organizations for which one volunteered, and the percentage of volunteer activities that were social.

Cognitive functioning. Cognitive functioning was measured at T1 and T2 with the Telephone Interview for Cognitive Status (Brandt & Folstein, 2012). This measure was developed for adults between the ages of 60-98 years and assesses a variety of cognitive skills (e.g., word recall, basic arithmetic, phrase repetition, antonym identification, etc.). A total cognitive functioning score is obtained from the sum of the individual items.

Health. Physical and mental health were measured using four different measures. Health-related quality of life (pertaining to both physical and mental health) was measured with the SF-36 at both T1 and T2 (Ware, Snow, Kosinski, & Gandek, 1993). This 36-item survey contains eight different scales: vitality, general health perceptions, physical functioning, physical role functioning, bodily pain, mental health, emotional role functioning, and social functioning. Each scale score is converted into a disability score between 0-100 with higher scores indicating less disability. Consistent with previous research, the eight scales were combined to form a mental functioning index and a physical functioning index (i.e., the primary measure of physical health).

Two aspects of mental health were measured. First, depressive symptomology was measured with the abbreviated form of the Center for Epidemiological Studies Depression Scale

(Radloff, 1977) at both T1 and T2. This 10-item instrument asks the respondent how often they experienced various feelings and behaviors during the past week where 0 = none of the time, 1 = a little of the time, 2 = some of the time, and 3 = most of the time. This measure showed good reliability (T1 = $\alpha = .86$; T2 = $\alpha = .87$).

Second, happiness was measured at both T1 and T2 with two items from Thoits and Hewitt (2001). At T1, respondents were asked to indicate how much they agreed with the following statement, “My life could be happier than it is now” on a 5-point scale where 1 = strongly disagree and 5 = strongly agree. They were also asked, “Taking all things together, how would you say things are these days – would you say you’re very happy, pretty happy, or not too happy these days,” and responded on a 3-point scale where 1 = not too happy, 2 = pretty happy, and 3 = very happy. At T1, these two items were positively correlated ($r = .52, p < .01$). At T2, only the latter item was asked.

Overall well-being was measured at both T1 and T2 with the Satisfaction With Life Scale (Diener et al., 1985). Five items assess the degree to which an individual is satisfied with his or her life. Each item of this widely used instrument is answered on a 1 to 7 scale where lower numbers indicate stronger disagreement and higher numbers indicate stronger agreement. This measure showed good reliability (T1 = $\alpha = .88$; T2 = $\alpha = .86$).

To reduce the number of analyses, we conducted a factor analysis of the primary mental health variables: the SF-36 mental functioning index score, life satisfaction score, CES-D score, and happiness (only the item assessed at both T1 and T2). The four variables loaded strongly onto one factor, which was named the mental health index. So as opposed to running separate analyses for each of the four variables, all analyses pertaining to any one of these four variables were run with the mental health index score (i.e., the primary measure of mental health).

Self-esteem. Self-esteem was measured at T1 using Rosenberg's (1965) Self-Esteem Scale. Respondents were asked how strongly they agreed or disagreed (on a 5-point scale where 1 = strongly disagree and 5 = strongly agree) with 10 statements describing how they felt about themselves. This measure included items like, "I feel that I am a person of worth, at least on an equal basis with others." This measure showed good reliability (T1 = $\alpha = .88$).

Social relations. Several different aspects of social relations were assessed. First, social support was measured at T1 with the 12-item version of the Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983). The 12 items, answered on a 1 to 4 scale where 1 = definitely false and 4 = definitely true, assess the different aspects of social support: tangible, companionship, emotional, and informational support. This measure showed good reliability (T1 = $\alpha = .88$).

Social participation was measured at T1 using two items from Thoits and Hewitt (2001): "How often do you attend religious services," and "How often do you attend meetings or programs of groups, clubs, or organizations to which you belong," both of which were answered on a 0 to 5 scale (where 0 = never, 1 = less than once a month, 2 = about once a month, 3 = 2 or 3 times a month, 4 = once a week, and 5 = more than once a week). Although the two items were not correlated ($r = .06$, n.s.), we summed the two items to create an overall index of amount of social participation.

Social functioning was measured at T1 with four items from Kaplan et al.'s (1988) social connections index: "How often do you visit friends and relatives," "On the average, how many different homes of friends or relatives do you visit per month," "How many people usually come to see you or call you per day," and "How often do you go to meetings of clubs, associations, or societies?" These items were scored according to the criteria provided by Kaplan et al. (1988).

Again, to reduce the number of analyses, we examined the empirical overlap among these constructs. Another factor analysis was conducted to find a common factor among the social support, social participation (both items), and social functioning scores. The social support score, social functioning score, and only one of the social participation items (i.e., “How often do you attend meetings or programs of groups, clubs, or organizations to which you belong”) loaded strongly onto one factor, whereas the other social participation item loaded onto its own factor. Thus, the factor onto which the three scores loaded was named the social participation index, and all analyses involving any of these variables was completed with this new social participation index.

Volunteering motives. Motivations for volunteering were assessed at both T1 and T2. At T1, five overarching motivations were examined with either 2 or 3 items: values ($T1 = r = .27, p = .06$; $T2 = r = .29, p < .05$; e.g., “Because of my personal values, convictions, and beliefs”), social connections ($T1 = r = .48, p < .01$; $T2 = r = .40, p < .01$; e.g., “To meet new people and make new friends”), esteem enhancement ($T1 = r = .35, p < .05$; $T2 = r = .30, p < .05$; e.g., “To feel better about myself”), skill acquisition ($T1 = \alpha = .72$; $T2 = \alpha = .74$; e.g., “To learn more about the topic”), and distraction from own problems ($T1 = r = .38, p < .01$; $T2 = r = .75, p < .01$; e.g., “To escape other pressures and stress in my life”). Ten of these 11 items were obtained from Omoto and Snyder (1995), who developed a larger set of items for AIDS volunteers and grouped the items under five different motivation categories: values, understanding, personal development, community concern, and esteem enhancement. Abbreviated forms of the motivations were used by including the two most representative items from each. Because these items were developed for AIDS volunteers, we selected those that made the most sense in this study’s context. One item (“To avoid thinking about my own problems”) was developed by the

faculty advisor for the project to also fall under the “distraction from own problems” category. For each item, participants indicated on a 5-point scale how important it was to them for volunteering (where 1 = not at all important and 5 = very important). At T2, the same motives were reassessed.

Overview of analyses. IBM SPSS Statistics Version 22 was used to conduct all statistical analyses. First, the correlations of the three primary volunteering variables (i.e., volunteer hours per week, total number of organization volunteered for, and percent of activities that are social) to the three primary health outcome variables (i.e., mental health index, physical health, and cognitive functioning) at both T1 and T2 were examined. Then, linear regression analyses were conducted to examine whether the T1 volunteer variables predicted the health variables at T2 controlling for the respective T1 variable. Additional regression analyses were conducted to examine the possibility of reverse causality (i.e., whether the health variables at T1 predicted the volunteering variables at T2). Next, we planned to examine self-esteem and social participation as mediator variables, but we could not test this hypothesis because we found no evidence that volunteering was related to good health. However, we did examine whether volunteering was related to these potential mechanisms. Lastly, we tested whether three variables influenced the relation of volunteer hours to health: volunteer motives (esteem enhancement, distraction from own problems, values), social participation, and baseline cognitive functioning. To test moderation, we conducted regression analyses in which we entered volunteer hours and the moderator on the first step of the regression (both of which were centered) and the interaction between the two on the second step of the regression. We examined the nature of significant interactions using the procedure outlined by Aiken and West (1991).

Results

Relation of Volunteering to Health

Time 1. Volunteer hours and number of volunteer organizations were unrelated to mental health, but the percentage of social volunteer activities was related to higher scores on the mental health index ($r = .38, p < .05$). These volunteer variables were unrelated to physical health and cognitive functioning at T1.

Time 2. Volunteer hours was related to worse mental health ($r = -.42, p < .05$) at T2, but total number of organizations and percentage of social activities were unrelated to mental health. These three volunteer variables were unrelated to physical health at T2. Contrary to prediction, volunteer hours was related to worse cognitive functioning ($r = -.37, p < .04$). Total number of organizations and percentage of social volunteer activities were unrelated to cognitive functioning.

Predicting changes in health. Regression analyses revealed that volunteer hours per week, total number of organizations, and percentage of social activities at T1 did not predict T2 mental health, physical health, or cognitive functioning when statistical controls for the respective T1 variable were entered in to the equation.

Relation of Health to Volunteering

Predicting changes in volunteering. We also examined the reverse causal pathway by examining whether the health variables at T1 predicted changes in the three volunteer variables. Regression analyses revealed that baseline mental health predicted a decline in volunteer hours (standardized beta = $-.36, p < .05$). Physical health did not predict changes in any of the volunteer variables. T1 cognitive functioning predicted a decline in volunteer hours per week (standardized beta = $-.31, p < .05$).

Relation of Volunteering to Potential Mechanisms

We hypothesized that self-esteem and social participation might explain the relation of volunteering to health. Because volunteering was not related to good health, we did not test mediation. However, we could test whether volunteering was correlated with these potential mechanisms. Volunteer hours was marginally related to lower self-esteem ($r = -.27, p < .10$); number of organizations and percent of social activities were not significantly related to self-esteem. None of the volunteer variables was related to social participation.

Predicting changes in health. Regression analyses revealed that none of the T1 motives were significant predictors of changes in mental health or cognitive functioning. Three marginal relations appeared: (1) T1 social connections predicted improved physical health between T1 and T2 (standardized beta = .20, $p < .10$); (2) T1 skill acquisition predicted improved physical health between T1 and T2 (standardized beta = .19, $p < .10$); and (3) T1 distraction from own problems predicted a decline in physical health between T1 and T2 (standardized beta = -.19, $p < .10$).

Predicting changes in motives. Again, reverse causality was examined with regression analyses to test whether the health variables predicted changes in motives over time. T1 mental health predicted an increase in values motive between T1 and T2 (standardized beta = .30, $p < .05$), a marginal decrease in esteem enhancement (standardized beta = -.20, $p < .10$), and a decrease in distraction from own problems (standardized beta = .40, $p < .001$) at T2. T1 physical health predicted marginally increased social connections motive (standardized beta = .20, $p < .10$) at T2. Lastly, T1 cognitive functioning predicted a decrease in values motive (standardized beta = -.24, $p < .05$) between T1 and T2.

Moderators of the Relation of Volunteering to Health

Volunteer motives as moderators of the relation of volunteering to T1 health. The esteem enhancement motive moderated the relation of volunteer hours to mental health (standardized beta = $-.50$, $p < .01$), such that more volunteer hours was associated with better mental health for those with low esteem enhancement motive but worse mental health for those with high esteem enhancement motive (see Figure 1). The esteem motive also moderated the relation of volunteer hours to cognitive functioning (standardized beta = $-.32$, $p < .05$), such that more volunteer hours was associated with better cognitive functioning for those reporting low esteem motive, whereas higher volunteer hours was associated with worse cognitive functioning for those reporting high esteem motive (see Figure 2).

The distraction motive moderated the relation of volunteer hours to mental health (standardized beta = $-.44$, $p < .01$), such that higher volunteer hours was associated with better mental health for those reporting low distraction motive, but volunteer hours was unrelated to mental health for those reporting high distraction motive (see Figure 3). The motive of distraction also moderated the relation of volunteer hours to cognitive functioning (standardized beta = $-.36$, $p < .05$) such that higher volunteer hours was associated with better cognitive functioning for those reporting low distraction motive, whereas higher volunteer hours was associated with worse cognitive functioning for those reporting high distraction motive (see Figure 4).

The values motive did not moderate the relation of volunteer hours to any of the health outcomes.

Volunteer motives as moderators of the relation of volunteering to T2 health. There was only one interaction of volunteer hours with a motive in predicting T2 health. The values

motive marginally moderated the relation of T1 volunteer hours to changes in physical health (standardized beta = .22, $p < .10$) between T1 and T2, such that more volunteer hours was associated with improved physical health for those reporting high values motive but declines in physical health for those reporting low values motive (see Figure 5).

Social participation as a moderator of the relation of volunteering to T1 health.

Social participation moderated the relation between volunteer hours and cognitive functioning (standardized beta = .36, $p < .05$) such that higher volunteer hours was associated with better cognitive functioning for those reporting high levels of social participation, whereas higher volunteer hours was associated with worse cognitive functioning for those reporting low levels of social participation (see Figure 6).

Social participation as a moderator of the relation of volunteering to T2 health.

Again, social participation marginally moderated the relation of volunteer hours to cognitive functioning (standardized beta = .25, $p < .10$) such that higher volunteer hours was associated with better T2 cognitive functioning for those reporting high levels of social participation, whereas higher volunteer hours was associated with worse T2 cognitive functioning for those reporting low levels of social participation (see Figure 7).

Baseline cognitive functioning as a moderator of the relation of volunteering to T1 health. Baseline cognitive functioning moderated the relation of volunteer hours to mental health (standardized beta = .37, $p < .05$) such that higher T1 volunteer hours was associated with better T1 mental health for those exhibiting high baseline cognitive functioning, whereas volunteer hours was associated with worse mental health for those exhibiting low baseline cognitive functioning (see Figure 8).

Baseline cognitive functioning as a moderator of the relation of volunteering to T2 health. Baseline cognitive functioning also moderated the relation of volunteer hours to T2 cognitive functioning (standardized beta = .31, $p < .05$) such that higher volunteer hours was associated with better T2 cognitive functioning for those exhibiting high baseline cognitive functioning, whereas higher volunteer hours was associated with worse T2 cognitive functioning for those exhibiting low baseline cognitive functioning (see Figure 9).

Ancillary Analyses

Because volunteering overall was not related to our health outcomes, we took the opportunity to examine whether different motives for volunteering was related to health. These relations are shown in Table 2.

Time 1. Esteem enhancement was related to marginally worse mental health, as was distraction from own problems. Values, social connections, and skill acquisition were not related to mental health. None of the motives was related to physical health or cognitive functioning.

Time 2. Esteem enhancement was again related to worse mental health, as was distraction from own problems. Social connections was related to marginally better physical health. Esteem enhancement was related to worse cognitive functioning.

Discussion

The first goal of this study was to examine the relation of volunteering to health. We hypothesized that a greater number of volunteer hours and a greater number of volunteer organizations would be positively associated with mental health, physical health, and cognitive functioning cross-sectionally, and also predict better mental health, physical health, and less cognitive decline over time. However, volunteer hours was related to *worse* mental health and cognitive functioning at one cross-sectional period, and number of volunteer organizations was

entirely unrelated to health. Additionally, volunteer hours did not predict changes in health over time. Instead, high levels of mental health and cognitive functioning each predicted declines in volunteer hours over time. In other words, those with poorer mental and cognitive health seemed to seek more volunteer work. These findings run contrary to previous research on the topic; volunteering has been formerly shown to be associated with greater life-satisfaction and to predict less depressive symptomology over time (Thoits & Hewitt, 2001). No studies, to our knowledge, have shown volunteering to be associated with worse mental health outcomes as this study did at one time point, or that good mental health predicts declines in volunteering. It is possible that our research findings have revealed a different dimension of volunteer work: its attraction as a coping mechanism. Older adults with declining mental and cognitive health might perceive volunteer work as a way to combat their poor health issues, whereas those with better mental and cognitive health may not be as motivated to volunteer.

The second goal of the study was to examine potential mechanisms that might explain the relation of volunteering to health. But because volunteering was not linked to health, we could not test self-esteem and social participation as mechanistic variables. Instead, we examined the relation of volunteer variables to self-esteem and social participation. We found that more avid volunteers (in terms of hours) reported lower self-esteem. This finding aligns with the previously described finding that number of volunteer hours was associated with worse mental and cognitive outcomes. However, we cannot determine the causal relation here. It is not clear if volunteering is linked to low self-esteem or low self-esteem persons are more inclined to volunteer. The low self-esteem associated with high rates of volunteering could also be connected to poor health.

The final goal of this study was to examine potential moderators of the relation of volunteering to health. First, we considered participants' motives for volunteering (specifically esteem enhancement, distraction, and values motives). We hypothesized that those with other-oriented motives for volunteering (i.e., values) would reap more health benefits from volunteering than those with self-oriented motives (i.e., esteem enhancement, distraction). The findings revealed that the connection between volunteer hours and poor mental/cognitive health was pronounced for those with self-oriented volunteer motives. One explanation for this finding is that those who volunteer for self-oriented reasons might not experience the benefits of making a positive difference in someone else's life because they are so focused on addressing their own concerns. In addition, volunteering to enhance self-esteem or to distract oneself from personal problems might even make these issues (i.e., low self-esteem, personal problems) more salient, bringing about additional stress and worsening the issues themselves. On the other hand, volunteer hours were associated with better physical health for those who volunteered based on their own personal values. This makes sense in that older adults who volunteer for such motives (e.g., "Because I consider myself to be a loving and caring person") would likely be more altruistic and exert more physical energy when volunteering for the betterment of others than would their self-oriented counterparts.

We also examined the potential moderating effect of social participation on the relation between volunteering and health. It was hypothesized that more socially involved individuals would reap more health benefits from volunteering than those reporting less social involvement. The findings supported this hypothesis, such that older adults with higher levels of volunteering exhibited better cognitive functioning only if they were actively participating within social groups. This finding contributes to the idea that developing social competency from frequent

social participation influences whether older adult volunteers can acquire health benefits from engaging in volunteer work. Simply volunteering in and of itself might not be sufficient for improving health; older adults must exhibit a certain level of social competence, know how to properly behave in different social situations, and be able to communicate and get along with others in order to successfully integrate themselves within their volunteering environments. Only then can older adult volunteers fully reap the potential health benefits of volunteer work.

The final moderator examined was baseline cognitive functioning. We hypothesized that those with poorer baseline cognitive functioning would benefit more from volunteering than those with higher baseline cognitive functioning. The findings revealed the opposite, however, such that avid volunteers with higher baseline cognitive functioning exhibited better mental and cognitive health, but that volunteer hours was associated with worse mental and cognitive outcomes among those with low baseline cognitive functioning. It can thus be inferred that those with better cognitive health are able to reap the health benefits of volunteer work. It may be that those with poorer cognitive health are purposefully volunteering to address personal issues or for more self-oriented motives. This finding is consistent with the previous finding on social participation. Both show that those with the greatest resources in terms of either social participation or cognitive functioning benefit the most from volunteering.

Before concluding, we note several study limitations. One limitation is the nature of the sample, which was composed of relatively highly educated, 100% White older adults. The generalizability of these findings is thus limited to this particular population, and future studies should examine these relations with a more diverse sample. Second, the short follow-up period of five months does not allow for much change to occur in either volunteering or health. Future efforts should increase the length of follow-up observations to allow sufficient time for change in

these variables to occur. It should also be noted that the five-month follow-up period coincided with summer for the majority of participants, when regular volunteering likely subsides due to vacationing and time away from home. Last, future research should extend the examination of volunteer work beyond cognitive functioning to other health outcomes, such as the onset of diseases with a cognitive component like dementia.

In sum, this study has revealed several important findings in connection with volunteering and health. It was not that volunteering predicted improved health, but mental and cognitive health predicted a decrease in volunteering over time. Those suffering from poor mental and cognitive health may more actively seek volunteer work as a method to cope with their declining health. In addition, the relation of volunteering to health may depend on one's motives for volunteering. This research showed that more avid volunteering was related to poorer mental and cognitive health for those motivated to volunteer for personal benefit rather than the benefit of others.

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Table 1

Demographic Characteristics of the Sample

	n (%)
Total participants	49 (100)
Sex	
Male	17 (34.7)
Female	32 (65.3)
Mean age (<i>SD</i>), age range	82.37 (<i>SD</i> = 5.55)
Race	
White	49 (100)
Ethnicity	
Non-Hispanic	49 (100)
Highest education completed	
Less than high school	1 (2)
High school graduate	5 (10.2)
Technical/vocational graduate as part of	1 (2)
Some college (did not graduate with degree)	2 (4.1)
2-year college graduate	3 (6.1)
4-year college graduate	10 (20.4)
Post-graduate training	27 (55.1)
Employed (full- or part-time)	7 (14.3)
Married	18 (36.7)
Have kids	44 (89.8)

Table 2

Relations of Motives to Health Outcomes

	Time 1 Correlations		
	Mental health	Physical health	Cognitive functioning
Values	.12	-.16	.05
Social connections	.04	-.15	.12
Esteem enhancement	-.29**	-.12	.07
Distraction from problems	-.40***	-.13	.02
Skill acquisition	.09	-.15	-.01
	Time 2 Correlations		
	Mental health	Physical health	Cognitive functioning
Values	.20	.16	-.21
Social connections	-.11	.26*	.05
Esteem enhancement	-.28**	-.03	-.29**
Distraction from problems	-.58****	-.13	-.04
Skill acquisition	-.05	.11	.09

* $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$

Figure Captions

Figure 1. Volunteer hours was related to better mental health for those with low esteem enhancement motives, but was slightly related to worse mental health for those with high esteem enhancement motives at T1.

Figure 2. Volunteer hours was related to better cognitive functioning for those with low esteem enhancement motives, but was related to worse cognitive functioning for those with high esteem enhancement motives at T1.

Figure 3. Volunteer hours was related to better mental health for those with low distraction motives, but was largely unrelated to mental health for those with high distraction motives at T1.

Figure 4. Volunteer hours was related to better cognitive functioning for those with low distraction motives, but was related to worse cognitive functioning for those with high distraction motives at T1.

Figure 5. Volunteer hours was related to better physical health for those with high values motives, but was related to worse physical health for those with low values motives at T2.

Figure 6. Volunteer hours was related to better cognitive functioning for those with high social participation, but was related to worse cognitive functioning for those with low social participation at T1.

Figure 7. Volunteer hours was again related to better cognitive functioning for those with high social participation, but was related to worse cognitive functioning for those with low social participation at T2.

Figure 8. Volunteer hours was related to better mental health for those with high baseline cognitive functioning, but was related to worse mental health for those with low baseline cognitive functioning at T1.

Figure 9. Volunteer hours was related to better cognitive functioning for those with high baseline cognitive functioning, but was related to worse cognitive functioning for those with low baseline cognitive functioning at T2.

















