Doing Good and Feeling Well: Understanding the Relationship Between

Volunteering and Mental Wellbeing in Older Adult Populations Through the

Application of a Social-Cognitive Theory of Depression

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Abstract

Previous research indicates that volunteering can improve positive psychological wellbeing, and protect against the onset of depressive symptoms amongst older adults. However, the mechanisms at play in the relationship remain unclear. This research project analysed two data sets in order to test the predictions of a social-cognitive theory of depression as it applies to the volunteering-psychological wellbeing relationship.

A social cognitive theory of depression (as described by Oatley and Bolton (1985)) suggests that older adults are susceptible to symptoms of depression and reduced psychological wellbeing when difficult life events limit their ability to maintain social roles that have previously facilitated investment in valued facets of their self-concept. Therefore, volunteering may compensate for such role losses by enabling older adults to continue to contribute to their sense of self through their volunteering role, and subsequently protect them from the effects that such role-loss may have on their psychological functioning.

Using longitudinal data from a New Zealand-based sample, this research illustrates that older adults who have relatively poorer physical health are more likely to be protected from experiences of depressive symptoms as a result of consistently volunteering than those who experience higher levels of health. Analyses of longitudinal data also provide some evidence that employment status may moderate the impact of volunteering consistency on protection against symptoms of depression.

In addition, analyses of cross-sectional data demonstrate a relationship between contributions to self-concept through the enactment of social roles, and better

psychological wellbeing. This research also suggests that the extent to which negative life events limit a person's ability to invest in their sense of self is related to psychological wellbeing outcomes. Finally, it is suggested that the amount of investment in self-concept facilitated by a volunteering role is related to psychological wellbeing. However, investment in self-concept through volunteering was not shown to moderate the relationship between pertinent life stressors, and psychological wellbeing. To a large extent, these findings align with a social-cognitive theory of depression (Oatley & Bolton, 1985), but they raise questions about the way that compensatory coping through social role changes has previously been theorised.

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Introduction

The process of ageing involves social, psychological and biological changes that are intrinsically interlinked. Ageing as a social construct can be understood as the adoption of new roles and positions over time, and this process can be accompanied by changes in people's psychological and biological wellbeing (Pavelek, 2013). While the prevalence of depressive disorders decreases with age, depression remains common amongst older adults (Byers, Yaffe, Covinsky, Friedman & Bruce, 2010), and the importance of changing social roles in the onset of depression in older adulthood has been the topic of recent investigation (Thoits, 2010).

In essence, this study aims to extend understandings of how changes in social roles can affect people's sense of identity, and subsequently lead to changes in their psychological wellbeing and experiences of depressive symptomatology. Researchers have suggested that the adoption of a social role as a volunteer can lead to a reduction in depressive symptoms amongst older adults, and can protect older adults against the onset of depressive symptoms. However, the causal mechanisms involved in this relationship remain unclear (Wilson, 2012). The function of volunteering in augmenting social roles, and subsequently protecting older adults from depressive symptomatology has recently become a topic of strong interest amongst researchers in the area of gerontology (Wilson, 2012), and advances in this research have spurred the development of the current research project.

The World Health Organisation's (WHO) Active Ageing Policy Framework (2002) refers to active ageing as the enhancement of opportunities for people to improve their

health, participation, and security as they age in order to ensure their quality of life. Participation can refer to older people's contributions to their families, friends, communities and countries. Volunteering fits well within the model of active ageing, and is relatively common practice amongst older adults (Australian Bureau of Statistics, 2006; Bureau of Statistics, 2012; Statistics New Zealand, 2009). As such, further research into the potential benefits of this type of behaviour carries an international mandate.

The current research project uses two separate datasets to answer research questions pertaining to the relationship between volunteering and psychological wellbeing. The first study (Study One), uses data collected through a longitudinal study (Massey University's Health, Work and Retirement Study, a Longitudinal Study of Ageing) to assess whether the effect of volunteering over time is moderated by the types of social roles that older adults maintain. The second study (Study Two) uses data collected through a cross-sectional survey, which was developed by the researcher. This study aims to understand whether volunteering protects against depression by facilitating continued investment in pertinent facets of a person's identity, in the context of stressors that prevent investment in important aspects of self-concept. The second study also seeks to gain an understanding of whether certain types of volunteering activity are associated with differences in volunteers' psychological wellbeing.

The literature review that follows provides an understanding of who, among older adults, are more likely to volunteer, and motivations for volunteering behaviour. Further to this, the relationship between volunteering and psychological wellbeing that has been observed internationally is described, and the theories that have been developed to

explain this relationship are also discussed. Greater detail is provided about the social-cognitive theory of depression (Oatley & Bolton, 1985), which forms the theoretical basis for the current research. The literature review also illustrates the limitations of the research investigating the relationship between volunteering and psychological wellbeing, some of which form the platform for the current research project.

While Study One and Study Two evaluate different research questions and hypotheses, Study Two extends on the findings of Study One. Study One aims to evaluate whether people's adoption of certain social roles moderates the impact of volunteering on psychological wellbeing. In other words, the study investigates whether people benefit differentially from volunteering activity, depending on the other social roles that they carry out. Study Two then seeks to understand whether volunteering is able to partially compensate for the impact of negative events on people's ability to invest in social roles that are important to their sense of identify, which is a test of the social-cognitive theory of depression (Oatley & Bolton, 1985).

Literature Review

It should be noted that studies investigating older adults' experiences of depression do not all use the same age group to define 'older adults' as opposed to 'younger adults', but in this literature review most of the cited studies have sampled participants who are at least 55 years of age. Where study cohorts have been separated according to specified age ranges, this is outlined, but most studies have included all participants aged 55 and older, or 60 years and older.

How is Volunteering Defined?

Volunteering has been defined differently throughout research publications, which can cause difficulties in comparing the outcomes and practical implications of study results (Petrewskj & Warburton, 2007). In the interests of clarity, some suggested definitions of volunteering are discussed here to provide the reader with an understanding of the types of behavior investigated in this research project.

Volunteering can be described as an activity in which time is given, without payment, to benefit other people, or an organisation (Wilson, 2000). This definition is a helpful start point, as it does not rely on volunteers having altruistic motivation for their actions, and allows for the fact that many volunteers benefit personally from their volunteer work. Similarly, the term 'volunteering' can be understood as activity that is undertaken "with a primary purpose other than financial reward; for a common goal or the good of others; of the person's own free will, and without coercion; and without the intention to cause harm" (Petriwskyj & Warburton, 2007, p. 10).

In volunteering research, a distinction is often made between formal, and informal volunteering. Formal volunteering has been referred to as an activity, facilitated by an organisation, that is of benefit to the community and the volunteer, at the free will of the volunteer, and for which the volunteer receives no payment (Volunteering Australia, 2013). Informal volunteering refers to voluntary work that is not done through an organisation (Petrewskj & Warburton, 2007), for example caring for family members, or helping friends.

Formal and informal volunteering are structured differently, and participants may be motivated by different factors and receive different consequences for these types of

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activities. This study aims to fill a gap in research pertaining to the impact of formal volunteering on psychological wellbeing. As such, the literature review to support the study refers only to studies that investigated formal volunteering practices, not informal volunteering practices.

Characteristics of Older Volunteers- Who Volunteers and Why?

  Rates of volunteering.

Similar rates of participation in volunteering amongst older adult populations are observed in the United States, Australia, and New Zealand. In the United States, between 2005 and 2011, the rate of volunteering in people aged over 65 varied between 23.5% and 24.8% (Bureau of Labour Statistics, 2010; Bureau of Labour Statistics, 2012). In New Zealand, 35.6% of people over 65 undertook voluntary work at some time between 2008 and 2009 (Statistics New Zealand, 2009). Although rates of volunteering are useful for some purposes, the number of hours contributed by older volunteers is a clearer indicator of productivity, but this data is more difficult to attain. In Australia, 32.6% of the population aged between 65 and 74, and 22.4% of those aged between 75 and 84 volunteered during 2005, and the average number of hours contributed by people over 65 was more than the average number of hours contributed by any younger age group (Australian Bureau of Statistics, 2007). Similarly, in the United States during 2011, people over 65 contributed the highest median number of volunteer hours of any age group (Bureau of Labour Statistics, 2012).

Conflicting results have been reported regarding the impact of employment status on engagement in volunteering. It has been suggested that older people contribute more time to volunteering than younger people, because older adults are not committed to as

many social roles or activities (Caro & Bass, 1997; Herzog & Morgan, 1993; Mutchler, Burr & Caro, 2003). However, other researchers have suggested a positive correlation between engagement in paid employment, and engagement in volunteering (Choi, 2003; Gauthier & Smeeding, 2003).

Caro and Bass found that amongst older adults who volunteered prior to retirement, the amount of time spent volunteering increased soon after retirement from paid employment (Caro & Bass, 1997). Further Mutchler, Burr and Caro (2003) suggested that older adults who are not in paid work are more likely to engage in volunteering than those still in paid employment. However, Gauthier and Smeeding's cross-sectional investigation across six countries (2003) found that among people over 60, those who were employed were more likely to engage in voluntary activity than those who were not employed.

Conflicting statistics are also reported in investigations of the amount of time that older adults contribute through volunteering. It has been demonstrated that volunteers who are unemployed report a higher mean number of volunteering hours than volunteers who are in paid work (Chambre, 1984; Herzog & Morgan, 1993; Musick & Wilson, 2003; Mutchler, Burr & Caro, 2003). However, Choi (2003) found that employed adults volunteer more than unemployed adults, but part-time workers contribute the greatest number of volunteering hours.

The results presented here suggest that no clear trends in volunteering uptake during, or following employment or unemployment, have emerged in international literature. It is possible that the opportunities for employees to engage in voluntary activities are encouraged to a greater or lesser extent across countries. Further, cultural norms relating to familial commitments differ across ethnicities (Burr & Mutchler, 1999), and may

have an impact on engagement in volunteering following retirement. There are many other possible explanations for the conflicting findings presented. Nonetheless, given the wealth of investigation conducted in this area, it is evident that researchers have long been interested in the impact of social roles on volunteering uptake.

There is greater clarity around the demographic characteristics common among older adults who volunteer. Older volunteers are more likely than older non-volunteers to be female, have a higher level of education, to be part of a higher socio-economic group, and to be married (Choi, 2003; Warburton et al., 2001). Further, older volunteers are more likely to have religious affiliations and better health than non-volunteers (Tan, 2006). Older volunteers and non-volunteers are also suggested to differ in their perceptions of the benefits and costs of volunteering (Warburton et al., 2001). Australian research indicates that older volunteers are more likely to perceive that benefits will result from volunteering, and are less likely to think that there are costs associated with volunteering, compared with older people who do not volunteer (Warburton et al., 2001).

In addition to understanding the demographic characteristics that are common amongst volunteers, it is also important to understand why people decide to begin, and maintain volunteering behaviours. An understanding of both of these topics provides important context when considering models used to explain the relationship between volunteering and psychological wellbeing.

Motivations for volunteering.

Theorists in sociology and psychology have proposed various models to explain older people's motivation to engage in volunteer work. Sherman and Shavit (2012) purport

that when people are involved in paid work, they are able to consume both the extrinsic value of the work (its monetary value), and its intrinsic value. The intrinsic value of paid work refers to any immaterial benefit gained from people's work experiences, such as a sense of achievement in overcoming challenge, social engagement with others, or a sense of being productive and valuable. Therefore, it is suggested that people who are accustomed to consuming more immaterial product at work, are more likely to volunteer than people who work in roles with less immaterial product. Choi and DiNitto (2012) use this theory to explain the positive correlation between levels of education and the likelihood of engagement in volunteering, as people with higher levels of education are more likely to have worked in jobs with high immaterial product.

Role theories purport a similar idea, in that they suggest that people use volunteering as compensation for losses of other purposes or activities in their lives. This understanding is based on evidence that older adults experience greater benefits from volunteering than younger people, which is possibly because the volunteer role becomes more important as people lose their roles as spouses, parents, employees, and caregivers (Van Willigen, 2000). Greenfield and Marks (2004) found that older individuals who had experienced more role losses benefited more, in terms of their psychological wellbeing, from their volunteer work than those who had experienced fewer role losses. However, Musick and Wilson's longitudinal research (2008) found no evidence that older volunteers' marital or employment status moderated the relationship between volunteering and depression. These contradictory findings suggest that role theories do not provide a complete explanation of motivation for older people's volunteering behaviours.

Wilson (2000) describes a behaviourist theory of older people's engagement in volunteering, whereby the decision to volunteer is based on a rational cost-benefit analysis. The analysis assesses access to resources such as time and alternative income streams, and the amount of resources that will be spent or gained by engaging in volunteering activity. Butrica, Johnson and Zedlewski (2009) propose a similar theory whereby the costs and benefits associated with volunteering determine older people's likelihood of commencing volunteering, maintaining their volunteering, or quitting. This research used longitudinal data to demonstrate that many of the factors that increase benefits compared with costs of volunteering, encouraged people to commence engagement and reduced the probability of older volunteers quitting (Butrica, Johnson & Zedlewski, 2009).

Motivations for volunteering in a New Zealand population.

Research suggests that older people are motivated to volunteer by a need to feel useful and productive (Okun, 1994), a desire to contribute something useful, and pleasure derived from voluntary activities (Erlinghagen & Hank, 2006). In New Zealand, interview research was conducted with a small group of 56 to 76 year olds to investigate the types of activities older people engage in, in order to increase their happiness. Themes emerging from the interviews included participating in volunteer work, but the most prominent theme was engagement with other people (Henricksen & Stephens, 2010). Therefore, a desire to build relationships with others, or simply a need to avoid isolation may also be a motivating factor in older New Zealanders' decisions to volunteer.

Community participatory research focussing specifically on Maori involvement in voluntary activity found that the principle of tikanga was an important motivator for some Maori (Office for the Community and Voluntary Sector, 2007). That is to say that Maori may engage in voluntary activities because they believe this is the right thing to do in accordance with a Maori worldview. Further, this research indicated that Maori volunteers are motivated to volunteer by the clear and urgent need visible amongst their communities, in addition to a desire to ensure the survival and recovery of Maori culture (Office for the Community and Voluntary Sector, 2007).

The benefits of volunteering behaviour.

Researchers have found a number of associations between older adults' volunteering behaviour and aspects of wellbeing, indicating that both society, and volunteers themselves benefit from volunteering activity. Older volunteers tend to evaluate their own health status more highly than older non-volunteers (Chambre, 1987; Choi. 2003; Warburton et al., 2001) and older adult volunteers also experience a lower mortality rate than non-volunteers (Harris & Thoresen, 2005; Oman et al., 1999).

Volunteering is also associated with older adults' psychosocial wellbeing. Gabriel and Bowling's interviews with older adults in Britain (2004) indicated that voluntary work provides older volunteers with a sense that their lives are valuable. Although one recent study has reported a positive linear relationship between the number of hours older adults spend volunteering, and their levels of self-reported happiness (Dulin, Gavala, Stephens, Kostick & McDonald, 2012), most research indicates that a non-linear relationship exists between volunteering hours and aspects of wellbeing, such as levels

of life satisfaction and positive affect (see Pilkington, Windsor & Crisp (2012) for a review).

Older adults involved in volunteering are also more likely to have larger social networks than non-volunteers (Chambre, 1987), experience greater frequency of informal social interactions (Musick & Wilson, 2003; Van Willigen, 2000), and have a greater sense of being part of a community (Okun & Michel, 2006). Musick and Wilson's longitudinal study (2003) demonstrated that volunteering helps to increase social interaction with others, leading to the formation of helpful social supports, access to information, and a reduction in isolation. Other longitudinal studies have also indicated that volunteering leads to growth in the number of social ties a person has (Rook & Sorkin, 2003; Tang, Choi & Morrow-Howell, 2010), and the amount of social support they receive (Van Ingen & Kalmijn, 2010). Indeed, the relationship between voluntary work and psychosocial wellbeing is suggested to be partially mediated by the greater level of social support from friends and family that is available to volunteers, than is available to non-volunteers (Pilkington, Windsor & Crisp, 2012). However, the causal directionality of this relationship is difficult to establish, as Paik and Navarre-Jackson (2011) observed that people with larger pre-existing social support networks are more likely to become volunteers as a result of their being recruited to voluntary roles by members of those social networks.

Summary of the characteristics of volunteers.

The research presented here indicates that across many countries, the proportion of the population who volunteer, and the number of hours people contribute to volunteering is greater amongst older adults, than younger adults. Amongst older adults who volunteer,

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it appears that volunteers often belong to different demographic groups than non-volunteers. Further, research suggests that demographic factors may also play a role in determining who, amongst volunteers, benefits the most from engagement in volunteering. However, the research around the impact of social roles on volunteering behaviour is conflicting and further clarification is required.

Having gained an understanding of who volunteers amongst older adults, and what motivates older adults' engagement in volunteering, this literature review now moves to the outcome focus of this research- psychological wellbeing and protection against symptoms of depression. The description that follows provides a broad understanding the nature of depression in older adult populations. This gives important context for the section that follows, which describes the relationship between volunteering and protection against depression, and the promotion of psychological wellbeing.

The Epidemiology and Aetiology of Depression in Older Age Groups

Depression is usually experienced episodically, with episodes generally lasting between a few months and a few years (World Health Organisation, 2001). The recurrence rate of depression is high, with about 60% of people experiencing another depressive episode in the 12 years following their first episode, and the recurrence rate is highest in people over the age of 45 (World Health Organisation, 2001). The American Psychiatric Association (APA) (2013) provides diagnostic criteria by which specific depressive disorders can be identified. All depressive disorders include the experience of sad, empty or irritable mood in addition to physical and cognitive changes that impact an individual's functioning. Depressive disorders are differentiated by the duration, frequency and proposed etiology of symptoms (APA, 2013). The current study does not

seek to investigate the occurrence of particular depressive disorders, but rather uses measures that identify the presence of symptoms common among depressive diagnoses, and therefore seeks to understand the occurrence of depressive symptomatology.

Older adults may have depressive symptoms that do not fulfil diagnostic criteria, but are nonetheless clinically important because their experiences of distress may be alleviated through intervention. Such symptoms are referred to in the literature as minor depression, subsyndromal depression, subclinical depression or mild depression (Harvath & McKenzie, 2011). Minor depressive syndromes are more common in older people than forms of major depression, and the occurrence of minor depression increases the risk of that individual experiencing major depression (Cuijpers, de Graaf & van Dorsselaer, 2004).

Epidemiological research indicates that depression is the fourth leading cause of international disease burden, and this burden is expected to increase over the next decade (WHO, 2001). The prevalence of depressive disorders declines with age, but depression remains common, particularly in females (Byers, Yaffe, Covinsky, Friedman & Bruce, 2010). Research indicates that rates of depressive disorders in developed nations vary. The 12-month prevalence rate of Major Depressive Disorder for American adults aged over 55 is estimated to be 4% (*SE*= 0.4, *p* < 0.05) and the prevalence rate for Dysthymia in this population group is suggested to be 0.8% (*SE*= 0.3, *p* < 0.05) (Byers et al., 2010). The New Zealand Mental Health Survey (Oakley Browne, Wells & Scott, 2006) indicated that the 12-month prevalence of Major Depressive Disorder in New Zealanders over 65 is 1.7%, and the 12-month prevalence of Dysthymia in this age group is 0.4%. Within the older adult population, depression rates are higher amongst

those who are medical outpatients, those who are hospitalised, and people living in residential care facilities (Blazer, 2003).

There are several factors that make it difficult to assess the reliability of these estimates. First, these studies use different age cut offs to define an 'older adult' population, so the characteristics of the studies' samples will likely be different. Further, prospective longitudinal research suggests that estimates of mental disorders generated from retrospective studies may be much lower than the true rate of mental disorders in population groups, because of reporting biases inherent in the methods of data collection used (Moffit et al., 2010). This should be considered in the interpretation of the prevalence rates demonstrated in the epidemiological studies reported, as they may underestimate the true prevalence of mental disorders in the population.

Fiske, Wetherell and Gatz (2009) suggest that the development of depression in older adulthood likely arises from interactions between genetic vulnerabilities, age-associated neurobiological changes and the impact of stressful events, which are more probable later in life (such as decline in health status and loss of loved ones). Colasanti, Marianetti, Micacchi, Amabile and Mina (2010) have also identified physical and psychosocial factors common in later stages of life that increase the risk of developing depression, such as heart disease, diabetes, brain disease, social isolation, being a carer, loss of social status and bereavement. In addition, Fiske, Wetherell and Gatz (2009) suggest that the reduction in daily activities common amongst older people, and increasing self-critical thinking may be a frequent pathway to depression, regardless of individuals' predisposing vulnerabilities.

People who experience depression during older adulthood may have a history of depression, or this experience may be new to them at this later stage in life. The factors influencing the development of depression in older individuals may be different for those who have previously experienced depression earlier in their lives, compared with the majority of people over 60 with depression who have only experienced it later in life (Brodaty et al., 2001; Bruce, 2002). Depression in older people is associated with increased risk of suicide, increased risk of morbidity, decreased physical, social and cognitive functioning, and greater self-neglect (Blazer, 2003). As such, depression is a serious and debilitating condition for a considerable number of older people, and therefore represents an area of priority for clinical intervention.

The Role of Volunteering in Protecting Psychological Wellbeing

A large body of research examining the effects of volunteering on aspects of mental health has been developed and analysed through literature reviews and meta-analyses (Wilson, 2012). Volunteers' mood is one aspect of mental health commonly measured in studies evaluating the impact of volunteering, and the majority of studies suggest that a relationship exists between these two variables (Wilson, 2012). This section will present research investigating the relationship between volunteering and psychological wellbeing, and will describe theorists' ideas pertaining to the causal mechanisms that may be involved in this relationship.

The studies reviewed have used varied outcome measures, with some focussing on the presence or absence of depressed mood, whilst others have focussed on a range of symptoms that would be indicative of clinical depression. Further, amongst the longitudinal studies assessing the relationship between volunteering and mental

wellbeing, some have used indicators of positive psychological wellbeing. Whilst it is acknowledged that psychological wellbeing and mental disorder are considered by many researchers to be separate, but related concepts (Keyes, 2005; Tennant et al., 2007), there is also theory emerging within clinical psychology research, which understands positive psychological wellbeing, and the presence of psychological disorder as existing on a continuum (Joseph & Wood, 2010).

Sin and Lyubomirksy's meta-analysis (2009) indicates that positive psychology interventions significantly improve mental wellbeing and reduce depressive symptoms. The authors conclude that clinicians should integrate positive psychology techniques into their work, especially with depressed older adults, as the greatest impact of positive psychology interventions on depressed mood is seen within this population (Sin & Lyumbomirksy, 2009). Given that this research project focuses on community-dwelling older adults, who likely do not fulfil diagnostic criteria for depression, it is considered appropriate to discuss research relating to the relationship between volunteering behaviour, and clinical depression, depressed mood, and positive psychological wellbeing within the same section.

Directionality of the Volunteering- Depression Relationship

It has been argued that a selection bias exists in investigations of the volunteering-wellbeing relationship, with suggestions that people who have higher levels of economic, social, physical and cognitive resources are more likely to engage in volunteering (Chambre, 1987; Thoits & Hewitt, 2001). It is possible that this has led to conclusions that wellbeing reflects the effects of volunteering, when in fact volunteering reflects the effects of wellbeing. Longitudinal studies, but not cross-sectional studies,

are able to identify causal relationships between two variables because they observe patterns of change in variables over time (Singer & Willet, 2003). The temporal precedence of variables can be established, allowing the direction of the causal relationship to be identified. Therefore it is important to look to research conducted using longitudinal data to establish the directionality of the relationship between volunteering and wellbeing, and in particular, protection against depressed mood.

Thoits and Hewitt's research (2001) suggests that a selection bias exists in the recruitment of volunteers, as people who are better educated, have higher socioeconomic status and are more socially engaged, are more likely to be sought out by voluntary agencies. However, the authors also found that participants who engaged in voluntary activity over a two-year period experienced enhanced happiness, life satisfaction, self-esteem, sense of control over their lives and decreased depressive mood. Therefore, a cycle of wellbeing may be created, in which people who have high levels of physical, social and psychological wellbeing are more likely to engage in voluntary activity, which then further enhances their wellbeing (Thoits & Hewitt, 2001).

However, Van Willigen's findings (2000) contradict the work of Thoits and Hewitt (2001). This longitudinal study found that older adults' psychological wellbeing was not predictive of their future voluntary behaviour. Rather, two waves of survey data, collected over a three-year period, suggested that the number of hours that older adults spend volunteering has a positive effect on their life satisfaction (Van Willigen, 2000). This study indicates that the observed relationship between volunteering and subsequent improvement in psychological wellbeing is the result of a causal relationship, and not the result of selection bias.

Hong and Morrow-Howell (2010) identified a strong causal relationship between volunteering and protection against depression. This longitudinal study investigated the effects of participants' involvement in an intensive volunteering programme, which required around 12 hours of service per week. It was found that on average, participants involved in intensive volunteering over the course of two years experienced a significant decline in depressive symptoms, whereas matched-controls, who did not participate in volunteering, experienced a significant increase in depressive symptoms (Morrow-Howell, 2010). Whilst this study provides evidence for the beneficial impact of the specific volunteer programme in question, it is not clear that these results can be generalised across all volunteering behaviour. This is because larger research studies have indicated that depressive symptomatology decreases as people age (Byers, Yaffe, Covinsky, Friedman & Bruce, 2010), which is in direct contrast to the trend exhibited in Hong and Morrow-Howell's study (2010) amongst non-volunteers.

Piliavin and Siegl (2007) used five waves of data, and Musick and Wilson (2003) used three waves of data, to examine the relationship between volunteering and depression. Multiple waves of data provide a sound basis upon which to draw conclusions about the relationship between two variables, because they enable observation of dynamic changes in the relationship between variables over different time periods (Singer & Willet, 2003). Both Piliavin and Siegl (2007), and Musick and Wilson (2003) suggest that engagement in volunteering protects against depression.

Piliavin and Siegl (2007) found that psychological wellbeing (measured through environmental mastery, personal growth, purpose in life and self-acceptance) increased

linearly with the number of organisations participants volunteered for, indicating that greater diversity of voluntary work may be beneficial for volunteers' mental health. Further, the longer that volunteers consistently worked for an agency, the greater the benefits to their perceptions of their mental and physical wellbeing, and no threshold point was found (Piliavin & Siegl, 2007).

Similarly Musick and Wilson (2003) identified a negative causal effect of volunteering on levels of depression in people aged over 65. It was found that older people's engagement in any type of volunteering in the first year of the study was predictive of lower depression levels eight years later, and that the effect of sustained volunteering over this eight year period on depression was even stronger (Musick & Wilson, 2003).

Kim and Pai's study (2010) offers a unique perspective on the relationship between volunteering and depression, as the sample used in this research demonstrated increasing rates of depression amongst older participants over the years of the study. This is unusual, given that rates of depression have been shown to decline with age (Byers, Yaffe, Covinsky, Friedman & Bruce, 2010). Kim and Pai (2010) found that the rate of the increase in depressive symptoms was slower on average for volunteers compared to non-volunteers, and the more hours of voluntary work that the person engaged in, the slower the rate of increase in depressive symptoms. These results may suggest that volunteering may not only be protective against the onset of depressive symptoms, but it may also help to alleviate depressive symptoms (Kim & Pai, 2010).

The results of Kim and Pai's study (2010) are interesting in light of Li and Ferraro's findings (2005). Li and Ferraro's three-wave longitudinal study (2005) provided

evidence that formal volunteering had a beneficial effect on participants' depression, but also that participants who experienced depression were more likely to engage in volunteering than those who did not. The authors therefore suggest that not only may volunteering be beneficial in protecting against depression, but depression may also be a factor in motivating older people to engage in volunteering because they recognise the beneficial effects of this activity on their mood state (Li & Ferraro, 2005). However, this hypothesis contradicts the ideas of Anderson and Moore (1978), and Okun (1994) who suggest that older people are not motivated to volunteer by a desire to protect their mental wellbeing, and the findings of Thoits and Hewitt (2001), who suggest that people who experience greater psychological wellbeing are more likely to engage in volunteering than those who experience lower levels of psychological wellbeing.

Studies that have compared the effect of volunteering on depression across age groups have suggested that it may be stronger, or may only exist in older populations (Musick & Wilson, 2003; van Willigen, 2000). Van Willigen's analysis of longitudinal data (2000) identified a beneficial effect of volunteering on life satisfaction in people over 60, but did not find this effect in younger population groups. Similarly, Musick and Wilson (2003) found that volunteering had a protective effect against depression in people over 65, but not in younger age groups. Fujiwara and Kawachi's longitudinal study (2008) found no relationship between volunteering behaviour and symptoms of major depression, but this research used participants aged between 25 and 75, and did not conduct analyses separately for different age groups. Therefore, by amalgamating the data of all age groups, this study may have failed to identify the effect of volunteering on depression in older populations. Researchers suggest that age may determine the effectiveness of volunteering on depression, because the volunteer role is

more pertinent to individuals in later life, when other roles they used to fulfil, (such as being a parent, spouse, or employee), come to an end (Greenfield & Marks, 2004; Hao, 2008; van Willigen, 2000).

The research reviewed provides evidence that there is something about volunteering activity that causes a reduction in depressive symptoms, and protects against the development of depressive symptoms in older adults. Wilson (2012) suggests that research to date provides conclusive evidence of a causal relationship, and therefore researchers should now seek to better understand the causal mechanisms involved in this relationship. As such, we look to the authors of volunteering studies, and psychological and sociological theorists, to provide possible explanations as to why this protective relationship exists.

Theoretical Understandings of the Causal Mechanisms Involved in the Volunteering-Depression Relationship

This research project aims to test the predictions of a social-cognitive theory of depression, in relation to the impact of volunteering on psychological wellbeing. The social-cognitive theory sits within the school of role theories, (also known as identity theories), which have been used to explain the results of studies investigating the relationship between volunteering and psychological wellbeing. As such, role theories will be discussed towards the end of this section. However, attention must also be paid to other explanations of the volunteering-depression relationship, in order to gain a comprehensive understanding of all of the mechanisms considered by researchers conducting investigations in this field.

Behavioural activation.

Researchers have suggested that a causal mechanism in the depression-volunteering relationship may be an improved pattern of activity resulting from people's volunteering obligations. Behavioural activation has long been used as a therapeutic intervention for depression, to teach people to increase the number of enjoyable activities, and positive social and environmental interactions in their day (Cuijpers, van Straten & Warmerdam, 2007). Research indicates that most behavioural activation therapies have a large effect on participants who engage in them (Cuijpers, van Straten & Warmerdam, 2007). As such, volunteering may positively influence people's patterns of activity, resulting in increased exposure to pleasurable experiences, and subsequently reducing, or protecting against depression.

Hong and Morrow-Howell's investigation (2010) suggests that part of the reason volunteering influences symptoms of depression is because volunteering increases people's levels of physical activity. Previous studies using the same data set showed that volunteers increased their levels of physical activity (Tan, Xue, Li, Carlson & Fried, 2006), developed a larger group of friends, and felt more meaningfully engaged with their communities as a result of their engagement in an intensive volunteering programme (Morrow-Howell et al., 2008). As such, the authors concluded that volunteering programmes might benefit participants' mental health through physical, social and cognitive mechanisms (Hong & Morrow-Howell, 2010). However, there was no assessment of the proportion of variability in mental health status that may be attributable each type of mechanism.

More recently, Morrow-Howell, Hong, McCrary and Blinne (2012) found that at the start of a nine-month intensive volunteer programme, one third of participants were considered to have low activity levels. By the end of the nine-month programme, almost two thirds of the group were considered to have high activity levels. For those considered to have low activity levels at baseline, volunteering led to an increase in involvement in different types of activities. The authors suggested that subsequent reductions in depression were likely related to increased social connections, or exposure to mood enhancing opportunities through a better portfolio of activity (Morrow-Howell et al., 2012). However, this study did not utilise path analyses, which may have provided more certainty as to whether the purported mediating relationship is an accurate representation of the causal mechanisms involved in the improved psychological wellbeing experienced by volunteers.

Van Willigen (2000) also investigated the role that increased physical activity may play in the volunteering-wellbeing relationship. This study conducted regression analyses of longitudinal survey data and controlled for participants' levels of physical activity. It was found that this explained less than two percent of the variance in psychological wellbeing attributable to volunteering (van Willigen, 2000). These findings contradict the conclusions of the studies reviewed in this section (Cuijpers, van Straten & Warmerdam, 2007; Hong & Morrow-Howell, 2010; Morrow-Howell et al., 2012), which suggest that physical activity is one pathway by which volunteering improves volunteers' mental wellbeing.

Social interaction.

Some studies relating to the impact of behavioural activation in volunteering have narrowed their focus to the impact of greater exposure to social interactions through volunteering. Social interaction is thought to enhance psychological wellbeing as it provides social resources and connections, which can buffer the impact of distressing situations (Musick & Wilson, 2003). Further, loneliness predicts depression, and volunteering may reduce loneliness, resulting in less depression (Barrett et al., 2011).

Pilkington, Windsor and Crisp's cross sectional study (2012) suggests that the positive relationship between moderate levels of volunteering and subjective wellbeing is mediated by older volunteers' access to higher levels of positive social exchanges and social support from friends than non-volunteers. They conclude that ageing related processes may lead to a desire to cultivate high quality relationships with family members and friends. However, because this was a cross-sectional study, the authors could not establish the temporal precedence of volunteering (Pilkington, Windsor & Crisp, 2012).

In contrast to Pilkington, Windsor and Crisp's study (2012), Musick and Wilson's longitudinal study (2003) found that attendance at meetings, but not informal social interactions, mediated the relationship between engagement in volunteering and levels of depression. The authors suggest that formal social interaction provides an opportunity for interpersonal connection, information sharing and building social ties, which form a resource that can be drawn on during stressful situations (Musick & Wilson, 2003). Further, Tang et al. (2010) found that measures of social network changes that resulted from engagement in volunteering were not associated with

volunteers' mental health. As such, it is unclear whether social interactions do in fact mediate the relationship between volunteering and depression, and the circumstances under which volunteers reap the benefits of more exposure to social interactions.

Self esteem.

Another line of theory suggests that engagement in volunteering may lead to exposure to factors that increase volunteers' self esteem. Lin, Ye and Ensel (1999) suggest that volunteering can lead to mastery of skills and alter a person's self-perception, leading to a boost in confidence and self esteem. The authors suggest that self-esteem is a useful resource when dealing with distress, and this may be the reason why volunteering is associated with protection against symptoms of depression. Similarly, Okun (1994) theorised that a personal sense of productivity is an important source of self-esteem, and therefore volunteering is important for people who are retirees, as it provides a sense of productivity.

Piliavin & Siegl's longitudinal study (2007) found that when a sense of mattering to the world was controlled for in regressions analysing the impact of recent volunteering on psychological wellbeing, the relationship between psychological wellbeing and volunteering became insignificant. The authors interpreted this as evidence that volunteering impacts on psychological wellbeing because it increases volunteers' sense of purpose, thereby improving their self-concept.

However, Musick and Wilson (2003) suggest that the impact of volunteering on self-esteem does not mediate the volunteering-depression relationship. Levels of self-esteem and a sense of mastery were controlled for in regression analyses, but neither of these

variables were shown to mediate the relationship between volunteering and depression (Musick & Wilson, 2003). The authors purport that although self-esteem and a sense of mastery did not appear to mediate the relationship between volunteering and depression, other studies suggest that a person's sense of self is improved through volunteering and this subsequently helps to protect against depression. Therefore, the impact of volunteering on sense of self may not be measurable through self-esteem, but another aspect of self-concept may mediate the relationship between volunteering and depression (Musick & Wilson, 2003).

Brown, Hoye and Nicholson's cross-sectional study (2012) sought to examine the roles of self-esteem, social connectedness and self-efficacy as mediators in the relationship between volunteering and mental wellbeing. This study was based in Australia and used a large sample (N=3318) aged between 18 and 98 years. The final model explained 34% of the variability in mental wellbeing, with the order of predictors: self-esteem, social connectedness, self-efficacy, and volunteering (measured by whether or not participants volunteered). Self-esteem was also found to be a nested mediator in the relationship between self-efficacy and mental wellbeing. Mental wellbeing was measured in terms of the absence of depression related symptoms. This provided further evidence that volunteering influences mental wellbeing by facilitating the modification of volunteers' sense of self. These results contradict the findings of Musick and Wilson (2003), which suggested that self-esteem does not mediate the relationship between volunteering and protection against depression.

Altruism.

Another line of theory suggests that the relationship between volunteering and

protection against depression may exist because engagement in altruistic activity boosts

people's sense of happiness. Mongrain, Chin and Shapira (2011) found that people who

purposefully acted compassionately towards someone for five to 15 minutes a day

experienced significantly greater gains in happiness and self esteem after six months

compared with a control group. The findings of Tang, Choi and Morrow-Howell's

longitudinal study (2010) aligned with those of Mongrain, Chin and Shapira (2011).

Tang, Choi and Morrow-Howell (2010) found that volunteers' perception that they are

contributing more to the people they serve, was associated with better psychological

wellbeing. However, Mongrain, Chin and Shapira (2011) caution the interpretation of

studies in the field of altruism, as they suggest that greater changes in wellbeing may be

reported by those engaged in altruistic activity in order to avoid dissonance, given the

level of effort required to complete the task.

Further, Borgonovi's cross-sectional study (2008) examined the effects of volunteering

and two other types of altruistic activity- donating money, and donating blood. No

relationship was found between engagement in donating money or blood, and mental

wellbeing, but a relationship was found between volunteering and mental wellbeing.

The author therefore suggests that altruistic activity alone may not be enough to

influence a person's self-concept, and that factors other than a sense of contribution will

influence the wellbeing of volunteers. In addition, this study found that relative income

was associated positively with happiness amongst non-volunteers, but not amongst

volunteers. Therefore, volunteering may influence mood by increasing empathy,

shifting aspirations around material wealth, and enabling volunteers to draw positive

subjective evaluations of their positions relative to people who are worse off than them, rather than people who are better off (Borgonovi, 2008). This suggests that a change in self-concept may occur as a result of volunteering, but it may be more related to people's perceptions of their own wellbeing in relation to others, as opposed to a sense that they contributing to society.

Role theories.

The finding that volunteering is more likely to protect against depression in older populations aligns with the predictions role theories (also known as identity theories), which suggest that volunteering enhances a person's sense of their role in society, and subsequently positively augments their self-perception, and improves their mood (Moen, Dempster-McClain & Williams, 1992). Role theorists propose that older populations experience the loss of many social roles including those of a spouse, parent and employee, and that the volunteer role may help to compensate for the reduction of enjoyable activity brought about by these role losses.

Li's longitudinal study (2007) observed that widows who took up a volunteer role following the death of their spouse, were protected against depressive symptoms compared with widows who did not take up a voluntary role. In addition, Greenfield and Marks (2004) found that volunteers who experienced more role losses (such as being a spouse or employee) achieved greater gains in positive affect and purpose in life over time, than volunteers who had experienced fewer losses. Further, sub-groups of older adults have been found to benefit differentially from volunteering, with those who have fewer social resources and roles benefiting more (in terms of protection against

depressive symptoms) than those with higher levels of social resources (Morrow-Howell, Hong & Tang, 2009; Piliavin & Siegl, 2007).

However, other studies discount the idea that people with fewer social resources experience greater benefits from their volunteering than people with more social resources. Oman, Thorensen and McMahon (1999), and van Willigen (2000) found that adults who were married, employed, and had higher levels of religious and social involvement experienced greater psychosocial benefits from volunteering than those who did not fulfil these roles. Further, Musick and Wilson (2003) found that employment status and marital status did not moderate the relationship between volunteering and depression any more in adults aged 65 and older compared with those in younger age groups, suggesting that the number of social roles a person fulfils may not be a mediating factor in the mental wellbeing - volunteering relationship.

Rates of volunteering among different population groups also provide evidence that contradicts role theories of volunteering. Research suggests that employed adults have higher rates of volunteering than unemployed adults, and that part time workers have the highest rate of volunteering (Choi, 2003; Musick & Wilson, 2008). This suggests that even people who are already engaged in productive roles are just as likely, or more likely, to engage in volunteering as those who no longer engage in productive roles.

As such, it is unclear whether role theories, as they have been developed to date, provide an accurate explanation of the causal mechanisms involved in the volunteering-wellbeing relationship observed within older adult populations. However, the amount of research published in this area is indicative of the level of interest in the impact that

social roles may have on the beneficial effects of engagement in volunteering activity. The current study therefore seeks to add to this literature by assessing whether the older adults' engagement in certain social roles moderates the effect of volunteering on psychological wellbeing. This will be explained in more detail in the hypotheses that follow.

Summary of the Literature Review Pertaining to the Direction of the Volunteering-Wellbeing Relationship, and the Mechanisms Involved in this Relationship

This section has provided evidence from longitudinal studies that a causal relationship exists between volunteering and protection against depression. It is suggested that volunteering for a range of agencies and for sustained periods of time helps to enhance the positive effects of volunteering on psychological wellbeing, and that older people are more likely to experience a significant improvement in psychological wellbeing as a result of their volunteering activity than younger people.

There are contradictory findings as to whether people with fewer or more social resources benefit more from volunteering, and the causal mechanisms that are possibly involved in the volunteering-depression relationship. It has been suggested that volunteering may enhance subjective wellbeing by encouraging increased engagement in activities, generating more social interactions and support, or augmenting a person's sense of self esteem through their sense of purpose and ability to contribute. However, studies investigating the role of each of these mechanisms in the relationship between volunteering and psychological wellbeing have produced conflicting results. There is some suggestion that all these mechanisms may be involved, but the proportional variance attributable to each of these mechanisms has not been investigated.

This study seeks to build on the work to date, by testing the ability of the social-cognitive theory of depression (Oatley & Bolton, 1985) to explain the relationship between volunteering and psychological wellbeing. The social-cognitive theory of depression combines many elements of the theories discussed. It is hoped that in testing the predictions of this theory in relation to the impact of volunteering on psychological wellbeing, this research will help to clarify some of the contradictions found in the results of volunteering studies, and will be able identify psychological mechanisms activated by volunteering behaviours.

A Social-Cognitive Theory of Depression in Reaction to Life Events

For decades, psychology theorists have shown interest in the ways in which people cope with, or do not cope with negative events that they experience. Some of the theories in this area of research suggest that people who experience failure or limitation in a specific domain of endeavour can protect themselves from negative emotional outcomes by investing in other, more rewarding domains of endeavour and by devaluing the importance of the domain that has been limited, or terminated (Breakwell, 1986; Gecas & Seff, 1990; Goffman, 1963; Kaplan, 1996; Sieber, 1997). Thoits (2010) terms this type of coping strategy "compensatory coping", describing the way in which people attempt to minimise the psychological costs of investment in an area which reaps few or no benefits, for investment in an area that provides more psychological benefits (p. 24).

Within this area of research, Oatley and Bolton's (1985) social-cognitive theory of depression was developed to explain why some people develop mental disorder following experiences of negative events, while others do not. Oatley and Bolton (1985)

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suggest that depression occurs when negative events disrupt a role that is important to a person's self-concept, and there are no other means by which this domain of self-concept can be maintained. The theory is based on Brown and Harris' study (1979), which analysed data from interviews with 458 randomly selected women aged 18 to 65. It was found that the onset of depression usually occurred following a negative event (either acute or chronic), when the person was experiencing one or more vulnerability factors. Oatley and Bolton (1985) refer to these negative events as provoking events, defined as severe events or difficulties that last longer than a week, which directly affect the individual.

Vulnerability factors are defined as circumstances that are not severely threatening when considered in isolation, but can facilitate and encourage the effect of provoking events (Oatley & Bolton, 1985). For example, social isolation alone is not considered to be severely threatening to individuals' wellbeing when no other difficulties are present. However, if provoking events did occur, then social isolation would facilitate the negative impact of the event upon the individual by preventing the individual from finding ways of investing in other domains of self-concept that are pertinent to their sense of identity (Oatley & Bolton, 1985).

Oatley and Bolton (1985) have tested the findings of Brown and Harris' study (1978) using the same definitions and rating scales of vulnerability factors and provoking events as used by the original theorists. This study indicated that the measures used were reliable and valid, and that similar results can be found among different population groups. Building on this, Oatley and Bolton (1985) investigated the psychological

mechanisms that might explain the observed relationship between provoking events, vulnerability factors and depression.

The authors suggest the reason provoking events increase the risk of depressed mood is because they threaten a person's sense of self-concept, which is perceived as reliant upon the different social roles that they fulfil (Oatley & Bolton, 1985). Social roles are considered to comprise goals, plans and expectations that contribute to a person's sense of identity. For example, a woman may perceive that her identity is based on her role as a teacher in a school. Therefore, threats to her positive perception of herself may include her students failing in their classes, or a formal warning from leadership staff. As Swallow and Kuiper (1988) point out, social comparisons may also lead to a loss of sense of self. For example, if a person thinks they are particularly gifted with a certain skill set, such as a talent for piano playing, and this skill is central to their self concept, then occasions of social comparison that lead to the realisation that they are not as skilled as other pianists may force that person to change or eliminate one of the central aspects of their self concept. If the person does not perceive that their identity is more heavily based on other roles that they seem to perform well, then such provoking events may lead to a sense of failure or hopelessness, and subsequent depression (Oatley & Bolton, 1985).

However, most people fulfil more than one social role. It is suggested that concepts of self will have some common aspects across the roles that a person fulfils (Oatley & Bolton, 1985). Each of these roles will be subject to rules that guide the enactment of the role, for example husbands are expected to be loyal. The goals of each of the roles that a person fulfils will also guide that person's action (Oatley & Bolton, 1985).

Therefore, there can be conflicts between the goals of different roles and as such, behaviours may need to be limited or modified to cope with these conflicts.

Often the plans or strategies that individuals enact in order to fulfil the goals of their roles require the participation of another person. As such, provoking agents can result in the onset of depression through two paths. First, the provoking event may lead to depression if it results in the loss of other people or roles that enable the individual to fulfil goals that are important for their self definition (Oatley & Bolton, 1985). An example of this may be the loss of a child, spouse or job. Second, if the provoking event makes it impossible to maintain a role that the person relies on for self-definition, it may also lead to depression (Oatley & Bolton, 1985). For example, if a person's wife is unfaithful, or they are burdened with chronic stress and lack of time due to caring for an elderly parent.

Either of these experiences could possibly lead to the loss of sense of self, negative emotions, and inner dialogue and strategies of interaction that are characteristic of depressive syndromes (Oatley & Bolton, 1985). People may feel a loss of a sense of self, or think that they are defective, worthless or guilty of doing something wrong. Dysphoric emotions usually accompany these cognitions, varying between sadness, envy, longing and other such negative sentiments.

In terms of the withdrawal symptoms commonly seen in depressive syndromes, Oatley and Bolton (1985) suggest that this is the result of a disruption to the habitual behaviour patterns that people develop in coordination with other actors, to pursue the goals of the roles which comprise their self-concept. Therefore the structure of those social habits

become useless when the relationships are lost, or circumstances change to make it impossible to maintain certain roles.

The authors acknowledge that this explanation of depression does not include all possible causal factors involved in the aetiology of different cases of depression, which likely involve a myriad of social, physical and cognitive factors (Oatley & Bolton, 1985). However, it is suggested that the majority of depressive episodes result from the disappointment of expectations, and from role loss, which this theory explains (Oatley & Bolton, 1985).

Chronic depression is suggested to be the result of the adoption of a depressed role, taken on following the onset of acute depression that has resulted from the original role loss (Oatley & Bolton, 1985). The strategies employed when someone experiences the onset of depression can form the foundation for depressive role relationships, which influence the actions of others around them (Oatley & Bolton, 1985). For example, others may act towards the depressed individual in a way that encourages dependency upon that other.

This theory suggests that the reason people demonstrate different reactions to similar levels of role loss is that different people will experience different levels of vulnerability factors (Oatley & Bolton, 1985). As such, a person's ability to reinvest in other goals, or utilise strategies to maintain roles that are important to their self-concept will be more or less inhibited, depending on the vulnerability factors that they experience. Full depressive syndromes are seen to be the result of a person experiencing role loss, when

they are not able to see an alternative role through which they can fulfil their self-definition goals (Oatley & Bolton, 1985).

Vulnerability factors include social factors, such as the lack of a confiding social relationship, unemployment outside the home, early loss of a parent, and low socioeconomic status. The authors describe three categories of vulnerability factors: lack of a secondary role that provides a sense of self-worth; a lack of strategies conducive to gaining a new role; and an inability to take part in activities that are satisfying to the individual when they are alone (Oatley & Bolton, 1985).

The authors suggest that the onset of depression can be relieved if another neutral event allows a version of the person's lost role to be regained, or an entirely new role is adopted that contributes to the person's sense of positive self-concept (Oatley & Bolton, 1985). Preventing the onset of depression can be achieved if the person holds resources that will enable them to maintain a sense that their life is meaningful (Oatley & Bolton, 1985).

Several authors have sought to test the ability of this theory to explain the occurrence of depression in different population groups. In 1993, Brewer used four studies to test the hypothesis that depression is, for most individuals, caused by a provoking event that disrupts the pursuit of self-defining goals through activities. The affective reactions of athletes to both hypothetical and actual athletic injuries were observed.

The first two studies included in this paper tested whether athletes who had a strong, exclusive identification with the athlete role were more likely to experience depression

following a hypothetical career-ending injury. The third study observed the extent to which depression amongst injured athletes was associated with their athletic identity. The fourth study extended the third, by looking at whether the relationship between depression and athletic identity was the same for both injured and uninjured athletes (Brewer, 1993).

As expected, across all four studies, a strong, exclusive identification with the athlete role was linked with a depressive reaction to an injury, which constitutes a provoking event (Brewer, 1993). This study suggests that a mismatch between specific life events, and the cognitive schemas that athletes had built about their social roles as athletes, resulted in depressed mood (Brewer, 1993). The study is limited in that it only used cross-sectional data, preventing an understanding of the temporal precedence of events. Therefore, it is possible that injured athletes focus intensely on their loss of function, and this focus may be what leads to negative mood.

Linville's work (1987) has also provided evidence that having a complex self-concept, which is informed by the occupation of many social roles, can provide protection against the effects of provoking events that threaten aspects of the self. This research indicated that people with less complex self-schemas (i.e. people who have adopted fewer social roles) were more likely to experience large swings in self-appraisal and affect. Later extensions of this work indicated that during times of stress, people with more complex self-schemas had greater protection from depressed mood and perceived stress (Linville, 1987).

Qualitative research utilising interview data collected from married adults with children also aligns with Oatley and Bolton's theoretical work (1985). Simon (1997) found that people perceive that their social roles are sources of purpose and meaning, and provide guidance for actions or behaviours. However, Simon's work (1997) extended the understanding of role meanings, by suggesting that adults perceive the meanings of their roles in terms of the costs and benefits they allow the actor. Interestingly, this research suggested that men and women sometimes associate different meanings to the same type of social role, and these different types of meanings are associated with the differences in distress experienced by males and females when these roles are threatened (Simon, 1997). This may explain why the mental health benefits of full time employment are greater for men than for women, because women also perceive that a cost is attached to this work as they have less time to spend with their families, impeding on the pleasure and esteem they can attain from their roles as mothers and wives (Thoits, 2010).

Thoits (2010) provides a comprehensive review of the literature in the area of stress and identity research. The author concludes that although adversity related to particular roles can initially increase a person's commitment to that role in an effort to overcome the impact of such adversity, if the barriers are maintained for a substantial period of time (Thoits suggests this would be over a year), then the person is likely to withdraw from the role in order to preserve their psychological resources (Thoits, 2010). This conclusion aligns closely with Oatley and Bolton's social-cognitive theory of depression (1985), which suggests depressive outcomes following negative events will be different for people depending on their experiences of vulnerability factors which may prevent them from maintaining the affected role, or replacing it with a new role.

More recently Kwok, Chui and Wong (2013) examined life satisfaction amongst volunteering and non-volunteering young adults in a cross-sectional survey, using self-determination theory as the framework for the investigation. The researchers looked at the impact of the satisfaction of motives for volunteering. Motives for volunteering were separated according to whether the motivation was altruistic, or whether the volunteering behaviour fulfilled self-serving motives relating to career enhancement, social relatedness, personal growth, learning opportunities, or to protect against personal problems or negative affect (Kwok, Chui & Wong, 2013).

The results of this study indicated that need satisfaction plays a mediating role in the relationship between volunteering and life satisfaction, and that volunteering itself does not contribute to life satisfaction (Kwok, Chui & Wong, 2013). The researchers observed that the satisfaction of altruistic motivation was not associated with increased subjective wellbeing amongst volunteers, but the satisfaction of self-serving motives was correlated with enhanced sense of life satisfaction. This indicates that those motivated to volunteer by self-serving motives experience greater life satisfaction than other volunteers if those needs are met, and that those who are mainly motivated by altruistic intent do not experience any greater life satisfaction if that motive is fulfilled through volunteering (Kwok, Chui & Wong, 2013).

Kwok, Chui and Wong's work (2013) provides an interesting foundation on which the current study can build upon. Whilst Kwong, Chui and Wong's work (2013) indicates that life satisfaction of volunteers is related to the extent to which their volunteering fulfils self-serving needs, it does not look at the impact of this need-satisfaction on

mental health outcomes. Although one might expect that life satisfaction will be related to experiences of depression, it is not clear from this study that older adults could be protected from the onset of depressive symptomatology through their volunteering behaviours. Further to this, the study did not control for the impact of the young adult's experiences of negative events that might have impacted on their ability to engage in activities that would satisfy self-serving motives. As such, the understanding of the protective benefits of volunteering provided by the study is not as nuanced as the current study aims to achieve. Nonetheless, the study provides a firm indication that the benefit of volunteering may not necessarily be available to every volunteer, but only to those for whom volunteering satisfies important needs or motivations. This would align with the hypotheses developed on the basis of Oatley and Bolton's social-cognitive theory (1985).

Further to this, Mike, Jackson, and Oltmanns' longitudinal study (2014) found that achievement striving (a facet of the personality trait, conscientiousness) was a significant predictor of individuals' choice to volunteer. The authors suggest that volunteering becomes appealing to conscientious individuals after retirement, but not during full time employment. It is theorised that in retirement, people lose their ability to invest in their social role as an employee or employer, and are searching to maintain the sense of meaning and achievement facilitated by participation in work. Therefore, adopting a volunteering role enables people to compensate for this role loss, as volunteer work is characterised by many of the same features as paid work. However, for individuals low on conscientiousness, it is likely that their investment in their work role is less important than for those high on conscientiousness, and they are therefore less likely to search for an alternative social role following retirement. This study did

not measure the psychological wellbeing of participants, but it indicates a possible pathway of investment in social roles, and attempts to compensate for loss of social roles, that aligns with a social-cogntive theory of depression (Oatley & Bolton, 1985). It provides some indication that volunteering serves to replace investment in the domain of work as a means of investing in social roles that inform a person's sense of identity (Mike, Jackson & Oltmanns, 2014).

Previously in this literature review, research describing role theories' explanations of the relationship between volunteering and psychological wellbeing was described. Some of these studies reported results that would also fit with a social-cognitive understanding of the impact of role gain and role loss on individuals' self-concepts, and the subsequent impact on experiences of depression. Greenfield and Marks (2004) suggested that older people who experience more role losses will benefit more psychologically from volunteering than people who still maintain many social roles. Further, Piliavin and Siegl's findings (2007), which utilised longitudinal data, found that a sense of mattering to the world mediated the relationship between volunteering and psychological wellbeing. The authors interpreted this as evidence that volunteering impacts on psychological wellbeing because it increases volunteers' sense of purpose, thereby improving their self-concept. However, neither of these studies look specifically at the extent to which volunteers are able to work towards roles and goals that inform their self-concept, and whether this impacts upon the extent to which volunteers benefit psychologically from their volunteering behaviours.

A social-cognitive theory's predictions of the relationship between volunteering and depression.

It is important to understand how a social-cognitive theory of depression would explain the relationship between volunteering and depression. First, the theory suggests that depression can develop from the interruption of roles and the pursuit of goals caused by a negative event (Oatley & Bolton, 1985). Older adults experience a range of stressors that involve the loss of social roles, such as being a parent, or spouse.

Kraaij, Arensman and Spinhoven's meta-analysis of studies testing the relationship between negative life events and depression in older age (2002) suggests that almost all negative life events have a modest, but significant relationship with depression. The findings of this study suggest that the cumulative number of stressors a person experiences has a relationship with depression ($r= 0.15$, $p<0.05$), as does the cumulative number of daily stressors that a person experiences ($r=0.41$, $p<0.05$). A social cognitive theory of depression acknowledges that life stressors are related to the onset of depression, but suggests that events which impact roles that are more relevant to our identity will better predict psychological outcomes than the cumulative effects of aggregated stressors (Thoits, 1995).

Thoits (1995) suggests that to test a social-cognitive theory of depression, stressors should not be measured by their acuity or chronicity, or their controllability or uncontrollability, as other researchers have done. Rather, she recommends that researchers separate stressors into those that occur in domains that are identity-relevant to the individual and those that are identity-irrelevant.

As such, a social-cognitive theory of the depression-volunteering relationship would

suggest that older adults are at greater risk of depression when an event leads to the

interruption of roles and the pursuit of goals. In terms of the impact of volunteering on

depression, it would be suggested that older adults who can adopt and sustain a

volunteering role which can contribute to the domains of identity which the person most

values, will be protected against the risk of depression which results from stressful

events, because the volunteering role can replace or supplement valued existing roles

which may be lost or limited as a result of difficult life events.

Summary of research relating to Oatley and Bolton's social-cognitive theory of depression (1985).

Oatley and Bolton (1985) suggest that social roles comprise goals, plans, and

expectations that contribute to a person's identity. The social-cognitive theory purports

that depression occurs when negative events disrupt social roles that are important to a

person's self-concept, and the individual is unable to maintain investment in this role or

adopt a new social role that adequately replaces the original role. This leads to the loss

of sense of self, feelings of guilt or worthlessness, and the onset of depressive

symptomatology (Oatley & Bolton, 1985).

The onset of depressive symptoms can be relieved or prevented if another event allows

the person's lost role to be regained, or allows the development of a new role that

enables adequate investment in the person's own self-concept (Oatley & Bolton, 1985).

This aspect of the theory is particularly pertinent to this research project, as it seeks to

establish whether volunteering provides older adults who have experienced recent

negative events to maintain their investment in important aspects of their self-concept through their volunteering role.

The findings of research investigating the impact of role-specific stressors has aligned with Oatley and Bolton's theory (1985) (Brewer, 1993; Kwok, Chui & Wong, 2013; Linville, 1987; Simon, 1997; Thoits, 2010). However, most of this research has investigated the detrimental impact of negative events on participants' self-concepts, but not the protective effect of adopting new social roles (Brewer, 1993; Linville, 1987; Simon, 1997; Thoits, 2010). Those that have investigated the importance of adopting new social roles, either did not investigate the specific impact of negative events on participants' social roles and their sense of self (Greenfield & Marks, 2004), or did not measure mental health outcomes (Kwok, Chui & Wong, 2013; Mike, Jackson & Oltmanns, 2014).

A social-cognitive theory of depression would suggest that older people experience a range of risk factors for depression, because they inevitably must resign from roles that they have enacted for most of their lifetimes, such as being a worker or a parent. Therefore, volunteering may protect an older adult from depression by providing an alternative role that enables them to achieve goals, and find a sense of meaning and purpose similar to that which they had previously attained through their old social roles. An individual with a self-concept informed by a larger range of roles is better able to find value and meaning in their lives, because they are fulfilling social roles, even when one or two of these roles are lost.

Defining Categories of Voluntary Work in Research Settings

Despite the large volume of research conducted to investigate the effects of volunteering on wellbeing, it has been suggested that much of this work employed measures of volunteering that do not adequately address the differences in the types of activity that volunteers engage in (Morrow-Howell, 2010; Wilson, 2000). Rather, authors have amalgamated information on participants' volunteering behaviour, analysing only whether or not the participant engaged in volunteering, and the number of hours they contributed. Often information pertaining to the nature of a wide range of voluntary activities is reduced to measure just these dimensions (Morrow-Howell, 2010). Because other differentiating aspects of volunteer work are not accounted for, it is difficult to assess which types of volunteer activities are in fact beneficial for the participant, and to identify the types of benefits they produce (Morrow-Howell, 2010). Given these concerns, some researchers have suggested that types of volunteer activity should be categorised when working with data from volunteering in varied contexts (Cnaan & Amrofell, 1994; Fischer, Mueller & Cooper, 1991; Handy et al., 2000; Morrow-Howell, 2010).

Of the articles investigating the impact of volunteering on subjective wellbeing discussed in this literature review, most only used data pertaining to whether or not participants engaged in voluntary activity (Greenfield & Marks, 2004; Li, 2007; Morrow-Howell, Hong & Tang, 2009), whilst some investigated the impact of frequency of volunteering, the number of organisations volunteers worked for and how long they had volunteered (Piliavin & Siegl, 2007; Pilkington, Windsor & Crisp, 2012). The one study reviewed that did investigate the impact of different types of volunteering

on depression, grouped voluntary activities into social sectors: culture and arts, social services, education, health, environment, housing, law, philanthropy, international and religion (Brown, Hoye & Nicholson, 2012). No significant differences were found between these activity subgroups, in terms of the impact of volunteering on subjective wellbeing (Brown, Hoye & Nicholson, 2012).

Research investigating the outcomes of discrete subsets of older adults' volunteering activities provides an understanding of how specific programmes may generate positive health outcomes in volunteers (Hong & Morrow-Howell, 2010). One volunteering programme that has received a lot of attention in the literature is the Experience Corps programme, which requires volunteers to tutor school children struggling with reading and writing for about 15 hours a week (Hong & Morrow-Howell, 2010). It has been suggested that the intensity of volunteers' engagement (in terms of the number of hours contributed) may be key to the positive wellbeing outcomes associated with programme participation (Hong & Morrow-Howell, 2010). Research has shown that Experience Corps volunteers become more physically active following their participation in the programme (Tan et al., 2006) and perceive themselves to be more socially engaged with their communities and friends (Morrow-Howell et al., 2008). Given what is known about the impact of the work on volunteers, it has been suggested that the positive subjective wellbeing outcomes associated with engagement in this particular volunteer role are attributable to physical, cognitive and social pathways (Hong & Morrow-Howell, 2010). As is evident from the conclusions drawn, these studies have been able to connect outcomes directly to the nature of the volunteer programme and this type of information can contribute to the development of evidence-based volunteer programmes that will promote health outcomes (Morrow-Howell, 2010).

Morrow-Howell's research (2010) evaluates the effects of one specific programme, but it does not allow for generalisations to be made about how different types of volunteer programmes may differentially impact on volunteers' wellbeing. Frameworks that categorise voluntary activities according to similar characteristics provide a way of logically analysing and comparing the impacts of a wide variety of voluntary behaviours (Fischer, Mueller & Cooper, 1991). In contrast, studies that report results gathered through the amalgamation of data from a wide range of volunteering activities cannot be generalised across all volunteer programmes, because it is unclear whether all volunteer programmes will comprise the essential contextual elements required for volunteers to experience benefits to their subjective wellbeing (Cnaan & Amrofell, 1994). By using classification systems when studying a wide range of voluntary activities, researchers can ensure that findings are only generalised to similar voluntary groups.

In response to the absence of literature discussing typologies of volunteering behaviour, Fischer, Mueller and Cooper (1991) developed a classification system for volunteer work. Their framework is based on three dimensions: whether the volunteer work is formal or informal; the amount of time committed to the work; and the type of service or activity being provided. The authors identify three types of activities or services in terms of the direct focus of the service or activity. The three categories outlined are 'Person to Object Services', 'Person to Person Services', and 'Person to Community Services' (Fischer, Mueller & Cooper, 1991). The authors purport that the framework provides standard definitions that can be shared amongst researchers to logically analyse precipitants and consequences of volunteering.

Cnaan and Amrofell (1994) also developed a classification system for defining voluntary activity. The authors outline ten dimensions that could potentially be employed when defining types of voluntary activity. The authors suggest that users may adapt the framework to their needs and use only a few of the dimensions, so long as it is clear where volunteer activities will be included or excluded. The dimensions include descriptors of the volunteer and their voluntary contribution: the demographic profile of the volunteer, the type of service being volunteered, whether or not the volunteering is under the supervision of a formal organisation, the frequency of volunteering, and the amount of time contributed in each episode. The framework also includes the volunteer's relationship to the beneficiary, and the client population that benefits. Finally, the framework covers the structural systems that facilitate and shape formal volunteering, such as who manages the volunteers, how this management is carried out, and the types of rewards received by volunteers (Cnaan & Amrofell, 1994).

Most recently, Petriwskyj and Warburton developed a model to differentiate between voluntary activities (2007). The criteria differentiate between formal and informal volunteering, and whether the volunteer works as an individual, or with groups of people. The criteria then further specify types of activities: philanthropic service; mutual aid or self-help activities; activism or advocacy; community service and environmental stewardship. Petriwskyj and Warburton (2007) argue that their matrix of measurement allows for a broad range of activities to be included, ensuring that population groups that are more likely to be involved in informal volunteering or activities that may not always be considered to be volunteering (such as the enhancement or maintenance of culture) will not be neglected by the model.

Although volunteering classification systems have been published since the 1990s, this review could not find any research that had employed either framework to classify types of voluntary behaviour. It appears that despite Morrow-Howell's indication that more needs to be done to investigate the impact of different types of voluntary activities (2010), the suggestion that researchers utilise standard definitions to differentiate between types of voluntary activities has not been heeded. Frameworks that categorise voluntary activities according to similar characteristics provide a way of logically analysing and comparing the impacts of a wide variety of voluntary behaviours (Fischer, Mueller & Cooper, 1991). By using classification systems when studying a wide range of voluntary activities, researchers can ensure that findings are only generalised to types of volunteering activities which afford certain experiences to the volunteer.

A social-cognitive theory of depression would suggest that the extent to which a person is protected from depression through different types of volunteering will be dependent upon whether the type of volunteering contributes to the most valued domains of a person's self concept. In other words, engagement in any type of voluntary activity has the potential to protect a person against depression, so long as it is helping a person to fulfil a role that they value highly. Nonetheless, given that there has been little investigation into the differential impact of types of volunteering activity, it is an important consideration for the current study. As such, research questions pertaining to both the categorisation of volunteering, and a social-cognitive theory of depression will be included.

Research Questions

The literature review outlines a small portion of the findings of an extensive body of research contributing to readers' understandings of the relationship between volunteering, and improvements in psychological wellbeing within an older adult population. However many studies have an inherently narrow focus, testing whether specific mechanisms play a role in the relationship, without attempting to understand how volunteering impacts the volunteer's overarching sense of self.

Oatley and Bolton's social-cognitive theory of depression (Oatley & Bolton, 1985) suggests that the way in which volunteering activity contributes to volunteers' self-concept, subsequently protecting them from depressive symptomatology, will be different for each individual. Therefore, an overarching theory that allows for such differences may help to explain why conflicting results have emerged from studies testing very specific mechanisms that may be activated when volunteering. This research seeks to test hypotheses that align with a social-cognitive theory of depression (Oatley & Bolton, 1985), in order to establish whether this theory provides an accurate understanding of the relationship between volunteering activities, and volunteers' mental wellbeing. It also seeks to establish whether certain types of voluntary activity are more beneficial for older adults' mental wellbeing than others.

The research questions are outlined below:

1)   Does volunteers' engagement in different social roles moderate the impact of volunteering on psychological wellbeing? This will be investigated through a secondary analysis of longitudinal data collected through Massey

University's Health, Work and Retirement Survey. This will comprise Study One, of the two studies included in this thesis.

2) Does the social-cognitive theory of depression predict the mechanisms involved in the volunteering-wellbeing relationship? This will be investigated through a cross-sectional survey designed by the researcher, which comprises Study Two.

3) Does the type of volunteering activity that older adults engage in moderate the impact of the volunteering on psychological wellbeing? This will also be investigated through Study Two.

Hypotheses

Hypothesis One (Investigated in Study One)

Longitudinal data will indicate that the impact of volunteering on depressive symptomatology will be stronger amongst participants who adopt fewer social roles, than amongst participants who engage in more social roles. More specifically, it is suggested that people who are unemployed would benefit more from volunteering than those who are employed. It is further predicted that volunteers without a partner would benefit more from volunteering than those with a partner, and volunteers in poorer physical health will benefit more than volunteers in good physical health.

This hypothesis aligns with a social-cognitive theory of depression, which suggests that people who experience social role losses are more prone to experiencing depressive symptoms, unless they adopt a new social role that enables the fulfilment of goals, and provides a sense of meaning that would have previously been provided through the lost social role. It should be noted that whilst this hypothesis aligns with a social-cognitive

theory of depression (Oatley & Bolton, 1985), findings within this area of research have been mixed. Some researchers have found that people with fewer social roles benefit more from volunteering than those who adopt more social roles (Greenfield & Marks, 2004; Morrow-Howell, Hong & Tang, 2004; Piliavian & Siegl, 2007), whilst others have suggested that volunteers who are employed and/or married experience better psychological wellbeing than volunteers who are unemployed and/or unmarried (Thoits & Hewitt, 2001).

Hypothesis Two (Investigated in Study Two)

It is hypothesised that participants who report higher levels of investment in their self-concept will experience higher levels of psychological wellbeing, as Oatley and Bolton's theory (1985) suggests that investment in the roles and goals that comprise a person's self-concept provides a sense of purpose and self-esteem.

Hypothesis Three (Investigated in Study Two)

Older adults who experience negative life events that correspond with a loss or limitation to domains of their self-concept in which they are most invested will report lower psychological wellbeing than older adults who experience negative life events that are not as severe, and align with the domains of self-concept in which they are less invested. This hypothesis aligns with Oatley and Bolton's social-cognitive theory (1985), and also the results of previous investigations in this area of research (Brewer, 1993; Krause, 2004; Kwok, Chui & Wong, 2013; Linville, 1987; Simon, 1997; Thoits, 2010).

Hypothesis Four (Investigated in Study Two)

Any difference in psychological wellbeing between volunteers and non-volunteers will be a function of the volunteering role facilitating increased investment in aspects of self-concept. This hypothesis aligns with Oatley and Bolton's social-cognitive theory (1985), and also the results of Greenfield and Marks' study (2004).

Hypothesis Five (Investigated in Study Two)

The extent to which a person's volunteering activity contributes to the most valued domains of their self-concept will moderate the impact of negative life events on a person's psychological wellbeing.

Hypothesis Six (Investigated in Study Two)

In accordance with a social-cognitive theory of depression (Oatley and Bolton, 1985), any relationship between engagement in certain types of volunteering activities and psychological wellbeing will be mediated by the extent to which the voluntary role contributes to investment in a highly valued aspect of self-concept. Therefore, it is predicted that either there is no relationship between types of volunteering activities and reported wellbeing, or if such a relationship is identified, it will no longer reach statistical significance once the contribution of the voluntary role to salient aspects of self-concept is controlled for in the analyses.

Method

Participant Recruitment

This study is a secondary analysis of data collected through Massey University's

Longitudinal Study of Ageing. Waves of data were collected in 2006, 2008, 2010, and

2012. At the time of the first wave of data collection, participants in the survey were

between the ages of 55 and 70. To ensure a nationally representative sample was taken,

survey participants were randomly selected from the New Zealand electoral roll

(Towers, 2006). Close to 96% of people eligible to vote in New Zealand were enrolled

on the electoral roll in March 2007. Individuals living in supported residential care, and

in prison were excluded from the study (Towers, 2006).

The recruitment methodology was informed by Dillman's five-stage participant

recruitment method (2000). In March 2006, participants were informed by letter that

they had been randomly selected to participate in the study. One week following, an

information sheet and the survey were posted to participants. Three weeks later,

reminder cards were sent to participants who had not yet responded, to encourage their

engagement in the study. After another three weeks, an extra copy of the survey was

posted to participants who had not yet responded. Those who had still not responded

received a final reminder card five weeks later. In total 12,570 surveys were sent out

and 6,662 people responded- a response rate of 53%.

Individuals of Maori descent were over-sampled to ensure that they were sufficiently

represented in survey findings. In 2006, people of Maori descent comprised 7.8% of the

population aged between 55 and 70 years (Statistics New Zealand, 2013). As such, if Maori had been recruited to participate using the same methods by which other participants were recruited, this population group would not have been adequately represented throughout further waves of the study (Towers, 2006). Therefore 7,780 people who identified as Maori on the electoral roll, and who were aged between 55 and 70, were randomly selected and invited to participate in the survey.

To date, there is no evidence to suggest that ethnicity moderates the relationship between engagement in volunteering and subsequent protection against depression. Further, a social-cognitive theory of depression (Oatley & Bolton, 1985), which has been used to guide the analyses, would not suggest that ethnicity would have any impact on the relationship between these two variables. As such, it was decided that it was appropriate for the NZLSA data to be used in its original form, without case weightings, as the over-representation of Maori participants should not be problematic when generalising the findings of these analyses.

The New Zealand Longitudinal Study of Ageing- Changes to the Title of the Study

The New Zealand Longitudinal Study of Ageing began in 2006 under the title of The Health, Work and Retirement (HWR) Study. Data was collected under this title in 2006 and 2008. In 2010, new funding was awarded by the Foundation for Research, Science and Technology and a new research collaboration was formed between the existing Massey University researchers on the HWR study and researchers from the Family Centre Social Policy Research Unit in Wellington, New Zealand. As such, in 2010, the research collaborators expanded the scope and age range of the HWR study and the name of the study was changed to the New Zealand Longitudinal Study of Ageing

(NZLSA). The survey developed for the 2010 and 2012 waves of the New Zealand Longitudinal Study of Ageing was then sent to all participants who had previously been involved in the HWR study, as well as to new participants.

The statistical analyses used for this research only include data from participants who answered questions pertaining to their engagement in volunteering in 2006, 2008 and 2012. Therefore, none of the data from participants who joined the study in 2010 is included the analyses. For ease of reading, this document only refers to the studies as the NZLSA.

Use of NZLSA Data

All researchers who use data from the NZLSA data set must agree to the terms and conditions outlined by the NZLSA research team for the use of the data. The original contract accepted by the researcher is available in Appendix One. The contract requires that the data is used by the researcher only, and is not distributed to other parties. Further, any copies of the data must be deleted or destroyed once the research has been completed. If the data is to be published, then acknowledgements of the NZLSA research team must be made, as well as acknowledgement of funding bodies that provided financial support for the study.

Participants

Measures of engagement in volunteering were only collected in the 2006, 2008 and 2012 waves of data collection. Data from participants who reported their engagement in volunteering in all three waves of data collection was analysed.

In total, 1640 participants provided reports of their volunteering activity across each of the three waves. Of the participants, 6.5% (n=107) did not report volunteering in any of

those waves, 15.6% (n=255) reported volunteering in only one wave of the survey,

33.6% (n=551) reported volunteering in two waves of the survey, and 44.3% (n=727)

reported volunteering in all three waves of the survey that collected volunteering data.

Measures

Dependent Variables

Depressive symptomatology.

Participants' levels of depressive symptoms were assessed using the revised Center for

Epidemiologic Studies of Depression scale (CESD-R scale), which measures the

occurrence of 11 symptoms of depression. This version of the CESD was designed to

indicate dysphoria and to reflect the nine primary symptoms of a major depressive

episode outlined in the Diagnostic and Statistical Manual of Mental Disorders IV (Eaton

et al., 2004). A higher score on this measure indicates increased depressive symptoms,

but this measure does not allow researchers to assess which participants would meet

clinical diagnostic criteria for depressive disorders. The measurement validity of this

scale has been tested across two cross-sectional samples of older adults, and was found

to be a valid and reliable measure of depression symptoms amongst this population

group (Hertzog, van Alstine, Usala, Hultsch & Dixon, 1990). In addition, the CESD-R

demonstrated high internal consistency, strong factor loadings, and convergent and

divergent validity with anxiety, schizotypy, and positive and negative affect when

completed a large adult community sample (N= 7389) (Van Dam & Earleywine, 2011).

Mental wellbeing.

The Short Form Health Survey (SF-36) is used as a generic measure of health and quality of life, which allows the relative benefit of different treatments to be compared (Ware & Gandek, 1994). Since the development of the SF-36, a 12 item version of the survey has been developed called the SF-12. The SF-12 is comprised of 12 items that were used in the SF-36 and were found to account for over 90 percent of the variability in scores attained on the SF-36 (Ware, Kosinski & Keller, 1996). The reliability and validity of the SF-12 has been tested with a sample of older adults living independently, and is recommended for use as either a predictor or an outcome measure (Resnick & Nahm, 2001).

The SF-12 yields scores that align with a Mental Component Summary Scale and a Physical Component Summary Scale. The Mental Component Summary Scale assesses both negative and positive states of mental health, with the lowest score representing feelings of happiness, peace and calm experienced all the time, and the highest score representing nervousness and depression all the time.

In the 2006 and 2008 waves of the NZLSA data collection, the survey included the SF-36, and in 2010 and 2012 the survey included the SF-12. As such, to assess changes on the items measured through the SF12, NZLSA researchers summed the scores that participants received on the 12 items of the SF-12, from the data collected through the SF-36 in 2006 and 2008.

Norm based standardised scores were calculated for the Mental Health Summary Scale in 2012, based on the Mental Health Summary Scale measures collected in the first wave of data collection in 2006.

Independent Variables

Volunteering consistency.

The NZLSA surveys differed slightly in their content in each wave of the study. Data relating to participants' engagement in volunteering was collected in 2006, 2008, and 2012, but not in the 2010 wave of the study. In each of the years in which information about volunteering behaviour was collected, different measures of engagement in volunteering were employed. In 2008, and 2010, the number of hours that individuals contributed was collected, but this information was not collected in 2006. Further, in 2008 and 2010, participants were asked to indicate the type of voluntary work that they engaged in, but this information was not recorded in 2006. Because this study sought to use longitudinal data to evaluate the relationship between volunteering and protection against symptoms of depression, volunteering was measured in terms of whether or not participants indicated that they did some volunteer work at each wave of data collections. The collation of this information could then be used to gain an understanding of the extent to which each participant consistently engaged in volunteering.

Participants were grouped according to how many times they reported engaging in volunteering, in the surveys undertaken in 2006, 2008, and 2012. The number of years that participants reported engaging in volunteering was summed to create four groups that represented levels of engagement in volunteering- group 0, 1, 2, and 3. Scores ranged from zero to three. For example, a participant who reported engaging in volunteering in 2006 and 2008, but not in 2012 would score two.

Control Variables

Lam and Power (1991) suggest that there are four main domains of life in which one enacts social roles that inform one's self-concept. These domains are: health and independence, interests and hobbies, relationships, and work (which may include both paid and unpaid employment). The authors describe social roles as contributing to investment in each of these four domains, and that a person's sense of self, and their mental wellbeing is influenced by the extent to which an individual is able to invest in domains of their self concept that are important to them.

Study One therefore used information relating to participants' physical health, employment status, and relationship status in statistical analyses to serve as proxies for understanding people's investment in the three domains of health and independence, work, and relationships. Statistical interactions between volunteering consistency and these three variables could then be used to inform understandings of how investment in domains of self-concept may moderate the extent to which people experience protection from symptoms of depression.

Physical health.

Participants' scores on the Physical Health Component Scale of the SF-12 in 2012 were used to control for the effect of physical health on participants' mental wellbeing. Norm based standardised scores were calculated for the Physical Health Component Scale scores, based on the SF-12 measures collected in the first wave of data collection in 2006. Scores on the measure can range from zero to 100, with higher scores representing better self-reported health status, and lower scores representing self-reports of poorer health status. As such, four groups were created to categorise levels of physical health that could be included in ANOVA calculations. Group 1 represented

those with scores ranging from 0-25, Group 2 represented scores ranging from 26-50, Group 3 represented scores ranging from 51-75, and Group 4 would have represented scores ranging from 76-100, but none of the participants' scores fell in this range. The raw scores were used to calculate means displayed as descriptive statistics.

Employment status.

Employment status was coded as a dichotomous nominal variable (1= working in paid employment, 0= not working in paid employment). This data was taken from the 2012 wave of the study, in which participants were asked which of the following options best described their current work status: Full-time paid work (including self employment); part-time paid work; retired (no paid work); full time homemaker; full time student; unable to work due to health or disability issue; unemployed and seeking work; or other. Participants who reported participating in fulltime or part-time paid employment were coded as '1- working in paid employment', and those who responded with any of the other options were coded as '0- not working in paid employment'.

Relationship status.

Relationship status was measured as a dichotomous nominal variable (1= in a relationship, 2= not in a relationship). This coded data was taken from the 2012 wave of the study, in which participants were asked: Which one of these statements is true about you? (please answer for your most recent marriage or partnership): I am legally married; I am in a civil union/ defacto / partnered / opposite sex relationship; I am in a civil union/ defacto / partnered / same sex relationship; I am divorced or permanently separated from my legal husband or wife; I am a widow or widower; I am single (but not a widow or widower); I have never been legally married.

Those who reported being legally married or in either a heterosexual or same sex relationship were coded as '1- in a relationship', and those who did not select these options were coded as '2- not in a relationship'.

Education.

Education level was measured as a dichotomous nominal variable (1= completed up to secondary school, 2 = completed post-secondary qualifications). This coded information was taken from the 2012 wave of data, in which participants were asked: What is your highest educational qualification?: no qualifications; secondary school qualifications (NCEA, school certificate, university entrance); post-secondary certificate, diploma or trade diploma; or university degree? Those who had either no qualifications, or secondary school qualifications were grouped together, and those who completed post-secondary qualifications or a university degree were grouped together.

Consideration of Statistical Analysis Methods

Parametric statistical tests require that certain assumptions pertaining to the underlying distribution of the dependent variable, and relationships between independent variables, are fulfilled (Tabachnick & Fidell, 2007). Importantly, independent variables used to predict the dependent variable distribution should not be strongly correlated with one another (i.e. $r > 0.9$) (Pallant, 2010). Violation of this assumption is called multicollinearity. Further, parametric analyses can become unstable if outlier scores are included in the calculation- i.e. scores on the dependent variable that are very high, or very low (Pallant, 2010).

In addition, for each value of the independent variable, there should be a normal distribution of values of the dependent variable. The distribution of dependent variables can be considered non-normal if the standardised values of skew and kurtosis exceed +/-2.58, and histograms illustrating the distribution of the data, for the given value of the independent variable, show marked variance from a bell-curve shape (Field, 2013). However, van Belle (2011), and Lorenzen and Anderson (1993) suggest that f-statistic equations are robust to violations of the assumption of normality, and therefore ANOVA and regression analyses can still be carried out with data that does not fit perfectly with a normal distribution.

For regression analyses, in addition to the previous assumptions, it is assumed that the relationship between each independent variable and the dependent variable is linear. Finally, for each value of an independent variable, the variance of the residuals should be constant- this is known as homoscedasticity. In other words, the residual distribution should not indicate a systematic pattern or clustering. These two assumptions are particularly important, because they can lead to poor estimations of p-values and confidence intervals (Hayes & Cai, 2007).

When the distribution of the data do not fulfill the requirements of parametric tests, non-parametric equivalents of the tests can be employed. For the purposes of this research, the Kruskal-Wallis H Test, can be used to assess for statistically significant differences in the distribution of a continuous variable, between two or more groups of an independent variable (Pallant, 2010). The Kruskal-Wallis H Test is considered to be the non-parametric alternative to the one-way ANOVA (Pallant, 2010).

Use of the Kruskal-Wallis H Test assumes that the dependent variable is measured at either the ordinal or continuous level, and that the independent variable consists of two or more independent groups. Further, as with a parametric test, it is assumed that there is no relationship between the observations of each group, or between individual data points within each group. Finally, the distributions of each group should have the same variability, i.e. the data points should be similarly distributed around the median (Field, 2013).

When employing the Kruskal-Wallis Test, the test for the homogeneity of variance of the dependent variable data points within each group can be conducted using the absolute difference between the ranks of each score, and the overall mean rank. The absolute difference values can then be plotted on histograms to demonstrate whether the shape of the distribution is similar between the groups being analysed (Field, 2013).

Data Screening

Data screening tests, and all other statistical analyses were carried out using SPSS statistical software, version 20. Data screening was conducted for the two outcome variables. No outliers were detected in the measures of either dependent variables.

To assess for multicollinearity, variance inflation factors (VIF) were calculated for each of the predictors of depression and mental health. All VIF statistics were lower than five, suggesting that multicollinearity did not exist between the predictor variables.

The limits for skew and kurtosis were exceeded by both outcome variables for both the volunteering group, and the non-volunteering group. In light of evidence suggesting that

f-statistic tests are robust to violations of the assumptions pertaining to normality of the distribution of the data (van Belle, 2002; Lorenzen & Anderson, 1993), it was decided that the violations of these assumptions did not rule-out the use of multiple regression calculations in the analyses. Although log transformations were considered, the complexity of the interpretation of the outcomes of statistical analyses using log transformed data were considered to outweigh the benefits of creating a more normally distributed data pattern, given the robustness of ANOVA calculations to violations of this assumption.

Homoscedasticity of the data was demonstrated using a plot of residual scores against predicted scores. The points for both outcome variables were roughly evenly distributed around the zero point. However, for the Mental Wellbeing variable, there was evidence of a pattern of residuals being more variable at moderate standardised predictor values, with less variability in residuals at the higher and lower ends of the standardised predictor values. As such, the assumption of homoscedasticity was violated by the mental wellbeing data, and this dependent variable was not included in ANOVA analyses. However, descriptive statistics relating to this outcome variable were reported, and a Kruskall-Wallis H Test was used to assess whether there were any differences in the distribution of mental wellbeing scores amongst groups of participants who never volunteered, who volunteered across one wave of data, who volunteered across two waves of data, or volunteered across all three waves of data.

Missing Data Analysis

As would be expected with such a large data set, some values of variables included in statistical analyses are missing. Howell (2009) suggests that when using ANOVA, if

the data are missing at random, it should not be problematic to exclude missing data

points from analyses, because their absence should not have a strong effect on the

means of the groups being compared. The term, missing at random, is commonly used

in statistical literature to describe a state of data missingness whereby the probability of

data missing on any particular variable can depend on other observed variables, but

cannot depend on the value of the particular variable itself (Vogt, 2011). Therefore, if

the observed variables known to be predictive of data missingness are included in the

analysis model, then the inclusion of these factors controls for the effect of the missing

variables (Vogt, 2011). However, Little (1992) argues that even if missingness is a

function of the value of the variable in question, it is not problematic so long as the

missingness is not influenced by the value of the dependent variable being predicted by

the analyses. As such, statistical researchers have suggested that a very broad range of

circumstances under which the assumption of data being missing at random can hold.

Although authors have argued that listwise deletion is an acceptable way to manage

missing data if it is missing at random, and may, in some cases be preferable to

imputation methods (Allison, 2002; Graham, 2009), there remains some criticism of this

method. Listwise deletion has previously been criticised because of the possibility that

it can yield biased parameter estimates if data is not missing at random (Wothke, 2000).

Further there will always be a loss of power of the analyses used because fewer cases

are included in the statistical analyses.

Whilst these criticisms have been taken into account, the use of listwise deletion still

appears sensible given the dataset employed here. First, the dataset is very large, and as

such, unless a very large proportion of the data is missing, the parametric statistical tests

used should not suffer greatly from reduced power to detect differences within the sample. Further, as will be further described below, there is no logical reason to assume that the data is not missing at random. Unlike with clinical trials, missing data is not representative of participants dropping out of a treatment condition or circumstances placed upon them as a result of random allocation to a particular condition. All participants have engaged in the survey voluntarily, and for most, only one data point is missing amongst all the data points included in the statistical analyses used here. As such, it is likely that participants have simply missed questions in the survey because of fatigue, or because they have not noticed that they have skipped a point. Given that the survey is comprised of questions presented in a tick-box format, it would be relatively easy for a participant not to realise that they had not answered all questions in full.

Unfortunately, no statistical test is able to assess whether data are indeed missing at random, with the exception of using follow-up data obtained from participants who did not respond (Schafer & Graham, 2002). As such, it is impossible to assert with certainty that the data missing in the NZLSA datasets are missing at random. Nevertheless, descriptive analyses of the missing data were carried out to assess any patterns to the missing data as extensively as possible, so that the author could be comfortable in asserting that the statistical analyses used in this research would not produce biased results following listwise deletion of cases with missing data.

Of the variables included in analyses, only two had complete measures for the whole sample- those were the number of waves of data in which a person reported engaging in volunteering, and the gender of each participant. Of the 1640 participants in the sample, 79.9% (n=1311) had completed measures on every variable included in ANOVA

calculations. Amongst the 20.1% of participants who had data missing, over 85% of them only had one missing data point. Of all the values included in ANOVA analyses, only a small proportion of the data was missing (1.4%).

Figure 1 illustrates the configuration of missing values in the dataset. Each pattern number on the y-axis corresponds to a group of cases with the same pattern of incomplete and complete data. For example, Pattern 1 represents cases with no missing values, and Pattern 9 represents cases that are missing data for marital status and depressive symptomatology. A dataset can potentially have a large number of variables patterns. For this analysis, 9 patterns of missing data are represented amongst the cases in the dataset. There does not appear to be any clear evidence of monotonicity. Having analysed these patterns, it was deemed appropriate to go ahead with the statistical analyses using list-wise deletion so that parametric tests could be used to assess for differences in the CESD-R scores.
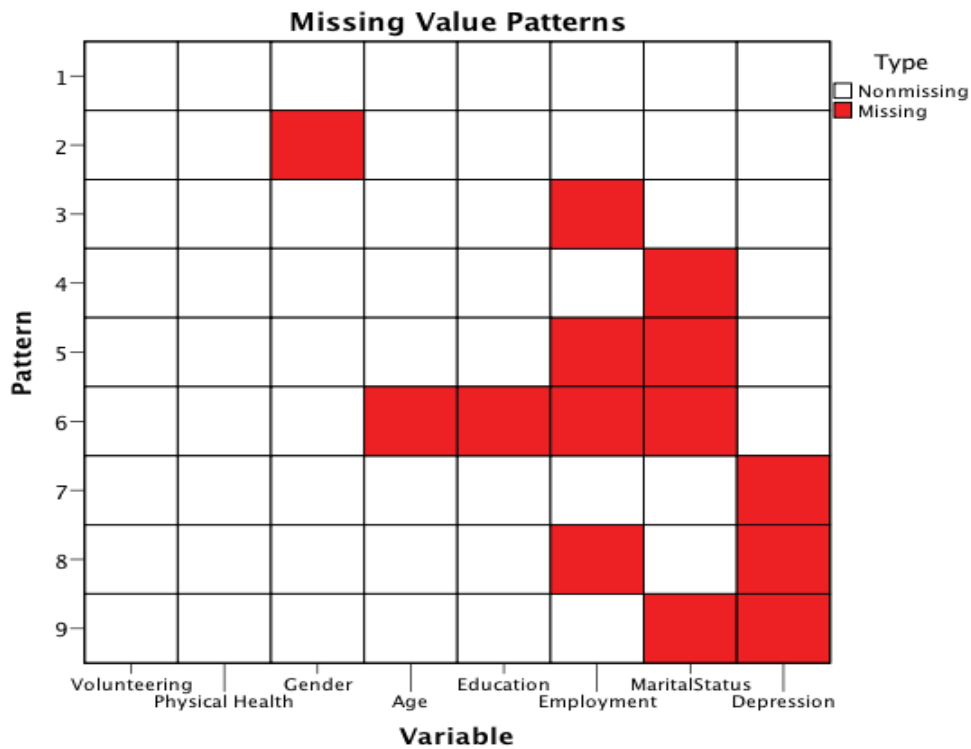
Figure 1: Missing value patterns for NZLSA sample imputation data

Analytic Strategy

Consultation with statistical advisors informed the development of the analytic strategy used for Study One. First, descriptive statistics are presented to illustrate differences in demographic characteristics between participants who did not engage in volunteering at any wave of data collection, and participants who reported volunteering at one or more waves. Given the outcomes of data screening, it was decided that factorial ANOVA calculations would be most appropriate to test the effects of volunteering on the mental wellbeing of older adults' levels of depressive symptomatology in 2012. This approach will be used to demonstrate how much variance in mental wellbeing and depressive symptomatology can be explained by the independent variables as a group, and how much variance in mental wellbeing and depressive symptomatology can be explained by each of the individual variables separately.

To test the moderating effect of volunteering on predictors of mental wellbeing outcomes in older adults, interaction effects were modelled using product terms, as recommended by Cohen and Cohen (1983).

Because the distribution of the mental wellbeing scores violated the assumptions of parametric analyses, a Kruskal-Wallis test for differences in the mental wellbeing scores of the volunteering consistency groups was conducted.

Results

Descriptive Statistics

The statistics presented in Table 1 represent the demographic characteristics of the sample following the pooling of the results of multiple imputation. However, listwise deletion was used to manage missing data in the following parametric analyses.

Table 1

Demographic Characteristics of Volunteering Consistency Groups as a Percentage of the Sample

Characteristic	Never volunteered (n=107)	Volunteered one wave (n=255)	Volunteered two waves (n=551)	Volunteered three waves (n=727)
Female	54.2	52.9	47.2	47.2
Male	45.8	47.1	52.8	52.8
In a relationship	67.1	70.9	67.6	74.1
Single/Divorced/ Widowed	32.9	29.1	32.3	25.9
Not in paid employment	7.5	7.0	5.3	6.8
In paid employment	92.5	93.0	94.7	93.2
Completed school-level qualifications only	60.8	58.4	49.7	36.4
Completed post-secondary qualifications	39.2	41.6	50.3	63.6

There were small differences in the gender makeup of participants who engaged in different amounts of volunteering. Similarly there was little difference between groups of participants in terms of their relationship status, and their employment status. However, it appears that those who did not engage in volunteering at any wave of the study were less likely to have completed post-secondary school qualifications (39.2%)

than those who volunteered at two (50.3%) or three (63.6%) points of data collection.

Table 2 provides mean values for the sample groups' measures of socio-economic status, age, physical health, depressive symptomatology and mental wellbeing.

Table 2

Mean Values of Control Variables by Volunteering Consistency Group

Control Variable	Never volunteered (n=107)	Volunteered one wave (n=255)	Volunteered two waves (n=551)	Volunteered three waves (n=727)
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Age	67.1 (4.7)	67.4 (4.6)	67.8 (4.5)	68.3 (4.5)
Physical Health	46.2 (12.3)	47.4 (11.9)	48.5 (10.8)	49.4 (10.4)
Depression score	8.6 (5.6)	7.03 (5.2)	6.9 (5.0)	6.5 (4.6)
Mental wellbeing score	47.8 (10.9)	49.3 (8.3)	49.8 (8.2)	50.0 (7.3)

The descriptive statistics indicate that those who reported volunteering consistently across the three waves of data collection were older on average (M= 68.3, *SD*= 4.5) than participants who reported not volunteering across the three waves (M= 67.1, *SD*= 4.7). Participants who volunteered consistently across the three waves had higher levels of physical health (*M*= 49.4, *SD*= 10.4) and lower levels of depressive symptoms (*M*= 6.5, *SD*= 4.6) than those who did not volunteer (*M*= 46.2, *SD*= 12.3; *M*= 8.7, *SD*= 6.6). Further, participants who did not volunteer had a lower mean mental health score (*M*= 47.8, *SD*= 10.9) than participants who volunteered in one (*M*= 49.3, *SD*= 8.3), two (*M*= 49.8; *SD*= 8.24), and three (*M*= 50.0, *SD*= 7.3) waves of the data collection.

ANOVA Analysis

A factorial ANOVA was conducted to investigate whether the impact of volunteering consistency on participants' levels of depressive symptomatology was moderated by participants' engagement in social roles. The results of this analysis are presented in Table 3. Main effects were identified for volunteering consistency ($F(1,1290)=6.59$, $p<.01$), employment status ($F(1,1290)=36.90$, $p<.01$), education ($F(1,1290)=7.36$, $p<.01$), and physical health ($F(2,1290) = 60.98$, $p<.01$) on depressive symptomatology. A Bonferroni post-hoc analysis identified a statistically significant difference in the mean depressive symptomatology scores of those who did not volunteer across any waves of the study ($M= 8.56$, $SD=6.59$), and those who reported volunteering across two ($M= 6.92$, $SD=4.96$, $p<.05$) and three waves ($M= 6.49$, $SD=4.61$, $p<.01$)

In addition, a significant interaction effect was found between volunteering consistency and employment ($F(3,1290)=3.21$, $p = .02$), and between volunteering consistency and physical health ($F(6,1290)= 3.88$, $p<.01$). This suggests that the effect of volunteering on wellbeing may be moderated by people's physical health, and people's employment status. As such, additional simple effects analyses were conducted by splitting the participants according to their level of physical health, and their employment status, to gain an understanding of the conditions under which volunteering consistency had an impact on depressive symptomatology outcomes.

Table 3

Results of initial ANOVA to test for differences in the mean depression scores of volunteering consistency groups

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	5663.565[a]	21	269.694	13.595	<.001**
Intercept	15996.851	1	15996.851	806.401	<.001**
Volunteering Consistency	391.920	3	130.640	6.586	<.001**
Gender	.014	1	.014	.001	.979
Relationship Status	28.536	1	28.536	1.439	.231
Employment	731.980	1	731.980	36.899	<.001**
Education	145.973	1	145.973	7.359	.007**
Physical Health	2419.279	2	1209.639	60.978	<.001***
Volunteering Consistency * Relationship Status	20.265	3	6.755	.341	.796
Volunteering Consistency * Employment	190.779	3	63.593	3.206	.022*
Volunteering Consistency * Physical Health	462.215	6	77.036	3.883	<.001**
Error	25590.179	1290	19.837		
Total	93928.000	1312			
Corrected Total	31253.744	1311			

Note: R Squared = .181 (Adjusted R Squared = .168).

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

Simple Effects Analysis by Employment Status

Another factorial ANOVA was conducted for each grouping of level of employment. Amongst participants who were not employed, a main effect of physical health on depressive symptomatology was found to be significant $(F(2, 67) = 6.88, p < .01)$, but no other significant main effects were identified. Amongst those who were employed, main effects of marital status $(F(1, 1227) = 4.13, p < .05)$, education $(F(1, 1227) = 7.19, p < .01)$, and physical health $(F(2, 1227) = 63.66, p < .01)$ on depressive symptomatology were found. However, no main effects of volunteering on depressive symptomatology were found in either of the employment groupings.

Simple Effects Analysis by Physical Health Grouping

Further factorial ANOVAs were conducted for each grouping of level of physical health. Amongst participants with the poorest reported physical health, a main effect of volunteering was found to be significant $(F(3, 52) = 6.84, p < .01)$, as was a main effect of marital status $(F(1, 52) = 4.41, p < .05)$, and employment $(F(1, 52) = 9.91, p < .01)$. Post hoc Bonferroni analyses identified a significant difference between the mean depressive symptomatology score of those who did not volunteer across all three waves of data $(M = 18.71, SD = 8.73)$, and those who volunteered across all three waves of data $(M = 9.04, SD = 6.51)$. No main effects of volunteering were demonstrated within the other two groups who reported better physical health.

These results identify a moderating effect of physical wellbeing on the relationship between volunteering and protection against symptoms of

depression, in that those with the poorest health were seen to benefit from volunteering in this respect, whereas those with better health did not.

Summary

Using data from the whole sample, a significant main effect of volunteering consistency on depressive symptomatology was seen, as those who reportedly did not volunteer at any wave of the study scored significantly higher on a measure of depressive symptomatology than those who reported volunteering across two, and three waves of the study. In addition, significant interaction effects were identified for volunteering and employment status, and volunteering and physical health.

Simple effects analyses suggest that the impact of volunteering consistency on depressive symptomatology may be moderated by people's physical wellbeing. People who experienced poorer physical health, and volunteered across all three waves of the study had significantly lower CESD-R scores, than those with poorer physical health that did not volunteer. However, this effect was not demonstrated amongst study participants with better physical health. This suggests that those with poorer physical health may benefit more from volunteering, in terms of protection against depressive symptomatology, than those with better physical health.

The findings also highlight that possibility that the impact of volunteering may also be moderated by engagement in paid employment. However, no significant results were demonstrated in simple effects analyses that were used to assess the

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significant interaction effect seen in the initial ANOVA. Possible explanations

for this unexpected finding will be explored in the discussion section.

Kruskal-Wallis Analysis of Differences between Volunteering Consistency Groups in Mental Wellbeing Scores

A Kruskal- Wallis H test showed that there was no statistically significant

difference in mental wellbeing scores between the different volunteering

consistency groups $\chi^2(3) = 1.637, p = 0.651$.

Summary of Results

Analyses of the NZLSA data set were conducted to assess whether the impact of

volunteering consistency on depressive symptomatology was moderated by

participants' engagement in different social roles.

Descriptive statistics evidenced small differences in the gender makeup of the

volunteering consistency groups, and small differences between the groups in the

proportion of participants who were in a relationship, and in paid employment.

However, larger differences were seen in the proportions participants who

completed post-secondary qualifications, as those who reported higher levels of

volunteering consistency were a lot more likely to have completed post-

secondary qualifications than participants who had lower volunteering

consistency, or who did not volunteer at all.

Small differences in the mean of measures of socioeconomic status, age and

physical health were seen between volunteering consistency groups. Further, the

mean mental wellbeing scores of volunteering consistency groups increased sequentially with increases in volunteering consistency, and the mean depressive symptomatology scores decreased sequentially with increases in volunteering consistency. This is in line with previous research, which has indicated that volunteering consistency has a positive effect on mental health outcomes (Van Willigen, 2000; Piliavin & Siegel, 2007; Musick & Wilson, 2003).

The initial ANOVA analysis demonstrated a significant effect of volunteering consistency on depressive symptomatology. Further analyses indicated that the impact of volunteering consistency was moderated by participants' physical health. Simple effects analyses identified a significant effect of volunteering consistency on depressive symptomatology outcomes amongst people with poorer physical health. No effect of volunteering on depressive symptomatology outcomes was identified amongst people with better physical health.

Unfortunately, due to the nature of the data distribution, ANOVA analyses could not be used to assess differences in mental wellbeing scores. A Kruskal-Wallis test did not demonstrate any statistically significant difference in the mental wellbeing scores of people who had differentially engaged in volunteering activity. However, because no other factors known to influence mental wellbeing, (such as gender, race, education, income, marital status and health (Mroczek & Kolarz, 1998; Ryff, 1995)), could be controlled for in the analyses, this result does not necessarily accurately reflect the true impact of volunteering on mental wellbeing.

Previous research has identified a positive effect of volunteering consistency on mental health outcomes (Musick & Wilson, 2003; Piliavin & Siegel, 2007; Van Willigen, 2000), but these studies used regression analyses to identify the impact of volunteering consistency over and above the impact of engagement in different social roles. As such, the results of this study add to this body of knowledge, by indicating that although volunteering does appear to have an effect on psychological wellbeing amongst older adults with relatively poor physical health, the same effect was not found amongst older adults with relatively good physical health. Therefore the effects of volunteering on psychological wellbeing may not be evident for all population groups. Hypotheses pertaining to the reasons for the findings of Study One will be presented in the discussion section.

Study Two

Method

Survey Development

The NZLSA survey data provides adequate information to assess the impact of volunteering on mental health outcomes over time, and the moderating effect of the adoption of social roles on this relationship. However, it does not provide information that would allow the mechanisms of the relationship between depressive symptomatology and volunteering, as they are predicted by the social-cognitive theory of depression, to be tested. As such, a cross-sectional survey was developed to test whether a social-cognitive theory of depression predicts the paths through which volunteering impacts on mental health. Most research to date that investigates the relationship between volunteering and depressive symptoms has utilised survey data (Wilson, 2012). Therefore, this method of data collection best enables comparisons with the literature previously published.

The outcomes of the cross-sectional survey are used to test hypotheses two, three, four, five, and six. The survey measured participants' investment in different social roles, and in goals associated with those roles. Further, the survey measured the extent to which events in participants' lives have limited their ability to invest in valued aspects of their self-concept. Because the study also aims to investigate whether different types of volunteering may be differentially related to mental wellbeing outcomes, the survey included criteria by which different types of volunteering can be categorised. A measure of mental wellbeing was collected as the outcome measure, and participants' demographic

information was collected so that the variability in mental health outcomes associated with these variables could be considered.

Cultural advisors from the University of Auckland were provided with copies of the survey prior to its distribution so that they could comment on the suitability of the questions for different ethnic groups. The advisors were satisfied that there were no obvious barriers to the engagement of different ethnic groups in the survey, and that the survey provided adequate opportunity for participants to express themselves within their own cultural paradigm.

Participant Recruitment

Participant recruitment targeted community dwelling older adults, not adults with cognitive decline, nor those with physical disabilities that would prevent their participation in the community. Community organisations that cater to the needs of older adults from around New Zealand were contacted by the researcher to see if they were interested in providing their clients with the opportunity to participate in the survey. The researcher used information available online, as well as discussions with colleagues involved in work with older adults to collate a list of organisations that may be helpful in facilitating the distribution of the survey.

The following organisations were contacted to discuss whether they were interested in facilitating distribution of the survey: Care and Craft, Chinese Positive Ageing Charitable Trust, Coffee and Chat Group, Savvy Seniors, Senior Citizens Events and Expeditions, Newlands Baptist Church, Devonport Holy

Trinity Opportunity Shop, Age Concern, Sixties Up Movement, Te Atatu Christian Care Centre, YMCA Never Too Old, University of the Third Age, Shanti Niwas Trust, Toa Pacific Incorporated, and Senior Net. Some of these agencies ran groups in multiple locations, and therefore could be used to help distribute the surveys in a range of areas. Toa Pacific Incorporated and Shanti Niwas Trust, who provide services for Pacific, Indian, and South East Asian older adults declined to support facilitation of survey distribution.

Those organisations that were happy to facilitate the recruitment process were provided with survey packs that were made available to people in contact with the organisation. Survey packs were made up of an information sheet, consent form, the survey, and an addressed postage paid envelope (see Appendix 2 for examples of these documents). Where possible, the researcher attended community group meetings to provide information about the survey and answer any questions that potential participants had. The information sheet included a free-phone number that participants could use if they had questions about the survey, or wanted to provide survey packs to other older adults. This was used as another form of participant recruitment. An additional 20 survey packs were sent out to the Torbay branch of the Sixties Up community group in Auckland as a result of this mechanism.

The information sheet provided an understanding of the purpose of the study, the way in which participant information would be managed, and information about the researchers involved with the study. It also mentioned that the survey required participants to think about difficult events that they have recently

experienced, and a free phone number for Lifeline (a helpline service) was provided in case participants experienced any distress relating to their recall of such events. To compensate for time spent filling out the survey, participants were provided with the opportunity to go into a draw to win supermarket vouchers. Further, participants were offered the opportunity to receive a summary of the results of the research, once analyses of the data had been completed.

Once participants completed the surveys, they posted them back to the researcher using the postage-paid envelope provided in the survey pack. These envelopes were addressed to the researcher, and were collected at regular intervals throughout the period of data collection. The data was then entered into an electronic, password-protected spreadsheet, which only the researcher had access to. No names or identifying details of participants were entered into the spreadsheet. Rather, each participant's information was assigned a numerical code. Once the information had been entered, the paper surveys were kept in a locked filing cabinet on Massey University's Albany Village campus, and again, only the researcher had access to this filing cabinet. This information is to be kept for ten years, after which time it will be destroyed.

Before the survey packs were widely distributed, the researcher attended a community group who had agreed that their members would complete the survey and provide feedback as to its ease of use whilst the researcher was there. The feedback suggested that the researcher remove one of the questions that had asked around additional roles and goals that people were investing in, outside of

the four domains outlined by Lam and Power's questionnaire (1991). This is discussed further in the sections below. This was the only change made to the survey packs, so once this was done, the survey packs were distributed as widely as possible.

In developing the survey, efforts were made to draw on peer-reviewed tools available in the literature. In addition, consultation with statistical advisors informed the development of the survey, and the analytic strategy used for Study Two. Measures included in the survey are described in the sections below.

Measures

      Measuring investment in social roles.

Lam and Power (1991) developed a questionnaire to assess individuals' investment in social roles, for the purpose of testing social-cognitive theories of depression. The authors propose that to measure investment in social roles, the value that an individual attaches to the social roles, and the goals relating to each of those roles, the individual's chances of success, and the impact of the domain on the person's life must be assessed (Lam & Power, 1991).

The questionnaire elicits information about investment in roles and goals in four domains of a person's life. The first domain is the individual's current form of work- whether that is paid employment, voluntary work, family or community obligations, or study. The second domain is the individual's interests and hobbies. The third domain is an individual's important personal relationships, and the last domain is the individual's investment in his or her own health and

independent living. Lam and Power (1991) suggest that these are the main domains of life, in which one enacts social roles that inform a person's self-concept. Lam and Power's questionnaire (1991) also asks for information on one other role or goal of the participant's choosing that they think informs an important part of their self concept. However, during the pilot phase of the survey it was apparent that this question confused participants, and few were able to provide relevant information in response. As such, this question was removed before the cross-sectional survey was more widely distributed.

The survey requires participants to indicate their investment in roles or goals related to the four main domains that inform a person's self-concept. Participants are asked specifically about how much their role or goal makes them feel good as a person, how much energy they put into the role or goal, how successful they think they are in their role or achievement of their goal, and to what extent success in other areas of their life is dependent upon their success in fulfilling their role, or achieving their goal. Finally, participants are asked about the extent to which they think life would be meaningless without their roles or goals. Ratings are made on a four-point scale from very little, to a great deal.

Levels of involvement or investment in each domain are calculated, and are represented through 'importance rating' scores'. An importance rating for a domain is calculated by taking the mean of the five ratings given on the scales that measure investment in that domain. Then associations between domain involvement scores and psychological wellbeing scores can be tested.

Lam and Power's investigation (1991) suggests that the questionnaire has good reliability, particularly amongst older adult samples, with a Chronbach coefficient alpha value of 0.86. All question items were shown to contribute to the internal consistency of the scale. The test-retest reliability for both younger and older participant samples was 0.8 (Lam & Power, 1991).

In reviewing Lam and Power's questionnaire (1991), it was noted that the four-point likert scale they had used could be misleading, as the second of the four points was labelled '*a moderate amount*'. Usually a likert scale provides a bipolar, balanced scale, where the neutral option falls in the middle of the scale. Alternatively, a forced choice method is used, where the neutral option is removed (Armstrong, 1987). It was considered that 'a moderate amount' would often be perceived to be the neutral option (i.e. neither a high value, nor a low value would be assigned to this label), so it should be in the middle of the scale. As such, the scale was changed to a five-point scale with the ratings: '*very little*', '*a little*', '*a moderate amount*', '*quite a lot*', and '*a great deal*'.

An example of the portion of the survey used to collect data pertaining to investment in the work domain is provided here:

Please tick one box on each line:

1b.	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much does this work make you feel good?					
How much energy and effort do you put into this work?					
How successful do you think you will be in this work?					
To what extent does being successful in other areas of life depend on being successful at this work?					
To what extent do you think life would feel meaningless or unhappy without this work?					

The investment score for this domain can be calculated by summing the ratings provided for each of these questions, and then dividing the answer by five, to give an investment score for the work domain that falls between one and five.

Measuring the importance of negative life events in the previous 12 months.

One of the aims of the cross-sectional survey is to assess whether volunteering can protect against depressive symptomatology in the context of a person having been affected by negative life events that are relevant to the most important aspects of their self-concept. A social-cognitive theory of depression would argue that participants who have recently experienced losses in identity-relevant domains of their life are at higher risk of depressive symptomatology than people who have not recently experienced difficulties in identity-relevant domains of their life (Oatley & Bolton, 1985). Further, this theory suggests that it is this group of participants who will benefit the most, in terms of protection of their

mental wellbeing, from identity-relevant volunteering behaviours (Oatley &

Bolton, 1985).

The only study found that provides a precedent for this type of theory testing was

conducted by Krause (2004), who investigated the impact of negative events on

highly salient domains of self-concept. Krause measured stressors arising in

salient roles by taking the unweighted sum of the number of events that occurred

in the three domains of self-concept that a person reported as being most

valuable. This score was used as the measure for the level of stress that a

participant experienced in the most salient domains of their self-concept, and as

such, represented the participant's vulnerability to experiences of depression

(Krause, 2004).

While this method provides one means of collecting such information, the

following problems with this mode of measurement were identified. First, it was

considered that participants were unlikely to be completely open when

describing stressful events in their lives, as the experience of stressful events may

be seen to be a source of shame, guilt, or embarrassment. Further, providing

detail of the stressful event may be an uncomfortable experience for the

participant, and may subsequently prevent them from participating in the

research. Finally, the measure used by Krause (2004) accounts for the frequency

of stressful events occurring in the different domains of a person's life, but it

does not account for the magnitude of the impact that the stress is having on the

individual. Participants who had three minor stressors in their lives would have

higher scores than an individual who had two major stressors in their life.

As such, it was decided that it would be best to find a new way to measure the extent to which events in participants' lives had limited their ability to invest in roles and goals across the four domains of self-concept outlined in Lam and Power's survey (1991). To do this, the questions that were used to assess investment across four domains of self-concept were modified slightly to ask participants about the extent to which events in their lives over the past 12 months had limited their ability to invest in domains of their self-concept. The questions were presented in the same format as those used in Lam and Power's questionnaire (1991), with the scores on the four questions for each domain averaged to give a score to represent the level of impairment to investment in each of the domains.

For example participants were asked:

> In the past 12 months . . .
> How much have events in your life prevented you from enjoying your work?
>
> *1. Very little   2. A little   3. A moderate amount   4. Quite a lot*
> *5. A great deal*

These scores that represent limitations in investment in each domain may also be called 'stress scores'. The stress score for each domain can be used individually, or the stress scores may be summed to provide a general understanding of the level of stress that people are experiencing across all four domains of self-concept. The summation of all four stress scores will be termed the 'general stress score'.

Measuring the alignment of stressors with pertinent domains of identity.

To test the impact of negative life events on participants' self concept, a measure needed to be developed to assess not only how severe the stressor was perceived to be, but also the extent to which that stressor aligned with domains of self-concept that the participant was most invested in.

The following formula, which sums the interactions of the stress scores and investment scores of particular domains, was used to calculate the alignment of stressors with domains of identity in which participants were most invested (termed the 'stressor salience score'). The stress scores and domain importance scores could have been used in their original forms, and the sum of the products could have been included as predictor in a regression model, in order to test this hypothesis. However, it was decided that because merely combining the scores as the sum of interaction variables would lead to a very wide range of scores, it would be better to use minimum-maximum normalisation to restrict the range of the scores and subsequently aid interpretation of the scores.

Minimum-maximum normalisation is appropriate when the minimum and maximum values possible within a distribution of scores are known (Jain, Nadakumar & Ross, 2005). This technique allows the original distribution of the score to be maintained, and merely shifts the minimum and maximum values to zero and one respectively, to aid interpretation of the scores (Jain, Nadakumar & Ross, 2005).

$$StressSalience = 0.25 \sum_{i=1}^{n} \left(\frac{SRi - 1}{5 - 1} \right) \left(\frac{IRi - 1}{5 - 1} \right)$$

(1)

- *Stress Salience* represents the 'stressor salience score'.
- n represents the number of domains that comprise a person's identity, according to Lam and Power (1991), which is four.
- *SRi* is the stressor rating score (ranging from one to five) for the *i*th domain.
- *IRi* is the importance rating score (ranging from one to five) for the *i*th domain.

This formula yields a score ranging from zero to one, which represents the extent to which the stressors in a person's life aligned with pertinent domains of their self-concept, whilst also accounting for the severity of the stressor. This score will be termed a 'stressor-salience score'.

A higher score represents a combination of the level of stress that people report having experienced in the last 12 months and the importance of the domain of self-concept in which the person experienced that stress, thereby estimating the impact that negative events would have on a person's self-concept. A social-cognitive theory of depression would suggest that the extent to which negative events limit a person's ability to invest in valued domains of their self-concept, will be directly related to their experiences of low mood.

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Measuring the contribution of volunteering to self-concept.

To date, the literature that has tested a social-cognitive theory of depression has used measures of the impact of negative events on self-concept (Krause, 2004; Lam & Power, 1991), but there has been no attempt to measure the protective impact of adopting roles that align with a person's most valued aspects of self-concept. As such, survey questions were developed for the purposes of this research to assess participants' perceptions of the contribution that their voluntary work makes to certain aspects of their self-concept. Participants are asked to rate, on a five-point scale, the extent to which their voluntary work contributes to the achievement of their goals in the four domains of self-concept identified by the survey.

For example, participants are asked:

> *How much do you feel your volunteering work helps you to achieve goals that are related to your work / main occupation? (Please circle one)*
>
> *1. Very little   2. A little   3. A moderate amount   4. Quite a lot*
> *5. A great deal*

The same formula used to calculate the stressor salience score can be used to measure the alignment of volunteering practices with pertinent domains of self-concept, if certain variables are changed. The formula is:

$$VolunteeringAlignment = 0.25 \sum_{i=1}^{n} \left(\frac{VIi - 1}{5 - 1} \right) \left(\frac{IRi - 1}{5 - 1} \right)$$

(2)

- *Volunteering Alignment* represents the 'volunteering alignment

score'.

- n represents the number of domains that comprise a person's identity, according to Lam and Power (1991), which is four.
- VI_i is the volunteering investment rating (ranging from one to five) for the ith domain.
- IR_i is the importance rating (ranging from one to five) for the ith domain.

The volunteering alignment score falls between zero and one, and represents a combination of the extent to which the participant perceives that volunteering enables them to invest in domains of their self-concept, and the importance of the domains of self-concept that the person is investing in through volunteering activities. A higher score represents a participant's perception that their volunteering role enables greater levels of investment in domains of self-concept that are most important to them.

Measuring types of volunteering.

Petrewskyj and Warburton's matrix (2007) was chosen as the measure for volunteering type because it allows for a diverse range of volunteering activities to be systematically categorised. Petrewskyj and Warburton (2007) based the matrix on their definition of volunteering, which is informed by definitions used by other researchers in the field. The authors define volunteering as activity that is undertaken "with a primary purpose other than financial reward; for a common goal or the good of others; of the person's own free will, and without coercion; and without the intention to cause harm" (Petriwskyj & Warburton, 2007, p. 10).

Petriwskyj & Warburton's matrix (2007) facilitates the categorisation of both formal and informal volunteering. Formal volunteering refers to volunteering work that is done through an organisation, and does not include altruistic activities that are not associated with organisations, for example caring for family members. Formal and informal volunteering are structured differently, and participants may be motivated by different factors and receive different consequences for these types of activities. Given that this research focuses on the relationship between formal volunteering activity and psychological wellbeing, information pertaining to participants' engagement in informal volunteering activity was not elicited by the cross-sectional survey.

All other aspects of Petriwskyj and Warburton's matrix (2007) have been included in the survey. The survey asks participants who engage in formal volunteering, whether or not they spend most of their time working as an individual or as part of a team. It then goes on to ask whether people spend their time working in any of four different types of volunteer work: environmental stewardship, provision of goods, activism or advocacy, or provision of service.

To ensure that participants correctly identified the category that their volunteering fits into, the survey asked participants to describe their volunteering role or roles, and how the role relates to the work of the organisation they are contributing to. This was done to check that participants had correctly categorised their volunteering practices. If it was clear to the researcher that the participant has incorrectly categorised their volunteering practice, the researcher removed the data point.

In addition, participants were asked whether they spend most of their time working with objects, or working with people. This is done to assess whether there is additional positive reinforcement experienced when working with other people as opposed to simply providing goods or services in a traditionally altruistic sense, where there is no additional enjoyment gained from experiencing first-hand, the positive impact that volunteer services often have on those who receive them. Finally, participants were asked how much time they spend volunteering each week. Given that the literature in this area of volunteer research is unclear (Mongrain, Chin & Shapira, 2011; Borgonovi, 2008), it was thought that this might provide some interesting additional information in the context of the other research questions.

Measuring mental wellbeing.

The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Stewart-Brown & Janmohamed, 2008) is a 14 item scale, developed to assess mental wellbeing in adults. All scale items are worded positively and represent positive aspects of mental health. The measure is simple and easy to complete. The positively worded phrases reduce the chance that a participant would incorrectly complete the measure, as there is no need for participants to switch their attention, as would be needed in measures that combine positively and negatively worded phrases. This is important, given that the research design does not allow for incorrectly completed measures to be corrected by the participant.

Each answer is recorded on a scale of one to five, so an overall score can fall between 14 and 70. This scale has been validated for use with adults (people over 16 years of age) in the United Kingdom. The measure has also been validated for use amongst people born within the United Kingdom, and amongst Chinese and Pakistani born adults living in England (Stewart-Brown et al., 2011).

In validation studies, scores were found to fall in approximation with a normal distribution and no ceiling or floor effects were found (Tennant et al, 2007). This is important, given that the participants in this study represent a general older adult population, not a psychiatric population. It would be expected that participants in this study experience higher levels of psychological wellbeing than the general population, as they are older, many are volunteers, and they are actively engaging in society through community groups. It was hoped that the scale would elicit enough differentiation in scores to be able to detect associations with people's engagement in roles and goals, and their mental wellbeing.

It is important to note that mental wellbeing, and mental illness are considered by researchers to be two related, but separate concepts (Keyes, 2005; Tennant et al., 2007). As such, the results elicited from the survey will identify relationships between volunteering and levels of mental wellbeing, but these results will also be used to inform ideas about the relationship between volunteering and depressive symptomatology.

Wood and Joseph (2010) assessed the longitudinal relationship between the

presence of psychological wellbeing, and the presence of depressive symptomatology. It was found that people with lower psychological wellbeing were at greater risk of being depressed ten years later, whether psychological wellbeing was measured as a global construct, or separately through self-acceptance, autonomy, purpose in life, positive relationships with others, environmental mastery, or personal growth. These results are supported by the findings of Garland et al. (2010), and Watson and Naragon-Gainey (2010), whose literature reviews indicate that positive affect serves a preventative function against the future onset of clinical depression, and relapse. These results support the underlying principle of the positive clinical psychology movement, which posits that aspects of positive psychological wellbeing are important to understanding the nature of psychological disorder, and that interventions that promote psychological wellbeing can be used as a method of preventing and treating depression (Lee Duckworth, Steen & Seligman, 2005).

Further, an evaluation of the psychometric properties of the WEMWBS found that participants' scores on the scale were highly correlated with their scores on the Short Depression and Happiness Scale, which has high convergent validity with other measures of depression (Joseph, Linley, Harwood, Lewis & McCollam, 2004). It is therefore considered appropriate to infer certain conclusions about the relationship between volunteering and depression based on the data collected in the survey. However, inferences drawn from the results will be done with consideration that depressive symptoms have not been measured directly.

Demographic variables.

Psychological wellbeing is associated with gender, race, education, income, marital status and health (Mroczek & Kolarz, 1998; Ryff, 1995). These variables are also associated with likelihood of volunteering (Warburton et al., 2001; Choi, 2003). As such, to provide evidence that identity relevant voluntary activity is associated with better psychological wellbeing, these factors were controlled for in the analyses.

Respondents' ethnicities were coded as nominal variables, and education level was coded on a four point scale, with 1 indicating that the participant had completed some or no years of high school, 2 indicating that the participant had completed high school, 3 indicating that the participant had completed some years in higher education and 4 indicating that the participant had completed a university qualification. Functional health was also assessed on a five point scale, based on participant's self-perception of their health on a scale of *'excellent', 'very good', 'good', 'fair'*, or *'poor'*. This scale was numerically coded, with a score of one representing *'poor'* and a score of five representing *'excellent'*. This generic measure of health status has been used in previous studies assessing the impact of people's perceptions of their own health on mental health outcomes, and is recommended as a tool for assessing general health status (Guyatt, Feeney & Patrick, 1991; Ruo et al., 2003).

Participants

Data collection methods were designed to target community dwelling older adults, who did not experience cognitive decline or physical disabilities that

would prevent their participation in the community. The main concern in recruiting survey participants was to ensure that the sample size was big enough that the findings could be generalised to the wider population of adults over the age of 60. Stevens (2012) recommends that when using multiple regression to analyse data, at least 15 participants per predictor is required for reliable regression outcomes. Tabachnick and Fidell (2007) suggest that the number of participants in a study should be calculated using the following formula: $N > 8m + 50$, where *'m'* is the number of predictor variables.

In this study, a maximum of eight independent variables would be entered into a regression equation at one time. Therefore Steven's equation (2012) would suggest that information from at least 120 participants be included in the analyses, and Tabachnick and Fidell's equation (2007) would suggest that data from at least 114 participants be included in the analyses. As such, the researcher set out to recruit at least 120 people to engage in the survey. Further, more cases are needed if the distribution of the dependent variable is skewed, so the more cases available, the more robust the analysis becomes (Pallant, 2011).

Data Screening

As mentioned previously in relation to Study One, parametric statistical tests require that particular assumptions pertaining to the underlying distribution of the dependent variable, and relationships between independent variables, are fulfilled (Tabachnick & Fidell, 2007). Data screening was carried out to assess whether the distribution of the mental wellbeing scores, and investment scores met the assumptions of parametric testing when grouped according to

volunteering status. Multicollinearity was assessed by reviewing correlation coefficients between each of the independent variables. No correlation larger than 0.7 was observed (the highest was 0.35), and the Tolerance values were all greater than 0.1 (the lowest was 0.868).

Further, multiple regression assumes that the independent variables, both collectively and individually, are linearly related to the dependent variable (mental wellbeing). This was assessed using scatter plots of residuals and predictor variables. Visual analyses of these plots suggested a linear relationship between the dependent and predictor variables.

Further, only one score in the mental wellbeing variable represented an outlier from the remainder of the data. This particularly low mental wellbeing score (which still fell within three standard deviations of the mean) belonged to a volunteering participant, and aligned with one of the highest stress scores in the data set. The trimmed mean of the mental health scores for the volunteering group was calculated to understand the effect of the outlier on the mean of the data. The trimmed mean represents the mean of the data, once the highest and lowest five percent of scores have been removed. There was a very small difference between the trimmed mean (m= 55.72) and the actual mean (m=55.36). As such, it was decided that the outlier should be included in the analyses, as it likely represented an accurate estimation of the participant's mental wellbeing, given their stress score, and it had little impact on the mean of the volunteering group used in regression analyses.

In addition, for each value of the independent variable, there should be a normal distribution of values of the dependent variable. The standardised values for the Kolmogorov-Smirnov and Shapiro-Wilk tests did not reach significance for the non-volunteering group, but the Shapiro-Wilk statistic indicated that the mental wellbeing data, and the investment score data was not normally distributed. However, as van Belle (2002), and Lorenzen and Anderson (1993) suggest that f-statistic equations are robust to violations of the assumption of normality, it was decided to continue with the use of parametric tests.

Finally, the Levene's test was used to assess for homoscedasticity of the mental wellbeing scores, and investment scores for the volunteering and non-volunteering groups. The Levene statistic was not significant, indicating that for each value of the independent variable, the variance of the residuals of the dependent variable was constant.

Imputation of Missing Data

Because the data fitted the assumptions for calculating regression equations, and because the relatively small sample size may affect the power of statistical analyses, it was decided to impute the data values missing in the data set. Multiple Imputation (MI) uses all available values of a data set to generate a range of plausible imputations for missing values, based on the correlations observed between existing variables (Newgard & Haukoos, 2006). Multiple sets of imputed data are generated to account for the uncertainty inherent in the MI process. Each of the complete imputed data sets is then analysed using standard statistical analysis methods, and the results of these analyses are pooled to allow

the researcher to draw statistical inferences from the data that may be generalised to the population from which the sample was drawn (Newgard & Haukoos, 2006).

All multiple imputation and statistical analyses were conducted using SPSS version 20. The Markov chain Monte Carlo method was used to create five independent imputed data sets. In the imputation process, all of the data used in the regression analysis was included in the imputation process, as well as participants' scores on other measures of mental wellbeing taken in 2012 and 2010. Five different complete data sets were created. Then identical ordinary least-squares regression analyses were conducted on each data set, and the results were pooled to produce estimations of parametric statistics. The beta coefficients were averaged across the five imputed data sets to produce a single estimate, and the standard error for each beta value was calculated from the five error estimates, as was the variability between the estimates, in accordance with the method set out by Rubin (1987).

When using MI, it is assumed that the data are missing at random- that is to say that there is no observed or unobserved pattern of missing data. There is no statistical test to assess whether data are indeed missing at random. Although biased results may be generated through the use of MI when the data is not missing at random, some studies suggest that MI generates less biased estimates than other more simple methods of data imputation (Crawford, Tennstedt & McKinlay, 1995; Liu & Gould, 2002; Newman, 2003; Sinharay, Stern & Russell,

2001). Missing data points were plotted on a chart to assess for monotonicity in the missing values.

<div align="center">**Results**</div>

The Reliability of Scales Measuring Experiences of Negative Events in Each Domain of Self-Concept

The internal consistency of the negative events scales used to assess stressors in each domain of self-concept, (which were adapted from Lam and Power's questionnaire (1991)), was evaluated. The Cronbach alpha coefficient for the scale measuring the impact of negative events on participants' work was .946, and the Cronbach alpha coefficient for the scale measuring the impact of negative events on participants' relationships was .935. The Cronbach alpha coefficient for the scale measuring the impact of negative events on participants' hobbies and interests was .937, and the Cronbach alpha coefficient for the scale measuring the impact of negative events on participants' health was .956.

These statistics indicate that the negative event scales, which were adapted from Lam and Power's questionnaire (1991), had good internal consistency, but likely also contained redundant questions. Further, the results that follow tested various relationships between the outcomes of the general stress scores, and participants' mental wellbeing. The results align with the social-cognitive theory, which the survey aims to evaluate, indicating that the scales have good construct validity.

Descriptive Statistics

Descriptive statistics pertaining to the characteristics of the study sample are

presented in Table 4. This data is grouped according to volunteering status, to

illustrate differences in the make up of the two groups.

Table 4

Demographic Characteristics as a Percentage of the Sample Grouped by Volunteering Status (Number of Data Points in Parentheses)

Variable	Characteristic	Non-Volunteers (n=52)		Volunteers (n=88)	
		%	n	%	n
Gender	Male	15.4	(8)	14.8	(13)
	Female	84.6	(44)	85.2	(75)
Age	Aged 60-64	5.8	(3)	11.4	(10)
	Aged 65-69	17.3	(9)	13.6	(12)
	Aged 70-74	23.1	(12)	27.3	(24)
	Aged 75-79	26.9	(14)	23.9	(21)
	Aged 80+	26.9	(14)	23.9	(21)
Relationship Status	Legally married	38.5	(20)	46.6	(41)
	In a civil union/de facto relationship	0.0	(0)	2.3	(2)
	Divorced or permanently separated	25.0	(13)	14.8	(13)
	Widowed	32.7	(17)	31.8	(28)
	Single (but not a widow or widower)	3.9	(2)	4.5	(4)
Educational Attainment	No qualifications	32.7	(17)	18.2	(16)
	Secondary school qualifications	28.9	(15)	36.4	(32)
	Post-secondary certificate, or trade diploma	19.2	(10)	25.0	(22)
	University degree	19.2	(10)	20.5	(18)
Ethnicity	New Zealand European	69.2	(36)	78.4	(69)
	New Zealand Maori	1.9	(1)	2.3	(2)
	Pacific Islander	0.0	(0)	1.1	(1)
	Asian	21.2	(11)	1.1	(1)
	Indian	0.0	(0)	1.1	(1)
	Other European	5.8	(3)	11.4	(10)
	Other	1.9	(1)	4.6	(4)
Perceived health status	Excellent	13.5	(7)	17.1	(15)
	Very Good	25.0	(13)	35.2	(31)
	Good	38.5	(20)	26.1	(23)
	Fair	21.2	(11)	18.2	(16)
	Poor	1.9	(1)	0.0	(0)
	Missing	0.0	(0)	2.3	(2)

There was little difference in terms of the gender make up of the volunteering, and non-volunteering participants. However, in both groups, there was much

larger representation of females than males. Data from the 2013 New Zealand
Census indicate that the gender make up of adults over 60 is 46.7% male, and
53.2% female (Statistics New Zealand, 2015). Therefore, males are very much
underrepresented in both the volunteering and non-volunteering groups in the
sample for Study Two.

Further, the groups were very similar in terms of the proportion of participants
who reportedly fell within each age range. A larger proportion of participants
who volunteered were married (45.6%), than participants who did not volunteer
(38.5%). However, the proportions of participants who were widowed were very
similar for volunteers (31.8%) and non-volunteers (32.7%).

Further, amongst non-volunteers, the proportion of participants who did not have
any qualifications (32.7%) was higher than the proportion of volunteers who
reported having no qualifications (18.2%), and volunteers were more likely to
have secondary school (36.4%), or post-secondary qualifications (25.0%) than
non-volunteers (28.9%, and 19.2% respectively). This characteristic was also
noted in the descriptive statistics for the sample used in Study One. However the
proportion of volunteers (19.2%) and non-volunteers (20.5%) who had university
qualifications was very similar.

A higher proportion of volunteers identified themselves as New Zealand
European (78.4%) compared with the non-volunteering group (69.2%). It is
noted that the participation of Maori, Pacific, and Indian participants was very
low, and therefore the sample is not representative of the ethnic makeup of the

New Zealand population aged over 60. Data from the 2013 New Zealand census indicates that 83.9% of the population aged over 60 identified as European, 6.3% identified as New Zealand Maori, 2.7% identified as Pacific, 5.3% identified as Asian, and 1.8% identify as another ethnic group (Statistics New Zealand, 2015).

Amongst non-volunteers, 38.5% reportedly perceived that their health was excellent or very good, whilst 52.3% of participants who volunteered reported that their health was excellent or very good. A greater proportion of non-volunteers reported that their health was good (38.5%) or fair (21.2%), than volunteers (26.1%; 18.2%). Only one participant (a non-volunteer) reported experiencing poor health.

Mental Wellbeing Amongst Volunteers and Non-Volunteers

Table 5

Mean and standard deviation of mental wellbeing scores by volunteering status

Variable	Non-Volunteers (n=48)		Volunteers (n=87)	
	M (SD)	95% CI	*M, (SD)*	95% CI
Mental Wellbeing	53.2 (8.9)	[50.5, 55.8]	55.51(9.4)	[53.5, 57.5]

The data described in Table 5 refers to the original data collected in the survey, and did not include imputed data, as it was not possible to calculate the standard deviation of the pooled mean in SPSS. There was a small difference between the mean mental wellbeing scores of volunteers ($M = 55.5$, $SD = 9.4$), and non-volunteers ($M = 53.5$, $SD = 9.4$).

The multiply imputed data was used in conducting the t-test to assess whether the difference between the scores of the groups was significant. The t-test found no significant difference between the mean mental wellbeing scores of the volunteering, and non-volunteering groups (t (3536) = -1.186, $p > .05$). Further exploration of this finding is conducted in analyses used to test hypothesis four.

Data Coding for Regression Analyses

Because linear regression analyses can only include categorical variables if they are binary, the categorical variables controlled for in the regression calculations were recoded.

Age.

Age groups were recoded as: 1= Between 60 and 70 years old; 2= 71 years and older.

Relationship status.

Those who were married, or were in a civil union or de facto relationship were coded as 1, and those who were divorced, widowed or single were coded as 2. These groups were to represent participants who were in a relationship, and those who were not in a relationship.

Education.

Education levels were recoded as: 1= completed up to secondary school; 2 = completed post-secondary qualifications.

Health status.

Participants who reported that their health was '*excellent*' or '*very good*' were coded as 1, and those who reported that their health was '*good*', '*fair*', or '*poor*' were coded as 2. Only one person reported that their health was '*poor*'.

Testing Hypothesis Two

Hypothesis two suggests that participants who report higher levels of investment in their self-concept will experience higher levels of psychological wellbeing, as Oatley and Bolton's theory (1985) suggests that investment in the roles and goals the comprise a person's self-concept provides a sense of purpose and self-esteem.

To test this hypothesis, a hierarchical regression analysis was carried out to assess whether investment scores were related to mental wellbeing scores, after controlling for variables known to be associated with mental wellbeing. The predictors included in model one of the hierarchical multiple regression were: gender, age, relationship status, education level, health status and stressor salience score. The addition of investment in self-concept to the prediction of mental wellbeing (Model 2), led to a statistically significant increase in the R^2 of .133, ($F(6,104) = 4.14$, $p < .01$). This indicates that investment in self-concept was positively related to mental wellbeing, even when variables known to be associated with mental wellbeing were controlled for.

The full model of gender, age, relationship status, education, health status, stressor salience and investment to predict mental wellbeing (Model 2) was

statistically significant, (R^2 = .301, $F(7,132)$ =7.936, p <.01; adjusted R^2 = .259).

Both the stressor salience scores (B = -.13637, p <.01) and the investment scores

(B = .320, p < .01) were significant predictors of mental wellbeing.

Unfortunately, SPSS is not able to calculate standardised beta values for the

pooled results of multiple regression. As such, only the unstandardised values

have been reported.

Table 6

Hierarchical Multiple Regression Analyses Predicting Mental Wellbeing From
Demographic Variables, and Stressor salience and Investment Scores

Model Number	Variable	B (unstandardised coefficient)	Standard Error	t	Significance
2	(Constant)	34.811	7.675	4.535	>.001
	Gender	.697	2.012	.347	.729
	Age	.966	1.444	.669	.504
	Relationship Status	-.431	1.448	-.298	.766
	Education	-.774	1.409	-.549	.583
	Health Status	-2.537	1.501	-1.691	.091
	Stress Salience	-13.637	3.860	-3.533	>.001
	Investment	.320	.065	4.949	>.001

These results align with hypothesis two, as they suggest that greater investment

in the social roles that one maintains is associated with higher levels of

psychological wellbeing, even when variables known to influence psychological

wellbeing are controlled for.

Testing Hypothesis Three

Hypothesis three states that older adults who experience negative life events that

correspond with a loss or limitation to domains of their self-concept in which they are most invested will report lower psychological wellbeing than older adults who experience negative life events that align with the domains of self-concept in which they are less invested. To test this hypothesis, the stressor salience score is used, which represents the degree to which negative events that a person experienced in the last 12 months aligned with the domains of their self-concept in which they were most highly invested, in combination with the perceived severity of that event.

It was found that the stressor salience score was significantly correlated with mental wellbeing, ($r = -.320$, $p < .001$), suggesting that participants who experienced stressful events in domains of their self-concept in which they were highly invested had lower mental health scores than participants who experienced stressful events in domains of their self-concept in which they were less invested. It was noted that the correlation between the stressor salience score and mental wellbeing was very similar to the correlation found between mental wellbeing and participants' general stress scores, which represents the summation of the ratings of the negative events that they had experienced in the previous 12 months ($r = -.362$, $p < .001$).

As such, a test of the correlation between participants' stressor salience scores and their general stress scores was conducted to assess whether the two measures were strongly aligned. The correlation coefficient indicated a very strong positive relationship between general stress scores and stressor salience scores ($r = .945$, $p < .001$). The general stress score accounts for the severity of negative events

experienced in the past 12 months, but does not account for the extent to which those events align with valued aspects of self-concept. This outcome suggests that participants were more likely to report higher levels of stress in domains of self-concept in which they are most invested, and report lower levels of stress in domains in which they are less invested. It therefore is suggested that the stressor salience score and the general stress score are likely measuring the same, or very similar phenomena. As such, in proceeding with regression equations, a decision was made to only include one of either of the scores- whichever was deemed the most appropriate, given the hypothesis being tested.

A regression analysis was carried out to identify whether the relationship between mental wellbeing, and the extent to which people experienced stressors in domains of self-concept in which they were most invested, held after variables known to be associated with mental wellbeing were controlled for.

Table 7

Hierarchical Multiple Regression Analyses Predicting Mental Wellbeing From Demographic Variables, and Stressor Salience Scores

Model	Variable	B (unstandardised coefficient)	Standard Error	t	*p*
2	(Constant)	61.532	5.937	10.364	.000
	Gender	2.039	2.157	.945	.345
	Age	.397	1.558	.255	.799
	Relationship Status	-.172	1.572	-.109	.913
	Education	-1.830	1.511	-1.211	.226
	Health Status	-4.020	1.598	-2.516	.012*
	Stress Salience	-11.461	4.163	-2.753	.006**

*p < .05, **p < .01

The predictors included in model one of the hierarchical multiple regression were: gender, age, relationship status, education level and health status. In model two, the stress salience score was added as a predictor. The addition of stressor salience to the prediction of mental wellbeing (Model 2), led to a statistically significant increase in the R^2 of .063, $F(1,112) = 8.480$, $p < .01$) .

The full model of gender, age, relationship status, education, health status and stress salience to predict mental wellbeing (Model 2) was statistically significant, $R^2 = .173$, $F(6,112) = 3.911$, $p < .01$; adjusted $R^2 = .129$. Unfortunately, SPSS is not able to calculate standardised beta values for the pooled results of multiple regression. As such, only the unstandardised values have been reported.

The results of this regression align with hypothesis three, which predicted that

older adults who experience negative life events that correspond with a loss or limitation to domains of their self-concept in which they are most invested will report lower psychological wellbeing than older adults who experience negative life events that align with the domains of self-concept in which they are less invested. However, because the correlation between participants' negative event scores, and the stressor salience scores was so high, it is suggested that people are more likely to report greater impairment due to stressors if they are aligned with domains in which they are more highly invested, and that if stressors occur in domains in which the person is less invested, the person will report that those stressors have been less severe.

In conclusion, the results of regression analyses concur with hypothesis three, which purports that people's mental wellbeing is related to the extent to which they experience stress in pertinent domains of self-concept. Correlational analyses between general stress scores, and stressor salience scores also suggested that stress is likely experienced more acutely in domains of self-concept in which a person is most invested.

Testing Hypothesis Four

Hypothesis four states that any difference in psychological wellbeing between volunteers and non-volunteers will be a function of the volunteering role facilitating increased investment in aspects of self-concept (Oatley & Bolton, 1985).

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To test this hypothesis, data was first analysed to assess whether volunteers were more invested in aspects of their self-concept than non-volunteers. The data presented in Table 8 represents the mean, standard deviation and confidence intervals of the original data, not the multiply imputed data, as standard deviations and confidence intervals could not be produced for pooled data in SPSS.

Prior to testing, data screening was undertaken to assess whether the data fulfilled the assumptions of parametric tests, when grouped according to volunteering status. The skew and kurtosis values of each group did not exceed +/-2.58, and the results of Shaprio-Wilks and Kolmogorov- Smirnov tests were not significant. Further, the Levene's test for equality of variances was not significant. As such, it was deemed suitable to continue with an independent samples t-test.

Table 8

Means, Standard Deviations and Confidence Intervals for Participants'
Investment Scores Using Original Data

Variable	n	*M (SD)*	95% CI
Non-volunteers' investment score	47	75.2 (12.2)	[71.7, 78.8]
Volunteers' investment score	74	82.6 (10.0)	[80.2, 84.9]

A t-test was performed using multiply imputed data. The results indicated that the mean investment score amongst participants who volunteered was

significantly higher than the mean amongst participants who did not volunteer (t

(79664) = 3.78, $p < .01$).

Following this, an additional hierarchical regression was carried out, to assess

whether volunteering status was a significant predictor of mental wellbeing once

other variables had been controlled for.

Table 9

Hierarchical Multiple Regression Analyses Predicting Mental Wellbeing From Demographic Variables, Stressor Salience, Investment Scores and Volunteering Status

Model Number	Variable	B (unstandardised coefficient)	Standard Error	t	Significance
2	(Constant)	34.211	7.681	4.454	.000
	Gender	.641	2.009	.319	.750
	Age	.958	1.442	.665	.506
	Relationship Status	-.607	1.455	-.417	.677
	Education	-.578	1.418	-.408	.684
	Health Status	-2.611	1.499	-1.742	.081
	Stressor Salience	-14.373	3.912	-3.674	.000
	Investment	.346	.068	5.070	.000
	Volunteering Status	-1.801	1.560	-1.154	.249

The predictors included in model one of the hierarchical multiple regression were: gender, age, relationship status, education level, health status, stressor salience, and investment score. The addition of volunteering status to the prediction of mental wellbeing (model two), did not lead to a statistically significant increase in the R^2 value, ($p = .321$). This indicates that although volunteering is known to be related to mental wellbeing, the effect of volunteering did not better enable mental wellbeing to be predicted after stressor salience and investment in self-concept were controlled for. Indeed, the *t*-test reported earlier in the results section indicated that there was no significant difference in the psychological wellbeing of volunteers compared with non-

volunteers, therefore these results are not unexpected. However, it was important to test this hypothesis using regression analyses that can control for the influence of other variables such as age and gender, on psychological wellbeing. This result confirms hypothesis four.

Testing Hypothesis Five

Hypothesis five predicts that the extent to which a person's volunteering activity aligns with the most valued domains of their self-concept will moderate the relationship between salient negative life events and psychological wellbeing. To test hypothesis five, stressor salience scores and volunteering alignment scores were used as main predictor variables, and an interaction variable of stressor salience * volunteering alignment was included to assess the extent to which volunteering alignment might moderate the relationship between stressor salience and mental wellbeing.

Both the stressor salience scores and the volunteering alignment scores were centred before the interaction variable was computed, in order to ensure that there were no problems with multicollinearity. Correlations between the two main predictors and the interaction predictor were all below .7 (the strongest correlation was $r= .219$, $p= .074$), and the VIF statistics were all below 7 (the highest was 1.237).

A hierarchical multiple regression analysis was carried out, which included three models. The first model contained demographic variables and stressor salience scores as predictors. Volunteering alignment scores were added as a predictor to

the second model. The second model of the regression analyses was conducted in order to assess the extent to which the alignment of volunteering activities with pertinent aspects of identity explains the variation in mental health outcomes after controlling for demographic, and stress variables.

Finally, an interaction variable between volunteering alignment and stressor salience was added to the model. The third model was used to assess the extent to which volunteering alignment moderated the relationship between stressor salience and mental wellbeing.

Table 10

Hierarchical Multiple Regression Analyses Predicting Mental Wellbeing From Demographic Variables, Stressor Salience Score, Volunteering Alignment Score, and the Interaction between Volunteering Alignment and Stressor Salience

Model	Variable	B (unstandardised coefficient)	Standard Error	t	Significance
3	(Constant)	63.170	7.034	8.980	.000
	Gender	-2.856	2.742	-1.042	.298
	Age	.662	1.970	.336	.737
	Education	-1.662	1.956	-.850	.395
	Relationship Status	1.262	2.015	.626	.531
	Health Status	-2.044	2.122	-.963	.335
	Stressor salience	-13.372	6.070	-2.203	.028
	Volunteering Alignment	11.209	4.530	2.474	.013
	Volunteering Alignment* Stressor salience	-32.452	30.717	-1.056	.292

The predictors included in model one of the hierarchical multiple regression were the level of alignment of stressors with pertinent domains of self-concept (the stressor salience score), gender, age, relationship status, education level, and health status. The level of alignment of volunteering activities with pertinent domains of self-concept (the volunteering alignment score) was added in model 2. In model 3, an interaction variable representing the combination of the stressor salience score and the volunteering alignment score was added.

The addition of volunteering alignment to the prediction of mental wellbeing (Model 2), led to a statistically significant increase in the R^2 of .083, $F(1, 79) = 8.436, p < .01$) . However, the addition of the interaction between volunteering alignment and stressor salience did not lead to a statistically significant increase in the R^2 (change in $R^2 = .010, F(1,78) = 1.032, p = .313$).

The full model of gender, age, relationship status, education, health status, stressor salience, volunteering alignment, and the interaction of stressor salience and volunteering alignment to predict mental wellbeing (Model 3) was statistically significant, $R^2 = .230, F(8,78) = 2.907, p < .01$; adjusted $R^2 = .151$. These results indicate that the full model could significantly predict 23% of variance in mental wellbeing scores using the predictors included in the model. Stressor salience and volunteering alignment were the only two statistically significant predictors in the model. The interaction between volunteering alignment and stressor salience was not a significant predictor. Therefore the results do not align with the hypothesis that the extent to which volunteering

activity aligns with investment in pertinent domains of self-concept will moderate the impact of stressful events on volunteers' mental wellbeing.

Given that the number of predictor variables included in the regression was so large for the available sample size, it was decided that an additional regression model should be run, including only predictors required to test hypothesis three (stressor salience, volunteering alignment, and stressor salience * volunteering alignment). However, this model also indicated that the stressor salience * volunteering alignment did not have a significant impact on variance in mental wellbeing scores, when stressor salience and volunteering alignment were included as singular main predictor variables.

Testing Hypothesis Six

Hypothesis six purports that any relationship between the types of volunteering activities people engage in, and mental wellbeing is mediated by the extent to which the voluntary role contributes to investment in a highly valued aspect of self-concept. Therefore, it is predicted that either there is no relationship between types of volunteering activities and reported wellbeing, or if such a relationship is identified, it will no longer exist once the contribution of the voluntary roles to salient aspects of self-concept is controlled for.

Unfortunately, because so many participants did not complete data relating to the number of hours that they volunteer each week, it was not appropriate to use this data in statistical analyses. Imputation, or other compensatory methods of dealing with missing data were not considered appropriate, given the proportion

of the data missing. In hindsight, it is recognised that this should have been a separate question in the survey, and this information should not have been requested in the same section as a request for a description of the nature of the volunteering role.

Table 11 presents the number of participants who reported that their volunteering activities fell into each of the categories outlined. Because participants were able to tick one or more boxes to indicate the type of volunteering that they engaged in, the percentage points sum to more than 100.

Table 11

Proportion of Participants Who Reported Engaging in Each Volunteering Category

Volunteering Type	n	Percentage
Providing goods - e.g. serving food at a homeless shelter, providing books to schools	26	29.9
Activism, campaigning or advocacy	16	18.4
Providing a community service – e.g. coaching a sports team, working in an opportunity shop	68	78.2
Environmental stewardship- e.g. cleaning up parklands	6	6.9

Of the 86 participants who reported volunteering, 29 ticked two categories to indicate the type of volunteering activity they were involved in. As such, for participants who indicated that their volunteering activity only fit into one of the

categories provided, their data was coded according to that category. For those participants who reported that their volunteering activity fell into two categories, their data was coded to indicate which two categories they had chosen- for example, all participants who indicated that they both provided goods, and a community service in their volunteering were grouped together.

Table 12

Number of Participants Engaged In More Than One Type Of Volunteering

Volunteering Category Combination	n
Providing Goods, and Community Service	13
Providing Goods, and Activism	2
Community Service, and Activism	8
Community Service, and Environmental Stewardship	4
Activism, and Environmental Stewardship	2

However, some of the groupings did not include enough people to perform statistical analyses to compare the different types of volunteer work that participants were involved in. Therefore some of the groups were amalgamated. The two groups that included activism were combined, as were the two groups that included environmental stewardship. The final outcome of this process is described in Table 13.

Table 13

Finalised Configuration of Volunteering Types Used in Comparative Analyses

Volunteering Category	n
Providing goods	10
Activism, campaigning or advocacy	5
Providing a community service	43
Providing goods, and community service	13
Activism combination	9
Environmental stewardship combination	6

Additional data screening.

Additional data screening was carried out to investigate whether it was appropriate to use a one-way ANOVA to assess differences in the mean wellbeing scores between the groups. The skew and kurtosis values of each group did not exceed +/-2.58, and the results of Shapiro-Wilks and Kolmogorov-Smirnov tests were not significant. However, visual inspection of the data indicated that the distribution of two of the groups was not normal. Given that f-statistic calculations are robust to violations of normality, it was decided that ANOVA was still better than the Kruskil-Wallis test, which serves as a non-parametric alternative for a one-way ANOVA. Further, the Levene's test for equality of variances was not significant.

ANOVA results.

A one-way ANOVA was conducted to assess for differences in the mean wellbeing scores amongst participants engaged in different types of volunteering.

Table 14

Mean Psychological Wellbeing Scores and Standard Deviations by Volunteering Type

Volunteering Category	n	Mean Wellbeing Score	SD
Providing goods	10	55.0	8.6
Activism, campaigning or advocacy	5	50.4	9.7
Providing a community service	43	54.5	9.8
Providing goods, and community service	13	57.5	9.0
Activism combination	9	57.6	11.1
Environmental stewardship combination	6	57.3	6.6

Although Table 14 illustrates differences in mean psychological wellbeing scores between participants involved in certain types of volunteering activity, no statistically significant differences in the Mental Wellbeing scores between the different volunteering activity groups were found when an ANOVA was conducted ($f(5,85) = .623$, $p = .623$). This indicates that they type of volunteering activity that people engage in is not related to their mental wellbeing outcomes. It may be that the sample size used to test this hypothesis was very small, and as such, the analysis may not have been powerful enough to detect such a difference. However, given the very small differences in the mean mental wellbeing scores between the different groupings, it is fair to accept that the results of the analyses indicate that engagement in different types of volunteering activity is not associated with different mental wellbeing outcomes.

Differences in working within teams, or individually.

Again, data screening exercises were undertaken to assess the distribution of psychological wellbeing data, when it was grouped according to whether participants' volunteering activities were mainly done as a part of a team, or

working individually. The skew and kurtosis values of each group did not

exceed +/-2.58, and the results of Shaprio-Wilks and Kolmogorov- Smirnov tests

were not significant. Further, the Levene's test for equality of variances was not

significant. As such, it was deemed suitable to continue with an independent

samples t-test.

Table 15

*Means and Standard Deviations of Psychological Wellbeing Scores of
Volunteers Working Mainly Individually or as Part of a Team*

	n	*M*	SD
Working individually	17	55.6	7.8
Working as part of a team	66	54.8	9.8

An individual samples t-test indicated that the difference between the mean

mental wellbeing scores of participants who worked individually (*M* = 55.59, *SD*

= 7.75) in their volunteering work, and those who worked as part of a team (*M* =

54.79, *SD* = 9.83) was not statistically significant (*t*(81) = .756, *p* = .212). As

such, there is no evidence to reject the null hypothesis that there is no difference

in the psychological wellbeing of volunteers who work mainly individually, and

those who work as part of a team.

Working mainly with objects, or people.

Again, data screening exercises were undertaken to assess the distribution of

psychological wellbeing data, when it was grouped according to whether

participants' volunteering activities were mainly focussed on working with

objects or working with people. The skew and kurtosis values of each group did

not exceed +/-2.58, and the results of Shaprio-Wilks and Kolmogorov- Smirnov

tests were not significant. Further, the Levene's test for equality of variances was not significant. As such, it was deemed suitable to continue with an independent samples t-test.

Table 16

Means and Standard Deviations of Psychological Wellbeing Scores of Volunteers Working Mainly With Objects, Or Mainly With People

	n	*M*	SD
Working mainly with objects	16	55.94	7.16
Working as part of a team	68	55.22	9.93

An individual samples t-test indicated that the difference between the mean mental wellbeing scores of participants who worked mainly with objects ($m = 55.94$, $sd = 7.16$), and those who worked mainly with people ($m = 55.22$, $sd = 9.93$) was not statistically significant ($t(82) = .272$, $p = .786$). As such, there is no evidence to reject the null hypothesis that there is no difference in the psychological wellbeing of volunteers who work mainly with objects, and those who work mainly with people.

The analyses used to inform the evaluation of hypothesis six have provided no evidence that engagement in different types of volunteering work, and that the performance of volunteering work within different contexts, is associated with different levels of volunteers' psychological wellbeing. As such, hypothesis six has been confirmed.

Discussion

Researchers have repeatedly demonstrated that volunteering leads to improved psychological wellbeing, and reduced depression symptoms in older adults (Hong & Morrow-Howell, 2010; Li & Ferraro, 2005; Musick & Wilson, 2003; Kim & Pai, 2010; Piliavin & Siegl, 2007; Van Willigen, 2000). However, studies that have undertaken to explain why this relationship exists have repeatedly presented conflicting results. Role theories are possibly the strongest theories in this field of research, as they can explain why the effect of volunteering on mood is seen in older adults, and not in younger populations (Wilson, 2000). Role theorists suggest that this is because older populations experience a greater number of social role losses than younger populations, which means that the volunteer role becomes more important for older adults in augmenting self-perception and subsequently improving mood (Thoits, 2010).

However, even research studies conducted to test theories within this school of thought have demonstrated contradictory findings. Some studies suggest that people who have experienced a greater number of role losses benefit more from volunteering (Greenfield & Marks, 2004; Li, 2007; Morrow-Howell, Hong & Tang, 2009; Piliavin & Siegl, 2007), whilst others indicate that people who maintain more social roles experience greater benefits from volunteering (Oman, Thorensen and McMahon, 1999; van Willigen, 2000; Musick & Wilson, 2003). As such, a theory within the area of social role research was sought that would explain how the effects of volunteering were moderated by older adults engagement in different social roles. The social-cognitive theory of depression (Oatley & Bolton, 1985) provides one possible explanation for this phenomenon,

but the predictions of this theory in relation to the impact of volunteering behaviours have never been tested. As such, this research project looked to assess whether the social-cognitive theory of depression provided a valid explanation for the impact of volunteering on older adults' psychological wellbeing.

Oatley and Bolton (1985) suggest that depression occurs when negative events disrupt a role that is important to a person's self-concept, and there are no other means by which investment in the particular domain of self-concept can be maintained. Lam and Power (1991) suggest that most people's self-concept is primarily comprised of four domains, which are health and independence, relationships, work, and hobbies or interests. Each social role that a person undertakes can be used to invest in a domain, or multiple domains of self-concept (Lam & Power, 1991). Therefore, social role losses limit people's ability to invest in the domains of their self-concept that are important to them, and this leads to depressive symptoms (Oatley & Bolton, 1985). However, depressive symptoms can be avoided if that person is able to find a way to maintain their investment in a damaged role, or if they are able to adopt another role that enables them to invest in the important domains of their self-concept (Oatley & Bolton, 1985).

Therefore the importance of certain types of role loss will be different for each individual. A social-cognitive theory would predict that if a volunteering role were able to facilitate an individual's continued investment in a domain of their self-concept that they have previously been heavily invested in, then

volunteering will be protective against the development of depressed mood. However, if an individual experiences a role loss in a domain of great investment, but the volunteering role does not align with the relevant domain, then the volunteering role is less likely to protect the individual against the onset of depressive symptomatology. This may explain why there have been differences in the outcomes of studies investigating whether the number of social roles that a person undertakes moderates the impact of volunteering on psychological wellbeing (Greenfield & Marks, 2004; Li, 2007; Morrow-Howell, Hong & Tang, 2009; Musick & Wilson, 2003; Oman, Thorensen and McMahon, 1999; Piliavin & Siegl, 2007; van Willigen, 2000), as it is not necessarily the number of roles that a person is fulfilling that will moderate the impact of volunteering on psychological wellbeing, but whether the volunteering role facilitates the individual's continued investment in areas of their self-concept that are most important to them.

Research Questions

Given the lack of clarity around the function of social role adoption and loss in the relationship between volunteering and psychological wellbeing, it was important to for the current research to answer the following three questions:

1) Does volunteers' engagement in different social roles moderate the impact of volunteering on psychological wellbeing?

2) Does the social-cognitive theory of depression predict the mechanisms involved in the volunteering-wellbeing relationship?

3) Does the type of volunteering activity that older adults engage in moderate the impact of volunteering on psychological wellbeing?

The first research question was answered using the results of Study One. The following two questions were answered using the results of Study Two.

Findings of Study One

      Hypothesis one.

It was hypothesised that the NZLSA longitudinal data would indicate that the impact of volunteering on symptoms of depression would be moderated by participants' engagement in employment, their relationship status and their physical health. More specifically, it was suggested that people who were unemployed, would benefit more from volunteering, in terms of their levels of depressive symptoms, than those who were employed. It was further predicted that volunteers without a partner would benefit more from volunteering than those with a partner, and volunteers in poorer physical health would benefit more than volunteers in good physical health.

This hypothesis does not entirely account for the predictions of a social-cognitive theory of depression, as it was not possible to measure participants' investment in different domains of their self-concept, and the contribution of their own volunteering to each domain of their self-concept. Therefore the conclusions drawn from the analyses are based on the assumption that people who are in relationships, are employed and who have good health, are able to invest more in the relationship, work, and health domains of their self-concepts, than people who are not in relationships, are unemployed and who have poor health. Further, previous research has indicated that people with fewer social roles benefit more

from volunteering than those who adopt more social roles (Greenfield & Marks, 2004; Li, 2007; Morrow-Howell, Hong & Tang, 2009; Piliavin & Siegl,). Therefore the hypothesis aligns both with a social-cognitive theory of depression, and also with the findings of some of the research undertaken in this area.

The initial ANOVA using all the available data suggested that the effect of volunteering consistency on depressive symptoms is moderated by people's employment status, and physical health. As such, additional simple effects analyses were conducted. However, having split the group according to employment status, the effect of volunteering consistency on depressive symptomatology was not identified within either the employed or unemployed groups. However, when simple effects analyses were conducted according to groupings of physical health status, a significant moderation effect was identified. These analyses revealed that people with poorer health benefitted more from volunteering (in terms of protection against symptoms of depression), than those with better physical health.

These results align with the findings of previous studies that have demonstrated a stronger beneficial effect of volunteering amongst people who have experienced more social role losses (Greenfield & Marks, 2004; Li, 2007; Morrow-Howell, Hong & Tang, 2009; Piliavin & Siegl, 2007). It is possible that for people who experience poorer health, that volunteering is important in enabling them to attain goals and maintain social roles that are usually dependent on their physical wellbeing. For example, a reduction in physical wellbeing may impact on an individual's ability to engage in as much physical activity as they had previously

engaged in. Hong, Morrow-Howell, McCrary and Blinne (2012) have previously demonstrated an increase in activity levels over time amongst participants in an intensive volunteer programme. Therefore, volunteering may be important for older adults experiencing poorer physical health, because it encourages their engagement in physical activity, and subsequently facilitates their investment in the domain of health and independence, even when they are experiencing poorer health.

In addition, poor physical health may inhibit a person's ability to invest in other domains of their self-concept, such as social relationships. Social isolation, and subsequent withdrawal from important social roles as a result of poor health may be less likely to occur if older adults are engaged in formal volunteering activities. Formal volunteering provides a social network of peers with similar interests who may ensure that the individual does not become socially isolated as a result of their poor health. Further, for individuals who have previously used their physical abilities to engage in roles that provide them with meaning and purpose, volunteering may enable such individuals to attain a sense of meaning and purpose by redirecting their energies into volunteering activities that do not rely on their physical wellbeing.

Unfortunately, because of the nature of Study One, it is not possible to determine which of these proposals is more likely. However, all of these ideas align with a social-cognitive theory of depression, and subsequently also align with the findings of Study Two, which tested the predications of a social-cognitive theory of depression.

With regards to the results relating to participants' employment status, it may be that grouping the sample according to employment status reduced the power of the ANOVAs conducted, and subsequently, the moderating effect of employment status on the impact of volunteering on psychological wellbeing could not be detected amongst those who were unemployed. Employment, like volunteering, allows for people to invest in many different domains of their self-concept, as it is described in a social-cognitive theory of depression (Oatley & Bolton, 1985). Employment will often mainly contribute to the work domain, which represents a sense of productivity. However, for many people, and particularly people who are at the end stages of their careers, their employment often also allows them to invest in their social relationships, and their interests (Sherman & Shavit, 2012).

A large proportion of the NZLSA sample was still in paid employment in 2012 (92.5% of those who never volunteered; 93.0% of those who volunteered in one wave; 94.7% of those who volunteered in two waves; and 93.2% of those who volunteered in three waves). It is likely for those that were unemployed at the time of the final wave of data collection, that they had only recently stopped working in paid employment. It may be that the benefits accrued through paid employment meant that the role of volunteering in protecting psychological wellbeing was not yet as important as it would be for a group of older adults who have not been in paid employment for a substantial period of time. It would be interesting to repeat the analyses again in subsequent data waves, to see if a moderating effect of employment status on the relationship between volunteering and psychological wellbeing is evident when a smaller proportion of the

volunteers are in paid employment. The analyses suggest that there may be a moderating effect of employment status on the impact of volunteering, but conservative analytical techniques were not able to provide more certainty around this finding.

Readers must be mindful that because Study One was not able to account for the extent to which volunteers' activities aligned with their most valued domains of self-concept, the results can only be interpreted as being aligned with what would be expected according to a social-cognitive theory of depression. This study is not able to actually determine whether people who experience poor health are better able to contribute to aspects of their self-concept related to their health and independence than non-volunteers. However, recent evidence does indicate that people do engage in volunteering for reasons relating to a sense of fulfilment that comes when contributing to important aspects of their self-concept (Kwok, Chui & Wong, 2013; Mike, Jackson & Oltmans, 2014). As such, the findings provide an important foundation for the investigations involved in Study Two.

Findings of Study Two

Study Two aimed to test four hypotheses relating to the social-cognitive theory of depression (Oatley & Bolton, 1985), and a fifth hypothesis that was related more so to a gap in the literature concerning the differential impact of specific types of volunteering activities on psychological wellbeing.

Hypothesis two.

The first hypothesis tested under Study Two, was hypothesis two. Hypothesis two predicted that study participants who reported higher levels of investment in their self-concept would experience higher levels of psychological wellbeing, as Oatley and Bolton's theory (1985) suggests that investment in the roles and goals that comprise self-concept provides a sense of purpose and self-esteem.

The results of the hierarchical multiple regression analyses indicated that investment in, or contribution to self-concept is positively related to mental wellbeing, when variables known to be associated with mental wellbeing were controlled for. Gender, age, relationship status, education, health status, and stress scores were controlled for in the analyses, as these were considered likely to have a significant impact on the psychological wellbeing of participants. The results align with Oatley and Bolton's theory (1985). However, given that the survey was cross-sectional only, it is not possible to assert that the relationship evidenced in the multiple regression analyses is causative. Nonetheless, this data indictes that the theory underlying the research provides an adequate understanding of the way that social roles impact on people's sense of psychological wellbeing.

Further, the results of the current research project build upon those reported by Kwok, Chui & Wong (2013), which indicated that need satisfaction mediated the relationship between volunteering and life satisfaction. This study indicated that the more that volunteers are able to fulfil motivations relating to career enhancement, social relatedness, personal growth, learning opportunities, and

protection against their own personal problems or negative affect through their volunteering activity, the greater the effect of volunteering on life satisfaction will be (Kwok, Chui & Wong, 2013). The current study has built upon these findings by controlling for the variation in mental wellbeing attributable to the impact of negative life events (which was not controlled for in Kwok, Chui and Wong's study (2013)), and evidencing that the relationship between investment in domains of self-concept, and mental wellbeing is still statistically significant once the impact of negative life events is accounted for.

Therefore, these results indicate that the social-cognitive theory of depression can contribute to an understanding of the relationship between engagement in volunteering, and mental wellbeing.

Hypothesis three.

Hypothesis three purports that older adults who experience negative life events that correspond with a loss or limitation to domains of their self-concept in which they are most invested will report lower psychological wellbeing than older adults who experience negative life events that limit their ability to invest in less important domains of self-concept. In order to test this hypothesis, stressor salience scores were developed to represent the extent to which people experienced severe negative life events within the last 12 months that led to a loss or limitation to domains of self-concept in which they were highly invested.

In attempting to measure this concept, it was recognised that participants' stressor salience scores (which measure the extent to which events limited a

person's investment in important domains of self-concept) were very highly correlated with general stress scores, which represent only the severity of stressors experienced in the last 12 months, not the extent to which the stressors align with highly valued domains of self-concept. It therefore appears that participants only reported highly valued information relating to the limitation of investment in important domains of self-concept, and omitted information relating to negative events that had affected other, less pertinent, domains of self-concept. Because the stressor salience score incorporates the general stress score, it was known that these scores would be correlated, but the strength of the correlation was surprising.

Previous studies have indicated that question order and wording can strongly influence responses to surveys, particularly when questions relate to participants' life-satisfaction (Schwartz, 1999). It is possible that if participants had been encouraged to consider all difficult events in their lives, whether or not they had a particularly severe effect on the person, then this may have encouraged participants to consider a wider range of events, rather than focussing on the events that had the most limiting effect upon them. In spite of this issue, the answers from the questions relating to life stressors are still valid for the purpose of testing the hypotheses relating to the current research project, as it is considered that these scores still reflect the extent to which negative events have impacted on investment in important domains of self-concept.

The results of this analysis concur with hypothesis three. The extent to which experiences of negative events aligned with important domains of self concept

statistically significantly predicted variance in psychological wellbeing, even after factors known to be predictive of psychological wellbeing were controlled for. Although this information was gathered from a cross-sectional survey, so causative relationships cannot be inferred, the relationship demonstrated between meaningful stressors and psychological wellbeing does align with a social-cognitive theory of depression (Oatley & Bolton, 1985).

The results align with Brewer's study (1993), which indicated that depressed mood results from specific life events that limit investment in pertinent domains of one's sense of self. The results also align with Kraaij, Arensman and Spinhoven's meta-analysis of studies testing the relationship between negative events and depression in older age (2002). The meta analysis indicated that almost all life events relating to the death or severe illness of others, one's own severe illness, and poor socioeconomic circumstances, have a moderate, but statistically significant relationship with depression, and that the effects of negative life events on depression can be cumulative (Kraaij, Arensman & Spinhoven, 2002).

A social-cognitive theory of depression acknowledges that life stressors are related to the onset of depression, but suggest that events which impact social roles that are more relevant to our identity will better predict psychological outcomes than the cumulative effects of aggregated stressors (Thoits, 1995). Therefore, it would have been expected that the stressor salience score was a better predictor of mental wellbeing scores than the general stress score. However, given that the two scores were so highly correlated, it is impossible to

assert whether this is an accurate predication. Nevertheless, the study provides evidence that a person's perceptions that negative events have limited their ability to invest in important domains of self-concept is related to their psychological wellbeing.

Hypothesis four.

Hypothesis four suggests that any difference in psychological wellbeing between volunteers and non-volunteers will be a function of the volunteering role facilitating increased investment in aspects of self-concept. This hypothesis aligns with Oatley and Bolton's social-cognitive theory (1985), and also with the results of Greenfield and Marks' study (2004).

Given that previous research has indicated that volunteers experience greater levels of psychological wellbeing than non-volunteers (Thoits & Hewitt, 2001; Van Willigen, 2000) it is surprising that no significant difference was observed between the mean psychological wellbeing of volunteers compared with non-volunteers. Although the social-cognitive theory of depression would suggest that both volunteers and non-volunteers are equally as capable of building their self-concept through social roles, many longitudinal studies have evidenced better psychological wellbeing amongst volunteers compared with non-volunteers (Wilson, 2012). Indeed, in Study One, volunteering consistency was demonstrated to have protective effect against depressive symptomatology amongst participants in the NZLSA. It is difficult to provide evidence as to why there is no difference in psychological wellbeing between the groups, particularly

as the mean investment score amongst participants who volunteered was significantly higher than the mean amongst participants who did not volunteer.

However, the extent to which a participant's voluntary activity contributed to meaningful aspects of their self-concept was predictive of psychological wellbeing. This suggests that, as predicted by a social-cognitive theory of depression, volunteering can protect against depressive symptomatology and promote positive psychological wellbeing by facilitating investment in domains of self-concept that are important to the individual. Therefore, it is apparent that the hypothesis is partially fulfilled. Whilst it is apparent that older adult volunteers in New Zealand may not enjoy significantly better psychological wellbeing than older adults who do not volunteer, the results suggest that the more that a person is able to engage in social roles that contribute to pertinent aspects of their self-concept through their volunteering activities, the better their psychological wellbeing will be. However, because this is a cross-sectional study, it is not possible to assert that there is a causal relationship between these two factors.

Hypothesis five.

Hypothesis five suggests that the level of contribution of a person's volunteering activity to their most valued domains of self-concept will moderate the impact of pertinent negative life events on a person's psychological wellbeing. To test this hypothesis, a regression model was developed using gender, age, relationship status, education, health status, stressor salience, volunteering alignment, and the interaction of stressor salience and volunteering alignment, to predict mental

wellbeing. Stressor salience and volunteering alignment were the only two statistically significant predictors in the model. The interaction between volunteering alignment and stressor salience was not a significant predictor.

These results do not support the hypothesis that the impact of stressful events on volunteers' mental wellbeing is moderated by the extent to which volunteering activity facilitates investment in pertinent domains of self-concept. While the salience of the volunteering activity, in terms of the volunteer's self-concept, was a significant predictor of mental wellbeing, it did not appear to moderate the relationship between stressor salience and mental wellbeing. It is apparent that people's investment in domains of their identity is important to their mental wellbeing, and this can be achieved through volunteering behaviour. In addition, people's experience of salient negative life events also contributes to their mental wellbeing. However, these two phenomena do not appear to moderate one another's contribution to mental wellbeing.

These results align with the findings of Greenfield and Marks (2004), which suggested that volunteering moderates the impact of role absences on psychological wellbeing, as measured according to purpose in life, but not positive affect or depressive affect. However, Greenfield and Marks' study (2004), looked only at whether participants did, or did not volunteer. As such, it was expected that once the extent to which volunteering contributes to self-concept was considered, the impact of volunteering on psychological wellbeing would be evident. The results of the current study do align with this prediction.

Previous research has indicated that people who experience failure or limitation in a specific domain of endeavour can protect themselves from negative emotional outcomes by investing in other, more rewarding domains of endeavour and devaluing the importance of the domain that has been limited or terminated (Breakwell, 1986; Gecas & Seff, 1990; Goffman, 1963; Kaplan, 1996; Sieber, 1997). It is possible that because this survey is cross-sectional, it is not able to assess volunteers' engagement in compensatory coping (as described by Thoits (2010)). Therefore when negative events have arisen in certain domains of people's self-concept, they may have invested in different domains that provide more psychological benefits, but this investment has not been facilitated by the adoption of a volunteering role. Because this research did not assess changes in social roles generally over a period of time, it was not able to detect compensatory coping that may have occurred through the adoption of social roles other than a volunteering role. This represents a limitation of the study, and also may explain these results.

The results of this research therefore do not align with predictions that volunteers are protected from the effects of negative life events on their psychological wellbeing, because volunteering enables them to compensate for the loss of investment in important domains of their self concept. While it is evident that there is a link between the contribution of volunteering to self-concept and psychological wellbeing, and also between salient negative life events and psychological wellbeing, these factors do not appear to be linked in the manner described in social-cognitive theories (Oatley & Bolton, 1985; Thoits, 2010).

Hypothesis six.

Hypothesis six predicted that, in accordance with a social-cognitive theory of depression (Oatley and Bolton, 1985), any relationship between the types of volunteering activities and psychological wellbeing would be mediated by the extent to which the voluntary role contributes to investment in a highly valued aspect of self-concept. Therefore, it was predicted that either there was no relationship between types of volunteering activities and reported wellbeing, or if such a relationship was identified, it would no longer exist once the contribution of the voluntary role to salient aspects of self-concept was controlled for.

The results of this study align with hypothesis six. Having examined differences in the psychological wellbeing outcomes of volunteers engaged in different types of volunteering activities, it can be suggested that the impact of volunteering is not dependent on the type of activity that the volunteer is involved in. This is not surprising, as it is reasonable to expect that most volunteers do not undertake volunteer roles solely out of obligation, but because they will find some enjoyment or sense of fulfilment as the result of the work. The type of activities that will lead to such results will be different, depending on the interests and the values of the volunteer themselves.

No differences were found amongst volunteers mainly working with objects, as opposed to those working with people, or amongst those who worked mostly as part of a team compared with those who worked mostly as individuals. Further, no mean differences in psychological wellbeing were detected amongst volunteers who indicated that they engage in different types of volunteering

activity, whether it be advocacy work, community services, the provision of goods, or environmental protection.

These results contribute to a gap in the volunteering literature that few have attempted to address previously. Wilson's (2000), and Morrow-Howell's (2010) reviews indicated that most work in the area of volunteering research has employed measures of volunteering that do not adequately address the differences in the types of activity that volunteers engage in. Instead, information pertaining to participants' volunteering behaviour has been amalgamated, and analyses have only considered whether or not the participant engaged in volunteering, and the number of hours they contributed. Often information pertaining to the nature of a wide range of voluntary activities is reduced to measure just these dimensions (Morrow-Howell, 2010).

While efforts have been made to measure types of volunteering activities in accordance with matrices put forward by previous researchers (Petriwskyj & Warburton, 2007), this is not the only method of categorisation suggested for volunteering behaviours (Cnaan & Amrofell, 1994). Therefore a more specific and complex division of types of volunteer work may have derived different results. While the results of this research project provide no indication that different types of volunteering activities are associated with different psychological wellbeing outcomes, only one other study could be found that had made the effort to assess different types of volunteering (Brown, Hoye & Nicholson, 2012). It is therefore suggested that future research continues to investigate the impact that different types of volunteering may have.

Clinical Implications

Study One indicates that the types of social roles that older adults engage in are likely to impact the extent to which they will benefit, in terms of psychological wellbeing, from volunteering activity. Those with poorer physical health are likely to benefit more from consistent engagement in volunteering behaviours than older adults with a relatively high level of physical wellbeing. Further, the findings of Study One suggest that the longitudinal relationship observed between volunteering and psychological wellbeing within older adult populations, as described in Wilson's review (2012), exists within a New Zealand population of older adults. However, the results of Study Two did not provide evidence that volunteers experience statistically significantly better psychological wellbeing than non-volunteers. Therefore, clinicians should be aware that recommendations for older adults to engage in volunteering in order to improve their psychological wellbeing, or prevent the onset of depressive symptoms are only partially supported by this research. The emphasis of recommendations should be focussed more towards engagement in activities that help older adults to invest in parts of their self-concept that are meaningful to them. Therefore, the findings of this study suggest that generalised recommendations to engage in volunteering activity are unlikely to be helpful.

Study Two suggests that older adults who experience events that limit their ability to engage in, and gain a sense of achievement from roles that are important to them are more likely to experience reduced psychological wellbeing, which may be linked with greater vulnerability to depression. This is interesting when considered in the context of the theory behind behavioural

activation interventions commonly used in the treatment of depression (Cuijpers, van Straten & Warmerdam, 2007). This study indicates that rather than people withdrawing from activities that give them pleasure as a result of depressed mood, limitations on people's ability to be involved in activities that are meaningful to their sense of self can coincide with reductions in psychological wellbeing. Therefore, this research serves as a reminder that clinicians should not necessarily consider stressful events in a person's life based on a generic understanding of how stressful an event is, but rather the impact that the event has on a person's ability to engage in roles that they find enjoyable, and gain a sense of achievement from.

Study two also indicates that increased investment in domains of self-concept through engagement in social roles is associated with higher levels of psychological wellbeing. Given that it has been indicated that higher levels of psychological wellbeing can protect against the onset of depressive symptomatology (Garland et al., 2010; Lee Duckworth et al., 2005; Watson & Naragon-Gainey, 2010; Wood & Joseph, 2010), it may follow that if older adults are able to invest in salient aspects of their self-concept through volunteering activity, or any other social role that they undertake, they are likely to be protected against the onset of depressive symptoms. Only volunteering activity that is directly related to a person's sense of achievement and enjoyment in parts of their lives that are important to them would likely be related to some benefit to their psychological wellbeing.

Although there has been much research to assert that volunteering causally affects psychological wellbeing (Wilson, 2012), the outcomes of Study Two suggest that the description of this relationship may not be entirely accurate. While volunteering does appear to enhance a person's ability to invest in roles and goals that are important to their sense of self, there is no evidence provided by this study to suggest that volunteering can facilitate investment in self-concept to the extent to which it can protect against the effects of negative life events.

Therefore, for people working in older adult mental health, encouraging clients to volunteer may be a valid suggestion for older adults experiencing low mood. However, it should not be asserted that any form of volunteering activity will be helpful. Further, a suggestion of involvement in any social role (be it voluntary or not) will likely be helpful for older adults if it aligns with domains of their self-concept in which they are greatly invested. There is no evidence from this study that there is a factor especially related to volunteering that can enhance older adults' mood.

Limitations

The findings of Study One are potentially limited by the fact that the most suitable method of imputation for missing data, (multiple imputation) could not be used, due to the type of statistical analyses that needed to be undertaken. While there is no evidence to suggest that there were biases in the missingness of the data, it is not possible to prove that the data are indeed missing at random, and therefore the results could potentially be biased.

The findings of Study Two are potentially limited by the use of a non-probability sampling approach, which led to the over representation of certain demographic groups within the sample. There are no empirical or theoretical reasons to believe that the findings of Study Two would differ according to ethnicity, or gender. However, the results should be considered to be more representative of women, and people who identify as New Zealand European.

Further, the participants involved in Study Two were self-selected, so it is possible that participants who held particularly strong views regarding their experiences of volunteering, or their own psychological wellbeing were more likely to participate. The advertising attempted to avoid providing information that would attract particular types of participants, but that characteristics of people who were exposed to the advertising, but chose not to participate are not known.

In addition, the survey data demonstrated that participants' stressor salience scores were very highly correlated with general stress scores, which represent

only the severity of stressors experienced in the last 12 months, not the extent to which the stressors align with highly valued domains of self-concept. It therefore appears that participants only reported highly valued information relating to the limitation of investment in important domains of self-concept, and omitted information relating to negative events that had affected less important domains of self-concept. It would have been helpful, for the purposes of this study, to be able to distinguish between these two phenomena in order to test the predictions of a social-cognitive theory of depression that identity-relevant stressors are more predictive of poorer psychological wellbeing than just a general understanding of exposure to stressors.

Previous studies have indicated that question order and wording can strongly influence responses to surveys, particularly when questions relate to participants' life-satisfaction (Schwartz, 1999). It is possible that including a lead in to the questions asking participants to rate their experiences of recent negative events would have encouraged participants to consider all difficult events in their lives, rather than focussing on the events that had the most limiting effect upon them. In spite of this issue, the answers from the questions relating to life stressors are still valid for the purposes of testing the hypotheses relating to the current research project, as it is considered that these scores still reflect the extent to which negative events have impacted on investment in important domains of self-concept.

Further, this study presents the results of a cross-sectional survey, so no causal inferences can be drawn from the findings. Whilst the information provides an

interesting start point for further research into the social-cognitive theory of

depression, it cannot assert that the relationships found between variables are

causal.

Contributions and Strengths

The present study has been able to contribute to the current literature relating to volunteering and psychological wellbeing in a number of useful ways. First, Study One adds to this body of knowledge, by indicating that although volunteering does appear to have an effect on depressive symptoms amongst the general population of older adults, differential effects are found between population groups. Therefore the effects of volunteering on psychological wellbeing may not be evident for all population groups, but are more likely to be evident amongst people who are more limited in their ability to invest in important domains of their self-concept.

As mentioned previously, the literature review conducted to support this research project identified conflicting findings amongst previous studies that have looked at the way in which engagement in a range of different social roles may modify the impact of volunteering on depressive symptoms, or psychological wellbeing. This study therefore attempted to bridge this gap in the literature. Simple effects analyses identified a significant effect of volunteering on symptoms of depression amongst those with relatively poorer health, but not those with higher levels of physical health. These results align with previous research in this field, and also align with a social-cognitive theory of depression. However, other social roles, such as being a spouse, were not demonstrated to impact the relationship between volunteering consistency and experiences of symptoms of depression. Therefore, the current study suggests that those with poorer physical wellbeing, and possibly those who are unemployed, are more likely to be protected from the symptoms of depression as a result of consistent engagement in volunteering.

The outcomes of Study Two aligned both with previous empirical findings, and also with the theoretical principles outlined in a social-cognitive theory of depression (Oatley & Bolton, 1985). Previous studies have indicated that depressive symptoms can be avoided, or psychological wellbeing can be improved through increased investment in domains of self-concept that are important to a person (Linville, 1987; Kwok, Chui & Wong, 2013). Statistical analyses using the data collected for Study Two confirmed this finding within a New Zealand based population of older adults.

Study Two was also able to demonstrate that investment in salient domains of self-concept through volunteering activity is associated with better psychological wellbeing, even when the impact of negative life events are also accounted for. No studies investigating this question were identified in the literature review. Study Two also assessed whether volunteering work that contributes to salient domains of self-concept could moderate the impact of negative events limiting investment in salient domains of self-concept. A comprehensive literature review did not identify research to date that has addressed this research question.

Finally, this study was able to investigate the differential impact of types of volunteering behaviours. As mentioned previously, only one other identified study to date has done this (Brown, Hoye & Nicholson, 2012), and there have been others that have investigated the impact of engagement in one specific form of volunteering activity (Morrow-Howell et al., 2008). The results aligned with those of Brown, Hoye and Nicholson (2012), (although the volunteering

activities were categorised slightly differently), and also aligned with a social-cognitive theory of depression (Oatley & Bolton, 1985).

A strength of this study is the combined use of both longitudinal, and cross-sectional data to answer the research questions. The outcomes of both studies are aligned, and therefore provide further weighting to the idea that the relationships identified in this research exist across a range of older adult population groups in New Zealand. Certainly the sample size used in Study One, and the extent to which the sample accurately represents the demographic makeup of the older adult population of New Zealand can be considered a significant strength of this research.

In sum, the research project provides important information that supports the application of the principles of social-cognitive theory to the relationship between volunteering and psychological wellbeing, and the prevention of depressive symptoms. Previous research has not yet attempted to test this theory within the context of volunteering, and the results provide substantial evidence that the theory may provide a plausible understanding of the some of the mechanisms underlying the relationship between volunteering and psychological wellbeing.

Future Research

Two central questions have arisen from the results of this research, one from each study within the research project. First, from Study One, it is apparent that engagement in different social roles likely moderates the relationship between volunteering and protection against depressive symptoms. However, it was difficult to gain a sense of whether a range of social roles may moderate this relationship, or whether this effect pertains to only certain social roles. In the analyses conducted within Study One, it was apparent that employment contributed a lot to the severity of depressive symptoms that older adults experienced. Therefore, it is possible that in international studies, a larger proportion of their samples were less engaged in paid employment, and therefore benefit more from volunteering when other social roles are compromised. Future research should therefore focus on whether a range of social roles become more important in moderating the impact of volunteering on psychological wellbeing as people move out of paid employment for longer periods of time.

Further, the results of Study Two provide the promise of a possible explanation of the relationship between volunteering and psychological wellbeing. The results of this study indicate that volunteering, in and of itself, does not contribute to psychological wellbeing. Rather, it is apparent that volunteering provides a conduit for older adults to invest in highly valued domains of their self-concept. However, as has been mentioned, the current study reports the findings of a cross-sectional survey that has a relatively small sample size.

In order to attain greater certainty as to whether a social-cognitive theory is able to provide an explanation of the relationship observed between volunteering and psychological wellbeing, it will be important to replicate these results using longitudinal data, and with a larger sample size. Further, future research focussed on this very specific area of investigation should build upon the limitations identified in this research project, and develop an alternative measure of the experiences of difficult life events. This would enable a stronger understanding of the relationship between investment in salient domains of self-concept, and subsequent psychological wellbeing outcomes.

Conclusion

This research project aimed to extend understandings of how changes in social roles can affect people's sense of identity, and subsequently lead to changes in their psychological wellbeing, and experiences of depressive symptomatology. Previous research indicated that volunteering can lead to a reduction in depressive symptoms amongst older adults, and protect older adults against the onset of depressive symptoms (Wilson, 2012). However, the causal mechanisms involved in this relationship remained unclear.

In order to provide some clarity in this area of investigation, three research questions were posed. First, does volunteers' engagement in different social roles moderate the impact of volunteering on psychological wellbeing? Second, does the social-cognitive theory of depression predict the moderators of the volunteering-wellbeing relationship? Finally, does the type of volunteering activity that older adults engage in moderate the impact of the volunteering on psychological wellbeing?

The study identified that volunteers' engagement in social roles does moderate the impact of volunteering on psychological wellbeing, or more specifically the relationship between volunteering and protection against symptoms of depression. It was found that people with relatively poorer health benefitted from consistent engagement in volunteering, while people in relatively better physical health did not. The moderating effects of other social roles such as marital status, and employment were not identified in these analyses. It is possible that the outcome may reflect the important contribution of employment in facilitating

investment in not only the work domain, but also investment in people's relationships, and their ability to engage in activity that is of great interest to them. Because the vast majority of the sample were in some form of paid employment, it is possible that because employment has such a strong impact on the psychological wellbeing of the participants', that the impact of volunteering consistency was much smaller, and played out in different ways than would have been expected given the findings of previous research studies. These results are indicative of the need for future research assessing the impact of social roles in moderating the extent to which participants can benefit psychologically from volunteering, and the way that this moderating relationship may change over time as older adults move out of the workforce and into retirement.

Further, the results also indicated that the application of a social-cognitive theory of depression (Oatley & Bolton, 1985) to volunteering behaviour provides a solid theoretical basis for understanding the relationship between volunteering and psychological wellbeing. First, this study indicated that events that limit a person's ability to invest in salient domains of self-concept are associated with reduced psychological wellbeing. Further, increased investment in salient domains of self-concept through volunteering is associated with better psychological wellbeing, even when factors known to influence psychological wellbeing are controlled for.

However, the results indicated that the extent to which a person could invest in their self-concept through volunteering did not moderate the impact of difficult life experiences on volunteers' psychological wellbeing. Therefore, the concept

of 'compensatory coping' (Thoits, 2010) is not supported by this research. Finally, this study provided no evidence that different types of volunteering activities are associated with different measures of psychological wellbeing.

To conclude, this study has used a combination of data sets to test a social-cognitive theory of depression. The results provide a good foundation of evidence upon which more nuanced studies can be used to test the predications of a social-cognitive theory of depression, in a wider range of contexts, with larger samples, and amongst a range of different populations.

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Appendix One: Student Contract for Use of NZLSA Data

Student Contract
Welcome to the Health, Work, and Retirement (HWR) survey. Below are the terms and conditions for using the data, which can be accepted by replying to this email and acknowledging acceptance of these terms and conditions.

When you reply we will understand that you agree that:
1. The data is for your use only. You will not distribute these data to another party.
2. When you have completed the study you will delete your copy, and any versions you may have made, from your files. This includes all electronic and hard copies of the data.
3. If you have choose to publish the results from your study in the HWR team request that you:
a. Specifically name the HWR lead investigators (Associate Professor Fiona Alpass and Associate Professor Christine Stephens) as co-authors on your publications
b. Explicitly acknowledge the funding provided for the HWR study by the Health Research Council of New Zealand. If you are combining either (or both) the HWR 2006 and 2008 datasets with the HWR participant dataset from the 2010 New Zealand Longitudinal Study of Ageing (NZLSA) then you will also need to acknowledge the funding provided for the NZLSA study from the New Zealand Ministry of Science & Innovation.
Acceptance of these terms and conditions will grant you access to our HWR datasets(s). If you have any queries surrounding this contract or any other aspect of the database please feel free to contact Mr Brendan Stevenson (HWR & NZLSA Research Officer: B.S.Stevenson@massey.ac.nz).

Best wishes for your research.
The HWR Team.

Louise Cooper, Student Researcher 13.3.13

MASSEY UNIVERSITY
COLLEGE OF HUMANITIES
AND SOCIAL SCIENCES
TE KURA PŪKENGA TANGATA

Doing good and feeling well- Information letter for participants

Dear reader

This research project aims to investigate how people's engagement in different activities relates to their sense of wellbeing. We would like to hear about the parts of your identity that are most important to you, and how activities and events in your life impact on different parts of your identity. It is hoped that the knowledge gained through this research project will be used to support the development clinical interventions to help people who are feeling particularly low.

How you can participate
If you are aged 60+ and have a spare 15-20 minutes, we would really appreciate your participation in this project. Attached to this information sheet are a consent form and a survey that you can fill out. You are under no obligation to participate in the survey, and if you do choose to participate, you do not have to answer all the questions on the survey if you are uncomfortable doing so. However, the survey information is most useful when all the questions are answered. When you have finished the survey, you can just post it back in the **postage paid envelope** provided.
A section of this survey asks about stressful events that you have recently experienced. Recalling stressful events can be emotionally difficult and sometimes getting a bit of support with this can be a big help. Lifeline provides a free telephone counselling service- their number is 0800 543 354.

Entry into a prize draw
To thank you for your participation in this study, each participant will be offered the chance to enter into a draw to win one of five 30 dollar supermarket vouchers. However, if you'd rather not provide your personal details to allow us to contact you if you win, that is not a problem. All participants' contact details will be destroyed after the draw has been made.

What happens to the information
All the data collected in this survey will be entered into a computer database, and your name will be removed from the survey information. That

means that there is no way that your answers could be identified as yours, once they are entered into the computer. The data collected will be stored in the database for ten years and then destroyed. All the papers included in this pack will be kept in a locked cabinet on the Massey University Albany Campus, and only the researcher and the supervisor will have access to it. After ten years, these papers will be destroyed. If you would like a summary of findings from the research, please indicate this on your consent form. They will be sent to you in the post.

Who is running this study
This research project is being undertaken by Louise Cooper, who is studying towards her Doctorate in Clinical Psychology at Massey University, and Associate Professor Paul Merrick is supervising this research project. Associate Professor Merrick has conducted many research studies in the area of older adults' mental health, and has worked as a clinical psychologist in older adults hospital services.

How to get more information
A free phone 0800 number has been set up to enable you to call in with questions about this project. This is a direct dial line to the student researcher, Louise Cooper. This line will operate from 1st March 2013 through to October 2013, in case you have any queries about your participation. You can also call this number if you know other people who would like to be involved with the study, and the researcher will make arrangements to send survey packs out as they are needed.
The telephone number is 0800 176 002. Alternatively, you can email Louise at louise@cooper.co.nz

Thank you very much for your time. Please let us know if there is anything we can do to facilitate your participation in this research.

Kind regards

Louise Cooper   Paul Merrick
Doctorate of Clinical Psychology Candidate   Associate Professor
                                                         Massey University
                                                         School of
                                                         Psychology

This project has been reviewed and approved by the Massey University Human Ethics Committee: Application 12/093R. If you have any concerns about the ethics of this research, please contact Dr Ralph Bathurst, Chair, Massey University Human Ethics Committee: Northern. Telephone 09 4140800 x 43404, email humanethicnorth@massey.ac.nz.

CONSENT FORM

Title of Research Project: Doing good and feeling well

Researcher: Louise Cooper

I, _____, have read the Participant Information Sheet relating to the use of the data that I provide through the survey and I have been offered an opportunity to ask questions about this project.

I understand that I can choose whether I want to provide my contact details in order to be entered into the draw to win a $30 grocery voucher.

I understand that any information that I provide through this survey will be made anonymous by the researcher, and that all information will be kept securely until its destruction, to ensure confidentiality.

☐   I wish to be entered into the draw to win a grocery voucher.

☐   I wish to receive a summary of the results of this research.

Signature: _____

Date: _____

Please only include your telephone number if you wish to be entered into the draw to win a grocery voucher.

Telephone Number (including area code):
_____

Please only include your address if you wish to receive a summary of the results of this research

Address: _____
                 _____
                 _____

This consent form will be held for a period of ten years.

1a. Please state the current form of work that you spend the most time doing. This includes paid employment, unpaid caregiving, housework, volunteering for an organisation etc.

Please tick one box on each line:

1b.	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much does this work make you feel good?					
How much energy and effort do you put into this work?					
How successful do you think you will be in this work?					
To what extent does being successful in other areas of life depend on being successful at this work?					
To what extent do you think life would feel meaningless or unhappy without this work?					

2a. Please state your most important hobby or interest.

_____

Please tick one box on each line

2b.	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much does your hobby/interest make you feel good?					
How much energy and effort do you put into your hobby/interest?					
How successful do you think you will be in your hobby/interest?					
To what extent does being successful in other areas of life depend on being successful at your hobby/interest?					
To what extent do you think life would feel meaningless or unhappy without your hobby/interest?					

3a. Please state the two most important relationships you have, or have had, with another person

---

Please tick one box on each line.

3b.	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much do personal relationships make you feel good?					
How much energy and effort do you put into your relationships?					
How successful do you think you will be in your relationships?					
To what extent does being successful in other areas of life depend on being successful in your relationships?					
To what extent do you think life would feel meaningless or unhappy without your relationships with others?					

4. This question asks about the way you feel about your personal health and independence.   **Please tick one box on each line**

	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much does your health and independence make you feel good?					
How much energy and effort do you put into maintaining or improving your health and independence?					
How successful do you think you will be in maintaining or improving your health and independence?					
To what extent does being successful in other areas of life depend on your health and independence?					
To what extent do you think life would feel meaningless or unhappy without your health and independence?					

The next section of questions is about volunteering that people do for a specific organisation- e.g. a church, or a hospice. The questions do not refer to the kind work that you may do for family members and friends in your own time and that is not associated with a specific organisation.

For example, these questions do not refer to looking after children as a favour to their parents, but it would include looking after a Sunday School class as part of a church activity. Giving your time or services on a marae, or voluntary contributions to any other cultural practices would also be considered volunteer work.

If you do not volunteer for any formal organisations, please move to question 13.

Thank you very much for filling out this survey. We very much appreciate your contribution to the research.

5. In your volunteering work, do you spend most of your time working as an individual, or as part of a team? (Please tick)

As an individual	As part of a team

6. In your volunteering work, do you spend most of your time working mainly with objects (e.g. letter writing, administration work, making meals), or working with people (e.g. providing information, mentoring, dropping meals to people's homes)? (Please tick)

Mainly work with objects	Mainly work with people

7. Please describe your volunteering role and how it relates to the work of the organisation you are contributing to. Please also state how much time you spend each week volunteering:

_____

_____

_____

8. Below is a list of categories that your volunteering work may fit into. Please tick the boxes that best describe the type of work you do. Tick as many boxes as you feel are appropriate. Many volunteer roles will fulfill more than one of these volunteering types.

Volunteering Type	
Providing goods - e.g. serving food at a homeless shelter, providing books to schools	
Activism, campaigning or advocacy	
Providing a community service – e.g. coaching a sports team, working in an opportunity shop	
Environmental stewardship- e.g. cleaning up parklands	

9. How much do you feel your volunteering work helps you to achieve goals that are related to your work / main occupation (This includes paid employment, unpaid caregiving, housework, volunteering for an organisation etc.)? (Please circle one)

1. Very little	2. A little	3. A moderate amount	4. Quite a lot	5. A great deal

10. How much do you feel that your volunteering work helps you to achieve goals that are related to your interests? (Please circle one)

1. Very little	2. A little	3. A moderate amount	4. Quite a lot	5. A great deal

11. How much do you feel that your volunteering work helps you to achieve goals that are related to your personal relationships? (Please circle one)

1. Very little	2. A little	3. A moderate amount	4. Quite a lot	5. A great deal

12. How much do you feel that your volunteering work helps you to achieve goals that are related to your health and independence? (Please circle one)

1. Very little	2. A little	3. A moderate amount	4. Quite a lot	5. A great deal

Sometimes events happen in our lives that mean that we can no longer be involved in certain activities, or the meaning of those activities change for us. The following questions ask about how events **in the past 12 months** have impacted on the activities that contribute to your sense of self.

Please tick **one** box on each line:
Please note that work includes paid employment, unpaid caregiving, housework, volunteering for an organisation etc.

13.

In the past 12 months . . .

	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much have events in your life prevented you from enjoying your work?					
How much have events in your life prevented you from putting energy and effort into your work?					
How much have events in your life prevented you from being successful in your work?					
To what extent have events in your life prevented you from finding meaning and happiness in your work?					

14.

In the past 12 months . . .

	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much have events in your life prevented you from enjoying your close relationships?					
How much have events in your life prevented you from putting energy and effort into your close relationships?					
How much have events in your life prevented you from being successful in your close relationships?					
To what extent have events in your life prevented you from finding meaning and happiness in your close relationships?					

15. In the 12 months . . .	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much have events in your life prevented you from enjoying your interests/hobbies?					
How much have events in your life prevented you from putting energy and effort into your interests/hobbies?					
How much have events in your life prevented you from being successful in your interests/hobbies?					
To what extent have events in your life prevented you from finding meaning and happiness in your interests/hobbies?					

16. In the past 12 months . . .	1. Very little	2. A little	3. Moderate amount	4. Quite a lot	5. A great deal
How much have events in your life prevented you from enjoying your health and independence?					
How much have events in your life prevented you from putting energy and effort into your health and independence?					
How much have events in your life prevented you from being successful in your health and independence?					
To what extent have events in your life prevented you from finding meaning and happiness in health and independence?					

17. Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks

Statements	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been feeling interested in new things	1	2	3	4	5
I've been cheerful	1	2	3	4	5

18. In general would you say that your health is (please tick):

Excellent ◯   Very Good ◯   Good ◯   Fair ◯   Poor ◯

19. Please tick your gender: Male ◯   Female ◯

20. Please tick the age bracket to which you belong (Please tick ONE box)

60-64	
65-69	
70-74	
75-79	
80+	

21. Which one of these statements is true about you? (Please tick ONE box)
(Please answer for your most recent marriage or partnership)

I am legally married	
I am in a civil union/de facto relationship	
I am divorced or permanently separated from my legal husband or wife	
I am a widow or widower	
I am single (but not a widow or widower)	

22. What is your highest educational qualification? (Please tick ONE box)

No qualifications	
Secondary school qualifications (e.g., School Certificate, University entrance)	
Post-secondary certificate, diploma, or trade diploma	
University degree	

23. Which ethnic group(s) do you identify with?

New Zealand European	
New Zealand Maori	
Pacific Islander	
Asian	
Indian	
Other European	
Other, please list:	

Appendix Four: Summary of Results for Participants

Dear Participant

In 2013, you participated in a study titled "Doing Good and Feeling Well". This letter is to thank you for your participation, and provide you with a summary of the results of the research, which you requested to receive.

Previous research has demonstrated that within populations of older adults (those who are aged 65 years and over), volunteers experience better psychological wellbeing than people who do not volunteer. The Doing Good and Feeling Well study has indicated that the effect of volunteering may be stronger amongst older adults who have poorer physical health, than amongst those with relatively good physical health. That is to say, volunteers who experience the greatest benefits to their psychological wellbeing are those who have poorer physical health.

The findings of the Doing Good and Feeling Well study also suggest that the reason volunteering is beneficial, particularly for older adults, may be that it provides additional opportunities for a person to engage in activities that help them to build social relationships, work in areas of interest, and contribute to their physical wellbeing, which in turn contributes to a person's sense of purpose and meaning. Previous research has shown that volunteer work often provides similar benefits to those that may have previously been attained through paid work, so it becomes more important as people move out of the workforce and into retirement. However, the Doing Good and Feeling Well study suggests that higher levels of psychological wellbeing may not be necessarily related to the adoption of a volunteer role, but could be related to the adoption of any social role that enables a person to contribute to their own sense of identity in ways that are important to them.

This research provides a platform from which further research can follow. While the relationship between volunteering and positive psychological wellbeing has been recognised for a long time, the reasons for this relationship have remained unclear. The Doing Good and Feeling Well study provides some understanding of the psychological mechanisms that are at play in this relationship.

Once again, thank you very much for your participation in this research project. Every piece of data is important to ensuring that the results can provide evidence that represents the true experiences of older adults in our communities.

Kind Regards

Louise Cooper

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