Effects of Volunteering on the Well-Being of Older Adults

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Objectives. This study tests the effects of volunteering on the well-being of older adults, including the effect of level of engagement, the moderating effects of demographic and social factors, and the effects of the nature of the volunteer experience.

Methods. This is a secondary data analysis of three waves of data from the Americans' Changing Lives Study. Self-rated health, functional dependency, and depression are regressed on the well-being measures from the previous waves, other control variables and volunteer status, volunteer hours, type and number of volunteer organizations, and the perceived benefit to others of the volunteer work.

Results. Older adults who volunteer and who engage in more hours of volunteering report higher levels of well-being. This positive effect was not moderated by social integration, race, or gender. There was no effect of the number of organizations for which the older adult volunteered, the type of organization, or the perceived benefit of the work to others.

Discussion. This work contributes to a knowledge base that points to the development of social programs and policies that maximize the engagement of older adults in volunteer roles. The findings suggest that targeting efforts may not be warranted, in that there are not differential benefits according to personal characteristics of the volunteer. Future studies have to address the nature of the social institutions that will maximize the number of elders in these roles and the benefits that they accrue.

V OLUNTARISM in our society is alive and well. In 1996, 47% of people aged 55 to 64, 43% aged 65 to 74, and 37% over the age of 75 volunteered in some capacity (U.S. Bureau of the Census, 1996). An increase in volunteering among those over 75 years of age has been documented, with up to 43% engaging in volunteer work (Independent Sector, 1999). It is likely that this trend will continue, given projections that a larger numbers of older adults in subsequent generations will seek volunteer experiences (Peter D. Hart Research Associates, 1999; Soo & Gong-Soog, 1998). It is probable that subsequent generations of older adults will be in greater demand as volunteers because of shortages in public spending for social programs (Abraham, Arrington, & Wasserbauer, 1996; Bass & Caro, 2001) and because middle-aged women, traditional volunteers, continue to increase their participation in the paid labor force (Caro & Bass, 1995).

As we develop volunteer opportunities and social policies that affect volunteerism, knowledge about the impact of volunteering on older individuals is important. We should shape volunteer roles on the basis of knowledge of what improves the well-being of the older population and what improves society. Here we seek to advance knowledge about the impact of volunteering by examining the effects of volunteering on the well-being of older adults, specifically the effects of the level of engagement in volunteering, the moderating effects of demographic and social factors, and the effects of the nature of the volunteer experience.

Background

A literature spanning over three decades documents the positive relationship between volunteering and well-being,

suggesting that volunteering has a role in maintaining well-being in later life (Fengler, 1984; Havighurst, Neugarten, & Tobin, 1968; Herzog, Kahn, Morgan, Jackson, & Antonucci, 1989; Maddox, 1968; Oman, Thoresen, & McMahon, 1999; Ward, 1979). A few studies achieved quasi-experimental designs (Litigation Support Services, 1984; SRA Technologies, 1985), but most work is limited to nonrepresentative samples and cross-sectional designs.

Although causal relationships cannot be established, several longitudinal studies with improved sampling and measurement have documented a link between volunteering and well-being outcomes (Moen, Dempster-McClain, & Williams, 1992; Musick, Herzog, & House, 1999; Oman et al., 1999; Van Willigen, 2000). These prospective studies have incorporated 3- to 8-year observation periods, although Moen and associates (1992) followed 300 women over a 30-year period and found that volunteering (even on an intermittent basis) is related to subsequent functional ability. These studies vary in the controls used in isolating the association of volunteering and well-being outcomes; nevertheless, all use some subset of demographics, economic status, health, function, lifestyle, social support, religious involvement, and psychological status. Thus, these studies produce solid evidence that volunteer engagement in later life is related to improved well-being. In fact, Oman and colleagues (1999) found that the reduction in mortality associated with volunteering was larger than the reduction associated with physical mobility, exercising, and attendance at religious services.

Researchers often use concepts from role theory (Sieber, 1974) to explain the positive impact of volunteering. Using the concept of role accumulation, Moen and colleagues (1992)

explained the finding that women occupying multiple roles, including volunteer roles, have more positive health outcomes because multiple roles increase social network, power, prestige, resources, and emotional gratification. They cited Bronfenbrenner's (1979) point that "roles have a magic-like power to alter how a person is treated, how she acts, what she does, and thereby even what she thinks and feels." Similarly, Musick and associates (1999) used the concept of role enhancement to explain the positive relationship between volunteering and mortality; the addition of the volunteer role increases power and prestige, which contributes to better health.

The concept of role strain, which states that too many roles may place a burden on the person resulting in negative effects (Goode, 1960), has also received some empirical support. Studies suggest that some level of volunteering may be optimal in its effect on well-being for older adults. Musick and colleagues (1999) hypothesized that moderate amounts of volunteering will be associated with lower risks of mortality, and they documented that older adults who volunteer for less than 40 hours a year experience lower mortality hazard than nonvolunteers or those who volunteer at a higher level. Van Willigen (2000) used the same data set to document that the relationship between volunteer hours and perceived health is not linear, with the positive effects of volunteering tapering off after 100 hours per year. Both analyses demonstrate that role strain might be experienced by older adults who take on higher levels of volunteering.

Several studies have assessed the effects of the number of organizations for which older adults volunteer, and findings are inconsistent. Oman and associates (1999) documented a positive effect of volunteering for two or more organizations (what they term "high volunteering") but no effect for volunteering for one organization. In contrast, Musick and associates (1999) documented a curvilinear relationship, with older adults who volunteer for one organization experiencing lower mortality hazard than nonvolunteers or those who volunteer for two or more. Van Willigen (2000) documented a more linear relationship, with volunteering for one organization having a positive effect over no organizations and volunteering for two having a more positive effect than volunteering for one. The literature is also unclear about what the number of organizations captures about the volunteer experience—level of involvement, type of involvement, or complexity of involvement. Musick and colleagues (1999) suggested that volunteering for one organization may be a more meaningful experience or involve work of higher prestige than volunteering for more than one organization. Van Willigen (2000) provided evidence that older adults benefit most from volunteer work with religious-based organizations. It is important to note that in the three studies mentioned here, the effects of hours of involvement and number of organizations are tested separately, so the unique information carried by number of organizations over and above hours of involvement is not clear.

These studies also test factors that moderate the relationship between volunteering and well-being measures. The concept of role context suggests that volunteering may not be equally beneficial to all people. Moen and colleagues (1992) described role context from the life course perspective as the personal circumstances of the older adult, including education, marital status, family size, and age. This differential impact of volunteering was postulated over 20 years ago (Larson,

1978), yet findings regarding the differential effects of volunteering have been mixed. Fengler (1984) documented a stronger relationship between volunteering and life satisfaction within what he called "disadvantaged" older adults with scarce personal and social resources—elders living alone or in poor health. Similarly, Musick and associates (1999) suggested that the protective effects of volunteering are greatest for those with low levels of social interaction. However, Oman and colleagues (1999) found that elders with high religious involvement and high social support benefited the most from volunteering; these researchers called the effect of volunteering "complementary" (p. 310). This notion of complementarity is supported by Van Willigen's (2000) finding that married persons and those who work experience a greater positive impact from volunteering.

Van Willigen (2000) tested a wide range of moderating conditions, including sociodemographic, socioeconomic, social role, and social resources, and found only a few, inconsistent results. She found that race did not mediate the effects of volunteering on life satisfaction, although other work suggests that race may be a moderating condition. For example, McIntosh and Danigelis (1995) found that volunteer work for religious organizations has a positive effect on Black women, whereas nonreligious volunteer involvement produces positive outcomes for both Black and White men. Gender and ethnic differences have not received adequate attention in the literature, although these role contexts are likely to be important for older volunteers. As the diversity of the older population increases, role context may be important determinants of outcomes for older volunteers.

In sum, there are several sophisticated studies that demonstrate that volunteering contributes to improved well-being outcomes for the older volunteer. Role theory offers a useful perspective by suggesting that participation in volunteer roles will increase well-being outcomes (role enhancement), at least up to a point (role strain). However, we are in need of a more refined research agenda that seeks to understand the personal circumstances (role context) and the nature of the volunteer experience that lead to the most positive outcomes.

This study builds directly on two recent studies of the effects of volunteering. Like the study by Musick and colleagues (1999) and that by Van Willigen (2000), we use role theory and the Americans' Changing Lives (ACL) Study data set to address research questions about the effects of volunteering on late-life well-being. This study addresses the following research questions: First, does volunteering affect late-life well-being? Second, do the age, gender, race, and social integration of the older adult condition this effect? Third, does the nature of the volunteer experience, including number and type of volunteer organizations and the perceived benefit of the work to other people, affect well-being outcomes? This study replicates aspects of studies already mentioned; yet it is unique in a number of ways. It uses three waves of data to assess a wider set of independent variables, and it uses a different set of dependent variables. In addition, some analyses are performed on the subsample of study participants who have volunteered as opposed to on the full sample of volunteers and nonvolunteers. Finally, the study uses different analytic techniques, with the aim of confirming and improving upon previous findings.

We pose several hypotheses that seek to replicate this previous work. We hypothesize that those who volunteer have higher levels of well-being than those who do not, and that there is a positive relationship between the number of volunteers' hours and well-being outcomes, up until some point where the effects level off. We hypothesize that there will be a stronger relationship between volunteering and well-being outcomes for elders with lower levels of social integration. We hypothesize that there will be no moderating effects of race, age, and gender. We hypothesize that volunteering for more than one organization will be positively associated with outcomes; and that volunteering for a religious organization will have the largest effect, compared with other types of organizations. Although there are no previous studies to directly inform us, we hypothesize that those who perceive that their volunteer work has a beneficial impact on others will have more positive gain. This hypothesis derives from ideas that the nature of the involvement is associated with the outcomes experienced by the individual and that activities that involve helping other people may be more beneficial to the volunteer (Midlarsky & Kahana, 1994; Young & Glasgow, 1998).

METHODS

Data

This study utilized three waves of data from the ACL study collected by a team of investigators associated with the Survey Research Center at the University of Michigan (House, 1989, 1997; House et al., 1990). The ACL study is a national longitudinal panel survey, consisting of a multistage stratified probability sample of 3,617 adults in this country, with an oversampling of people over the age of 60. Data were collected in 1986, 1989, and 1994. Face-to-face interviews were completed.

We use a subset of all individuals 60 years of age and older at the time of the first wave of data collection. In Wave 1 (1986), there are 1,669 older adults to include in the analysis, and at Wave 2 (1989), 1,279 older respondents were reinterviewed. At Wave 3 (1994), over 900 of these respondents were located and reinterviewed. The large sample size provides ample statistical power for the proposed analyses. For some analyses, we subset to only those respondents who reported volunteering, which is 575 respondents at Wave 1.

By the end of the 8-year observation period, 27.56% of the older subsample had died. At the second observation, there was a 14% nonresponse rate, caused by the inability to locate elders who had not died; there was a 10% nonresponse rate at the third observation. Thoits and Hewitt (2001) reported that respondents who exited the study at Wave 2 were different from those who were reinterviewed; thus we decided to complete missing data on all nonresponders who had not died. We used multiple random imputation to complete the missing data.

Multiple random imputation, which uses all the information available as well as a random component to fill in missing values, is recognized as a preferred technique for completing missing data (Little & Rubin, 2002; Wang, Sedransk, & Jinn, 1992). We used multiple imputation through the Markov chain Monte Carlo method (Schafer, 2000) to create five independent data sets with no missing data. In the imputation process, we used all the variables in our analysis, as well as 42 others that were thought to be highly associated with these variables (e.g., number of chronic conditions and satisfaction with health) and items related to the structure of the sample design, such as strata and cluster variables (Rubin, 1996). We used an application-specific approach (King, Honaker, Joseph, & Scheve, 2001) to address the general pattern (item and monotone nonresponse combined) of missing data evident in the ACL study. First, we only used information that was applicable to the respondent to predict a missing value for that respondent. For example, a respondent who indicated that he or she was not volunteering at Wave I would have recorded a response of "inappropriate" for hours of volunteering. His or her response to hours of volunteering therefore was not imputed, nor was this respondent's case used to impute number of hours for other individuals. Conversely, number of hours was imputed for respondents who indicated that they had volunteered, but did not report a number of hours. Additionally, the imputation procedure was structured to ensure that missing values caused by death of the respondent were not imputed or used to impute other missing data. Sample size for Wave 2 after data were imputed for nonrespondents (excluding those who died) was 1,530; for Wave 3, it was 1,209.

Five completed data sets were generated, and by utilizing a different random seed at the start of each imputation pass, variance between the data sets more accurately reflects the uncertainty in imputing missing data. Identical analyses were then conducted on each data set, and the results were combined or "rolled up" to produce less biased estimations of parametric statistics. The beta coefficients were averaged across the data sets to produce one estimate; and the standard error for each beta was calculated from the five error estimates as well as the variability between the estimates (Rubin, 1987).

Variables

The research questions center around independent variables capturing aspects of the volunteer experience and the dependent variable of well-being. The volunteer experience is captured through five variables: volunteer status (volunteer or not); volunteer hours; type of sponsoring organization; number of sponsoring organizations where the study participant volunteers; and the participant's perception of the benefit to others of the volunteer activity. Well-being is captured by three variables: self-rated health, functional dependency, and depressive symptomotology. Control variables include demographics, informal social integration, and previous levels of well-being. Age, gender, race, and informal social integration are also used as moderator variables. All variables used in the analysis are described in Table 1, along with univariate descriptions of the sample at Wave 1.

Statistical Analysis

The ACL data were collected through a multistage stratified area probability sample, and the ACL researchers provide weights to account for this sampling design. The appropriate weight for our purposes is captured in the ACL variable v1860 in Wave 1, referred to as the "final centered poststratification weight." We use this weight in all analyses.

The major method of analysis is the generalized estimating equations (GEE) method. The GEE method (executed through

Table 1. Variables in the Study and Unweighted Univariate Statistics at Wave 1

Variables	Operationalization	Mean (SD)	Percentage (%)
Volunteer Experience			
Volunteer status	1 = did volunteer work in the last 12 months; 0 = did not		34.5 volunteered
Level of volunteering	No. of hours volunteering in last 12 months; range 0–200 hr[a]	For full sample: 24.63 (53.48) hr/year For volunteers: 71.50(70.38) hr/year	
Type of org. (volunteers, $n = 575$)	5-level categorical variable indicating sponsoring orgs.: (1) religious; (2) political; (3) educational; (4) senior citizen/related organizations; and (5) other orgs. (inclg. hospitals)		68.5 religious 15.5 political 14.1 educational 30.1 senior 37.6 other
Number of orgs. ($n = 575$)	No. of orgs. for which a person volunteers, range 1–5; calculated from type of orgs. information described above	1.66 (0.89)	
Perceived benefits to others ($n = 575$)	Subjective rating of how much other people are better off because of activity on a scale of 1 = not better off to 4 = a great deal better off	3.46 (0.63)	
Well-Being			
Functional dependency	6 functional items were assessed separately, 1–4, higher scores meaning more difficulty in performing the function; scores used to create index from 1 = no functional impairment (no difficulty to all of the functional impairment questions) to 4 = most severe functional impairment (currently in bed/chair and/or have a lot of difficulty bathing or cannot bathe)		8.8 Severe impairment 14.1 moderate 16.1 mild 61.0 no impairment
Self-rated health	Subjective rating of health from 1–5, excellent to poor	2.84 (1.14)	
Depression	Modified CESD scale on each of 11 symptoms, 1–3 rating of frequency of symptom occurrence; higher score indicating increased depressive symptoms, range from −1.2–4.5	0.03 (1.01)	
Other Variables			
Gender	0 = female, 1 = male		67 female
Age	Age at first interview, 60–96 years	70.1 years (7.4 years)	
Education	Years of formal education completed in 1986, range 0–17 years	10.3 years (3.7 years)	
Race	1 = White; 0 = non-White		69 White
Marital status	1 = married or currently living w/ another adult in intimate relationship; 0 = not		51 married
Income	Household income in last 12 months, from $2,500 to $110,000	$17,522 ($19,191)	
Informal social integration	2 items re: contact with friends (telephone & in person); 1 = more than once a day/week to 6 = never; created index by adding items, taking arithmetic mean, and standardizing; index ranges −3.07–1.35, with higher scores indicating greater integration	−0.05 (1.07)	

Notes: CESD = Center for Epidemiologic Studies of Depression. For Wave 1, $N = 1,669$.

[a]Response categories: <20 hr, 20–39 hr, 40–79 hr, 80–159 hr, and ≥160 hr. Midpoint values are used in the analyses, with 200 hr/year being assigned to the highest value.

the GENMOD procedure in SAS) is one of several effective ways to use longitudinal data (Horton & Lipsitz, 1999). The multiple waves of data are pooled so that levels of well-being from the previous time period can be controlled while the marginal effect of volunteering in that time period is isolated. The GEE method is a preferred analytic technique when time-dependent autocorrelated data are used (Liang & Zeger, 1986). The method extends general linear model methods by estimating parameters, while controlling for the within-subject correlated error present in longitudinal data (Hendricks, Wassell, Collins, & Sedlak, 1996). This technique is flexible. For example, it allows for both time-variant and invariant factors to be modeled simultaneously, or for the inclusion of

nonlinear and interaction terms. More importantly, the GEE method is robust to violations of key assumptions, that is, when multivariate nonnormality is found (Liang & Zeger, 1986). Even under weak assumptions regarding the joint distribution of the observed data, the GEE technique produces consistent regression coefficients and variances. The coefficients produced by GEE are asymptotically unbiased and normally distributed, even when they are estimated by use of observations that statistically are not independent (Norton, Bieler, Ennett, & Zarkin, 1996). A pseudomeasure of explained variance can be computed for each model by using log-likelihood estimates (Nagelkerke, 1991). We report the R^2 value that results from averaging the R^2s across the five models produced during the

analyses using the five imputed data sets. Finally, the cor-
relation matrix of the parameter estimates within each GEE
model can be used to identify multicollinearity problems.

In each model, the dependent variable is one of three well-
being indicators (self-rated health, functional dependency, and
depression). In each model, the dependent variable is regressed
on levels of the three well-being measures taken from the
previous wave of data, with other control variables and the
independent variable(s) of interest regarding volunteerism
taken from the current wave. We use the control variables
(except lagged well-being measures) from the same wave as the
dependent variable because we judge that time-varying factors
such as marital status, income, and informal social support
in the current assessment period are more likely to be related
to current well-being than those factors assessed several
years before in the previous wave. As an example, a respon-
dent represented in all three waves of data contributes two
observations to the regression in the following way: self-rated
health at Wave 3 is regressed on self-rated health at Wave 2
as well as functional dependency and depression at Wave 2,
in addition to the other control measures at Time 3 and the
volunteer variable of interest at Time 3. Self-rated health at
Wave 2 is regressed on self-rated health at Wave 1 as well as
functional dependency and depression at Wave 1, in addition to
the other control measures at Time 2 and the volunteer variable
of interest at Time 2. This pooling of observations results in
a sample size of 2,739 when volunteers and nonvolunteers are
included in the analysis and 993 when only volunteers are
included in the analysis.

With the exception of some models that included interaction
terms, multicollinearity did not threaten the estimates in the
models, as indicated by low correlations of the slope co-
efficients (none exceeded .50). We centered the number of
hours volunteered when we included the quadratic term and the
age variable when we tested age as a moderator. Only the
models including the interaction of race and volunteer status
had high levels of multicollinearity. To reduce multicollinearity
while testing for the effects of race on the relationship between
volunteering and well-being, we regressed the well-being
outcomes on volunteer status within non-White and White
subgroups and compared the parameter estimates.

RESULTS

In this sample of adults over the age of 60 years, 34.5%
volunteered. Of those who volunteered, the average amount of
engagement was 71.5 hours a year. Although these hours could
have been given in a consolidated period of time, if we average
them over a 12-month period, this is 6 hours a month or less
than 2 hours a week. However, because of a positive skew in
the distribution, there is a large standard deviation in this
estimate. Approximately 25% of volunteers reported that they
worked 160 hours or more a year, with the median being
approximately 30 hours a year (or 2–3 hours per month). These
volunteers are most likely to affiliate with programs sponsored
by religious institutions. The second largest category was
"other organizations," and it is important to note that hospitals
and other health-related programs are included here. On aver-
age, volunteers worked for 1.7 organizations. These numbers
are consistent with other studies on older volunteers.

Table 2. Coefficients From GEE Regression of Well-Being Outcomes on Volunteer Status

Independent Variable	Dependent Measures		
	SR Health	FD	Depression
Age	0.002	0.02***	0.004**
Gender	−0.09**	−0.08**	−0.07
Race	0.004	−0.04	−0.09
Education	−0.02***	−0.001	−0.01
Married	0.08	−0.08	−0.09*
ISI	−0.02	−0.07***	−0.08***
Income	−0.002	−0.004	−0.02***
FD lag	0.15***	0.49***	0.05**
SR health lag	0.44***	0.12***	0.11***
Depression lag	0.08***	0.04	0.37***
Volunteer	−0.18***	−0.12***	−0.11***
Pseudo-R^2	0.50	0.54	0.46

Notes: GEE = generalized estimating equations; SR = self-rated; FD = functional dependency; ISI = informal social integration.

Lagged variables are from the previous observation period, whereas de-
pendent, other control, and independent variables are from the current obser-
vation period; $N = 2,739$.

*$p \leq .10$; **$p \leq .05$; ***$p \leq .01$.

Our findings suggest that volunteering positively affects late-
life well-being. Table 2 shows that there is a significant effect
of volunteer status (yes or no) on all three well-being measures.
Table 3 indicates that increased volunteer hours are related to
higher levels of well-being. The significant estimates on the
quadratic terms further indicate that the positive effect of
increasing hours on the dependent variables tapers off. The
regression equation indicates that the impact of volunteering is
at a maximum at 100 hours a year (or approximately 2–3 hours
a week), and higher levels of involvement are not associated
with increasing gains.

Table 4 presents the coefficients on the interaction terms,
after the same control variables presented in Table 2 and 3 are
considered. We found no evidence that the positive effect of
volunteering is moderated by informal social integration. The
effects of volunteering are similar between female and male
respondents and between non-Whites and Whites. There is
some evidence to suggest that age moderates the relationship
between volunteering and well-being. The coefficient on the
interaction term indicates that the relationship between age
and functional dependency is different for volunteers and
nonvolunteers. Specifically, the association between age and
functional dependency (as demonstrated in Tables 2 and 3,
where the coefficient indicates that as age goes up, functional
dependency goes up) is weaker for volunteers. Thus, the
negative effect of increased years of age is attenuated for older
volunteers. This same trend occurs for the dependent variable
of depression, but note that the coefficient is only marginally
significant.

Tables 5 and 6 present findings that suggest that the
organizational type and number of sponsoring organizations are
not related to well-being outcomes, when these relationships
are tested on the subsample of those respondents who vol-
unteered. For those who volunteer, the number of organizations
has no relationship to any of the three dependent variables.
Given no evidence of multicollinearity problems, we included
all types of volunteer organizations in one regression model,

Table 3. Coefficients From GEE Regression of Well-Being Outcomes on Volunteer Hours

	Dependent Measures		
Independent Variable	SR Health	FD	Depression
Age	0.003	0.02***	0.005*
Gender	−0.09**	−0.08**	−0.07*
Race	0.008	−0.04	−0.08
Education	−0.02***	−0.001	−0.01*
Married	0.08	−0.06	−0.09**
ISI	−0.02	−0.08***	−0.08***
Income	−0.001	−0.004	−0.02***
FD lag	0.15***	0.49***	0.05*
SR health lag	0.44***	0.12***	0.11***
Depression lag	0.09***	0.04*	0.37***
Volunteer hours	−0.004***	−0.004***	−0.003***
Volunteer hours^2	0.00002***	0.00002***	0.00002***
Pseudo-R^2	0.50	0.54	0.46

Notes: GEE = generalized estimating equations; SR = self-rated health; FD = functional dependency; ISI = informal social integration.

Lagged variables are from the previous observation period, whereas dependent, other control, and independent variables are from the current observation period; $N = 2{,}739$.

$*p \leq .10; **p \leq .05; ***p \leq .01.$

Table 4. Coefficients on Interaction Terms From GEE Regression of Well-Being Outcomes on Volunteer Status: Testing Interaction Effects

	Dependent Measures		
Interaction	SR Health	FD	Depression
Volunteer × Age	−0.004	−0.01**	−0.01*
Volunteer × Gender	0.10	0.07	−0.0005
Volunteer × Race	−0.09	0.13	0.02
Volunteer × ISI	0.05	0.04	0.04

Notes: GEE = generalized estimating equations; SR = self-rated; FD = functional dependency; ISI = informal social integration.

$N = 2{,}739$.

$*p \leq .10; **p \leq .05.$

and Table 6 shows that volunteering for a religious organization is related to functional dependency. These findings do not support our hypothesis that volunteering for more than one organization is associated with positive outcomes; they provide only minimal support for the hypothesis that volunteering for a religious organization has the largest positive effect, compared with other types of organizations.

Counter to our hypothesis, we found that volunteers who perceive more benefit to other people from their work do not report higher well-being outcomes. Using the same control variables in the aforementioned tables, we find that the coefficients and probabilities levels on the "perceived benefits to others" variable are as follows: $b = −.05$, $p = .45$ for self-rated health; $b = −.05$, $p = .30$ for functional dependency; and $b = −.001$, $p = .99$ for depression.

The amount of variance in the well-being outcomes explained by these models is quite substantial (close to 50% in most models), caused in large part by the lagged well-being variables. In all models, the three lagged variables are highly related to the well-being outcomes and account for most of the variance explained, as would be expected. That is, functional dependency, self-rated health, and depression at Wave 2 are related to functional dependency at Wave 3, and most of the variance in functional dependency at Wave 3 related to these variables. This statistical control strengthens the ability to test the marginal impact of volunteering on functional dependency.

Discussion

This study adds to a substantial body of evidence that volunteering positively affects late-life well-being. The evidence produced in this study derives from more stringent methodologies than some of the previous work. Although findings cannot be interpreted as unidirectional, short of an experimental design, this study has several advantages that increase confidence in the findings. We used three waves of a nationally representative data set, controlling for time-varying

and nonvarying factors as we tested the effects of volunteering on three different types of well-being indicators. Control variables included lagged measures for each indicator of well-being from the previous observation period.

Like previous work on the effects of volunteering, this study faces the difficult problem of social causation versus social selection (Verbrugge, 1983). However, Thoits and Hewitt (2001) used these same data to demonstrate the reciprocal relationship between volunteer hours and numerous measures of personal well-being, including physical health and depression. Their analyses show that volunteer hours enhance well-being and that people with greater well-being engage in more volunteer hours. They argue that well-being facilitates volunteer involvement and that volunteer involvement subsequently augments well-being—that is, social causation and social selection operate simultaneously. We suggest that despite the lack of experimental designs in this body of work, we have enough evidence to proceed with the understanding that volunteering is beneficial to the well-being of older adults. However, given the increasingly diverse group of older adults who will engage in these volunteer roles, we need to advance a research agenda that moves beyond this general observation.

We need to understand more fully the conditions that influence the effects of volunteering on late-life well-being. As pointed out almost 20 years ago (Fengler, 1984), the generally positive relationship between activity and well-being depends on the personal and social resources of the older adult. The research on the effects of volunteering has only begun to specify the conditions under which volunteering produces positive outcomes for the individual (Morrow-Howell, Hinterlong, Sherraden, & Rozario, 2001). Thus, this study seeks to understand if the relationship between volunteering and outcomes for the older adult is modified by characteristics of the older volunteer—what we have called role context from role theory perspective—as well as the nature of the volunteer experience.

Like others before us, we find a nonlinear relationship between hours of volunteering and well-being outcomes, suggesting not only that a certain level of involvement is optimal, but that low levels of volunteering lead to positive outcomes. In fact, evidence suggests that occupying the role versus not, that is, engagement versus no engagement, is related to well-being. From a public health perspective, the role enhancement associated with volunteering implies that programs and policies that bring older adults into volunteer roles, even at modest amounts of commitment, will be beneficial. More older adults may be attracted into volunteer positions with increased in-

Table 5. Coefficients From GEE Regression of Well-Being Outcomes on Number of Volunteer Organizations

Independent Variable	Dependent Measures		
	SR Health	FD	Depression
Age	−0.001	0.02***	−0.003
Gender	0.005	−0.03	−0.06
Race	−0.05	0.05	−0.06
Education	−0.02	0.0007	−0.01
Married	0.02	−0.08	−0.06
ISI	0.03	−0.05	−0.04
Income	−0.005	−0.0008	−0.03**
FD lag	0.15***	0.39***	0.07*
SR health lag	0.48***	0.15***	0.10**
Depression lag	0.09**	0.09**	0.42***
Volunteer hours	−0.0002	−0.00005	0.0002
No. of orgs.	−0.03	0.008	0.001
Pseudo-R^2	0.50	0.42	0.46

Notes: GEE = generalized estimating equations; SR = self-rated; FD = functional dependency; ISI = informal social integration.

Lagged variables are from the previous observation period, whereas dependent, other control, and independent variables are from the currrent observation period; $N = 993$.

*$p \leq .10$; **$p \leq .05$; ***$p \leq .01$.

Table 6. Coefficients From GEE Regression of Well-Being Outcomes on Types of Volunteer Organizations

Independent Variable	Dependent Measures		
	SR Health	FD	Depression
Age	−0.001	0.02**	−0.003
Gender	−0.002	−0.05	−0.06
Race	−0.05	0.05	−0.06
Education	−0.02	−0.002	−0.02
Married	0.03	−0.06	−0.05
ISI	0.03	−0.05	−0.04
Income	−0.006	−0.002	−0.03**
FD lag	0.14**	0.38***	0.07*
SR health lag	0.48***	0.15***	0.10***
Depression lag	0.09**	0.09**	0.40***
Volunteer hours	−0.0003	0.00002	0.0002
Religious	−0.11	−0.15**	−0.05
Educational	0.03	0.05	0.06
Political org.	−0.06	0.06	−0.01
Senior group	−0.04	0.05	0.03
Other org.	−0.01	−0.009	−0.03
Pseudo-R^2	0.51	0.43	0.46

Notes: GEE = generalized estimating equations; SR = self-rated; FD = functional dependency; ISI = informal social integration.

Lagged variables are from the previous observation period, whereas dependent, other control, and independent variables are from the current observation period; $N = 993$.

*$p \leq .10$; **$p \leq .05$; ***$p \leq .01$.

formation about the positive impact of volunteering, with the emphasis that even modest amounts of volunteering can be beneficial. Volunteer opportunities with clearly defined, modest commitments may attract older adults involved in other roles who seek to avoid too much role obligation. For example, caregivers may be more willing to undertake volunteer involvement if information and incentives articulate the benefits and suggest that 2 to 3 hours a month may contribute to their well-being. The involvement of caregivers in volunteer roles may be effective in enhancing caregiver well-being, given some preliminary evidence that caregivers who volunteer are better off than those who do not (Rozario, Morrow-Howell, & Hinterlong, 2001). Older adults with increasing disability may also benefit from programs structured around modest time commitments, if more demanding roles limit participation.

We do not find any evidence that informal social integration modifies the relationship between volunteering and well-being. As reviewed herein, there is inconsistency in the literature, with some work showing that volunteering is more beneficial for those with lower social support (Musick et al., 1999) and some showing that it is more beneficial for those with higher social support (Oman et al., 1999). Thus, our findings of no conditioning effect of social integration may be closer to reality. Further evidence is needed to clarify this relationship for program development purposes. In some exploratory analyses of other potential moderating conditions, we found that there was a significant interaction between volunteer status and previous measures of functional dependency in regard to current levels of functional dependency ($b = -.12$, $t = -3.10$, $p = .002$); the same interaction existed for volunteer hours ($b = -.0009$, $t = -2.20$, $p = .034$). These findings suggest that volunteering may be more beneficial to older adults with functional limitations. Clearly, future research is needed to identify the role contexts that modify the effects of volunteering, as programming to maximize the public health impact of late-life volunteerism depends on such knowledge.

We found no evidence that gender or race affected the

positive relationship of volunteering and well-being, suggesting a universal effect and that targeting of volunteer programs may not be necessary. Yet there are many unmeasured aspects of individuals that are probably most critical—individual preferences, cultural preferences, and family circumstances. Individual preference and choice are likely important ingredients in maximizing positive outcomes, but these constructs are difficult to measure with high degrees of validity (Sherraden, Morrow-Howell, Hinterlong, & Rozario, 2001). Furthermore, they are likely shaped by culture, social class, and life experience. Isolating the effect of individual preference and choice in the study of the effects of volunteer engagement in later life will be a major challenge but an essential task in this work.

Previous research on the effects of volunteering has been limited in considering the nature of the volunteer activities (Fengler, 1984; Morris & Caro, 1996). However, it has been suggested that some volunteers may benefit more if the nature of the work is challenging and meaningful. Oman and colleagues (1999) reviewed possible causal connections between volunteering and positive health outcomes; they included the idea that service to others and the altruistic features of volunteerism may be elements that impact health through cognitive and emotional pathways. These issues are especially salient given the increasing educational levels of older volunteers and the likelihood that unskilled and clerical tasks will not be fulfilling (Chambre, 1993). We test one aspect of the nature of the volunteer experience in terms of the perceived meaningfulness of the volunteer role; we find that the extent to which the older adult assesses that other people benefit from the activities does not affect well-being outcomes. This appears to be the first test of this association, so replication efforts are needed before we can rule out the effects of perceived benefits of the activity.

Well-being outcomes for the older volunteer are likely to be affected by aspects of the volunteer experience that relate to organizational environment—the amount of supervision and learning opportunities, the extent to which constructive working relationships between workers and volunteers exist, and various types of compensation or reimbursement or recognition given (Morris & Caro, 1996). We are able to test a gross indicator of organizational environment—the type of organization that sponsors the volunteer involvement. Our findings do not support previous work that suggests that those volunteering for religious organizations experience the greatest positive effect. In our analyses, there is only a marginal relationship between volunteering for a religious organization and one of the three well-being measures.

Neither do we find that the number of organizations for which an individual volunteers is related to outcomes. It is important to note that, unlike previous studies, we tested type of organization and number of organizations on the subsample of those who volunteer, seeking to understand the impact of number of organizations on individuals assuming the volunteer role. In previous work, these variables were related to well-being outcomes in samples of both volunteers and nonvolunteers; perhaps they were operating as proxies for volunteering. Our findings suggest that the number of organizations does not matter, but rather it is the assumption of the volunteer role that matters. Further research on the effects of number and type of organization should proceed from specific theoretical propositions about the phenomena that are being measured by these variables.

The causal links between volunteering and improved health outcomes have been widely debated. Many ideas have been put forth over the years: benefits derive from increased feelings of usefulness and boosted self-esteem (Hunter & Linn, 1980–1981); from protection against role loss (Chambre, 1987) and social isolation (Moen et al., 1992); from structure, purpose, affiliation, growth, and meaning provided by volunteer involvement (Freedman, 1994); from increased social networks (Chambre, 1987); and from the altruistic acts of helping others (Oman et al., 1999). By controlling for informal social integration (measured here as contact with family and friends), we add evidence to previous work that indicates that volunteering has an effect beyond increasing the number of friends. From the role enhancement perspective, the volunteer role may augment power, prestige, and resources, and it may heighten sense of identity (Thoits, 1983, 1986).

Conclusions

In sum, this work contributes to a knowledge base that points to the development of social programs and social policies that maximize the engagement of older adults in volunteer roles. It supports the perspective that volunteering is important in the larger context of successful aging. We need more empirical work to address the nature of social institutions that will maximize the number of elders in these roles and the benefits that elders accrue from occupying these roles. Further work could also address the multiple benefits that derive from these activities—benefits that extend beyond the older volunteer to the individuals, families, and communities served by the volunteer programs. As Butler (1997) argued, we should transform retirement by work-life extensions and by expanding volunteer roles, for the benefit of society as well as the individual.

REFERENCES

Abraham, I. L., Arrington, D. T., & Wasserbauer, L. I. (1996). Using elderly volunteers to care for the elderly: Opportunities for nursing. *Nursing Economics, 14*, 232–238.

Bass, S., & Caro, F. (2001). Productive aging: A conceptual framework. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 37–78). Baltimore: Johns Hopkins University Press.

Bronfenbrenner, U. (1979). *The ecology of human development.* Cambridge, MA: Harvard University Press.

Butler, R. N. (1997). Living longer, contributing longer. *The Journal of the American Medical Association, 278*, 1372–1373.

Caro, F., & Bass, S. (1995). Dimensions of productive engagement. In S. Bass (Ed.), *Older and Active* (pp. 204–216). New Haven, CT: Yale University Press.

Chambre, S. M. (1987). *Good deeds in old age: Volunteering by the new leisure class.* Lexington, MA: Lexington Books.

Chambre, S. M. (1993). Volunteerism by elders: Past trends and future prospects. *The Gerontologist, 33*, 221–228.

Fengler, A. P. (1984). Life satisfaction of subpopulations of elderly. *Research on Aging, 6*, 189–212.

Freedman, M. (1994). *Seniors in national and community service: A report prepared for the Commonwealth Fund's Americans Over 55 at Work Program.* Philadelphia: Public/Private Ventures.

Goode, W. J. (1960). A theory of role strain. *American Sociological Review, 25*, 483–496.

Havighurst, R. J., Neugarten, B. L., & Tobin, S. S. (1968). Disengagement and patterns of aging. In B. L. Neugarten (Ed.), *Middle age and aging: A reader in social psychology.* Chicago: University of Chicago Press.

Hendricks, S. A., Wassell, J. T., Collins, J. W., & Sedlak, S. L. (1996). Power determination for geographically clustered data using generalized estimating equations. *Statistics in Medicine, 15*, 1951–1960.

Herzog, A. R., Kahn, R. L., Morgan, J. N., Jackson, J. S., & Antonucci, T. C. (1989). Age differences in productive activities. *Journal of Gerontology: Social Sciences, 44*, S129–S138.

Horton, N. J., & Lipsitz, S. R. (1999). Review of software to fit generalized estimating equation regression models. *The American Statistician, 53* (May), 160–169.

House, J. S. (1989). *Americans' changing lives codebook, Waves I and II, 1986 and 1989.* Ann Arbor: University of Michigan, Survey Research Center.

House, J. (1997). Americans' changing lives: Waves I and II, 1986 and 1989 [computer file]. ICPSR version. Ann Arbor, MI: University of Michigan, Survey Research Center [Producer]; Inter-university Consortium for Political and Social Research [Distributor].

House, J., Kessler, R., Herzog, A. R., Mero, R., Kinney, A., & Breslow, M. (1990). Age, socioeconomic status, and health. *Milbank Quarterly, 68*, 383–411.

Hunter, K., & Linn, M. (1980–1981). Psychological differences between elderly volunteers and nonvolunteers. *International Journal of Aging and Human Development, 12*, 205–213.

Independent Sector. (1999). *Giving and volunteering in the United States: Findings from a national survey* [On-line]. Retrieved on February 6, 2001, from the World Wide Web: http://www.independentsector.org.

King, G., Honaker, J., Joseph, A., & Scheve, K. (2001). Analyzing incomplete political science data: An alternative algorithm for multiple imputation. *American Political Science Review, 95*, 49–69.

Larson, R. (1978). Thirty years of research on the subjective well-being of older Americans. *The Journal of Gerontology, 33*, 109–125.

Liang, K-Y., & Zeger, S. L. (1986). Longitudinal data analysis using generalized linear models. *Biometrika, 73 (1),* 13–22.

Litigation Support Services. (1984, September). *Impact Evaluation of the Foster Grandparent Program on the Foster Grandparents.* Washington, DC: ACTION.

Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). Hoboken, NJ: Wiley.

Maddox, G. L. (1968). Persistence of life style among the elderly: A longitudinal study of patterns of social activity in relation to life satisfaction. In B. L. Neugarten (Ed.), *A reader in social psychology* (pp. 181–183). Chicago: University of Chicago Press.

McIntosh, B. R., & Danigelis, N. L. (1995). Race, gender, and the relevance of productive activity for elders' affect. *Journal of Gerontology: Social Sciences, 50B,* S229–S239.

Midlarsky, E., & Kahana, E. (1994). *Altruism in later life.* Thousand Oaks, CA: Sage.

Moen, P., Dempster-McClain, D., & Williams, R. (1992). Successful aging: A life-course perspective on women's multiple roles and health. *American Journal of Sociology, 97,* 1612–1638.

Morris, R., & Caro, F. (1996). Productive retirement: Stimulating greater volunteer efforts to meet national needs. *The Journal of Volunteer Administration, 14,* 5–13.

Morrow-Howell, N., Hinterlong, J., Sherraden, M., & Rozario, P. (2001). Advancing research on productivity in later life. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 285–311). Baltimore: Johns Hopkins University Press.

Musick, M. A., Herzog, A. R., & House, J. S. (1999). Volunteering and mortality among older adults: Findings from a national sample. *Journal of Gerontology: Social Sciences, 54B,* S173–S180.

Nagelkerke, N. J. D. (1991). Miscellanea. A note on a general definition of the coefficient of determination. *Biometrika, 78,* 691–692.

Norton, E. C., Bieler, G. S., Ennett, S. T., & Zarkin, G. A. (1996). Analysis of prevention program effectiveness with clustered data using generalized estimating equations. *Journal of Consulting and Clinical Psychology, 64* (5), 919–926.

Oman, D., Thoresen, C., & McMahon, K. (1999). Volunteerism and mortality among older adults: Findings from a national sample. *Journal of Health Psychology, 4,* 301–316.

Peter D. Hart Research Associates. (1999). *The new face of retirement: Older Americans, civic engagement, and the longevity revolution.* New York: Author.

Rozario, P., Morrow-Howell, N., & Hinterlong, J. (2001). *Role enhancement and role strain.* St. Louis, MO: Washington University, Center for Social Development.

Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys.* New York: Wiley.

Rubin, D. B. (1996). Multiple imputation after 18+ years. *Journal of the American Statistical Association, 91,* 473–489.

Schafer, J. L. (2000). *Analysis of incomplete multivariate data.* New York: Chapman & Hall.

Sherraden, M., Morrow-Howell, N., Hinterlong, J., & Rozario, P. (2001). Productive aging: Theoretical choices and directions. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 260–284). Baltimore: Johns Hopkins University Press.

Sieber, S. (1974). Toward a theory of role accumulation. *American Sociological Review, 39,* 567–578.

Soo, Y. K., & Gong-Soog, H. (1998, December). Volunteer participation and time commitment by older Americans. *Family and Consumer Sciences Research Journal,* 146.

SRA Technologies. (1985, September). *Senior Companion Program Impact Evaluation.* Washington, DC: ACTION.

Thoits, P. A. (1983). Multiple identities and psychological well-being: A reformulation and test of the social isolation hypothesis. *American Sociological Review, 48,* 174–187.

Thoits, P. A. (1986). Multiple identities: Examining gender and marital status differences in distress. *American Sociological Review, 51,* 259–272.

Thoits, P., & Hewitt, L. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior, 42,* 115–131.

U.S. Bureau of the Census. (1996). *Statistical abstract of the United States: 1996* (116th ed.). Washington, DC: U.S. Government Printing Office.

Van Willigen, M. (2000). Differential benefits of volunteering across the life course. *Journal of Gerontology: Social Sciences, 55B,* 308–318.

Verbrugge, L. M. (1983). Multiple roles and physical health of women and men. *Journal of Health & Social Behavior, 24,* 16–30.

Wang, R., Sedransk, J., & Jinn, J. H. (1992). Secondary data analysis when there are missing observations. *Journal of the American Statistical Association, 87,* 952–961.

Ward, R. A. (1979). The meaning of voluntary association participation to older people. *Journal of Gerontology, 34,* 438–445.

Young, F. W., & Glasgow, N. (1998). Voluntary social participation and health. *Research on Aging, 20,* 339–362.