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Practice Concepts

Engaging Older Adults in Environmental Volunteerism: The Retirees in Service to the Environment Program

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Abstract

Purpose of the Study: Retirees in Service to the Environment (RISE) is a program designed to promote participation of older people in volunteering for the environment. Based on principles of adult learning and best practices for the development of effective volunteer programs, RISE engaged older individuals in environmental volunteering and involved them in community stewardship activities.

Design and Methods: This article details the development and formative evaluation of RISE. We describe program assessment, benefits to the community, and effects on participants.

Results: The program successfully recruited individuals new to environmental volunteering and substantial hours of volunteer time were provided to communities. Program satisfaction was high and preliminary evidence suggests positive outcomes from RISE participation.

Implications: The innovative structure combined with local relevance of the RISE program has the potential to expand older adults' engagement in environmental volunteerism.

Keywords: Volunteerism and civic engagement, Environmental sustainability, Social roles and social factors

Over the past decade, awareness of critical environmental problems has mounted. Widespread concern exists on local, national, and global levels regarding such issues as climate change, compromised water quality, air pollution, toxic waste, unsustainable growth, and other environmental threats affecting health and quality of life. It is widely recognized that citizen engagement in sustainability efforts is critically important to solving these problems. At the same time, a growing body of research has demonstrated the benefits of volunteering for older people. Increasing attention is being paid to the intersection of aging and environmental issues (Frumkin, Fried, & Moody, 2012), leading to

calls for expanded opportunities for older people to engage in volunteer activities that promote environmental conservation and sustainability (Bushway, Dickinson, Stedman, Wagenet, & Weinstein, 2011; Pillemer & Wagenet, 2008).

Despite evidence of the benefits of environmental volunteering among older people, no program models have been documented in the literature that specifically encourage and facilitate such activity. In this article, we report on a model program that aims to attract older persons to environmental volunteering. *Retirees in Service to the Environment* (RISE) was based on extensive developmental research and was implemented in multiple settings. Program data suggest positive outcomes at the community and individual levels.

Background and Need for the Intervention

The RISE model is founded on three research-based assumptions underlying the need for programs that intentionally recruit and train older individuals for environmental volunteering. First, volunteer activity is critical to addressing pressing environmental concerns. Second, environmental volunteering has special benefits for older people that may exceed those of other activities. Third, despite these community and individual benefits, there are barriers to older adults' participation in environmental activities that can be addressed by a structured program.

Communities Can Be Enhanced by Older Environmental Volunteers

Engagement of community volunteers has been identified as one of the most important solutions to environmental problems. The success, and indeed the existence, of most local environmental efforts depend on volunteers. Volunteer engagement is critical to such activities as environmental restoration, protection of endangered species, collection of scientific environmental data, monitoring water quality, and maintenance of protected natural areas. As Ryan, Kaplan, and Grese summed up the evidence, "The environmental movement would not exist without the help of thousands of dedicated volunteers" (Ryan, Kaplan, & Grese, 2001, p. 629).

Studies point to concrete environmental benefits to local communities as a result of volunteer programs (Ewing, Catterall, & Tomerini, 2013). The financial benefits of volunteers are also substantial. Paid staff is the most costly component of many local environmental initiatives. Volunteers are, therefore, key to conducting activities like monitoring protected areas and control of invasive species. In fact, the contribution made by the labor of volunteers often greatly exceeds actual financial expenditures (Armsworth et al., 2013; Hopkins-Murphy & Seithel, 2005). However, a major concern for environmental organizations is attracting and retaining a sufficient supply of volunteers (McDougle, Greenspan, & Handy, 2011), given the critical role they play.

One strategy to address the need for volunteers is to engage the relatively untapped source of environmental volunteers in the older population (Pillemer & Wagenet, 2008). As retirees, they are likely to have time to dedicate to environmental volunteerism and civic engagement. Further, due to their increasing numbers, the impact of their collective behaviors is profound. With the aging of the baby boomers, there is a vast reservoir of retired persons who might become engaged in environmental action,

but few organized pathways into such activities exist. The RISE program attempts to fill this gap, providing a new model for creating environmental volunteer roles for retirees.

Environmental Volunteering Benefits Older People

A large body of research, reinforced by systematic reviews, has demonstrated the benefits of volunteering to older individuals. Positive effects have been found for such outcomes as better self-rated health, less functional limitation, improved psychological well-being, and a potential reduction in dementia risk (Anderson et al., 2014). Research also suggests that volunteering may provide protection against specific illnesses and health events, such as hypertension (Burr, Tavares, & Mutchler, 2011) and hip fracture (Warburton & Peel, 2008). As a result of these proximal benefits, volunteering appears to reduce overall mortality risk (Jenkinson et al., 2013; Okun, Yeung, & Brown, 2013).

Evidence suggests that environmental volunteering may have added value for older persons beyond other types of volunteer activity. There are several potential mechanisms for this effect. First, exposure to nature is often a benefit of environmental volunteering, which can involve activities like cleaning natural areas, testing stream quality, restoring habitats, and clearing invasive species. Research has demonstrated the positive effects of exposure to nature, including improvements in cognitive functioning (Berman, Jonides, & Kaplan, 2008), enhanced psychological well-being (Kaplan, 2000), greater levels of physical activity (Ellaway, Macintyre, & Bonnefoy, 2005) as well as links to longevity (Takano, Nakamura, & Watanabe, 2002). A self-reported benefit of environmental volunteering is increased appreciation of the benefits of nature (Miles, Sullivan, & Kuo, 1998; O'Brien, Townsend, & Ebden, 2010).

Second, volunteering for the environment can be a pathway to physical activity. Librett and colleagues found that individuals who performed any kind of volunteering compared with non-volunteers were 1.8 times more likely to meet the Centers for Disease Control and Prevention guidelines for physical activity (Librett, Yore, Buchner, & Schmid, 2005). However, volunteers engaged in environmental activities were 2.6 times more likely to meet physical activity guidelines. Thus, one benefit of volunteering for environmental organizations may be increased physical activity, over and above other types of volunteering.

Finally, life-span developmental theory and research suggest that older people experience a need for engagement that is focused on improving the world and leaving a legacy for future generations—a process referred to as generativity (McAdams & de St. Aubin, 1998; Villar, 2012). Environmental volunteering is highly consistent with a need to express generativity, as making a positive contribution

to the environment is critically important to the quality of life—and perhaps the survival—of future generations (Matsuba et al., 2012; Urien & Kilbourne, 2011). Research has found that generativity motivations are strong for older volunteers, showing that satisfaction with the activity results from a desire to nurture the environment and create a better future (Warburton & Gooch, 2007). Thus, environmental volunteerism fulfills what Moody has termed the "legacy motivation"; that is, the desire in later life to have contributed to our collective future that outlives the self (Moody, 2009).

Strong evidence for health benefits was found in a longitudinal study of the relationship between volunteering for an environmental organization and health and well-being outcomes over a 20-year period in a large community sample (the Alameda County Study). The investigators examined the prospective association between environmental and other volunteerism and physical activity, self-reported health, and depression (Pillemer, Fuller-Rowell, Reid, & Wells, 2010). Midlife environmental volunteering was positively associated with later-life physical activity and selfreported health and negatively associated with depressive symptoms. The effects were greater in all three cases for environmental volunteering over other types of volunteering. Thus, engaging in environmental volunteerism may be an especially effective way to achieve healthy and active aging.

Barriers Exist to Environmental Volunteerism Among Older People

Despite the potential benefits, older people are less likely to engage in environmental volunteerism than younger individuals. In a random-sample population survey in New York State, we found pronounced age group differences in whether respondents volunteered for any environmental organization. Those under age 65 volunteered at rates of 16%-22%, whereas 13% of persons aged 65-74 and 8% of those aged 75 and older volunteered for environmental organizations (Pillemer et al., 2010). Recent data from the Bureau of Labor Statistics showed that rates of environmental volunteerism were much lower among people aged 65 and older than other types of volunteering. When asked just about the one main organization for which they volunteered, only 2% of older people reported an environmental organization (Bureau of Labor Statistics, 2014). Thus, there is considerable room for development of environmental volunteer opportunities for older adults and recruitment of older volunteers to environmental organizations.

Studies have uncovered several major barriers to wider engagement among older people in environmental volunteerism (Formosa, 2012; Pillemer et al., 2010). First, some older people feel that they lack sufficient expertise or knowledge about environmental issues or science to contribute effectively (Bushway et al., 2011). Second, older individuals report being unaware of opportunities

for environmental stewardship in their communities and uncertainty as to how they could become involve. A need exists for easily accessible resources that describe the range of environmental volunteering opportunities (Howgate, 2008), which would assist older adults in finding the volunteer opportunity that best meets their interests, skills, and abilities.

Third, models used by many organizations do not meet the needs of older people who wish to use their professional expertise and skills in a volunteer setting (Howgate, 2008). They are often assigned to more menial tasks that do not allow them to show leadership and independence, leading them to feel their time is not well spent. Older volunteers, therefore, need to be able to advocate for themselves in acquiring meaningful volunteer work (Wells & Pillemer, 2015). Fourth, among some older people, environmental volunteer activities are not perceived as socially fulfilling compared with other types of opportunities, such as volunteering in schools or churches (Pillemer et al., 2010). Activities like trail cleanup and water quality monitoring are seen as solitary tasks rather than opportunities for engaging with others.

For these reasons, a core assumption of the RISE model is the need for organizational, rather than simply individual, solutions to these barriers. To maximize the benefits of volunteering for older people, analysts have called for structural and institutional solutions that facilitate their entry into later-life volunteering (Tang, Morrow-Howell, & Hong, 2009). Factors such as lack of knowledge about the subject matter and available volunteer opportunities, perceived lack of skills, and assignment to menial tasks can be addressed through a program model that prepares older people for environmental engagement. Similarly, an organizational intervention can include components on developing leadership skills and maximizing social engagement. RISE attempted to extend the benefits of environmental volunteering to older people by creating an organizational structure that addressed these barriers to participation.

Conceptual Basis

Our research team conducted a number of research activities in developing the RISE program. The developmental phase included interviews with older environmental volunteers; a survey of environmental organizations to determine opportunities and challenges working with older individuals; and a consensus workshop with expert scientists and practitioners on the intersection of aging and the environment (Pillemer et al., 2010; Pillemer, Wells, Wagenet, Meador, & Parise, 2011). These formative activities were combined with an extensive review of theory and research on engagement in environmental organizations and activities and later-life volunteering. Based on this body of knowledge, we developed a conceptual framework for RISE that encompasses the following four principles.

- 1. Providing a core of knowledge relating to environmental issues through contact with scientists will facilitate older people's involvement in environmental volunteering. As noted, a barrier to environmental volunteering for some older people is a perceived lack of scientific understanding (Pillemer, Wagenet, Goldman, Bushway, & Meador, 2010). For this reason, a core feature of RISE is science-based educational sessions taught by experts. A deliberate effort is made to avoid a communication gap or disconnect between experts and participants. This goal is accomplished by providing training on how to engage with experts, with specific guidelines on how to question them about the scientific basis for their opinions. Another key component of RISE is training in how to evaluate scientific information about the environment, including guidance on how to read and evaluate scientific articles. Therefore, all sessions include discussion of how additional knowledge can be obtained and how to distinguish scientific evidence from advocacy or industry points of view.
- 2. Environmental leadership training is needed for optimal volunteer participation of older persons. RISE features a component on developing leadership skills for environmental stewardship. Participants can benefit from reflecting on how their values affect their environmental activities and how they can apply their knowledge and skills to make the most of a volunteer job. They also are provided extensive information on the range and types of volunteer engagement that are available. The leadership training additionally emphasizes the diverse ways that an individual can advocate for responsible (rather than menial) roles in an organization. This training component focuses on understanding different leadership styles, including exploring participants' prior leadership experiences and how they can apply these insights to their volunteer engagement.
- 3. Creating social connections is critical to volunteer satisfaction. Staying socially connected can become a major challenge for people after retirement. Organized group programs are needed that foster social interaction and engagement in rewarding relationships. A number of RISE activities deliberately promote social interaction and interpersonal closeness in the group, including providing time for detailed personal introductions, breaks for refreshments and meals where participants can mingle, and field trips with the entire group. As noted, one drawback to environmental volunteerism is that many activities (e.g., stream testing, trail cleanups) can be relatively solitary, whereas retirees often pursue volunteering specifically to develop new friendships. For this reason, efforts are explicitly built into the program to encourage the creation of meaningful and supportive connections among participants.
- 4. The skills and knowledge obtained must be put into practice. To create effective environmental stewards, an experience involving action is critical beyond just an

educational program. Therefore, RISE involves a commitment to performing an environmental stewardship activity as a capstone to the program. As discussed in the following section, to allow for diversity of participant abilities and interests, flexibility is built into this volunteer activity.

Design and Key Components of RISE

Based on this program rationale, RISE includes three interrelated components, which typically take place over an 8-week period. Approximately 30 hours of training and education are provided, followed by a stewardship project. (Detailed guidance on implementing the RISE program, including a program manual, is available from the corresponding author.)

The RISE program consists of three main components, as follows.

Skills for Environmental Action and Leadership

This intensive full-day experiential workshop begins the RISE program. The goal is to build the capacity of participants to engage in effective and rewarding environmental stewardship in their communities. The Skills for Environmental Action and Leadership (SEAL) workshop covers identifying and developing strengths as a leader, understanding leadership styles, critically evaluating environmental information, and understanding how values affect environmental debates. A key component is training participants to maximize their volunteer involvement, have their own goals met for volunteering, and become comfortable asking that any special needs they have (e.g., mobility impairment) be considered by environmental organizations.

RISE Workshop Sessions

Following the SEAL workshop, six weekly environmental workshops (3 hours each) form the educational component of the RISE program (a final session is devoted to planning a stewardship project, described below). The goal of the environmental workshops is to provide objective scientific information about pressing global and local environmental issues. This information is presented in an unbiased manner and each workshop is led by an expert speaker who is typically drawn from a local educational institution. Importantly, RISE presenters are limited to scientific experts and intentionally do not include environmental advocates or industry representatives, as the goal is to engage participants with research evidence.

Some flexibility is provided to RISE organizers in the selection of workshops, depending on the availability of scientific experts and issues of local interest. Five core topics are recommended: climate change, water quality, soil contaminants, waste management, and energy use. The remaining substantive session is devoted to one or more

issues of local importance. The workshops typically include a lecture and hands-on activities or field trips. In one RISE program, for example, a lecture on water quality was followed by a field trip on a "floating classroom" boat on a nearby lake. Similarly, a lecture on alternative energy was followed by a visit to a solar-powered home, and a workshop on water quality included a visit to a water treatment plant. Detailed guidance is provided in the program manual on structuring the environmental workshops.

Stewardship Project

Upon completion of the RISE environmental workshop series, RISE participants engage in a local project to benefit the environment. The exact nature of the stewardship project is flexible, as groups vary according to participant ability and local opportunities. Ideas are discussed throughout the course of the earlier RISE sessions, and the concluding session is dedicated to finalizing the planning of the stewardship project. The RISE facilitator guides participants through the planning process to help ensure their projects are successful. Participants are asked to consider how their project will improve the environment, how it is different from other projects in the area, what barriers or obstacles they will need to overcome, and the roles and responsibilities of any collaborators. The stewardship project is completed within 2 months after the end of the 8-week program.

Based on early program experience, two stewardship project options are offered and are decided upon by the group. The first option is for all participants jointly to plan and implement a *group stewardship project*. The facilitator assists participants to reach consensus on a project and to organize the necessary tasks. RISE projects have included: developing an awareness campaign for appropriate disposal of prescription drugs, organizing a battery recycling project, building a demonstration garden in a local park for public education, and hosting educational seminars on the environmental effects of horizontal drilling for natural gas.

The second option is for participants to complete an *individual stewardship project*. For this option, the implementation is done by the participant himself or herself. As a result, an individual project may be less complex and smaller in scope. Individual projects have included: presenting to a group on an environmental topic; arranging for an environmental speaker at a school, club, or organization; leading a small stream cleanup; planting bee-friendly flowers in a community setting; conducting an energy audit for a senior center; and improving the greenspaces in an assisted living center where the participant was a resident. The goal is for participants to use the information and tools they have garnered throughout the course in this individual stewardship project.

Implementation Considerations

Three considerations are important regarding program implementation.

Partnership

Implementation of RISE is based on a partnership between an organization dedicated to environmental education and an organization that serves older adults. In this partnership, the educational organization provides knowledge and skills about how to develop and implement community-based educational programs, including experience in workshop logistics, adult learning, and environmental issues. The aging services organization provides access to older adults and knowledge about their unique needs and interests.

Program Costs

Direct costs for the program are relatively small. Speakers volunteered their time and meeting space was donated for all RISE programs. The most significant potential costs are for field trips and refreshments. It is recommended to provide transportation for all participants during field trips to increase group cohesion and provide a service to older individuals who cannot drive. Food and beverages are an important component in the program, and they fulfill a social function. Because the first workshop is 7 hours long (usually 9:00 a.m. to 4:00 p.m.), breakfast and lunch are provided with other refreshments throughout the day. Refreshments should be provided for every session, given the 3-hour length of sessions. Finally, there are small costs for reproduction of handouts. We estimate that the program can be implemented for approximately \$500. This includes transportation, refreshments, and handouts.

Accommodations for Differences in Functional Ability

Some RISE participants have had limited mobility or hearing or vision impairments. Activities and participation should be modified to make it easier for participants to take part in all aspects of the program. For example, a group included a participant who used a wheelchair. In this case, workshops were held in a wheelchair-accessible location, accessible transportation was provided to the fieldtrips, and the person who used a wheelchair took an active part in the stewardship project by organizing logistics for the event.

Evaluation Findings

The formative evaluation of RISE was guided by four questions: (a) Could older individuals be successfully recruited to multiple administrations of RISE? (b) Did volunteers make contributions to local communities? (c) Did participants report positive experiences with and assessments of RISE? and (d) Did changes occur on outcome variables?

Successful Recruitment of Volunteers

A major question addressed in the RISE evaluation was: Can programs attract sufficient numbers of older volunteers? Given the low overall participation of older people in environmental activities, it was possible that recruitment would be difficult. In fact, over 11 administrations of the program, recruitment never emerged as a problem. A total of 11 sites implemented the RISE program between 2008 and 2014 (8 in six counties in New York State; 3 in the Sarasota, Florida area). Initially, 149 participants were enrolled at the 11 sites and completed pre-test surveys (107 New York; 42 Florida). This was an average of 13.55 participants per site (min 5; max 18). Out of the original 149 participants at the 11 sites, 125 participants (84%) completed the program, demonstrating strong retention rates.

Of particular importance is the fact that over two thirds of the participants (69%) were not involved in any kind of environmental volunteering when they joined RISE. Additionally, another 9% were only marginally involved in environmental volunteering (active a few times a year or less). Thus, the program succeeded in attracting individuals with no or little prior experience (nearly three-quarters of participants) who wished to explore environmental stewardship opportunities.

Further, the project attracted almost exclusively retired or semiretired individuals: 89% were retired, 8% were semiretired (working part-time), and only 3% were working full-time. RISE attracted both younger and older retirees; the average age of participants was 68 and ranged from age 49 to 93. Although the program attracted some younger retirees, most participants were aged 60 or older (90%). We also sought gender diversity and were reasonably successful; one third of participants were male (34%) and two thirds were female (64%). The participants in RISE were not diverse, however, in terms of race. Nearly all participants were white (97%), reflecting the demographics of the locations where RISE was implemented.

Contribution to Communities

Although we were not able to quantify precisely the number of volunteer hours contributed by participants in their capstone projects, the best estimate is 15–20 hours per participant, either in a group or individual project, or between 1,875 and 2,500 hours of community engagement. Several groups engaged in projects that created a new program in the community that would not have existed without RISE (e.g., a drug disposal awareness program). Thus, RISE clearly provided gains for communities in which RISE took place in terms of new commitment of volunteer hours to local projects.

Subjective Evaluation of Program

Subjective evaluations of program experience were extremely positive. In their overall evaluation of the program, 94.3% of participants reported that the RISE program was excellent or good (64.2% and 30.1%, respectively). The major themes from the qualitative responses for the overall evaluation included that the program was "well-organized" and "comprehensive," the speakers were "well-prepared" and "knowledgeable," and the sessions covered a "variety of topics" and "wide range of material."

Participants also highlighted the "hands-on activities" during the introductory workshop and field trips, as well as the time allocated for discussion. Many participants reported that the speakers and program were "interesting," "stimulating," "inspirational," and "motivating,"

When asked if they would recommend the program to others, 96.7% said that they would do so. The main reasons included that it was "informative and energizing" and "interesting and fun." Participants indicated that the program provided a "good overview" and "great exposure" to a wide range of environmental issues and different ways to address them. As participants explained, "It is very valuable information that everyone should know" and "It's extremely advantageous to citizens today." Participants also highlighted the social aspects of the program, including the chance to "meet a lot of interesting people" and to get "to know other people in the community." Further, they appreciated the opportunity to give back to the community and to help improve the environment for future generations. They noted that the program is a "good way for retirees to get involved in the greater community" and "for future generations, our grandchildren, we have to start somewhere."

Benefits to Individuals

Participants were administered a questionnaire prior to participation in RISE and approximately 2 months after they completed the program. Five outcomes were explored that are consistent with the goals of RISE. Social integration and feelings of attachment to others were measured by two subscales from the Social Provisions Scale (Cutrona & Russell, 1987). To measure generativity, we used the Loyola Generativity Scale (McAdams & de St. Aubin, 1992), which is widely used and is a predictor of prosocial behavior. Pro-environmental attitudes were measured by the New Environmental Paradigm Scale (Dunlap & Van Liere, 1978). We also included a four-item scale, created for this project, of environmental self-efficacy; that is, the participant's perceived ability to be effectively engaged in environmental action (e.g., "How confident are you that you can find the reliable, scientific information you need to improve or solve problems in terms of environmental issues?").

Analyses revealed an interesting pattern of pre-test/post-test results. When the participants were considered in the aggregate, no significant differences emerged between the pre-test and the post-test on any of the five outcomes. However, examining only those individuals who were new to environmental volunteering, significant changes were found on three variables (because of the small sample size, we employed a significance level of p < .10). Scores on the *generativity* scale improved for non-prior volunteers (pre M = 18.6, post M = 19.1; p = .025). Regarding social support, improvements were found on the scale of feelings of *attachment to others* (pre M = 14.8, post M = 15.1; p = .052)

and on *social support* (pre M = 13.9, post M = 14.2; p = .09). Effect sizes, as would be expected from the mean differences, were low (ranging from 0.14 to 0.18). Therefore, these outcomes should be viewed only as suggestive of potential beneficial effects and worthy of future investigation, as well as evidence that no unintended negative effects of the program occurred. No effects were found for environmental knowledge or self-efficacy, which may be due in part to a ceiling effect; initial scores on these two scales were quite high.

Discussion

The successful implementation of the RISE program demonstrated that the time and energy of retirees can be leveraged to address environmental challenges. Provision of a structured program was an effective strategy to recruit older adults to participate with a cohort of their peers, to train them to be discriminating consumers of environmental information, and to connect them with meaningful environmental volunteer opportunities. Satisfaction with the program was overwhelmingly positive across all implementations, among males and females, and across age groups.

Modest positive effects of the program were found among individuals new to environmental volunteerism. This finding suggests that the RISE program might be particularly effective as a "gateway" program to recruit older adults into volunteerism. The structure provided by RISE—with a clear orientation program, science-based expert programming, and a connection to both global and local environmental issues—may help to address some of the barriers that inhibit older adults' engagement with environmental issues.

An important question is the degree to which the RISE program is scalable to fit the resources of a range of communities. One potential limitation might appear to be the availability of scientific experts who serve as presenters. We would note that the RISE sites were diverse in this regard. Although over half of the locations were situated near colleges or universities, making presenters easily available, in several communities local scientific environmental expertise was scarce. In every case, however, program sponsors succeeded in recruiting presenters with the required knowledge of environmental issues from local and state agencies such as environmental conservation departments, planning boards, municipal solid waste divisions, and other sources. The question also arises as to whether the success of RISE requires a highly educated group of participants. However, despite the average high educational levels, the groups also included individuals with lower educational attainment who rated the program highly. Further, the RISE materials are specifically designed to be easily readable and nontechnical, and the manual contains suggestions for including individuals from diverse backgrounds.

Based on the findings presented in this article, future research is highly recommended to address study limitations. First, an important next step is examining the effects of the RISE program using a randomized, control group design.

Second, research should examine the long-term effects of RISE, including whether and under what circumstances participants make a sustained commitment to environmental volunteering. Third, RISE should be extended to and tested in racially and culturally diverse populations; a limitation of the evaluation for RISE is the almost exclusively white sample. It is important to implement RISE among ethnic minority populations and to determine whether cultural modification is needed. This information will help to inform the further dissemination of RISE to broader, more varied audiences.

As the population of older adults expands globally and communities worldwide face a wide range of urgent environmental challenges, RISE provides a compelling strategy to match untapped volunteer resources with pressing needs. The potential benefits of expanding models to promote environmental volunteering among older people are great. This initial examination of the RISE program suggests that it is an effective mechanism to recruit older adults to become environmental volunteers, that communities benefit, and that older adults—particularly environmental volunteering novices—experience positive outcomes.

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References

Anderson, N. D., Damianakis, T., Kröger, E., Wagner, L. M., Dawson, D. R., Binns, M. A., ... Cook, S. L.; BRAVO Team. (2014). The benefits associated with volunteering among seniors: A critical review and recommendations for future research. *Psychological Bulletin*, 140, 1505–1533. doi:10.1037/a0037610

Armsworth, P. R., Cantú-Salazar, L., Parnell, M., Booth, J. E., Stoneman, R., & Davies, Z. G. (2013). Opportunities for costsharing in conservation: Variation in volunteering effort across protected areas. *PLoS One*, 8, e55395. doi:10.1371/journal. pone.0055395

Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, **19**, 1207–1212. doi:10.1111/j.1467-9280.2008.02225.x

Bureau of Labor Statistics, U.S. Department of Labor. (2014). Volunteers by type of main organization for which volunteer activities were performed and selected characteristics: September 2014. *Economic News Release*. Retrieved from http://www.bls.gov/news.release/volun.t04.htm

- Burr, J. A., Tavares, J., & Mutchler, J. E. (2011). Volunteering and hypertension risk in later life. *Journal of Aging and Health*, 23, 24–51. doi:10.1177/0898264310388272
- Bushway, L. J., Dickinson, J. L., Stedman, R. C., Wagenet, L. P., & Weinstein, D. A. (2011). Benefits, motivations, and barriers related to environmental volunteerism for older adults: Developing a research agenda. *International Journal of Aging & Human Development*, 72, 189–206. doi:10.2190/AG.72.3.b
- Cutrona, C. E., & Russell, D. W. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), *Advances in personal relationships* (pp. 37–67). Greenwich, CT: JAI Press.
- Dunlap, R. E., & Van Liere, K. D. (1978). The 'New Environmental Paradigm': A proposed measuring instrument and preliminary results. *The Journal of Environmental Education*, 9, 10–19. doi: 10.1080/00958964.1978.10801875
- Ellaway, A., Macintyre, S., & Bonnefoy, X. (2005). Graffiti, greenery, and obesity in adults: Secondary analysis of European cross sectional survey. *British Medical Journal*, **331**, 611–612. doi:10.1136/bmj.38575.664549.F7
- Ewing, C. P., Catterall, C. P., & Tomerini, D. M. (2013). Outcomes from engaging urban community groups in publicly funded vegetation restoration. *Ecological Management & Restoration*, 14, 194–201. doi:10.1111/emr.12054
- Formosa, M. (2012). Older persons and green volunteering: The missing link to sustainable future? In S. Rizzo (Ed.), *Green jobs from a small state perspective. Case studies from Malta*. Brussels, Belgium: Green European Foundation.
- Frumkin, H., Fried, L., & Moody, R. (2012). Aging, climate change, and legacy thinking. *American Journal of Public Health*, **102**, 1434–1438. doi:10.2105/AJPH.2012.300663
- Hopkins-Murphy, S. R., & Seithel, J. S. (2005). Documenting the value of volunteer effort for sea turtle conservation in South Carolina. *Chelonian Conservation and Biology*, 4, 930–934. issn:1071-8443
- Howgate, D. (2008). Increasing volunteerism among older adults: Benefits and strategies for states. National Governors Association Center for Best Practices, Issue Brief, 1–12. Retrieved from http://www.nga.org/files/live/sites/NGA/files/pdf/0805CIVICENGBRIEF.PDF
- Jenkinson, C. E., Dickens, A. P., Jones, K., Thompson-Coon, J., Taylor, R. S., Rogers, M., ... Richards, S. H. (2013). Is volunteering a public health intervention? A systematic review and metaanalysis of the health and survival of volunteers. *BMC Public Health*, 13, 773. doi:10.1186/1471-2458-13-773
- Kaplan, S. (2000). Human behavior and environmentally responsible behavior. *Journal of Social Issues*, **56**, 491–508. doi:10.1111/0022-4537.00180
- Librett, J., Yore, M. M., Buchner, D. M., & Schmid, T. L. (2005).
 Take pride in America's health: Volunteering as a gateway to physical activity. *American Journal of Health Education*, 36, 8–13. doi:10.1080/19325037.2005.10608149
- Matsuba, M. K., Pratt, M. W., Norris, J. E., Mohle, E., Alisat, S., & McAdams, D. P. (2012). Environmentalism as a context for expressing identity and generativity: Patterns among activists and uninvolved youth and

- midlife adults. *Journal of Personality*, **80**, 1091–1115. doi:10.1111/j.1467-6494.2012.00765.x
- McAdams, D. P., & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology*, **62**, 1003–1015. doi:10.1037/0022-3514.62.6.1003
- McAdams, D. P., & de St. Aubin, E. (1998). Generativity and adult development: How and why we care for the next generation. Washington, DC: American Psychological Association.
- McDougle, L. M., Greenspan, I., & Handy, F. (2011). Generation green: Understanding the motivations and mechanisms influencing young adults' environmental volunteering. *International Journal of Nonprofit and Voluntary Sector Marketing*, 16, 325– 341. doi:10.1002/nvsm.431
- Miles, I., Sullivan, W. C., & Kuo, F. E. (1998). Ecological restoration volunteers: The benefits of participation. *Urban Ecosystems*, 2, 27–41. doi:10.1023/A:1009501515335
- Moody, H. R. (2009). Eco-elders: Legacy and environmental advocacy. *Generations*, 33, 70–74.
- O'Brien, L., Townsend, M., & Ebden, M. (2010). 'Doing something positive': Volunteers' experiences of the wellbeing benefits derived from practical conservation activities in nature. *Voluntas*, 21, 525–545. doi:10.1007/s11266-010-9149-1
- Okun, M. A., Yeung, E. W., & Brown, S. (2013). Volunteering by older adults and risk of mortality: A meta-analysis. *Psychology and Aging*, 28, 564–577. doi:10.1037/a0031519
- Pillemer, K., Fuller-Rowell, T. E., Reid, M. C., & Wells, N. M. (2010). Environmental volunteering and health outcomes over a 20-year period. *The Gerontologist*, 50, 594–602. doi:10.1093/geront/gnq007
- Pillemer, K., & Wagenet, L. P. (2008). Taking action: Environmental volunteerism and civic engagement by older people. *Public Policy & Aging Report*, 18, 23–27. doi:10.1093/ppar/18.2.1
- Pillemer, K., Wagenet, L. P., Goldman, D., Bushway, L., & Meador, R. (2010). Environmental volunteerism in later life: Benefits and barriers. *Generations*, 33, 58–63.
- Pillemer, K., Wells, N. M., Wagenet, L. P., Meador, R. H., & Parise, J. T. (2011). Environmental sustainability in an aging society: A research agenda. *Journal of Aging and Health*, 23, 433–453. doi:10.1177/0898264310381278
- Ryan, R. L., Kaplan, R., & Grese, R. E. (2001). Predicting volunteer commitment in environmental stewardship programmes. Journal of Environmental Planning and Management, 44, 629–648. doi:10.1080/09640560120079948
- Takano, T., Nakamura, K., & Watanabe, M. (2002). Urban residential environments and senior citizens' longevity in megacity areas: The importance of walkable green spaces. *Journal of Epidemiology and Community Health*, 56, 913–918. doi:10.1136/jech.56.12.913
- Tang, F., Morrow-Howell, N., & Hong, S. (2009). Inclusion of diverse older populations in volunteering: The importance of institutional facilitation. *Nonprofit and Voluntary Sector Quarterly*, 38, 810–827. doi:10.1177/0899764008320195
- Urien, B., & Kilbourne, W. (2011). Generativity and self-enhancement values in eco-friendly behavioral intentions and environmentally

- responsible consumption behavior. *Psychology & Marketing*, 28, 69–90. doi:10.1002/mar.20381
- Villar, F. (2012). Successful ageing and development: The contribution of generativity in older age. *Ageing and Society*, **32**, 1087–1105. doi:10.1017/S0144686X11000973
- Warburton, J., & Gooch, M. (2007). Stewardship volunteering by older Australians: The generative response. *Local Environment*, 12, 43–55. doi:10.1080/13549830601098230
- Warburton, J., & Peel, N. M. (2008). Volunteering as a productive ageing activity: The association with fall-related hip fracture in later life. *European Journal of Ageing*, 5, 129–136. doi:10.1007/s10433-008-0081-9
- Wells, N. M., & Pillemer, K. (2015). Environmental engagement in later life: RPM as a framework for intervention. In R. Kaplan & A. Basu (Eds.), *Fostering reasonableness* (pp. 157–175). Ann Arbor, MI: Maize Books.