



# Factors associated with formal volunteering among retirees

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Published online: 22 October 2019  
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## Abstract

The present study developed and tested a comprehensive multivariate model designed to assess the relative importance of various factors found or proposed in previous research to be associated with engagement in volunteering among 799 fully retired Australian older adults (62% female; mean age = 71.92 years (SD = 6.69)). Engagement in volunteering in the 12 months preceding the study and a range of sociodemographic, psychological, physical, social, and attitudinal variables were measured. Respondents' perceived personal responsibility to volunteer was found to be especially important in the tested model. This variable was directly associated with engagement in volunteering and acted as an important mediator between the following variables and volunteering engagement: personal growth, social connectedness, religious attendance, self-rated health, and depression. Efforts to increase volunteering engagement among older adults may therefore need to target perceptions of their responsibility to volunteer. Especially important focus areas for future strategies may include increasing social connectedness, facilitating personal growth, and improving self-rated health.

**Keywords** Healthy aging · Attitudes · Perceived value · Perceived personal responsibility

## Introduction

Populations around the world are aging rapidly, with both the proportion and absolute number of older people increasing dramatically (World Health Organization (WHO) 2015). The phenomenon of population aging has been described as “one of the most significant social transformations of the twenty-first century” (United Nations 2015, p. 1), and

substantial economic and social implications are forecast (Börsch-Supan et al. 2005; Harper 2014). Preparing for rapid population aging is essential to ensuring sustainable economies and the health and well-being of people of all ages (United Nations 2015). Important to this preparation process is the fostering of healthy aging, defined as “the process of developing and maintaining the functional ability that enables well-being in older age” (WHO 2015, p. 28).

Responsible editor: Marja J. Aartsen

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Formal volunteering has been proposed as a strategy to facilitate healthy aging because of its ability to foster positive outcomes across multiple health and psychological domains (Anderson et al. 2014; Connolly and O'Shea 2015). Defined as non-mandatory unpaid work conducted for organizations and/or the wider community (Lee and Brudney 2012), formal volunteering in older adults has been found to be associated with positive self-rated health (Fiorillo and Nappo 2017), higher levels of cognitive and physical functioning (Cramm and Nieboer 2015; Proulx et al. 2018), lower prevalence of hypertension (Burr et al. 2015), reduced mortality (Burr et al. 2015), increased physical activity (Sneed and Cohen 2013), higher levels of psychological well-being (Sneed and Cohen 2013), greater life satisfaction (Haski-Leventhal 2009), higher perceived quality of life (Krägeloh and Shepherd 2015), and fewer depressive symptoms (Musick and Wilson 2003). In addition to the health and psychological benefits for the individual volunteer, participation in volunteering among older adults provides numerous benefits to the economy (Bowman 2009). Volunteering in this age group can therefore be considered a dual strategy to (1) improve the health of older adults and (2) strengthen the economy and communities (Morrow-Howell 2007).

Despite these benefits, evidence suggests that older adults are less likely to volunteer than those in other age groups, particularly those in mid-life (Australian Bureau of Statistics 2015; Statistics Canada 2012; U.S. Bureau of Labor Statistics 2016). There is thus the opportunity to better promote volunteering in older adults to enhance health and well-being in later life (Pettigrew et al. 2015). Determining the relative importance of factors associated with volunteering in older adults can inform the development of interventions designed to encourage volunteering in this population segment. Such information is also critical to organizations if they are to recruit new volunteers and ensure existing volunteers are retained.

Previous studies assessing the sociodemographic factors associated with volunteering in older adults have largely emanated from the USA, although there is growing supportive evidence from other parts of the world, including Australia (Parkinson et al. 2010; Warburton and Stirling 2007). Consistent findings have been reported across gender, age, income, education, socioeconomic status (SES), and marital status. Specifically, females, younger seniors, those with higher levels of education and income, those of higher SES, and those who are married or live with a partner (especially one who volunteers) are more likely to volunteer than males, older seniors, those with lower levels of education and income, those of lower socioeconomic status, and those who do not live with a partner (Australian Bureau of Statistics 2018a; Choi et al. 2007; Parkinson et al. 2010; Pilkington et al. 2012; Principi et al. 2012a; Wahrendorf

et al. 2016). These findings are largely consistent with the integrated theory of volunteer work, which argues that volunteering is a productive activity requiring certain human, social, and cultural capital and, as such, is more likely among those who are more educated and of higher SES (Wilson and Musick 1997).

Other variables relating to volunteering that have received attention in the literature include physical health, psychological health, and social connectedness. In further support of the integrated theory of volunteer work, an extensive body of evidence indicates that being in good physical health is positively associated with engagement in volunteering among older adults (Choi et al. 2007; Parkinson et al. 2010; Pilkington et al. 2012; Principi et al. 2012a; Warburton and Stirling 2007). Studies examining the relationship between psychological health and volunteering among older adults have produced mixed results. For example, symptoms of depression have been found to be associated with both lower (Choi 2003; Choi et al. 2007) and higher (Li and Ferraro 2005) likelihood of volunteering. Among older adult women, the presence of fewer mental health symptoms has been associated with increased likelihood of volunteering over time (Parkinson et al. 2010). In the general adult population, higher levels of self-esteem, happiness, and life satisfaction have been found to be positively associated with volunteering engagement (Thoits and Hewitt 2001). With respect to social connectedness, those who (1) involve themselves in other social domains and religious activities, (2) are socially connected, and (3) reside in their country of birth are more likely to volunteer (Choi et al. 2007; Pilkington et al. 2012; Principi et al. 2012a; Suanet et al. 2009). The increased propensity to volunteer among these individuals has been attributed to the social capital afforded by group membership (Warburton and Stirling 2007). For example, with respect to country of birth, it has been suggested that migrants (especially those from different linguistic backgrounds) may lack the social networks that facilitate engagement in volunteering (Warburton and Stirling 2007).

Several other variables may also be related to engagement in volunteering but have yet to be explored in the literature. For example, the psychological variables of personal growth (i.e., the extent to which an individual continues to develop their potential: Ryff 1989) and purpose in life (i.e., the extent to which an individual believes that there are purpose and meaning in their life: Ryff 1989) have been identified as outcomes of volunteering engagement among the general population (Heo et al. 2017). However, reflecting the complex nature of causality relating to volunteering and psychological health (Parkinson et al. 2010), these variables may also predict volunteering engagement. Another example is physical activity—although it has been suggested that higher levels of physical activity may facilitate volunteering (Librett

et al. 2005), there is a lack of research assessing this proposition. By contrast, previous research in both general population and older adult samples has explored physical activity as an outcome of volunteering, with evidence indicating that volunteering results in increased physical activity (Librett et al. 2005; Varma et al. 2016).

Finally, despite the importance of attitudes as a precursor to behavior (Ajzen 1991), research assessing older adults' attitudes to volunteering is limited. The research that has been conducted to date has tended to focus on motivations for volunteering and has adopted a functional approach to engagement (e.g., Clary and Snyder 1999). This research suggests that older adults who volunteer do so because they value helping others (Wilson and Musick 1997), and because of the benefits they believe it provides (e.g., use of skills and development of new skills, sharing knowledge, feeling needed, making a contribution) (Clary et al. 1998; Dolnicar and Randle 2007; Ho et al. 2012; Petriwskyj and Warburton 2007; Warburton et al. 2001). Results from the few studies examining attitudes to volunteering suggest that they may mediate the relationship between various individual and social variables and engagement in volunteering (Lenzi et al. 2013; Matsuba et al. 2007). For example, age, educational attainment, and social connectedness have been found to be associated with positive attitudes toward civic responsibility, which in turn increase engagement in volunteering and other civic behaviors (Lenzi et al. 2013; Matsuba et al. 2007). Other variables such as gender, income, self-rated health, self-esteem, and religious attendance have been examined as predictors of attitudes toward volunteering (Smith 2004), but have yet to be examined in the context of a mediational model, despite their direct association with volunteering engagement (Pilkington et al. 2012; Principi et al. 2016; Warburton and Stirling 2007; Wilson and Musick 1997).

To develop effective interventions designed to promote volunteering, research that better explicates the various factors that encourage and discourage volunteering in older adults is needed. This is particularly the case among retired older adults because most previous studies have been conducted on samples comprising both working and retired seniors, and important differences in volunteering motives have been found between these two groups (Ho et al. 2012). Specifically, evidence suggests that those still in paid work are more likely to be driven by the desire to improve their career or knowledge, while those who are retired are more likely to be seeking to protect themselves from the challenges of retirement (e.g., loss of role identity or social functions) (Principi et al. 2012b). Given volunteering is likely to be particularly beneficial to those who are retired and may have lost the social roles and networks afforded to them during their working life (Greenfield and Marks 2004), it is important to examine the factors that impact volunteering engagement among those in retirement.

## Present study

In light of the aforementioned limitations and gaps in the literature, the present study sought to develop and test a comprehensive multivariate model designed to assess the relative importance of various factors that have been demonstrated or proposed to be associated with engagement in volunteering. The study was conducted among fully retired older adults residing in Western Australia. Given the acknowledged role of attitudes as precursors to behavior, the present study also sought to assess the factors associated with attitudes to volunteering and the mediating role of attitudes.

## Methods

### Recruitment and Sample

Approval for the study was obtained from a university Human Research Ethics Committee. A convenience sampling approach was adopted for recruitment, with Australian seniors aged 60+ years invited to participate in a study on health and well-being via (1) notices placed in seniors' publications, community newspapers, and the relevant offices of government and non-government organizations across the Perth, Western Australia metropolitan area; (2) announcements made on a community radio station; and (3) flyers distributed to retirement villages and at seniors' events. A total of 799 seniors (62% female; 71.92 years,  $SD = 6.69$ , range 60–95 years) participated in the study. Respondents completed a battery of measures (described below) either by post or online, depending on their preference.

## Measures

### Sociodemographic variables

Age, gender (1 = *male*, 2 = *female*), level of education (*no formal school/primary school, high school, technical/trade certificate, undergraduate, postgraduate*), SES, country of birth (1 = *Australian-born*, 2 = *overseas-born*), and living arrangement (1 = *does not live alone*, 2 = *lives alone*) constituted the sociodemographic variables included in the study. SES was calculated from respondents' postcodes using the Australian Bureau of Statistics' Socioeconomic Index for Areas *Index of Relative Socio-Economic Disadvantage* (Australian Bureau of Statistics 2018b). This index summarizes the economic and social conditions of individuals based on the income level, educational attainment, and occupation of all individuals within a given neighborhood. Given the age range of respondents in the present study and the likelihood

that some may be widowed or divorced but currently in de facto relationships, whether respondents lived alone or with others was used in analyses instead of marital status.

### Psychological health variables

The 14-item Personal Growth and Purpose in Life subscales of Ryff's Psychological Well-Being Scales (Ryff 1989) were used to assess the constructs of personal growth and purpose in life. Respondents answered each item (e.g., *I have the sense that I have developed a lot as a person over time; I feel good when I think of what I've done in the past and what I hope to do in the future*) on a 6-point scale (1 = *strongly disagree* to 6 = *strongly agree*). In the present sample, Cronbach's alpha was .87 and .88 for scores on the Personal Growth and Purpose in Life subscales, respectively. The 10-item Rosenberg Self-esteem Scale (Rosenberg 1965) was used to assess self-esteem. Each item (e.g., *I feel that I'm a person of worth, at least on an equal plane with others*) was measured on a 4-point scale (0 = *strongly disagree* to 3 = *strongly agree*). A Cronbach's alpha of .88 was obtained for scores on this scale. Depressive symptomatology was assessed using the 20-item Center for Epidemiology Studies Depression Scale (Radloff 1977). Respondents answered each item (e.g., *I was bothered by things that usually don't bother me*) on a 4-point scale (0 = *rarely or none of the time* to 3 = *most or all of the time*), with scores yielding a Cronbach's alpha of .87.

### Physical health variable

The question "How would you describe your physical health?" was used to measure self-rated health (as per Idler and Benyamini 1997). Responses were made on a scale of 1 (*very good*) to 5 (*very bad*). For analysis purposes, this variable was reverse-scored.

### Social variables

Social connectedness was assessed using the 24-item Social Provision Scale (Cutrona and Russell 1987). Respondents answered each item (e.g., *I feel a strong emotional bond with at least one other person*) on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). A Cronbach's alpha of .92 was obtained. Religiosity was assessed by asking respondents to indicate how frequently they attended religious services (1 = *more than once a week* to 6 = *never*). For analysis purposes, religious attendance was reverse-scored.

### Physical activity

Participation in physical activity was assessed using the question "How many hours of moderate to vigorous activity

(that is, physical activity that makes you breathe harder or puff and pant) would you do in an average week?" Responses were made on a 7-point scale (1 = 0 h to 7 = 5 or more hours).

### Attitudes to volunteering

Attitudes to volunteering were assessed using a shortened version of the Community Service Attitudes Scale (CSAS) (Shiarella et al. 2000). A shortened scale was sought to minimize demand on respondents given the numerous measurement scales used in the present study. Ten items from the original 46-item measure were selected. The remaining 36 items were removed as they (1) made reference to college students and volunteering for the purposes of one's professional career or resume (and were therefore not applicable to retired older adults), (2) assessed volunteering-related intentions or empathy toward others rather than attitudes, or (3) were highly similar to other items.

The remaining 10 items were rated on a scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Slight modifications were made where necessary to make the items more specific to volunteering (e.g., *Community service is necessary to making our communities better* was modified to *Volunteering is necessary to make our communities better*). Reliability analyses were conducted on this shortened and modified scale. First, a principal components analysis (PCA) with direct oblimin rotation was conducted to determine the scale's factor structure. Factors associated with an eigenvalue > 1 were retained and items were attributed to a factor if their factor loadings were  $\geq 0.50$  and cross loadings on other factors were < .30 (Hair et al. 2010). Cronbach's alpha was then used to assess internal reliability of scores on the factors derived from the PCA. Results from the PCA revealed the presence of two factors related to perceived value of volunteering (Factor 1: 6 items; e.g., *Volunteering can greatly enhance the community's resources*) and perceived personal responsibility to volunteer (Factor 2: 4 items; e.g., *It is my responsibility to take some real measures to help others in need*), respectively. Cronbach's alpha was 0.88 for Factor 1 and 0.84 for Factor 2, indicating good reliability.

### Volunteering engagement

Participation in volunteering was assessed by asking respondents whether they had engaged in any formal volunteering in the 12 months prior to the period of data collection (dichotomous yes/no response option). Formal volunteering was defined to respondents as work activities that are unpaid, non-compulsory, and unrelated to family obligations.

### Statistical analyses

Correlational analyses were conducted assessing the factors associated with perceived value of volunteering, perceived personal responsibility to volunteer, and engagement in volunteering. A path analysis combining the results of these analyses was conducted using *MPlus*. The model specified direct paths (where found to be significant in correlational analyses) between the independent variables under investigation, the mediating variables of perceived value of volunteering and perceived personal responsibility to volunteer, and the dependent variable of volunteering engagement. As volunteering engagement was dichotomous in nature, the weighted least squares mean and variance adjusted estimator was specified. Bootstrapping ( $n = 1000$  draws) was used to reduce bias of standard errors and confidence intervals. The fit of the model was assessed using model Chi square, the comparative fit index (CFI), the Tucker–Lewis index (TLI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). A nonsignificant model Chi square, CFI and TLI values  $\geq .95$ , SRMR value  $< .08$ , and RMSEA value  $\leq .06$  are indicative of good model fit. Mediation pathways were assessed using the indirect effects function available in *MPlus*.

### Results

#### Descriptive analyses

Respondents had generally positive attitudes to volunteering ( $M = 4.43$ ,  $SD = 0.51$ ) and relatively strong perceptions regarding their personal responsibility to volunteer ( $M = 3.89$ ,  $SD = 0.67$ ). Engagement in formal volunteering in the 12 months prior to data collection was reported by 37% of those surveyed. Independent samples  $t$  tests revealed a significant difference between volunteers and non-volunteers on perceived value of volunteering ( $M = 4.61$ ,  $SD = 0.44$  vs.  $M = 4.32$ ,  $SD = 0.51$ ;  $t(685.72) = -7.89$ ,  $P < .001$ ,  $d = -0.60$ ) and personal responsibility to volunteer ( $M = 4.17$ ,  $SD = 0.65$  vs.  $M = 3.73$ ,  $SD = 0.64$ ;  $t(597.34) = -9.05$ ,  $P < .001$ ,  $d = -0.67$ ). In both instances, perceived value of volunteering and perceived personal responsibility to volunteer were higher among volunteers.

#### Correlational analyses

Correlational analyses (presented in Table 1) revealed that education, religious attendance, self-rated health, personal growth, purpose in life, depression, self-esteem, and social connectedness were significantly associated with all three dependent variables of perceived value of volunteering,

**Table 1** Correlations between the independent and dependent variables of interest

Independent variable	Dependent variable		
	Perceived value	Perceived personal responsibility	Volunteering engagement
Gender (female)	.04	.03	.11**
Age	.09*	.01	.16***
Education	.09*	.13***	.14***
Living arrangement	-.07	.02	-.09**
SES	.04	.05	.00
Country of birth	.00	.04	-.02
Self-rated health	.20***	.21***	.17***
Personal growth	.30***	.36***	.16***
Purpose in life	.25***	.31***	.16***
Self-esteem	.25***	.26***	.10**
Depressive symptoms	-.13***	-.17***	-.08*
Social connectedness	.26***	.31***	.13***
Religious attendance	.07*	.17***	.10**
Physical activity	.01	.07	.11***
Perceived value	-	.64***	.27***
Perceived personal responsibility	.64***	-	.31***

Pearson product-moment correlations were used to calculate the association between continuous variables, point-biserial correlations were used to assess the relationship between continuous and dichotomous variables, and phi correlations were used to assess the relationship between dichotomous variables

\* $P < .05$ ; \*\* $P < .01$ ; \*\*\* $P < .001$

personal responsibility to volunteer, and volunteering engagement. Age was found to be associated with both perceived value of volunteering and engagement in volunteering; and gender, living arrangement, physical activity, perceived value of volunteering, and perceived personal responsibility to volunteer were associated with engagement in volunteering.

### Mediational path analysis

A multivariate mediation model combining results of the correlational analyses was specified and tested. The model provided an excellent fit to the data ( $\chi^2(7) = 7.97$ ,  $P = .335$ , CFI = 1.00, TLI = .99, SRMR = 0.08, RMSEA = 0.01 (0.00, 0.05)) and accounted for 16% of the variance in perceived value of volunteering, 22% of the variance in personal responsibility to volunteer, and 33% of the variance in volunteering engagement.

A schematic of the model depicting significant associations only is presented in Fig. 1. Unstandardized parameter estimates, standardized parameter estimates, and standard errors for all paths tested (including those that emerged as nonsignificant) are reported in Table 2. Gender, age, education, physical activity, and personal responsibility to volunteer were directly associated with volunteering engagement. Specifically, females were more likely than males to volunteer. Engagement in volunteering was also more likely among (1) older individuals with higher levels of education, (2) those who engaged in greater levels of physical activity, and (3) those who scored higher on personal responsibility to volunteer.

Mediation analyses revealed that personal responsibility to volunteer was the only significant mediator. Personal growth, social connectedness, self-rated health, depression, and religious attendance were all found to be indirectly associated with volunteering engagement via this variable

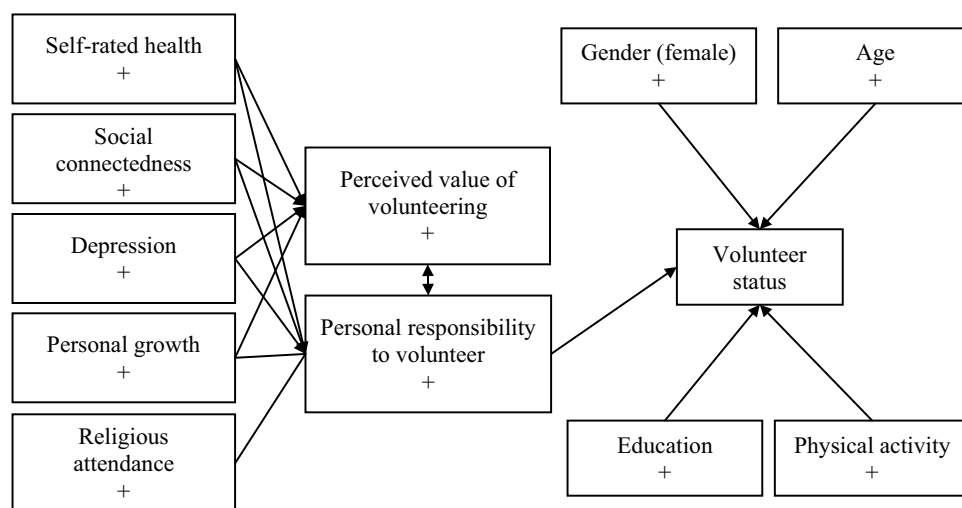
(Table 3). Specifically, higher levels of personal growth, social connectedness, depression, self-rated health, and attendance at religious services were associated with greater personal responsibility to volunteer, which in turn was associated with engagement in volunteering.

### Discussion

To better understand how retired older people can be attracted to volunteering in later life, the present study developed and tested a comprehensive multivariate model designed to assess the relative importance of various factors that may be associated with engagement in volunteering among fully retired Australian older adults. Of the modifiable factors under investigation, perceived personal responsibility to volunteer was found to be especially important. This variable was directly associated with engagement in volunteering and significantly mediated the relationship between the following independent variables and volunteering engagement: self-rated health, social connectedness, personal growth, depression, and religious attendance. In addition, physical activity was found to be directly associated with volunteering. These results have the potential to inform the development of interventions designed to promote volunteering by highlighting areas that could be targeted to increase intervention effectiveness.

Of the factors associated with perceived personal responsibility, the largest effect sizes were found for social connectedness and personal growth. The importance of social connectedness is consistent with previous research linking the extent of people's social connections with their attitude to civic responsibility (Lenzi et al. 2013). This association may be due to the increased sense of reciprocity that is fostered by social connectedness (Lenzi et al. 2013; Thomas 2019). There is a lack of prior research relating personal growth to

**Fig. 1** Graphic presentation of the volunteering mediational model (only significant associations depicted)



**Table 2** Unstandardized parameter estimates, standardized parameter estimates, and standardized errors of the mediational path analysis

Independent variable	Dependent variables	B	SE	$\beta$	95% CI for $\beta$	<i>P</i>
Age	Perceived value	0.01	0.00	.06	−0.02, 0.13	.136
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	0.04	0.01	.21	0.12, 0.29	<.001
Gender (female)	Perceived value	N/A	N/A	N/A	N/A	N/A
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	0.38	0.12	.17	0.07, 0.26	<.001
Living arrangement	Perceived value	N/A	N/A	N/A	N/A	N/A
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	−0.19	0.12	−.08	−0.18, 0.02	.104
Education	Perceived value	0.01	0.02	.02	−0.04, 0.09	.460
	Personal responsibility	0.03	0.02	.05	−0.01, 0.12	.114
	Volunteering	0.16	0.05	.16	0.08, 0.24	<.001
Personal growth	Perceived value	0.01	0.00	.21	0.10, 0.32	<.001
	Personal responsibility	0.02	0.00	.24	0.15, 0.34	<.001
	Volunteering	−0.01	0.01	−.05	−0.17, 0.08	.462
Purpose in life	Perceived value	0.00	0.00	.01	−0.12, 0.14	.904
	Personal responsibility	0.00	0.00	.04	−0.07, 0.16	.466
	Volunteering	0.01	0.01	.13	−0.02, 0.28	.086
Depression	Perceived value	0.01	0.00	.13	0.04, 0.22	.007
	Personal responsibility	0.01	0.00	.12	0.03, 0.20	.012
	Volunteering	0.00	0.01	.03	−0.10, 0.15	.670
Self-esteem	Perceived value	0.01	0.01	.07	−0.04, 0.18	.221
	Personal responsibility	0.00	0.01	.01	−0.09, 0.11	.791
	Volunteering	−0.02	0.02	−.07	−0.20, 0.07	.317
Social connectedness	Perceived value	0.01	0.00	.18	0.08, 0.28	<.001
	Personal responsibility	0.01	0.00	.21	0.12, 0.31	<.001
	Volunteering	−0.01	0.01	−.05	−0.17, 0.07	.438
Self-rated health	Perceived value	0.09	0.03	.13	0.06, 0.21	.001
	Personal responsibility	0.11	0.04	.12	0.04, 0.20	.002
	Volunteering	0.09	0.07	.06	−0.04, 0.16	.222
Physical activity	Perceived value	N/A	N/A	N/A	N/A	N/A
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	0.06	0.03	.10	0.01, 0.19	.031
Religious attendance	Perceived value	0.02	0.01	.06	−0.01, 0.13	.092
	Personal responsibility	0.07	0.01	.17	0.11, 0.23	<.001
	Volunteering	0.04	0.03	.05	−0.04, 0.14	.255
Perceived value	Perceived value	N/A	N/A	N/A	N/A	N/A
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	0.31	0.16	.14	−0.00, 0.28	.054
Personal responsibility	Perceived value	N/A	N/A	N/A	N/A	N/A
	Personal responsibility	N/A	N/A	N/A	N/A	N/A
	Volunteering	0.51	0.10	.31	0.19, 0.42	<.001

*B* unstandardized regression coefficient; *SE* standard error of *B*;  $\beta$  standardized regression coefficient; *CI* confidence interval; *P* significance value; N/A not applicable (i.e., the independent variable was not found to be associated with the dependent variable in univariate analyses, and the path was therefore not tested in multivariate analyses)

Model fit statistics:  $\chi^2(7) = 7.97, P = .335, CFI = 1.00, TLI = .99, SRMR = 0.08, RMSEA = 0.01 (0.00, 0.05)$

**Table 3** Unstandardized and standardized estimates of the indirect effects in the model assessing factors associated with volunteering engagement

Independent variable	Mediating variable	B	SE	$\beta$	<i>P</i>	Total indirect effect	Total direct effect	Total effect
Self-rated health	Perceived value	0.03	0.02	.02	.089			
	Personal responsibility	0.06	0.02	.04	.012	$\beta = .06, P = .002$	$\beta = .06, P = .222$	$\beta = .12, P = .020$
Social connectedness	Perceived value	0.00	0.00	.03	.129			
	Personal responsibility	0.01	0.00	.07	.001	$\beta = .09, P < .001$	$\beta = -.05, P = .438$	$\beta = .04, P = .499$
Depression	Perceived value	0.00	0.00	.02	.161			
	Personal responsibility	0.01	0.00	.04	.026	$\beta = .05, P = .015$	$\beta = .03, P = .670$	$\beta = .08, P = .219$
Personal growth	Perceived value	0.00	0.00	.03	.088			
	Personal responsibility	0.01	0.00	.07	.001	$\beta = .10, P < .001$	$\beta = -.05, P = .462$	$\beta = .06, P = .394$
Religious attendance	Perceived value	0.01	0.01	.01	.202			
	Personal responsibility	0.04	0.01	.05	<.001	$\beta = .06, P < .001$	$\beta = .05, P = .255$	$\beta = .11, P = .015$

*B* unstandardized estimates, *SE* standard error of *B*,  $\beta$  standardized estimate, *P* significance value

perceived personal responsibility to volunteer, and the possible mechanism between these factors is less apparent. It is plausible that individuals' desire to further develop their potential may manifest in altruistic actions such as volunteering due to perceptions that growth involves becoming a "better person." This is speculative, however, and further research is required to examine this proposition.

Similarly, studies to date do not appear to have investigated the relationships between the independent variables of religiosity, self-rated health, and depression and the mediating variable of perceived personal responsibility to volunteer. The first two are intuitively logical given the importance placed in religious teachings on helping others (Smith, 2004) and the body of evidence demonstrating an association between health status and volunteering (Choi et al. 2007; Parkinson et al. 2010; Pilkington et al. 2012; Principi et al. 2012a; Warburton and Stirling 2007). The outcome for depression, however, is difficult to explain, and the nature of this association will need further investigation to assess whether it holds in longitudinal research that is better able to demonstrate causal relationships.

The identified direct association between physical activity and volunteering is consistent with previous work (Librett et al. 2005) and suggests that existing activity level may influence propensity to volunteer. Given engagement in physical activity has been found to influence many of the variables indirectly associated with volunteering engagement in the present study (e.g., self-rated health, social connectedness; Aguiñaga et al. 2018; Meyer et al. 2014; Toepoel 2013), promoting physical activity in older adults has the potential to both directly and indirectly facilitate volunteering.

In terms of the non-modifiable factors examined in the present study, those respondents with higher levels of education were more likely to volunteer than those with lower levels of education, supporting previous research indicating that

greater human capital facilitates volunteerism (Choi et al. 2007; Pilkington et al. 2012; Principi et al. 2012a, b; Wilson and Musick 1997). In addition, females and older seniors were more likely to volunteer than males and younger seniors. The result relating to gender is consistent with the gender difference observed in national volunteering surveys (Australian Bureau of Statistics 2018a). The result relating to age stands in contrast to previous research (Choi 2003; Choi et al. 2007) and may reflect the composition of the sample surveyed in the present study (i.e., fully retired adults).

### Intervention implications

Social connectedness and personal growth present as being especially important factors to address in interventions due to their influence on volunteering engagement via their effect on perceived personal responsibility to volunteer. These factors can be potentially enhanced through the provision of (1) tailored information to seniors detailing ways in which they can continue to grow, develop, and engage socially with others as they age and (2) opportunities to be socially active (e.g., via local community centers, Men's Sheds, University of the Third Age).

Self-rated health is another potentially modifiable factor that could be incorporated into strategies to increase volunteering rates. Although self-rated health was used in the present study as a proxy for actual health and poor health can often be a barrier to engaging in volunteer work (Principi et al. 2016; Warburton and Stirling 2007), self-rated perceptions of health may be altered. "Health optimism" occurs when an individual's self-rated or subjective health is better than their objective health (Chipperfield 1993). Higher levels of psychological well-being and quality of life have been found to be positively associated with health optimism, suggesting that strategies designed to foster these psychological factors have the potential to improve an individual's



self-rated health (Rai et al. 2017). This in turn may increase their propensity to volunteer. In addition, information can be disseminated to older adults detailing the volunteering positions available and tasks that can be accomplished within the constraints of their health status. Volunteering organizations thus need to recognize the heterogeneity in older adults' health status and ensure that there are a range of tasks and assistance on offer to those with different abilities (Sundeen et al. 2007).

Finally, the results of the present study indicate that increases in volunteering in this age group may be a highly positive by-product of strategies designed to promote physical activity. A large and rapidly growing evidence base demonstrates that physical activity is an effective prevention and treatment strategy across numerous physical and mental health domains (Bauman et al. 2016; Taylor 2014). Government policies that promote physical activity may have additional social and financial benefits in the form of an enlarged volunteer workforce.

### Limitations and strengths

The findings should be interpreted in the context of the study's limitations. First, results were based on cross-sectional data, meaning causality cannot be inferred. As it is likely that reciprocal relationships exist between some of the factors examined (e.g., between physical activity and volunteer status; Librett et al. 2005), longitudinal research is needed to assess in which direction these relationships are strongest. A second limitation concerns the recruitment procedures utilized. Those who have a propensity to volunteer may have been more likely to self-select into the study. Supporting this, the rate of engagement in formal volunteering obtained in the present study was greater than in the general population of older adults aged 60+ years (37% cf. 19%: Australian Bureau of Statistics, 2017). However, as the aim was to examine the factors associated with volunteerism rather than the prevalence of volunteerism, the greater number of volunteers in the sample served to increase the power available to conduct analyses with multiple independent variables. Third, data were based on self-report methods and therefore subject to social desirability bias. Finally, this study was conducted in one Australian state, and results may not generalize to the broader Australian population or to those living in other countries.

The present study also had several strengths. First, it addressed the lack of research assessing the relative importance of various sociodemographic, health, social, and attitudinal factors to volunteering engagement, thus minimizing the potential for the contribution of any one particular factor to be overstated. Second, the development and testing of a mediational model allowed for the presence of indirect effects to be assessed. Finally, the focus on fully retired older

adults provided the opportunity to assess the variables associated with volunteering in a population segment likely to benefit most from this activity because of the opportunity to regain the social roles and networks that may have been lost at retirement (Greenfield and Marks 2004).

### Conclusion

Results of the present study suggest that older adults' perceived personal responsibility to volunteer and their engagement in physical activity are especially important factors associated with volunteering. Promoting physical activity and increasing older adults' belief in their personal responsibility to volunteer may facilitate their engagement in this pursuit and foster healthy aging.

**Acknowledgements** The authors wish to acknowledge Nicole Biagioni, Sophie Cronin, Kaela Farrer, Gregory Jongenelis, Caitlin Worrall, and the team of staff and students at Curtin University, Edith Cowan University, and the Vario Health Clinic for their assistance with data collection.

**Funding** This work was supported by an Australian Research Council [Grant Number DP140100365].

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Human and animal rights** This article does not contain any studies with animals performed by any of the authors.

**Informed consent** Informed consent was obtained from all individual participants included in the study.

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