

Beyond Keeping Active: Concomitants of Being a Volunteer in Old-Old Age

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This study examines concomitants of volunteering in the context of other lifestyle activities. Investigating formal volunteering in old-old age, the authors analyzed data of 148 volunteers versus 1,195 nonvolunteers in a national sample of the Israeli Jewish population aged 75–94. As hypothesized, being a volunteer related (whether as a cause or effect) to more positive functioning on psychosocial markers and prospectively resulted in reduced mortality risk even when other activity outlets (physical activity, everyday activities, having a hobby) were controlled. These findings suggest that the benefits of volunteering in late life are not reducible to those of other activities.

Prolonged longevity and improved life quality among old-old people increase the relevance of volunteering behavior in very late life. Studies indicate that older volunteers enjoy higher physical and mental well-being (Wheeler, Gorey, & Greenblatt, 1998). Typically analyzing cross-sectional data, such studies cannot ascertain the direction of causation between volunteering and well-being. However, the few investigations of prospective data indicate that volunteering enhances well-being over time (Van Willigen, 2000) and reduces mortality risk (Musick, Herzog, & House, 1999; Oman, Thoresen, & McMahon, 1999).

Old-age volunteering is widely interpreted in relation to the classical activity theory. Activities in general are associated with well-being and reduced mortality risk of elders (Glass, Mendes de

Leon, Marottoli, & Berkman, 1999; Herzog, Franks, Markus, & Holmberg, 1998). Volunteering shares with other common activities (e.g., physical activity, everyday solitary and social activities, having a hobby) adaptive features such as physical and mental vitality, purposeful behaviors, sense of control, and social involvement. These features probably modulate certain self-processes such as enhancing an agentic self-identity (Herzog et al., 1998), which explains why keeping active facilitates positive functioning (i.e., the behavioral maintenance of one's biopsychosocial well-being). Other self-qualities such as role participation and social integration, which may be engendered by a host of activities, were specifically found to moderate the protective effect of volunteering on mortality (Musick et al., 1999). By further extending the activity framework, volunteer work is conceptualized as sustaining productivity in late life (Herzog, Kahn, Morgan, Jackson, & Antonucci, 1989) and constituting a life task that combines sociocultural prescriptions with individualized pursuits (Harlow & Cantor, 1996).

However, counter to expectations that may also stem from the activity theory, old-age volunteering is not empirically explained as a substitute for the loss of work and other role activities (Chambré, 1987, 1993). Rather, the motivation to volunteer may involve multiple combinations of independent motives (Clary & Snyder, 1999; Okun, Barr, & Herzog, 1998). In this vein, volunteering is expected to have specific salutary qualities such as altruistic pursuits (e.g., helping behavior), dedication to esteemed values (e.g., social responsibility), affiliation with humanitarian and moral traditions, and modeling an exemplary behavior (Midlarsky & Kahana, 1994).

The purpose of this study is to examine empirically the concomitants of volunteering in the context of other lifestyle and leisure activities. Although the tendency of volunteers to be generally active confounds beneficial effects derived from volunteering versus other activities (Chambré, 1987), most of the literature does little to disentangle these effects. A refined delineation of the

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volunteering effects in late life is warranted in order to understand further the distinct qualities of this activity (e.g., prosocial behavior in the face of vulnerability and finitude). The extent to which benefits of volunteering may or may not be obtainable by other activities also has implications for practitioners working with the elderly.

Assuming that volunteering is not completely reducible to other activities, we tested two hypotheses: (a) Volunteers, compared with nonvolunteers, are more strongly associated with markers of positive functioning (in health, cognitive, emotional, and social domains) to an extent that other activity outlets cannot account for; and (b) volunteering has a unique contribution to the reduction of mortality risk beyond that of other activity outlets. Whereas volunteering and functioning in the first hypothesis may interchange cause-and-effect roles, the second hypothesis implies a causal sequence in which volunteering affects mortality.

This study offers an opportunity to explore the particular aspects of volunteering in very advanced age. We analyzed a national database of the old-old in Israel, which also provided an opportunity to gather data other than those usually reported in U.S.-based studies. Volunteers were defined here as participants engaged in unpaid work managed by formal organizations for social causes (cf. Herzog & Morgan, 1993).

Method

Participants

The sample consisted of 1,343 self-respondents interviewed from 1989 to 1992 in the first wave of the Cross-Sectional and Longitudinal Aging Study (CALAS). The CALAS conducted a multidimensional assessment of a random sample of the old-old Jewish population in Israel stratified by age group (75–79, 80–84, 85–89, and 90–94), gender, and place of birth (Europe–America, Asia–Africa, and Israel). Not included are 264 participants interviewed by proxy and 26 self-respondents who did not report their volunteer status. Of the initial sample of 2,400 individuals drawn from the National Population Registry in 1989, 15.7% had died before the sampling day or were not located, 8.5% refused to be interviewed, and 7.8% died before the interview date. An update of vital status as of December 1997 was obtained from the National Population Registry (for more details on the CALAS, see Fuchs et al., 1998; Shmotkin, Blumstein, & Modan, 2003; Walter-Ginzburg, Blumstein, Chetrit, & Modan, 2002).

Measures

The distinction between volunteers and nonvolunteers was made by a *yes–no* question of whether the respondent was presently participating in volunteering activities within organizational frameworks. The question specified examples of Israeli organizations managing volunteers for social causes (e.g., women's and immigrants' associations, senior clubs, hospitals, national agencies). Another question probed the frequency of volunteering.

Activity outlets other than volunteering included (a) *physical activity*, scored as the mean frequency of rigor-demanding activities (walking up to 2 km without rest, gardening, and any sport) on a scale of 1 (*not at all*), 2 (*rarely*), 3 (*once or twice a week*), to 4 (*three or more times a week*); (b) *everyday activities*, scored as the mean frequency of six regular behaviors (watching TV, listening to radio or music, reading newspapers or books, talking with family or friends, going to a cinema, restaurant, concert, or theater, and playing cards or other games) on a scale of 0 (*never*), 1 (*rarely*), 2 (*frequently*), to 3 (*every day*); and (c) *having a hobby*, scored by an answer of either 0 (*no*) or 1 (*yes*).

Functioning was indicated by six markers of physical, psychological, and social well-being. The *number of diseases* were summed on a self-report checklist of 26 major health problems that the participant ever suffered from. *Subjective health* was indicated by a self-rating of the respondent's health on a scale of 1 (*bad*), 2 (*all right*), 3 (*good*), to 4 (*excellent*). *Cognitive malfunctioning* was measured by Katzman et al.'s (1983) mini-mental instrument tapping difficulties in time orientation, memory, and concentration. It was scored as 1 (*good*; raw = 0–8), 2 (*average*; raw = 9–19), or 3 (*impaired*; raw = 20+). *Depressive symptoms* were measured by the Center for Epidemiological Studies–Depression Scale (CES–D; Radloff, 1977), scored as the mean frequency (after recoding positive items) of experiencing 20 symptoms in the past month on a scale from 0 (*not at all*), 1 (*sometimes*), 2 (*most of the time*), to 3 (*almost every day*). The Cronbach's alpha of the CES–D in the CALAS was .88. The *number of close relationships* was measured by listing up to five people, whether relatives, friends, or neighbors, with whom the respondent maintained particularly close interactions. *Life evaluation* was measured by a self-rating of the respondent's life at present on a scale from 1 (*very difficult*), 2 (*difficult*), 3 (*pretty good*), to 4 (*good*). (See the aforementioned references for a fuller description of the Hebrew-adapted measures in the CALAS.)

Procedure

After signing an informed consent, participants were interviewed at home or at their residential institution by multilingual interviewers. The interviewers read aloud the questions as phrased in a preordered form. The interview lasted about 2 hr.

Results

Extent and Frequency of Formal Volunteering

Eleven percent of the 1,343 participants engaged in formal volunteering at the time of the interview. By *formal*, we mean a volunteering setting led by an organization either as a primary function (e.g., charity organizations) or as an auxiliary function (e.g., hospitals). This proportion of volunteers did not reflect semiformal kinds of volunteering in religious settings. Progressively decreasing with advancement in age, the proportions of volunteers were 14.3%, 12.6%, 9.5%, and 4.1% for the respective age groups of 75–79, 80–84, 85–89, and 90–94. Regarding the frequency of the volunteering behavior, 54.3% reported doing it several times a week, 36.2% several times a month, and 9.5% more rarely (21 volunteers did not provide this information).

Univariate Comparisons of Volunteers Versus Nonvolunteers

Comparisons with nonvolunteers (see Table 1) show that volunteers were, on average, 2 years younger. They had higher proportions of Israeli and European–American than Middle-Eastern and North African descent. They had higher education and more income; however, they did not differ in gender, marital status, and the proportion living in residential institutions (sheltered housing and senior homes).

Volunteers emerged more active than nonvolunteers in all outlets: physical activity, everyday activities, and having a hobby. Although volunteers did not differ from nonvolunteers in reporting number of diseases, they were subjectively healthier. Volunteers also fared better on all other functioning markers: They were less

Table 1

Volunteers Versus Nonvolunteers: Univariate Comparisons and Logistic Regression Results of Sociodemographic Characteristics, Activity Outlets, and Functioning Markers

| Variable | Volunteers | Nonvolunteers | Univariate comparison test | Logistic regression results ^a | |
|-----------------------------------|------------|---------------|----------------------------|--|---------------------------------|
| | | | | <i>B</i> | Odds ratio (exponent <i>B</i>) |
| Sociodemographic characteristics | | | | | |
| Age (years) | | | $t(197.24) = 4.27^{b,***}$ | -.04* | 0.96 |
| <i>M</i> | 82.1 | 84.0 | | | |
| <i>SD</i> | 4.8 | 5.7 | | | |
| Gender (%) | | | $\chi^2(1) = 0.04$ | | |
| Woman ^c | 45.3 | 46.1 | | | |
| Man | 54.7 | 53.9 | | -.38 | 0.69 |
| Origin (%) | | | $\chi^2(2) = 32.84^{***}$ | | |
| Israel ^c | 46.6 | 29.9 | | | |
| Asia–Africa | 11.5 | 33.3 | | -.70* | 0.50 |
| Europe–America | 41.9 | 36.8 | | -.32 | 0.73 |
| Years of education (%) | | | $\chi^2(3) = 46.92^{***}$ | .27* | 1.31 |
| 0–4 | 15.1 | 33.3 | | | |
| 5–8 | 16.4 | 27.0 | | | |
| 9–12 | 40.4 | 26.2 | | | |
| 13+ | 28.1 | 13.5 | | | |
| Income (%) | | | $\chi^2(1) = 15.75^{***}$ | | |
| Only social security ^c | 25.9 | 42.9 | | | |
| Additional income sources | 74.1 | 57.1 | | .26 | 1.29 |
| Marital status (%) | | | $\chi^2(1) = 0.08$ | | |
| Presently unmarried | 43.9 | 42.7 | | | |
| Married | 56.1 | 57.3 | | | |
| Place of residence (%) | | | $\chi^2(1) = 0.67$ | | |
| Home | 89.9 | 87.5 | | | |
| Institutions | 10.1 | 12.5 | | | |
| Activity outlets | | | | | |
| Physical activity | | | $t(177.25) = 5.79^{b,***}$ | .16* | 1.17 |
| <i>M</i> | 2.54 | 1.84 | | | |
| <i>SD</i> | 1.40 | 1.25 | | | |
| Everyday activities | | | $t(199.74) = 8.71^{b,***}$ | .60* | 1.82 |
| <i>M</i> | 1.89 | 1.52 | | | |
| <i>SD</i> | 0.48 | 0.56 | | | |
| Has a hobby (%) | | | $\chi^2(1) = 46.06^{***}$ | | |
| No ^c | 44.9 | 72.3 | | | |
| Yes | 55.1 | 27.7 | | .47* | 1.60 |
| Functioning markers | | | | | |
| No. of diseases | | | $t(1,300) = 0.16$ | | |
| <i>M</i> | 3.64 | 3.67 | | | |
| <i>SD</i> | 2.65 | 2.46 | | | |
| Subjective health | | | $t(1325) = 5.93^{***}$ | .41*** | 1.51 |
| <i>M</i> | 2.38 | 1.94 | | | |
| <i>SD</i> | 0.83 | 0.85 | | | |
| Cognitive malfunctioning | | | $t(237.89) = 9.28^{b,***}$ | -.55* | 0.58 |
| <i>M</i> | 1.17 | 1.59 | | | |
| <i>SD</i> | 0.48 | 0.71 | | | |
| Depressive symptoms | | | $t(203.12) = 4.20^{b,***}$ | .66* | 1.94 |
| <i>M</i> | 0.63 | 0.77 | | | |
| <i>SD</i> | 0.38 | 0.46 | | | |
| No. of close relationships | | | $t(167.24) = 4.91^{b,***}$ | .26*** | 1.30 |
| <i>M</i> | 1.80 | 1.15 | | | |
| <i>SD</i> | 1.54 | 1.13 | | | |
| Present life evaluation | | | $t(1,332) = 4.37^{***}$ | .13 | 1.14 |
| <i>M</i> | 3.14 | 2.76 | | | |
| <i>SD</i> | 0.92 | 0.98 | | | |

Note. The sample consists of 148 volunteers and 1,195 nonvolunteers. In the univariate comparisons, data are occasionally missing for 1–58 participants in particular variables. Due to listwise deletion of participants with missing data, the logistic regression analysis contrasts 142 volunteers with 1,032 nonvolunteers.

^a The dependent variable categories of the logistic regression are coded 0 for nonvolunteers and 1 for volunteers. Predictor variables included in the equation are treated as continuous unless a reference category is specified by table footnote c. ^b Reported is a *t*-test equation for unequal group variances. ^c A reference category.

* $p < .05$. *** $p < .001$.

impaired cognitively, had fewer depressive symptoms, had more close relationships, and evaluated their lives more positively.

Multivariate Differentiation of Volunteers and Nonvolunteers

The first hypothesis was tested by a logistic regression with three consecutive blocks of independent variables: sociodemographic characteristics (serving as covariates), activity outlets, and functioning markers. The analysis included variables that significantly differentiated the groups in the univariate analyses (with gender added for its role in the sample stratification). The results of the last three-block equation are shown in Table 1. In support of the hypothesis, four functioning markers (subjective health, cognitive malfunctioning, depressive symptoms, and close relationships) significantly differentiated between volunteers and nonvolunteers beyond the significant effects of three sociodemographic covariates (age, origin, and education) and all three activity outlets. A surprising finding is the reversal in the role of depressive symptoms: When all the other variables are accounted for, these

symptoms become positively associated with volunteering (see Discussion).

Prediction of Mortality

The second hypothesis was tested by Cox (1972) proportional hazards regression. Based on the follow-up of the mortality status at the end of 1997, the analysis took into account the time from date of interview to date of death ($M = 3.7$ years, $SD = 2.1$) or date of follow-up ($M = 7.9$ years, $SD = 0.7$) for deceased and surviving (censored) participants, respectively. We introduced the three consecutive blocks of independent variables, as used in the logistic regression, with volunteering (either *yes* or *no*) added to the block of activity outlets. Table 2 presents results of the last three-block model. In support of the hypothesis, volunteers are significantly associated with a 33% reduction in mortality risk compared to nonvolunteers (hazard ratio, $HR = 0.67$) when the other predictors in all blocks are accounted for. Among the other activity outlets, only physical activity maintains a parallel significant association. The respective effects of these two activities on

Table 2
Effects of Sociodemographic Characteristics, Activity Outlets, and Functioning Markers on Mortality (Cox Proportional Hazards Estimates)

| Variable | <i>B</i> | Hazard ratio (exponent <i>B</i>) | 95% confidence interval of hazard ratio |
|-----------------------------------|----------|--------------------------------------|--|
| Sociodemographic characteristics | | | |
| Age | .06*** | 1.06 | 1.05–1.08 |
| Gender | | | |
| Woman ^a | | | |
| Man | .48*** | 1.62 | 1.38–1.91 |
| Origin | | | |
| Israel ^a | | | |
| Asia–Africa | –.34** | 0.71 | 0.58–0.89 |
| Europe–America | –.03 | 0.97 | 0.81–1.16 |
| Years of education | .04 | 1.04 | 0.96–1.14 |
| Income | | | |
| Only social security ^a | | | |
| Additional income sources | –.10 | 0.91 | 0.77–1.06 |
| Activity outlets | | | |
| Physical activity | –.18*** | 0.83 | 0.78–0.90 |
| Everyday activities | .04 | 1.05 | 0.89–1.23 |
| Has a hobby | | | |
| No ^a | | | |
| Yes | –.08 | 0.93 | 0.78–1.11 |
| Volunteering | | | |
| No ^a | | | |
| Yes | –.40** | 0.67 | 0.51–0.89 |
| Functioning markers | | | |
| Subjective health | –.12* | 0.89 | 0.79–0.99 |
| Cognitive malfunctioning | .12 | 1.13 | 0.99–1.29 |
| Depressive symptoms | .17 | 1.18 | 0.96–1.46 |
| No. of close relationships | .01 | 1.01 | 0.94–1.08 |
| Present life evaluation | –.02 | 0.98 | 0.89–1.08 |

Note. $N = 1,174$, with 694 (59.1%) deceased and 480 (40.9%) censored participants.

^aA reference category.

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

mortality were just negligibly higher before introducing the block of the functioning markers. Among these markers, only subjective health adds a significant contribution to the prediction.

In another model, we added a block of interaction (cross-product) terms between volunteering (either *yes* or *no*) and each of the three activity outlets. The only significant interaction was with everyday activities ($B = -58, p = .04, HR = 0.56$), indicating that volunteering related to reduced mortality risk at a higher level of everyday activities. The main effect of volunteering in this model was nonsignificant. However, a chi-square difference test indicated that the model with interactions failed to improve significantly the overall fit as compared with the model reported in Table 2 ($\chi^2 = 233.36 - 226.94 = 6.42, df = 18 - 15 = 3$).

Modifying the model presented in Table 2, we tested a Cox model where nonvolunteers served as reference for four dummy groups that differed in their reports on the *frequency of volunteering* (rather than for a volunteer group as a whole). The results showed that, compared to nonvolunteers, mortality risk was significantly lower for those who reported volunteering several times a week ($B = -48, p = .02, HR = 0.62$) and several times a month ($B = -51, p = .04, HR = 0.60$), but did not differ significantly for those who reported volunteering more rarely ($B = -16, HR = 0.86$) or who failed to report at all ($B = -04, HR = 0.96$).

Discussion

The guiding assumption in the study was that volunteering in old-old age involves unique effects that are not redundant with ones involved in other activity outlets. As hypothesized, volunteering relates to better functioning (concurrently) and to a lower mortality risk (prospectively), even when other activities are controlled. Hence, any application of the activity theory to late-life volunteering should address the distinct implications of this particular behavior.

Our data show that old-old people engaged in formal volunteering are highly distinguishable from nonvolunteers. They enjoy a higher socioeconomic status, keep more active, regard themselves as healthier, and function better in cognitive, emotional, and social domains. Although our sampling procedures hinder simple comparability with data on old-olds in the United States, the characteristics we found in the Israeli volunteers greatly resemble those reported in their U.S. counterparts (Chambré, 1987; Herzog & Morgan, 1993). As cautiously noted before, such cross-sectional results cannot tell whether better functioning makes people more likely to volunteer, or, alternatively, volunteering makes functioning better.

The multivariate analyses shed light on volunteering in an activity context. As hypothesized, being highly active does not sufficiently explain the beneficial concomitants of being a volunteer. However, it is notable that all the activity outlets proved nonredundant to each other in distinguishing volunteers from nonvolunteers. Apparently, physical activity, everyday activities, and having a hobby characterize volunteers by differential mixtures of psychological ingredients, such as physical and mental vigor, goal-directed behavior, social affiliation, self-mastery, and intellectual interests. The current study, then, highlights the importance of broadly viewing the multiple forms of activity in late life (Chambré, 1987).

The finding that the volunteer role predicts a reduced mortality risk indicates a protective effect of volunteering on mortality. Here again, as hypothesized, the role of volunteering was beyond that of other activities. Support was also found in an interactive model in which volunteering predicts reduced mortality risk only at a higher level of everyday activities. The results give us no reason to prefer the latter over the former model. The competing models suggest that the question of interdependence between volunteering and other activities indeed deserves further research. Such research may compare at least three categories of mechanisms explaining the impact of volunteering on mortality: one that derives from the unique consequences of volunteering (e.g., satisfying altruistic goals when these are of high priority to the self); one that links volunteering to general adaptational processes (e.g., acquiring social status, which provides access to resources such as information and support); and one that dwells on an interactive model such as the one we found (e.g., gaining the benefits of volunteering, such as self-agency and self-efficacy, when they are also routinely reinforced by everyday activities).

Although confirming previous reports (Musick et al., 1999; Oman et al., 1999), the finding here that volunteering predicts mortality is instructive because prior studies differed from ours in relating to U.S. data, younger old age, broader definitions of volunteering, and volunteers who largely operated within religious settings. This study, however, did not replicate Musick et al.'s (1999) finding that volunteering is most beneficial in a modest, rather than large, amount. We found that reduced mortality risk was similarly significant for volunteering on a weekly and a monthly basis, whereas less frequent volunteering had no effect. This result may indicate either a linear effect of volunteering on mortality (cf. Oman et al., 1999), or a failure of our coarse measure of volunteering frequency to tap the suggested curvilinear effect.

It is worth noting that although the volunteers were *lower* (as expected) than nonvolunteers in depressive symptoms, the simultaneous introduction of all the other variables into the logistic regression equation intriguingly associated volunteers with *higher* depressive symptoms. Indicating a suppression effect, this reversal may suggest that after eliminating gross depressive inclinations from variance shared with other activity and functioning variables, the *residual* depressive symptoms might indicate a higher probability of being a volunteer, possibly by relating to a higher psychological sensitivity or empathy with others in distress. Conducting further analyses, we found that after adjustment for the sociodemographic variables, the reversal in the predictive direction of depressive symptoms, albeit not yet significant, occurred by introducing either subjective health alone or the three activity outlets together. It might be speculated that a common element in these variables (e.g., physical functioning) becomes more predictive of volunteering when depressive symptoms suppress variance with different predictive relevance (e.g., subjective distress). Such tentative speculations, as well as past doubts about the relations between formal volunteering and depressive symptoms (see Krause, Herzog, & Baker, 1992), require more investigation.

We exercise caution about generalizing our findings because they probably involve culture-bound norms and procedures of volunteering. Also, the crude self-report employed here does not specify the varieties of this behavior, nor does it tap informal volunteering in closer circles or through religious affiliations. It seems that this study refers to the more robust section among the

old-old volunteers, consisting of those who adapt to the often highly demanding regulations of organizational volunteering.

These limitations notwithstanding, this study shows that, although volunteers are highly active, volunteering is not just a means of maintaining activity. Old-old volunteers are associated with positive aging outcomes beyond the benefit of keeping active. By channeling their capabilities into altruistic purposes, these volunteers set a valuable model of defying declines and enhancing survival.

References

- Chambré, S. M. (1987). *Good deeds in old age: Volunteering by the new leisure class*. Lexington, MA: Lexington Books.
- Chambré, S. M. (1993). Volunteerism by elders: Past trends and future prospects. *The Gerontologist, 33*, 221–228.
- Clary, E. G., & Snyder, M. (1999). The motivations to volunteer: Theoretical and practical considerations. *Current Directions in Psychological Science, 8*, 156–159.
- Cox, D. R. (1972). Regression models and life tables (with discussion). *Journal of the Royal Statistical Society, 34B*, 187–220.
- Fuchs, Z., Blumstein, T., Novikov, I., Walter-Ginzburg, A., Lyanders, M., Gindin, J., et al. (1998). Morbidity, co-morbidity and their association with disability among community-dwelling oldest-old in Israel. *Journal of Gerontology: Medical Sciences, 53A*, M447–M455.
- Glass, T. A., Mendes de Leon, C., Marottoli, R. A., & Berkman, L. F. (1999). Population-based study of social and productive activities as predictors of survival among elderly Americans. *British Medical Journal, 319*, 478–483.
- Harlow, R. E., & Cantor, N. (1996). Still participating after all these years: A study of life task participation in later life. *Journal of Personality and Social Psychology, 71*, 1235–1249.
- Herzog, A. R., Franks, M. M., Markus, H. R., & Holmberg, D. (1998). Activities and well-being in older age: Effects of self-concept and educational attainment. *Psychology and Aging, 13*, 179–185.
- 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, 44B*, S129–S138.
- Herzog, A. R., & Morgan, J. N. (1993). Formal volunteering work among older Americans. In S. A. Bass, F. G. Caro, & Y. P. Chen (Eds.), *Achieving a productive aging society* (pp. 119–142). Westport, CT: Auburn.
- Katzman, R., Brown, T., Fuld, P., Peck, A., Schechter, R., & Schimmel, H. (1983). Validation of a short orientation–memory–concentration test of cognitive impairment. *American Journal of Psychiatry, 140*, 734–739.
- Krause, N., Herzog, A. R., & Baker, E. (1992). Providing support to others and well-being in later life. *Journal of Gerontology: Psychological Sciences, 47*, P300–P311.
- Midlarsky, E., & Kahana, E. (1994). *Altruism in later life*. Thousand Oaks, CA: Sage.
- 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.
- Okun, M. A., Barr, A., & Herzog, A. R. (1998). Motivation to volunteer by older adults: A test of competing measurement models. *Psychology and Aging, 13*, 608–621.
- Oman, D., Thoresen, C. E., & McMahon, K. (1999). Volunteerism and mortality among the community-dwelling elderly. *Journal of Health Psychology, 4*, 301–316.
- Radloff, L. S. (1977). The CES–D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Shmotkin, D., Blumstein, T., & Modan, B. (2003). Tracing long-term effects of early trauma: A broad-scope view of Holocaust survivors in late life. *Journal of Consulting and Clinical Psychology, 71*, 223–234.
- Van Willigen, M. (2000). Differential benefits of volunteering across the life course. *Journal of Gerontology: Social Sciences, 55B*, S308–S318.
- Walter-Ginzburg, A., Blumstein, T., Chetrit, A., & Modan, B. (2002). Social factors and mortality in the old-old in Israel: The CALAS study. *Journal of Gerontology: Social Sciences, 57B*, S308–S318.
- Wheeler, J. A., Gorey, K. M., & Greenblatt, B. (1998). The beneficial effects of volunteering for older volunteers and the people they serve: A meta-analysis. *International Journal of Aging and Human Development, 47*, 69–79.

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