

Volunteering and Well-Being in Older Adulthood: Contextual and Psychological Influences

By

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Abstract

Formal volunteering refers to the provision of unpaid assistance willingly given in the form of time, services, or skills to an organisation or group. A substantial body of research has demonstrated that formal volunteering supports well-being in later life. However, questions remain regarding the conditions under which these benefits occur. Specifically, limited research has explored how the contextual features of the volunteer experience (e.g., nature of the work) influence well-being outcomes. Additionally, few studies have considered how self-perceptions of ageing affect engagement in prosocial activities. Furthermore, although volunteering has been linked to well-being, little is known about the mechanisms underpinning these associations. Finally, limited research has evaluated the feasibility and impact of intergenerational programs for older adults within the Australian context.

This thesis addressed these gaps through four empirical studies. The first, a cross-sectional study, examined how variations in volunteer experience (i.e., task, knowledge, social, and contextual characteristics) related to well-being among older volunteers and whether these associations were moderated by functional health. Findings showed social support and favourable work conditions were associated with higher life satisfaction and psychological flourishing, while interactions outside the organisation were linked to higher negative affect. Task characteristics (e.g., variety of tasks) and knowledge characteristics (e.g., skills required) were more strongly associated with positive well-being among volunteers with poorer physical functioning.

The second study employed a longitudinal design to assess how awareness of age-related gains and losses predicted volunteering over a 12-month period during the COVID-19 pandemic. While volunteering hours remained stable, individuals who perceived more age-related losses were less likely to volunteer at baseline. A trend suggested that higher perceived age-related gains may have buffered the impact of COVID-19-related disruptions on volunteering.

The third study examined whether basic psychological needs – autonomy, competence, and relatedness – mediated the relationship between volunteering and well-

being. These mechanisms were partially supported cross-sectionally: autonomy mediated the relationship between volunteering and positive affect and life satisfaction, while competence mediated associations with affective well-being. Relatedness did not emerge as a significant mediator, and longitudinal mediation effects were non-significant.

The final study evaluated the feasibility and impact of a pilot intergenerational volunteering program involving older adults supporting numeracy development in primary school children. Qualitative data showed the program was well-received by volunteers and stakeholders. Quantitative data showed older participants reported increased positive affect following the intervention, though no significant changes were found across other well-being outcomes (e.g., life satisfaction).

Overall, this thesis extends current understanding of the contextual, psychological, and subjective factors influencing the relationship between volunteering and well-being in later life. The findings highlight that (a) specific aspects of the volunteer experience are differentially associated with well-being, especially for those with poorer functional health; (b) negative perceptions of ageing may hinder volunteer engagement; (c) autonomy and competence are key mechanisms through which volunteering may enhance well-being; and (d) intergenerational volunteering is a feasible and meaningful approach to promote social engagement and emotional benefits among older adults. These findings provide insights for designing tailored, evidence-based volunteering programs to support healthy ageing.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and the research within will not be submitted for any other future degree or diploma without the permission of Flinders University; and to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text; and if generative artificial intelligence has been used in my thesis it has been duly acknowledged with details to identify the extent to which generative artificial intelligence formed the final thesis.

Name: Amy Harvey

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CHAPTER 1

INTRODUCTION

1.1 Overview

As Australia's population ages, health promotion efforts toward supporting well-being in later life have become increasingly important. Formal volunteering has been identified as a significant factor in facilitating well-being in older adulthood. Although substantial evidence supports the positive relationship between volunteering and well-being, questions remain as to *how* and *under what conditions* volunteering produces these effects (Morrow-Howell, 2010; Stuart et al., 2020). The first aim of this thesis is to examine the conditions under which volunteering yields favourable effects for older adults. Specifically, it investigates how contextual variations in the volunteer experience (e.g., the nature of the work itself and the work environment) are associated with the well-being of older volunteers. This thesis also considers how individual and historical factors may influence volunteering behaviour. An emerging body of research suggests that subjective ageing – how individuals perceive and experience their own ageing process – significantly influences health and behaviour (M. Diehl et al., 2021). Although subjective ageing has been linked to cognitive and emotional well-being, functional health and longevity (see Diehl et al., 2021), its role in shaping older adults' engagement in prosocial activity, including volunteering, remains unexplored. Understanding whether subjective ageing contributes to volunteering behaviour is important as it identifies a potential point for intervention in promoting engagement in later life. This thesis examines this relationship longitudinally while also considering the added impact of the COVID-19 pandemic as a historical event potentially affecting volunteering behaviours.

Furthermore, despite extensive research on the association between volunteering and well-being, relatively few studies investigate *how* volunteering produces its beneficial effects (Morrow-Howell, 2010; Stuart et al., 2020). To address this gap, this thesis explores potential mechanisms through which volunteering enhances well-being, focusing on its role in fulfilling autonomy, competence and relatedness, three core psychological needs essential for motivation and well-being (Ryan & Deci, 2000). The final aim of this thesis is to evaluate the feasibility, acceptability and effectiveness of a newly developed pilot intergenerational program designed to enhance well-being among community-dwelling older adult volunteers.

By implementing and assessing this pilot intervention, the study aims to establish the feasibility of a framework that can be applied in schools to increase volunteer opportunities for older Australians.

1.2 Ageing in Australia

Australia's population is experiencing a significant demographic shift, with increasing life expectancy and declining fertility rates contributing to a growing number and proportion of older Australians. As of June 2020, an estimated 4.2 million people aged 65 and over comprised 16% of the population, up from 8.3% in 1970 and 12% in 1995 (Australian Institute of Health and Welfare, 2024). This trend is expected to continue, with projections indicating that by 2071 older Australians will make up between 25% and 27% of the total population (Australian Bureau of Statistics, 2022). These changes reflect significant improvements in health and well-being across the life course. For example, in the 1970s a woman aged 65 could expect to live for an additional 15.9 years, whereas by 2020-22 this had increased to an additional 22.8 years. Similarly, a man aged 65 in the 1970s could expect to live an additional 12.2 years, compared to 20.2 years in 2020-22 (Australian Institute of Health and Welfare, 2024).

Although the process of ageing is heterogeneous, with significant variations in individuals' physical, social and psychological functioning (Baltes & Carstensen, 1996), Australia's demographic transition presents notable challenges for the health and welfare sectors. These include increased demand for aged care services, as well as rising healthcare costs (Australian Institute of Health and Welfare, 2015). At the same time, this shift also presents an opportunity to harness the potential of older Australians as active contributors to society. For many years, older adults have played a vital role in the paid and unpaid workforce and the broader community. In 2010, people aged 55 and over comprised 16% of the labour force, with projections indicating this would grow to nearly 20% by 2050 (Advisory Panel on the Economic Potential of Senior Australians, 2011). Underutilising their capacity was estimated to cost the economy \$10.8 billion annually. Beyond paid

employment, older Australians also contribute significantly through caregiving and volunteering, with the economic value of their unpaid work, particularly volunteering, estimated at \$14.6 billion per year (Advisory Panel on the Economic Potential of Senior Australians, 2011). With longer life expectancy, higher levels of education and greater access to technology, older adults are increasingly well-positioned to engage in meaningful work, care and civic life. Recognising and supporting this potential is essential for ensuring sustainable social and economic outcomes (Advisory Panel on the Economic Potential of Senior Australians, 2011).

While recognising the broader social benefits of volunteering, the primary focus of the current thesis is on developing a better understanding of how, and under what conditions, volunteering contributes to well-being among older adults. In the sections that follow, the concept of well-being will be defined, and the broader benefits of maintaining well-being for health and longevity will be discussed.

1.3 Well-Being and Ageing

1.3.1 *Conceptualising Well-Being: Subjective Versus Psychological Well-Being*

The concept of well-being is complex and multifaceted. Broadly speaking, well-being refers to an individual's potential for optimal human functioning and experience (Ryan & Deci, 2001). Contemporary research on well-being distinguishes between two perspectives: subjective well-being (SWB) and psychological well-being (PWB). SWB is concerned with the experience of pleasant emotions and/or experiences and the avoidance of negative ones (Diener, 1984). SWB is typically operationalised using measures of life satisfaction, positive affect and (the absence of) negative affect. Life satisfaction involves a global cognitive evaluation of one's life, often assessed with statements such as "I am satisfied with my life" (Diener et al., 1985), whereas positive and negative affect capture the frequency of emotional experiences, such as joy or fear (Diener et al., 2009). While SWB focuses on how people feel about their lives, some researchers argue that this approach does not fully capture deeper aspects of well-being, such as personal growth or meaning (Ryff, 1989). This critique has led to an alternative conceptualisation in the form of psychological well-being.

Psychological well-being (PWB) extends beyond life satisfaction and emotional experiences, emphasising the fulfilment of human potential and the pursuit of a meaningful life (Ryff, 1989). Although there is an ongoing debate on the most effective way to conceptualise PWB (Steptoe et al., 2015), Ryff's (1989) model provides one of the most influential and widely recognised frameworks. Ryff argued that traditional measures of well-being fail to adequately capture essential aspects of human development. Rather than viewing happiness as an end goal, Ryff proposed that it is a by-product of living a purposeful and meaningful life. Ryff's (1989) model identifies six core dimensions of well-being: autonomy, personal growth, purpose in life, self-acceptance, environmental mastery and positive relationships. Autonomy refers to self-determination and independence, whereas personal growth reflects a sense of continual development and the realisation of one's potential. Purpose in life captures the extent to which individuals perceive meaning and direction in their lives, while self-acceptance involves a positive self-evaluation. Environmental mastery describes an individual's ability to manage life effectively, and positive relationships emphasise the importance of meaningful social connections. Together, these dimensions suggest that well-being involves engaging with life in ways that foster growth, purpose and fulfilment, rather than merely experiencing positive emotions and avoiding negative ones.

A related theoretical perspective, Self-Determination Theory (SDT; Ryan & Deci, 2000), offers an alternative lens for understanding well-being by identifying three fundamental psychological needs: autonomy, competence and relatedness. Autonomy involves the sense of being in control of one's actions and making choices aligned with personal values, while competence refers to feeling effective in one's activities and capable of achieving goals. Relatedness concerns experiencing a sense of connection and belonging through meaningful social relationships. These needs are conceptually aligned with several of Ryff's (1989) dimensions. However, unlike Ryff's model, which defines well-being as the presence of specific qualities, SDT conceptualises these psychological needs as essential conditions that facilitate well-being rather than as components of well-being itself.

Table 1*Defining Well-Being*

Type of well-being	Major proponent	Major components
Subjective well-being	Diener	Life satisfaction Positive affect Negative affect
Psychological well-being	Ryff	Autonomy Personal growth Self-acceptance Purpose in life Environmental mastery Positive relationships

Note. Sourced from Lent (2004).

This distinction is important in understanding the different theoretical approaches to well-being. In SDT, well-being is achieved when individuals operate in environments that support autonomy, competence and relatedness, whereas environments that restrict these needs are said to hinder well-being (Deci & Ryan, 2012). In contrast, Ryff's model considers autonomy, personal growth, self-acceptance, purpose in life, environmental mastery and positive relationships as intrinsic components of well-being itself (Ryff, 2014). Some researchers have noted that Ryff's framework blurs the line between well-being predictors and well-being outcomes (Robbins & Kliever, 2000). Nevertheless, researchers have argued that fulfilling these psychological needs (e.g., autonomy, competence, relatedness) typically fosters subjective well-being (i.e., positive affect and life satisfaction; Ryan & Deci, 2001). In this thesis, and consistent with the SDT perspective, I conceptualise the fulfilment of basic psychological needs – autonomy, competence, and relatedness – as a key determinant of well-being.

1.3.2 *The Benefits of Well-Being: Empirical Evidence*

An extensive body of research demonstrates a strong link between well-being and key life domains, including health, longevity, social relationships and societal contributions (Diener et al., 2009). Research has consistently shown that higher well-being is associated with better health outcomes and longer life expectancy. For example, a study using data from the English Longitudinal Study of Ageing (Stephoe et al., 2015) found that psychological well-being was associated with greater survival rates in adults aged 50 and older. Specifically, individuals in the lowest well-being quartile had significantly higher mortality rates (29.3%) compared to just 9.3% among those in the highest quartile, even after accounting for demographic and baseline health factors.

Beyond physical health, well-being has been closely linked to social connectedness. Evidence suggests a bidirectional relationship: individuals with strong social networks are more likely to report higher well-being, while those with greater well-being are better able to develop and maintain supportive relationships (Berkman et al., 2000). Moreover, well-being has been shown to extend its benefits to broader societal engagement. Research indicates that individuals with higher subjective well-being are more likely to engage in prosocial activities, such as volunteering, and devote more time to these pursuits compared to those with lower well-being (Diener et al., 2009; Thoits & Hewitt, 2001).

While such findings imply that well-being fosters civic engagement, the relationship between prosocial activity and well-being is likely reciprocal. That is, engaging in meaningful pursuits can enhance well-being, which may in turn encourage continued participation, potentially creating an upward spiral of mutual reinforcement (Fredrickson & Joiner, 2018). Building on this perspective, the present thesis examines volunteering as a key example of such engagement. This focus is consistent with literature suggesting that involvement in purposeful activities such as volunteering can promote well-being (Jenkinson et al., 2013; Piliavin & Siegl, 2007; Thoits & Hewitt, 2001). At the same time, it is acknowledged that the experience of well-being may encourage sustained engagement in volunteering. In the

sections that follow, volunteering will be defined, and its association with well-being explored in greater detail.

1.4 Formal Volunteering

1.4.1 *Volunteering in Australia*

Formal volunteering is defined as “*unpaid help willingly given in the form of time, services, or skills, to an organisation or group*” (Volunteering Australia, 2015, p. 6). This definition excludes informal volunteering, which occurs outside an organisational setting, as well as caregiving responsibilities and financial donations to charities (Morrow-Howell, 2010). Australia has a rich history of volunteering, with millions of Australians donating their time and skills to support charitable organisations and community groups. In 2023, formal volunteering in Australia increased to 36%, up from 26.7% in 2022, reversing a decade-long decline between 2010 and 2019, when rates dropped from 36.2% to 28.8% (Volunteering Australia, 2024). In 2020, nearly 5.03 million Australians (24.8% of those aged 15 and over) participated in formal volunteering. Demographic trends reveal that women historically volunteer more than men. In 2019, 30.7% of women and 28.5% of men volunteered, but by 2020, these figures had declined to 26.3% and 23.1%, respectively. Participation also differs across age groups. Middle-aged adults (40-54 years) had the highest volunteering rate (30.5%), followed by older adults aged 70 and over (28.0%) and those aged 55-69 (24.9%). Young adults (15-24) were the least likely to volunteer, with a participation rate of 19.4%. The most common sectors for volunteering include sports and physical recreation (30.7%), religious groups (23.1%), and education and training (18.8%). While in-person volunteering remains the dominant mode (98.3%), online and remote volunteering grew significantly during the COVID-19 pandemic, rising from 8.5% in 2019 to 17.3% in 2020 (Volunteering Australia, 2024).

Volunteering also contributes significantly to the Australian economy. In 2020, volunteers collectively contributed 489.5 million hours of service, often filling gaps left by public services (Volunteering Australia, 2024). The economic value of this unpaid labour is substantial, though estimates vary depending on the valuation method used (De Vaus et al.,

2003). The Australian National Accounts estimated that in 2012-13, volunteering for non-profit institutions had an imputed value of \$17.3 billion, while the ABS valued it at \$14.6 billion in 2006-07 (see De Vaus et al., 2003). Beyond its financial impact, volunteering strengthens communities by fostering civic engagement and social cohesion. Research has shown that volunteers are significantly more involved in community life than non-volunteers, with 81.8% attending community events compared to 55.2% of non-volunteers, and 44.4% actively providing services in their local area, compared to just 15.1% of non-volunteers. Additionally, those who volunteer report higher well-being, with 82% describing themselves as delighted, pleased, or mostly satisfied with life, compared to 75% of non-volunteers (Volunteering Australia, 2024). These collective contributions, both economic and social, underscore the vital role that volunteering plays in strengthening Australian society, enhancing individual well-being and fostering resilient and connected communities.

Given the demographic shift towards an ageing population, volunteering among older adults has attracted increasing attention from academics and policymakers (Rudnicka et al., 2020; World Health Organization, 2002, 2021). In Australia, an estimated 765,100 people aged 70 years and over (28% of this age group) participated in voluntary work in 2020 (Australian Bureau of Statistics, 2020). Although older adults do not represent the largest proportion of volunteers in Australia, they contribute the highest number of volunteer hours of any age group. In 2006, Australians aged 65 to 84 were found to volunteer a median of two hours per week, nearly double the commitment of other age groups (Australian Bureau of Statistics, 2007). Older adults are most likely to volunteer for organisations related to welfare and community services (30%) and health services (19%; Volunteering Australia, 2024). In addition to their time commitment, older adult volunteers make a substantial economic contribution. De Vaus et al. (2003) estimated that Australians aged 65 and over contribute approximately \$39 billion annually through volunteering. While these economic benefits are significant, volunteering in later life is also linked to improved health and psychosocial well-being, underscoring its broader societal value. In the section that follows,

the relationship between volunteering, health and psychosocial aspects of well-being in later life will be examined.

1.4.2 *Volunteering and Well-Being: Empirical Evidence*

Several decades of research have shown that volunteering can be instrumental in facilitating well-being in older adulthood. Cross-sectional studies consistently demonstrate a positive association between volunteering and subjective well-being (SWB). For example, Greenfield and Marks (2004) found that older adults who volunteered reported higher positive affect compared to non-volunteers, based on data from 373 participants aged 65 to 74. Volunteering has also been linked to psychological well-being (PWB), including greater self-esteem, self-efficacy and social connectedness. Brown et al. (2012) found that volunteers reported higher levels of these attributes than non-volunteers in a large sample of 10,840 individuals (median age 57 years). Additionally, volunteering may help buffer against the psychological impact of role loss in later life, such as retirement or bereavement. Greenfield and Marks (2004) found that volunteering moderated the negative effects of multiple role-identity absences (e.g., unemployment) on individuals' sense of purpose.

In recent years, research has increasingly adopted longitudinal approaches to better capture how volunteering relates to changes in well-being over time. This growing body of work often relies on secondary analysis of large-scale datasets that follow participants across multiple years. For example, Binder and Freytag (2013), using data from the British Household Panel Survey, found that volunteering at least once a week was linked to increased life satisfaction, even after controlling for personality traits, trust and social networks. Similarly, Meier and Stutzer (2008), using longitudinal data from the German Socio-Economic Panel survey, found that individuals who volunteered weekly reported higher life satisfaction over time compared to those who did not volunteer. Uniquely, their study addressed reverse causality by examining individuals who lost the opportunity to volunteer due to the collapse of East Germany. They found a significant decline in life satisfaction among those who ceased volunteering, suggesting a causal effect of volunteering on well-being. Additionally, Lawton et al. (2021) analysed ten waves of data

(across approximately 18 years) from the British Household Panel Survey and its successor study, Understanding Society, which together tracked adults aged 16 and older in the UK. After adjusting for a wide array of demographic, health and lifestyle factors, as well as previous well-being trends among participants, they found that those who volunteered consistently over time reported higher life satisfaction and fewer mental health problems compared to those who did not volunteer.

Moreover, Steptoe and Fancourt (2020), using data from the English Longitudinal Study of Ageing, found that adults aged 50 and over who volunteered at least once a month reported higher levels of well-being, specifically the feeling that life is worthwhile, two years later. Importantly, they found no evidence that well-being predicted future volunteering, supporting the notion of volunteering as a causal factor for well-being. Finally, Son and Wilson (2012), in a ten-year study of adults aged 25 to 74, found that volunteering was positively associated with psychological well-being (e.g., purpose in life, sense of belonging), though not with subjective well-being (e.g., positive affect). Interestingly, Son and Wilson reported a reciprocal relationship: higher psychological well-being predicted volunteering, and volunteering in turn enhanced psychological well-being.

To move beyond correlation and establish causality, researchers have begun to use randomised controlled trials (RCT) to examine associations of volunteering with well-being. The HEAL-HOA Dual RCT (Warner et al., 2024) tested the impact of a six-month volunteering intervention on loneliness and mental health in Hong Kong. Participants aged 50–70 were randomly assigned to either (1) a volunteering condition, in which they delivered telephone-based psychosocial support, or (2) an active control group, which attended six two-hour face-to-face sessions on retirement planning and health behaviours. After six months, those in the volunteering group showed significantly greater improvements in loneliness, social network engagement, stress and depressive symptoms compared to the control group.

Similarly, Jongenelis et al. (2022) conducted an RCT with retired Australian adults aged 60 and older. Participants were randomised to either (1) an intervention group, which

engaged in at least 60 minutes of formal volunteering per week for six months, or (2) a control group, which did not engage in any formal volunteering during the study period. Follow-up assessments over 12 months showed that the intervention group experienced significant gains in subjective and psychological well-being, including higher life satisfaction, stronger sense of purpose and increased personal growth. These results provided compelling evidence that initiating a volunteering routine can improve psychosocial health in older adults.

A particularly rigorous and well-studied example of a structured volunteer intervention is Experience Corps® (EC; Fried, 2004), a national initiative that trains older adults to serve in public elementary schools. EC has been the subject of several experimental and quasi-experimental evaluations that document both physical and psychological outcomes, including improvements in physical strength, increased daily activity levels, slower declines in walking speed and a trend towards improved cognitive function (Carlson et al., 2008; Fried, 2004). More directly relevant to well-being, a quasi-experimental national study by Hong and Morrow-Howell (2010) found that EC participants experienced greater improvements in depressive symptoms and fewer functional limitations over two years compared to a control group of non-volunteers. EC has also been used to examine the psychological mechanism of generativity (i.e., the desire and effort to contribute meaningfully to younger generations). Gruenewald et al. (2016), analysing data from the Baltimore RCT, found that EC participants reported increased generative desire and achievement over time. These gains were in turn linked to improved life satisfaction and positive affect, highlighting generativity as a potential driver of the well-being benefits of volunteering.

Together, these cross-sectional, longitudinal and experimental studies provide compelling evidence that volunteering is not only associated with well-being but appears to directly promote subjective and psychological well-being in older adulthood. However, despite these advancements, key questions remain about the mechanisms, contexts and volunteer program characteristics that best support such salubrious effects. The following

section outlines current gaps in the literature and describes how the present thesis seeks to address them.

1.4.3 *Advancing Research on Volunteering and Well-Being*

Over a decade ago, Morrow-Howell (2010) summarised the existing knowledge about volunteering in older adulthood and suggested several research questions crucial for advancing the field. Although research on volunteering and well-being in later life has progressed significantly, recent reviews indicate that many of the gaps in knowledge identified by Morrow-Howell remain (Linning & Jackson, 2018; Stuart et al., 2020). First, greater clarity is needed regarding the conditions under which volunteering enhances well-being (Linning & Jackson, 2018; Morrow-Howell, 2010; Stuart et al., 2020). This involves exploring whether specific characteristics of the volunteer experience – such as task complexity, social interactions, knowledge acquisition and work conditions – affect the well-being of older adults. Understanding these contextual factors would help identify which aspects of volunteering are most beneficial. Second, there is a need to understand how individual and historical factors influence volunteering behaviour and its associated well-being outcomes (Morrow-Howell, 2010). Emerging research suggests that subjective ageing – how individuals perceive and experience their own ageing process – significantly influences health, behaviour and engagement, yet little is known about how these perceptions impact volunteering behaviours.

Third, despite extensive research linking volunteering to well-being, there is limited understanding of the psychological mechanisms through which these benefits are achieved. Current literature is often constrained by cross-sectional designs and a lack of theoretical grounding, leaving critical gaps in knowledge about how volunteering produces its positive effects (Linning & Jackson, 2018; Morrow-Howell, 2010; Stuart et al., 2020). Investigating potential mechanisms, such as the fulfilment of basic psychological needs (autonomy, competence and relatedness), is essential for understanding the processes driving well-being improvements (Haivas et al., 2013; Lee, 2022). Lastly, Morrow-Howell's review and more recent analyses highlight the need for more rigorous intervention studies to identify the

active ingredients through which volunteering promotes well-being in older adults (Morrow-Howell, 2010; Stuart et al., 2020). Addressing these issues is crucial for developing evidence-based strategies to maximise the benefits of volunteering for older adults. The following section outlines how this thesis addresses these gaps, contributing to a deeper understanding of the contextual and psychological factors influencing volunteering outcomes and the mechanisms that link volunteering to well-being in later life.

1.5 The Present Thesis

The present thesis extends existing knowledge on volunteering and well-being in later life by addressing key gaps identified in the literature. First, a cross-sectional study examined how variations in volunteer experiences, such as task complexity, social interactions and contextual characteristics, relate to well-being in older volunteers. Second, a longitudinal study investigated the role of subjective ageing in predicting levels and rates of change in volunteering during the COVID-19 pandemic. Third, a longitudinal mediation analysis was used to examine possible mechanisms through which volunteering enhances well-being, focusing on the fulfilment of basic psychological needs. Finally, a pilot intervention evaluated the feasibility, acceptability and effectiveness of an intergenerational volunteering program designed to enhance well-being among community-dwelling older adults. The following sections will expand on these areas, exploring each in greater depth and detailing the theoretical frameworks and methodological approaches employed to address key questions. By doing so, this thesis aims to advance understanding of how, why, and under what conditions volunteering enhances well-being in later life.

1.6 Volunteering and Well-being in Environmental Context

1.6.1 The Role of the Volunteer Environment

While substantial evidence demonstrates the positive impact of volunteering on well-being in later life, little is known about which contextual aspects of the volunteering experience contribute to these psychological benefits (Linning & Jackson, 2018; Morrow-Howell, 2010; Stuart et al., 2020). Just as volunteers differ in their characteristics, volunteer experiences vary widely in terms of the nature of the work, the environment, the types of

activities involved, and the specific tasks and roles undertaken. Without a clearer understanding of the mechanisms at play, we risk treating volunteering as universally beneficial rather than recognising the conditions under which it is most effective. The following section will summarise contemporary literature related to the specific nature of volunteering experiences and their significance for well-being.

1.6.2 The Role of the Volunteer Environment: Empirical Evidence

Existing empirical research has identified numerous associations of volunteer activities and contexts with well-being among older volunteers, including the degree of physical, social and cognitive activity involved, the perceived meaningfulness of the volunteer role, receiving adequate support and training from volunteer organisation/s, perceived recognition for volunteering efforts, and the autonomy in choosing volunteer activities and schedules (Fried, 2004; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; McMunn et al., 2009; Tang et al., 2010; Wahrendorf et al., 2006). For example, volunteers aged 60 years or older who felt appreciated for their contributions reported greater quality of life and overall satisfaction compared to those who did not receive a similar degree of recognition (McMunn et al., 2009; Wahrendorf et al., 2006). Furthermore, studies have shown that older volunteers who were provided with sufficient training, ongoing support, and increased flexibility in selecting volunteer activities and schedules experienced enhanced socio-emotional well-being relative to volunteers who did not (Morrow-Howell et al., 2009; Tang et al., 2010). This included improvements in self-esteem, feelings of personal development, engagement in meaningful activities, increased social interaction and overall life satisfaction.

More recent studies by Jongenelis and Pettigrew (2021) and Jongenelis et al. (2022) explored the connections between various aspects of the volunteering experience and well-being among older volunteers. Jongenelis and Pettigrew's (2021) cross-sectional analysis of 293 older volunteers found that perceived social and mental intensity of the volunteer role, recognition for contributions and belief in benefiting others were associated with superior psychological well-being, including greater self-esteem, self-efficacy and sense of purpose.

Their subsequent longitudinal study involving 108 older volunteers found that the perceived importance of the cause and the meaningfulness of the activities undertaken significantly predicted improvements in positive affect, self-esteem, self-efficacy and social connections across two time points over a six-month study period (Jongenelis et al., 2022). Contrary to previous research, adequate support, perceived contribution to others, exposure to new learning opportunities and skill application did not predict changes in any of the measured well-being outcomes for older volunteers (Jongenelis et al., 2022). While these findings provide valuable insights into the relationship between volunteering and well-being, research in this area has often been limited by methodological constraints.

To date, research examining the relationships between characteristics of the volunteering experience and well-being among older adults has largely focused on a narrow set of broad contextual factors (e.g., social, mental, and physical activity). Moreover, these characteristics are often assessed using unvalidated single-item measures (e.g., Jongenelis et al., 2022; Tang et al., 2010). Although these measures provide some insight into factors influencing well-being among older volunteers, they are limited in capturing the specific aspects of volunteering that contribute to positive outcomes. For example, a single measure assessing mental activity (e.g., the perceived intensity of the mental activity involved in the volunteer work; Jongenelis & Pettigrew, 2021) does not account for the complexity of mental workload, such as role complexity, information processing demands and problem-solving requirements (Morgeson & Humphrey, 2006), all of which may have varying impacts on well-being. By considering a more comprehensive set of contextual characteristics related to the volunteer experience using multiple-item measures, more fine-grained insights can be gained into the specific aspects of volunteering that influence well-being.

To address these limitations, the first aim of this thesis was to enhance understanding of how the contextual characteristics of the volunteer experience relate to well-being by using an adapted version of the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006), a validated and comprehensive measure of work characteristics. The WDQ assesses four higher-order work design characteristics: task, knowledge, social and

contextual. Task characteristics refer to the nature of the tasks performed, including autonomy and task variety. Knowledge characteristics involve the cognitive demands of the role, such as information processing and problem-solving requirements. Social characteristics capture interpersonal aspects, including social support and interaction with others. Contextual characteristics relate to the physical and environmental conditions under which the work is performed. A cross-sectional survey was conducted to examine how these specific aspects of the volunteer experience are associated with well-being in older adults. This approach provides a more nuanced understanding of the contextual conditions that maximise the psychological benefits of volunteering in later life.

1.7 Subjective Ageing and Volunteer Engagement During COVID-19

Emerging research suggests that subjective ageing – how individuals perceive and experience their own ageing process – significantly influences health and behaviour (M. Diehl et al., 2021), yet little is known about how these perceptions impact volunteering behaviours. Understanding this relationship is particularly important given the potential for volunteering to enhance well-being in later life (see Morrow-Howell, 2010; Stuart et al., 2020). In the following sections, the concept of subjective ageing will be explained, alongside a review of current literature on its impact on health-promoting behaviours. To provide a comprehensive perspective, the impact of the COVID-19 pandemic as a significant historical event will also be explored, given its potential to reshape volunteering patterns and behaviours among older adults.

1.7.1 Subjective Ageing

Subjective ageing has focal point of gerontological research for several decades (Diehl et al., 2014, p. 201). Subjective ageing forms part of a broader construct known as “views on ageing” (Kornadt & Rothermund, 2015), which encompasses multiple dimensions, including age stereotypes, ageing stereotypes, self-perceptions of ageing and future self-views. Age stereotypes refer to generalised mental representations of characteristics and behaviours associated with older people as a group, whereas ageing stereotypes involve generalised beliefs about the ageing process itself, such as the notion that ageing inevitably

leads to physical and cognitive decline. In contrast, self-perceptions of ageing focus on individuals' personal views about their own ageing experience, while future self-views reflect expectations about one's future ageing process, including anticipated capabilities and roles (Kornadt & Rothermund, 2015).

According to Kornadt and Rothermund (2015), these views on ageing are domain-specific, varying across areas of life such as health, cognitive abilities, social relationships and physical appearance. For example, an individual might feel optimistic about staying socially active while simultaneously harbouring concerns about declining physical health. These domain-specific views shape how people approach the ageing process by influencing their self-perceptions and actions, which in turn affects their well-being, guides their health behaviours, and directs how they adapt to developmental changes. For example, if older adults perceive ageing as a time of continued growth and learning, they might be more inclined to engage in mentally stimulating activities. Conversely, those who associate ageing with decline could feel less motivated to participate in social or cognitive challenges. This illustrates how perceptions of ageing can influence emotional and cognitive outcomes as well as behavioural choices that contribute to overall well-being.

Early measures of subjective ageing often relied on unidimensional indicators, such as asking "How old do you feel?" (Gendron et al., 2018). While these provided a useful starting point, they were limited in capturing the breadth of how individuals perceive and adapt to diverse aspects of ageing. Consequently, multidimensional approaches have emerged to incorporate the possibility of both positive and negative perceptions that can arise simultaneously across multiple facets of one's life.

1.7.2 Awareness of Age-Related Change: A Multidimensional Perspective

One such multidimensional framework is the Awareness of Age-Related Change (AARC), introduced by Diehl and Wahl (2010). AARC refers to "all experiences that make an individual aware that their behaviour, level of performance, or ways of experiencing life have changed as a consequence of having grown older" (Diehl & Wahl, 2010, p. 340). Unlike earlier unidimensional constructs, AARC captures perceptions of both positive and negative

age-related changes. These gains and losses are measured across five life domains: health and physical functioning, cognitive functioning, interpersonal relationships, social-cognitive and social-emotional functioning, and lifestyle and engagement (Diehl & Wahl, 2010). For example, in the domain of lifestyle and engagement, an indicator of AARC-gains might be the perception of having more freedom to live according to personal preferences, while an indicator of AARC-losses could involve recognising limitations in activity participation. This multidimensional approach allows for a more comprehensive understanding of how people experience ageing, acknowledging that gains and losses can co-occur within the same domain (Diehl et al., 2021).

Empirical evidence supports the significance of subjective ageing in influencing health-promoting behaviours and well-being among older adults. For instance, Levy and Myers (2004) found that adults aged 50 to 80 with more positive self-perceptions of ageing were more likely to engage in preventive health behaviours compared to those with less positive perceptions. This association remained significant even after controlling for age, gender, education and functional health. Similarly, Windsor et al. (2022) found that among adults aged 65 to 91, AARC-gains were associated with better health, higher subjective well-being and a greater sense of purpose, whereas AARC-losses were linked to poorer health and lower well-being. Additionally, AARC-gains moderated the negative impact of AARC-losses on physical functioning, subjective well-being and sense of purpose, indicating a buffering effect. Collectively, these findings suggest that positive perceptions of ageing, such as AARC-gains, may support well-being and health-related behaviours as people age. The focus in this thesis was whether such effects extended to volunteer engagement.

Despite growing evidence linking AARC to health outcomes, its influence on prosocial behaviours, particularly volunteering, remains underexplored. Given that volunteering is both a health-promoting and socially meaningful activity, understanding the role of AARC in influencing volunteering behaviour is particularly important. It is plausible that individuals with higher AARC-gains may be more likely to engage in volunteering, as positive perceptions of ageing may enhance feelings of competence and capability, and

facilitate flexible, adaptive processes of self-regulation (See Diehl & Wahl, 2010, pp. 343-346). In contrast, those experiencing higher AARC-losses may be less inclined to volunteer due to perceived limitations or doubts about their ability to contribute. This potential link between AARC and volunteering warrants further investigation to better understand how subjective perceptions of ageing shape prosocial behaviour in later life.

1.7.3 Changes in the Wake of COVID-19 Disruption

The possible association between AARC and volunteering may be particularly relevant in the historical context of the COVID-19 pandemic. The pandemic significantly disrupted volunteering patterns worldwide. In Australia, volunteering rates dropped sharply and remained below pre-pandemic levels through 2022 (Biddle & Gray, 2020, 2021). This decline was particularly pronounced among older adults, who faced higher health risks and limited opportunities due to facility closures, social distancing measures and other public health restrictions (Biddle & Gray, 2020, 2021). The changing landscape provides a valuable context for examining how subjective perceptions of ageing are associated with changes in volunteering activity among older Australians in the aftermath of this significant historical event. For instance, individuals with higher AARC-gains – those who viewed themselves as adaptable and capable – may have been more likely to seek new volunteering opportunities or return sooner to existing roles once restrictions eased. Conversely, those with higher AARC-losses may have felt increasingly vulnerable or uncertain, contributing to prolonged withdrawal from volunteering even after restrictions were lifted. To sum up, we regarded COVID-19 as a broad history-graded influence with the potential to reduce overall individual volunteer engagement, and considered AARC as an individual difference factor that could play a role in driving re-engagement through motivating effects of AARC-gains, as well as disengagement resulting from a potentially de-motivating influence of AARC-losses.

The second study of this thesis explored the extent to which AARC-gains and AARC-losses were associated with changes in time spent volunteering over a 12-month period. The longitudinal approach allowed for unique insights into how subjective ageing was associated with changing levels of volunteering during a rare historical event.

1.8 Psychological Mechanisms Linking Volunteering and Well-Being

Although extensive research demonstrates a positive association between volunteering and well-being, the underlying mechanisms driving this relationship remain unclear. To develop volunteer programs that maximise benefits for older adults, it is essential to understand the specific psychological and social processes involved. Recent studies have begun to explore potential mediators; however, many rely on cross-sectional designs and lack a cohesive theoretical framework to explain causal pathways. The following sections will review current empirical evidence on the mechanisms linking volunteering to well-being and explore methodological considerations for advancing this area of research.

1.8.1 Mediators in the Volunteering-Well-Being Relationship: Empirical Evidence

Empirical research identifies several mediators that help explain why volunteering enhances well-being, with evidence pointing to self-esteem, self-efficacy, social connectedness, and a sense of purpose as key pathways. Brown et al.'s (2012) cross-sectional Australian study of 2,990 adults found that all three factors significantly mediated the volunteering-well-being relationship, with social connectedness emerging as the strongest pathway. Their findings also suggested a multi-step mediation process, where self-esteem further mediated the effects of self-efficacy and connectedness on well-being. Supporting this, Pilkington et al. (2012) found greater social support from friends and family partially explained the positive associations between volunteering and subjective well-being in their cross-sectional study of 561 adults aged 55 and older. In contrast, Mellor et al.'s (2008) cross-sectional Australian study of 1,219 adults found that psychological factors other than self-esteem, explained the link between volunteering and well-being, specifically, optimism and perceived control. Thoits (2012) identified a sense of purpose and meaning in life as key mediators connecting volunteering and well-being. Additionally, recent research has proposed that self-perceptions of ageing and generativity may also mediate this relationship. Huo et al. (2021) found that volunteering was associated with more positive and fewer negative self-perceptions of ageing in adults aged 65 and above, which in turn predicted fewer depressive symptoms.

1.8.2 Methodological Limitations and Future Directions

While the evidence suggests that volunteering enhances well-being through various psychological and social mechanisms, much of the existing research relies on cross-sectional designs (Morrow-Howell, 2010; Stuart et al., 2020). This poses significant limitations for establishing causality. A significant body of research has shown that statistical mediation using cross-sectional data can misrepresent the causal relationships between variables (O’Laughlin et al., 2018). For instance, while volunteering may promote social connectedness by facilitating new social connections, individuals with preexisting supportive networks are often more likely to engage in volunteering due to recruitment through friends or community groups (Paik & Navarre-Jackson, 2011). These bidirectional dynamics complicate the interpretation of cause and effect, underscoring the need for longitudinal research to disentangle causal pathways and better understand the mechanisms linking volunteering and well-being. To address this limitation, longitudinal designs are needed to capture changes over time, allowing for more accurate examination of causal processes through which volunteering may influence well-being.

1.8.3 Self-Determination Theory as a Framework for Longitudinal Mediation

In addition to addressing methodological advancements, there is a need for stronger theoretical integration to clarify how volunteering produces beneficial effects for older adults. Self-Determination Theory (SDT; Ryan & Deci, 2000) offers a comprehensive framework for understanding these mechanisms. SDT posits that three innate and universal psychological needs – autonomy, competence and relatedness – must be satisfied for individuals to function optimally. SDT also distinguishes between intrinsic and extrinsic motivation (Ryan & Deci, 2000). Intrinsic motivation occurs when people engage in an activity because they find it inherently enjoyable or meaningful. In contrast, extrinsic motivation occurs when people participate in an activity to achieve an externally focused outcome, such as earning a reward or avoiding punishment. Researchers have argued that activities driven by intrinsic motivation – those pursued out of genuine interest and personal value – are more likely to

foster both immediate pleasure and long-term psychological fulfilment (Ryan & Deci, 2000, 2001).

Volunteering may provide a unique context for satisfying psychological needs and fostering intrinsic motivation. Unlike many other work roles, volunteering often allows individuals to choose their roles, tasks, and schedules, fostering autonomy by aligning with personal values and interests. For instance, a retired teacher mentoring children may draw on their expertise while maintaining control over how and when they contribute. Additionally, volunteering may enhance competence through skill-building and meaningful activities, such as organising events, coordinating teams, or learning new skills. Successfully leading a fundraising campaign, for example, may boost a volunteer's sense of mastery and confidence. Additionally, the inherently social nature of volunteering promotes relatedness by fostering collaboration, shared purpose and potentially meaningful connections.

Existing research applying SDT to volunteering has primarily focused on the motivational processes influencing volunteer retention and satisfaction. Studies indicate that volunteers who experience high levels of autonomy and competence report greater satisfaction and lower intentions to quit (Haivas et al., 2013). Autonomous motivation (i.e., where engagement arises from personal values or genuine interest) has been positively associated with increased volunteer effort, satisfaction and well-being. In contrast, controlled motivation (i.e., engagement driven by external pressures or obligations) correlates with emotional exhaustion and higher turnover intentions (Bidee et al., 2013; Wu & Li, 2019). Additionally, autonomy-supportive leadership, which fosters autonomy, competence, and relatedness, enhances autonomous motivation and overall volunteer satisfaction (Oostlander et al., 2014).

While these findings contribute to our understanding of why individuals volunteer and remain committed, they offer limited insight into how volunteering fulfils psychological needs over time to improve and sustain well-being among older volunteers. However, a closer examination of the broader mediation literature reveals that many variables previously identified as mediators align conceptually with SDT's basic psychological needs. These

mediators include self-esteem (i.e., one's overall evaluation of self-worth; Brown et al., 2012), self-efficacy (i.e., belief in one's capacity to achieve desired outcomes; Brown et al., 2012), optimism (i.e., a general expectation that positive outcomes will occur; Mellor et al., 2008), perceived control (i.e., the belief that one can influence life circumstances; Mellor et al., 2008), and social support (i.e., the availability of close and reliable relationships that offer help and emotional connection; Pilkington et al., 2012). For example, self-efficacy and perceived control align closely with the need for competence, social support reflects relatedness and self-esteem, and optimism may reflect enhanced autonomy. As shown in Table 2, these mediators can be systematically mapped onto the SDT framework, demonstrating how SDT offers an integrative perspective that brings coherence to current findings. This theoretical alignment provides further justification for the present study's focus on basic psychological needs as mediators in the relationship between volunteering and subjective well-being.

Table 2

Conceptual Alignment Between Self-Determination Theory Needs and Previously Identified Mediators

SDT Need	SDT Definition	Aligned Mediators	Conceptual Explanation
Autonomy	The experience of volition and self-direction.	Self-esteem, optimism, perceived control	Reflects self-determined functioning, internal locus of control, and confidence in agency.
Competence	Sense of effectiveness and mastery.	Self-efficacy, perceived control, mastery	Reflects belief in one's ability to succeed in tasks and influence outcomes.

Relatedness	Meaningful social connections and a sense of belonging.	Social connectedness, social support, sense of belonging	Reflects the presence of meaningful relationships and emotional support.
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Note. Aligned mediators are drawn from empirical studies examining mechanisms linking volunteering and subjective well-being in older adults (e.g., Brown et al., 2012; Mellor et al., 2008; Pilkington et al., 2012).

The Present Research. Guided by SDT, and addressing methodological limitations of previous work, the third aim of this thesis is to employ a longitudinal mediation model to examine whether volunteering satisfies the basic psychological needs of autonomy, competence and relatedness, and whether satisfaction of these needs in turn predicts subjective well-being in older adults. By investigating these mechanisms over time, this study aims to clarify the causal pathways linking volunteering to well-being. This approach advances the understanding of how and why volunteering enhances well-being in later life, moving beyond cross-sectional findings to illuminate the dynamic processes through which volunteering may exert its positive effects.

1.9 Evaluation of a Pilot Intergenerational Program for Older Volunteers

The fourth and final study of this thesis drew on several of the conceptual perspectives outlined above in targeting a more directly applied context for studying well-being in older volunteers. Taking inspiration from international efforts (Fried, 2004), this study focused on piloting a new intergenerational program for supporting the engagement of older volunteers in South Australian schools. Intergenerational programs have gained recent attention as a means of fostering well-being, intergenerational solidarity and reducing ageism. These programs involve organised, ongoing interactions between younger and older generations designed to benefit all participants (Lloyd-Sherlock et al., 2019). While the specific activities can vary, common objectives include enhancing intergenerational interaction and understanding, promoting physical and psychological well-being, fostering meaningful relationships and achieving educational and community goals (Giraudeau &

Bailly, 2019). Despite their growing popularity, the evidence base for the effectiveness of intergenerational programs is still emerging (Teater, 2016). Although preliminary findings suggest positive outcomes, such as improved social connectedness, reduced age-related stereotypes and enhanced psychological well-being, many studies are limited by a lack of rigorous methodological designs. To better understand the potential of intergenerational programs as health-promoting interventions, the following sections will review contemporary literature on their effectiveness and identify key limitations within this field of research. This overview will highlight the need for more robust evaluations to clarify the impacts of intergenerational interactions on well-being in later life.

1.9.1 Intergenerational Programs: Empirical Research

Several studies have documented the benefits of Intergenerational Programs (IGPs) for both younger and older participants. For younger generations, IGPs have been shown to improve perceptions and attitudes towards older adults (Chorn Dunham & Casadonte, 2009; Femia et al., 2008; Heyman et al., 2011; Lynott & Merola, 2007; Meshel & McGlynn, 2004; Wescott & Healy, 2011) and enhance classroom behaviour and academic performance (Fried et al., 2013). For example, Meshel & McGlynn found that children aged 7-12 years reported more positive attitudes towards older adults after participating in an intergenerational program compared to a control group. For older generations, IGPs have been linked to increased well-being (Gamliel & Gabay, 2014; Hernandez & Gonzalez, 2008; Meshel & McGlynn, 2004), improved memory function and physical mobility and enhanced social connectedness (Fried, 2004; Fried et al., 2013; Hong & Morrow-Howell, 2010). For example, Gamliel and Gabay (2014) found that older adults reported greater self-confidence and self-efficacy after participating in an intergenerational program. While many studies in this area have relied on small-scale or context-specific evaluations, they nonetheless offer valuable early insights into the potential of IGPs to promote intergenerational engagement and mutual benefit.

One of the longest-running intergenerational programs with a strong evidence base supporting its efficacy is Experience Corps® (EC; Fried et al., 2004), a volunteer-based

tutoring program that has been rigorously evaluated. Based in the United States, EC was designed to enhance educational outcomes for children while promoting health and well-being among older adult volunteers. The program recruits older adults to serve as volunteer tutors in primary schools, addressing unmet educational needs, particularly in literacy, numeracy and social-emotional development. EC is structured around three core components: identifying unmet educational needs in collaboration with schools, recruiting and training older adult volunteers to work directly with students and teachers and providing ongoing support and supervision to ensure program effectiveness and sustainability. Designed as a low-cost, high-impact intervention, EC aims to create a “win-win-win” scenario, benefiting students, older volunteers and broader school communities.

Experience Corps® is distinguished by its rigorous evaluation and robust evidence base. Multiple randomised controlled trials (RCTs) and longitudinal studies have demonstrated its effectiveness in enhancing educational outcomes for children and promoting health, social and cognitive benefits for older adults (Fried, 2004; Fried et al., 2013; Rebok, 2004). Research findings indicate that children participating in EC demonstrate improved literacy skills, social-emotional development and classroom behaviours, including increased engagement and reduced behavioural issues (Fried et al., 2013; Rebok, 2004). Older volunteers experience gains in physical health, cognitive functioning and psychological well-being, including a stronger sense of purpose, increased self-efficacy and reduced social isolation (Carlson et al., 2008; Fried et al., 2013; Rebok et al., 2011). At the community level, EC has been theorised to increase social capital, promote greater community involvement and support resource mobilisation (i.e., the community’s ability to leverage existing assets such as volunteer time, skills and institutional partnerships to support shared goals; Glass, 2004). In support of this, Parisi et al. (2015) found that participation in EC was associated with increases in older adults’ engagement in social and lifestyle activities outside of their volunteering role, suggesting potential ripple effects that extend beyond direct program involvement and contribute to broader community-level benefits.

1.9.2 Challenges in Replicating Experience Corps® in Australia

Despite its success, directly replicating the Experience Corps® model in Australia presents several challenges. Differences in school systems and curricula may require modifications to tutoring content and delivery methods. Cultural norms and community dynamics influence the acceptance and integration of older volunteers within schools, while variations in community resources and regulatory requirements impact recruitment, training and program sustainability (MacCallum et al., 2010). These contextual differences necessitate adaptations to ensure the program's effectiveness and sustainability in the Australian context.

While the number of Intergenerational Programs (IGPs) in Australia has grown in recent years, few are designed to explicitly target both student academic achievement and the well-being of older adults (MacCallum et al., 2010; Peters et al., 2021). To address this gap, the final aim of this thesis was to co-design and pilot an intergenerational program that recruits and trains older volunteers for placement in South Australian public primary schools. This initiative draws on proven strategies from Experience Corps® but adapts them to the local context to ensure cultural and contextual relevance. By tailoring the program to South Australian schools, this study seeks to support educational outcomes for children while simultaneously promoting well-being among older adults by fostering a sense of purpose, social connectedness and cognitive engagement. Additionally, the program aims to build community resilience by bridging generational gaps and promoting civic engagement. To evaluate the pilot program's effectiveness, this study will employ a mixed-methods design that integrates quantitative and qualitative measures. Quantitative data will assess well-being outcomes for older adults, while qualitative feedback from participants and stakeholders will provide deeper insights into the program's impact and relevance.

1.10 Thesis Contributions

In summary, this thesis makes significant contributions to the understanding of how volunteering influences well-being in older adulthood by addressing critical gaps identified in the literature. First, it examines the conditions under which volunteering enhances well-being

by exploring how variations in volunteer experiences—such as task complexity, social interactions and contextual characteristics—impact psychological outcomes. Second, it investigates the role of subjective ageing and historical influences, including the COVID-19 pandemic, in shaping volunteering behaviour over time. Third, using Self-Determination Theory (SDT), it explores the psychological mechanisms through which volunteering satisfies the basic needs of autonomy, competence and relatedness, thereby enhancing well-being. Finally, the thesis pilots an intergenerational program tailored to the Australian context, drawing on proven strategies from Experience Corps® to enhance educational outcomes for children and promote well-being among older adults. By integrating longitudinal designs, robust theoretical frameworks and mixed-methods evaluations, this thesis advances the understanding of how volunteering contributes to well-being and provides practical insights for designing effective, evidence-based volunteer programs.

1.11 Research Aims and Hypotheses

The overarching purpose of this thesis was to extend existing knowledge regarding volunteering and well-being, specifically in the context of older adulthood. This was achieved through four studies:

1.11.1 Study 1

The primary aim of the first study was to examine how specific characteristics of the volunteering experience relate to subjective and psychological well-being. Cross-sectional data was collected from a community sample of older adults aged 60 to 90 years. Volunteering characteristics were measured using the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006), which assesses four high-order domains: (1) task, (2) knowledge, (3) social, and (4) contextual characteristics. These domains capture the range and nature of tasks, the cognitive demands placed on workers in terms of knowledge, skills, and abilities, the broader social environment and the physical and environmental context in which the work is performed, respectively. Consistent with previous research outlined above, it was hypothesised that task, knowledge, social and contextual characteristics would be positively associated with both subjective and psychological well-being.

A secondary aim was to examine whether specific features of the volunteering experience are differentially associated with well-being among older volunteers with varying levels of functional health. Although a few studies have explored potential moderators of the relationship between volunteer work characteristics and well-being (e.g., Jongenelis & Pettigrew, 2021), the findings have been inconsistent. Health-related differences may help explain this variability, as functional health in later life can influence one's capacity to engage in physically demanding roles, limit informal social interactions, and affect perceptions of independence and environmental control. Building on this premise, we hypothesised that older adults with poorer physical functioning would show stronger positive associations between autonomy and social work characteristics with well-being, as these features may compensate for health-related restrictions by fostering a sense of control and social connectedness. Conversely, we anticipated weaker positive associations between physical demands and well-being among those with poorer physical functioning, as physical challenges may exacerbate health limitations and reduce overall well-being. In contrast, older adults with better physical functioning were expected to benefit more uniformly from all work characteristics, including those involving physical demands.

1.11.2 Study 2

The primary aim of the second study was to investigate how subjective perceptions of ageing, conceptualised as Awareness of Age-Related Change (AARC; Diehl & Wahl, 2009), influence both individual differences in volunteering levels and changes in volunteering behaviour over a 12-month period following the COVID-19 pandemic. To achieve this, a longitudinal design was employed, with participants completing assessments at baseline (N = 514), six months (N = 255), and 12 months (N = 145). The study measured AARC-gains and AARC-losses, volunteering behaviour (average hours per week), and perceived COVID-19 disruption.

Using a latent growth modelling approach, the study examined how age-related gains and losses relate to initial levels of volunteering and changes in volunteering over time. It was hypothesised that AARC-gains would be associated with higher initial levels of

volunteering and increases over time during the post-COVID-19 recovery period.

Conversely, AARC-losses were expected to predict lower initial levels of volunteering and greater declines (or shallower increases) in volunteering over time. Consistent with previous research on AARC (Wilton-Harding & Windsor, 2022; Windsor et al., 2022), the study controlled for a range of demographic and health-related variables known to influence both volunteering behaviour and perceptions of ageing, including age, gender, employment status and physical functioning.

In addition to age-related perceptions, the study also examined perceived COVID-19 disruption as a predictor, hypothesising that greater disruption would be associated with lower levels of initial volunteering and less increase in volunteering over time. While moderation by AARC-losses was not explicitly hypothesised, the study explored whether AARC moderated the relationship between COVID-19 disruption and volunteering. Specifically, it was expected that the negative effects of disruption would be weaker among individuals with higher AARC-gains, who may be better equipped to adapt, self-regulate, and maintain engagement in volunteering despite ongoing challenges (Brandtstädter, 1999; Brandtstädter & Rothermund, 2002). Conversely, individuals with greater AARC-losses were expected to experience declines in volunteering, as negative perceptions of ageing could hinder motivation or perceived capacity to participate.

1.11.3 Study 3

The purpose of the third study was to examine the relationship between volunteering, basic psychological needs, and subjective well-being in older adults, guided by Self-Determination Theory. To achieve this, longitudinal data was collected from a community sample of older adults aged 60 to 90 years. At Time 1, 514 participants were recruited, with follow-up surveys conducted at six months (Time 2; N = 255) and 12 months (Time 3; N = 145).

The study employed a longitudinal mediation design to investigate whether the basic psychological needs of autonomy, competence, and relatedness mediated the relationship between volunteering and SWB. This was first explored using cross-sectional analyses to

examine between-person differences in the constructs of interest (e.g., Pilkington et al., 2012), followed by longitudinal analyses to capture changes over time. Consistent with previous research, it was hypothesised that more volunteer hours would be associated with higher life satisfaction and positive affect as well as lower negative affect. Additionally, it was predicted that autonomy, competence, and relatedness would mediate the associations between volunteering and SWB, highlighting the role of basic psychological needs in the volunteering-SWB relationship.

1.11.4 Study 4

The fourth and final study reported on the piloting of an intergenerational program – The Wisdom Club – that recruited and trained older volunteers to support learning among children in South Australian public primary schools. Using a co-design approach involving older adults, school communities, and project partners, the study sought to adapt the core features of Experience Corps® (Fried, 2004) for local implementation in Adelaide, South Australia. The Wisdom Club aimed to create opportunities for purposeful engagement for older adults, enhance developmental outcomes for children, particularly in numeracy skills, and promote well-being among older adults, while also strengthening school communities by fostering intergenerational connections. The overarching goals were to co-design and pilot a locally relevant intergenerational program and to explore its feasibility and perceived value to inform future implementation in South Australian schools.

It was hypothesised that participation in the program would lead to increases in subjective well-being, including lower negative affect, higher positive affect, and increased life satisfaction, as well as improvements in psychological well-being, such as greater psychological flourishing and a stronger sense of purpose among the older adult volunteers. In addition to assessing within-person changes in well-being, the study also evaluated the acceptability, feasibility, and sustainability of the intervention through semi-structured qualitative interviews with school and community officials and focus groups with volunteers following program completion.

CHAPTER 2

CHARACTERISTICS OF THE VOLUNTEER ENVIRONMENT AND THEIR ASSOCIATIONS WITH WELL-BEING IN OLDER ADULTHOOD

2.1 Introduction

As defined earlier, formal volunteering refers to the provision of unpaid assistance willingly given in the form of time, services or skills to an organisation or group (Volunteering Australia, 2015). In recent decades, an extensive body of literature has demonstrated a positive relationship between formal volunteering and favourable psychological outcomes in later life, including superior subjective well-being (e.g., greater positive affect and life satisfaction; Baker et al., 2005; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; Meier & Stutzer, 2008; Van Willigen, 2000; Windsor et al., 2008) and psychological well-being (e.g., greater purpose in life, self-esteem, self-efficacy, and social support; Greenfield & Marks, 2004; Ho, 2017; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; Piliavin & Siegl, 2007). However, questions remain as to whether specific contextual features of the volunteering experience (e.g., the nature of the work itself and the work environment) could facilitate or undermine these apparently beneficial effects. To inform the development of volunteer roles that optimise positive outcomes for older volunteers, the present study examined how specific characteristics of the volunteering experience relate to subjective and psychological well-being and whether these associations are moderated by functional health.

2.1.1 Volunteering Characteristics and Well-Being

There is growing interest in identifying aspects of the volunteer experience that influence psychological outcomes for older volunteers, yet research in this area remains limited. At a conceptual level, the Social Model of Health Promotion developed by Fried et al. (2004) posits that volunteering fosters social engagement, physical activity, and cognitive stimulation, which in turn promote favourable health and well-being outcomes. This model aligns with broader well-being perspectives, including the Basic Psychological Need Theory (BPNT; Ryan & Deci, 2017), which emphasises that the satisfaction of autonomy (i.e., sense of independence in decision-making), competence (i.e., feeling of effectiveness and mastery in one's interactions and endeavours), and relatedness (i.e., sense of connection, belonging and meaningful relationships with others) needs is fundamental to human flourishing. In the context of volunteering, roles that promote autonomy in task management, require diverse

skills and knowledge, nurture close relationships, and offer physical stimulation (thereby reinforcing health and functional competence) are therefore likely to enhance well-being by contributing to psychological need fulfilment.

Existing empirical research has identified numerous correlates of well-being among older volunteers, including the degree of physical, social and cognitive activity involved, the perceived meaningfulness of the volunteer role and cause, receiving adequate support and training from volunteer organisation/s, perceived recognition for volunteering efforts, and autonomy in choosing volunteer activities and schedules (Fried, 2004; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; McMunn et al., 2009; Tang et al., 2010; Wahrendorf et al., 2006). For example, volunteers aged 60 years or older who felt appreciated for their contributions reported greater quality of life and overall satisfaction compared to those who did not receive a similar degree of recognition (McMunn et al., 2009; Wahrendorf et al., 2006). Furthermore, studies have shown that older volunteers who were provided with sufficient training, ongoing support, and increased flexibility in selecting volunteer activities and schedules experienced enhanced socio-emotional well-being relative to volunteers who did not (Morrow-Howell et al., 2009; Tang et al., 2010). This included improvements in self-esteem, personal development, meaningful engagement, social interaction, and overall life satisfaction.

Of particular relevance to the present study are recent investigations conducted by Jongenelis and Pettigrew (2021) and Jongenelis et al. (2022), who explored the connections between various aspects of the volunteering experience and well-being among older volunteers. Jongenelis and Pettigrew's (2021) cross-sectional analysis of 293 older volunteers found that perceived social and mental intensity of the volunteer role, recognition for contributions and belief in benefiting others were associated with superior psychological well-being, including greater self-esteem, self-efficacy and sense of purpose. Their subsequent longitudinal study involving 108 older volunteers found that the perceived importance of the cause and the meaningfulness of the activities undertaken significantly predicted improvements in positive affect, self-esteem, self-efficacy and social connections

across two time points over a six-month study period (Jongenelis et al., 2022). Contrary to previous research, adequate support, perceived contribution to others, exposure to new learning opportunities, and skill application did not predict changes in any of the measured well-being outcomes for older volunteers (e.g., positive affect, self-esteem; Jongenelis et al., 2022).

To date, research examining the relationships between characteristics of the volunteering experience and well-being among older adults has primarily focused on a limited range of broad contextual factors (e.g., social, mental, and physical activity). Additionally, these work-related characteristics have frequently been assessed using unvalidated single-item measures (Jongenelis & Pettigrew, 2021; Tang et al., 2010). While these measures provide insight into the factors affecting well-being among older volunteers, using single-item measures presents challenges in identifying precise aspects of volunteer characteristics that contribute to favourable outcomes. For instance, a single measure that evaluates only the level of mental activity (Jongenelis & Pettigrew, 2021) does not account for the diverse aspects of mental workload, such as role complexity, information processing demands and problem-solving requirements (Morgeson & Humphrey, 2006), all of which may have varying impacts on well-being. To address these limitations, the present study assessed volunteering characteristics by using a comprehensive, validated and widely used measure of work characteristics, the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006).

The WDQ consists of 21 distinct characteristics grouped into four higher-order domains: (1) Task Characteristics, (2) Knowledge Characteristics, (3) Social Characteristics and (4) Work Context Characteristics, which capture the range and nature of tasks, the cognitive demands placed on workers in terms of knowledge, skills, and abilities, the broader social environment and the physical and environmental context in which the work is performed, respectively. The existing literature on work design and well-being has predominantly focused on associations between the four higher-order domains of work design and well-being within the context of paid employment (Deci et al., 2017). For

example, research has demonstrated that identified domains comprising Task Characteristics (i.e., autonomy, task variety, task significance and task identity), Knowledge Characteristics (i.e., job complexity and information processing), Social Characteristics (i.e., social support, interdependence, feedback and external interaction), and Work Context Characteristics (i.e., comfortable, hazard-free environment) are positively associated with employee satisfaction and motivation (Humphrey et al., 2007). While there is growing evidence regarding the impact of broad task, knowledge, and social characteristics on volunteer well-being as discussed above, research on contextual characteristics remains limited (Tang et al., 2010). A more comprehensive investigation of work characteristics in volunteer settings could provide important insights into their significance for the well-being of volunteers.

Although previous research using the WDQ provides evidence regarding work design characteristics and employee well-being, we cannot assume that these findings will generalise to older volunteer samples. Unlike paid employees who are often motivated by financial incentives (Rynes et al., 2004; Thibault Landry et al., 2017), older volunteers are more likely driven by generative and altruistic motives (Konrath et al., 2012; Okun et al., 1998) and may be less concerned with future-oriented goals related to employment (Carstensen et al., 2006). As a result, whereas factors such as feedback from others and skill variety that feed into career advancement may be significant for well-being among the paid labour force, roles that offer ample opportunities for social interaction and provide meaningful work that makes a positive impact on the lives of others may be more central to the well-being of older volunteers. The initial aim of the present study was to explore the associations between the comprehensive range of work characteristics captured by the WDQ and key markers of well-being among older volunteers.

2.1.2 Physical Functioning as a Moderator of the Volunteering and Well-Being Relationship

The current study also seeks to examine whether specific features of the volunteering experience are differentially associated with well-being among older volunteers

with varying levels of functional health. A few previous studies have examined possible moderators of associations between volunteer work characteristics and well-being (see Jongenelis & Pettigrew, 2021). Consistent with prior research (Connolly & O'shea, 2015; Morrow-Howell et al., 2009; Okun et al., 1998), Jongenelis and Pettigrew (2021) found no moderation effects for age or gender. Despite some studies suggesting volunteering is especially beneficial for those who live alone (Fengler, 1984; Musick et al., 1999), Jongenelis and Pettigrew also found no moderating effects of living arrangements. Subsequent longitudinal analysis by Jongenelis et al. (2022) yielded similar outcomes, with no moderation effects observed for age, level of education and level of engagement (although gender emerged as a moderator between perceived appreciation and subjective well-being: among men, greater appreciation was associated with lower subjective well-being, whereas among women, greater appreciation was associated with higher subjective well-being).

In the present cross-sectional analysis, we moved beyond a focus on socio-demographic characteristics by examining the role of physical functioning as a potential moderator. There are several reasons why the significance of different work characteristics for well-being might be expected to vary as a function of older volunteers' health. For instance, health restrictions become more common in later life, and physically demanding volunteer roles (e.g., those requiring significant muscular endurance and strength) may be associated with lower well-being among those in poorer functional health. According to Hobfoll's Conservation of Resources (COR; Hobfoll, 2010) model, over-extending limited resources can lead to stress and reduced well-being. Consequently, for older adults with health restrictions, physically demanding volunteer roles may deplete limited physical resources more significantly, leading to lower well-being compared to those in better health. Additionally, health restrictions can limit older adults' ability to engage in informal social interactions, increasing their risk of social isolation (Townsend et al., 2021). In such cases, volunteering roles that offer a structured environment for social engagement may be particularly valuable, helping to satisfy relatedness needs among those in poorer functional health (Li & Ferraro, 2006). Lastly, physical decline, commonly experienced as an age-

related loss (Windsor et al., 2022), can lead to a loss of independence and control over one's environment. In this context, volunteering opportunities that provide autonomy (e.g., choice in activities and scheduling) may be especially important for maintaining well-being among those in relatively poorer functional health.

2.1.3 Present Study

The current study seeks to extend previous research on volunteer work characteristics and well-being in two ways: (1) by employing a comprehensive measure that captures a range of relevant aspects of the volunteer work environment, and (2) by examining moderating effects of physical functioning on associations between work characteristics and well-being. Based on Jongenelis and Pettigrew's (2021) findings and existing literature on volunteering and well-being, we expect task, knowledge, and social characteristics to be positively associated with both subjective and psychological well-being. We also predict that contextual characteristics (i.e., a comfortable, hazard-free work environment) will be positively associated with well-being among older volunteers, based on preliminary findings in the paid work literature (Humphrey & Nahrgang, 2007). Finally, concerning our moderation analyses, we predict that older adults with poor physical functioning will show stronger positive associations between autonomy and social work characteristics with well-being. We also expect weaker positive associations between physical demands and well-being among this group, compared to those with better physical functioning.

2.2 Method

2.2.1 Participants

A community-based sample of 458 participants was recruited through the distribution of study advertisements via various channels including: (a) an email database of older adults who had previously expressed research interest with the Generations Research Initiative at Flinders University; (b) the South Australian Office for Ageing Well's feedback network through email and their digital publication "Weekend Plus" (over 100,000 recipients); and (c) eBulletins distributed to members of other online networks across Australian states,

predominantly comprising older adults (such as Seniors Card Programs and Universities of the Third Age); and (d) the Flinders University Facebook page. Eligibility criteria necessitated participants to be: (1) aged 60 or older; and (2) actively engaged as formal volunteers for an organisation or group. Individuals with missing data on 80% or more of the variables were excluded from all analyses, resulting in the exclusion of 50 participants. Additionally, five participants were excluded as they reported volunteering for 0 hours within the past month. The final sample consisted of 403 participants aged between 60 and 90 ($M = 70.63$, $SD = 6.05$, Female 79.7%). Power analysis using Stata's (StataCorp, 2023) 'powerreg' module indicated that a sample size of at least 312 was required to detect a significant predictor variable with greater than 80% power assuming an R^2 of 0.20 for the full model, and unique variance of 3% accounted for by the individual predictor, with alpha set at .01. This suggested that the study was adequately powered to detect individual predictors with small-to-moderate effects. Demographic characteristics of the sample are provided in Table 3.

2.2.2 Procedure

Following approval by the Flinders University Human Research Ethics Committee (Project ID 5285), the opportunity to participate in a research study about 'Volunteering and Well-Being' was advertised through the networks mentioned above. Interested individuals were provided with a link to an external online survey platform via Qualtrics. In recognition of the time and effort taken to participate, participants were given the chance to select a charity from a list that included the Australian Red Cross, The Smith Family, WIRES Wildlife Rescue, World Vision Australia, The Salvation Army, Lifeline, Beyond Blue, Cancer Council Australia, RSPCA, and Royal Flying Doctor Service of Australia. Three participants were randomly selected, and a \$200 donation was made to their chosen charity. In later stages of data collection, this was modified, and each participant received a \$3 donation to their chosen charity, with a maximum total donation of \$500 for that data collection period.

Table 3*Sociodemographic Characteristics of Participants*

Characteristics		
Age (Years)	Mean (SD)	70.63 (6.06)
Gender (n, %)	Male	83 (20.3)
	Female	325 (79.7)
Ancestry ^a (n, %)	Australian	242 (60)
	English	79 (19.6)
	Other	82 (20.3)
Education	Tertiary Education or higher	324 (80.4)
	High School Education or lower	79 (19.6)
Relationship Status	Partnered	268 (66.5)
	Not Partnered	135 (33.5)
Employment Status	Employed	57 (14.1)
	Unemployed	346 (85.9)
Physical Functioning ^b	Mean (SD)	80.49 (19.66)
Volunteering Roles ^c	Mean (SD)	2.03 (1.18)
Volunteering Hours ^d	Mean (SD)	12.44 (14.45)

Note. N = 403 total participants. (SD) = Standard Deviation.

^a Respondents could choose multiple categories.

^b Higher scores indicate greater physical functioning. Participants reported a mostly favourable physical functioning status (M = 80.49, SD = 19.66; Range 0-100, with 100 representing optimum physical functioning).

^c Reflects the average number of volunteer roles currently held by participants.

^d Reflects the average weekly volunteering hours reported by participants over the past month.

2.2.3 Measures

Volunteer Work Design Characteristics. Volunteer work design characteristics were assessed using the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006). The WDQ contains 77 items that assess 21 distinct work characteristics, which are grouped into four higher-order domains: Task Characteristics (24 items), Knowledge Characteristics (20 items), Social Characteristics (19 items;), and Work Context Characteristics (14 items). For example, the Task domain includes seven characteristics: work scheduling autonomy, decision-making autonomy, and work methods autonomy (which together form the *Autonomy* sub-dimension), as well as task variety, task significance, task identity, and feedback from job. The Knowledge domain includes five characteristics: job complexity, information processing, problem solving, skill variety, and specialisation. The Social domain comprises of five characteristics: social support, initiated interdependence and received interdependence (which together form the *Interdependence* sub-dimension), interaction outside the organisation, and feedback from others. The Work Context domain consists of four characteristics: ergonomics, physical demands, work conditions, and equipment use. Figure 1 provides a visual overview of these domains and their corresponding characteristics, while

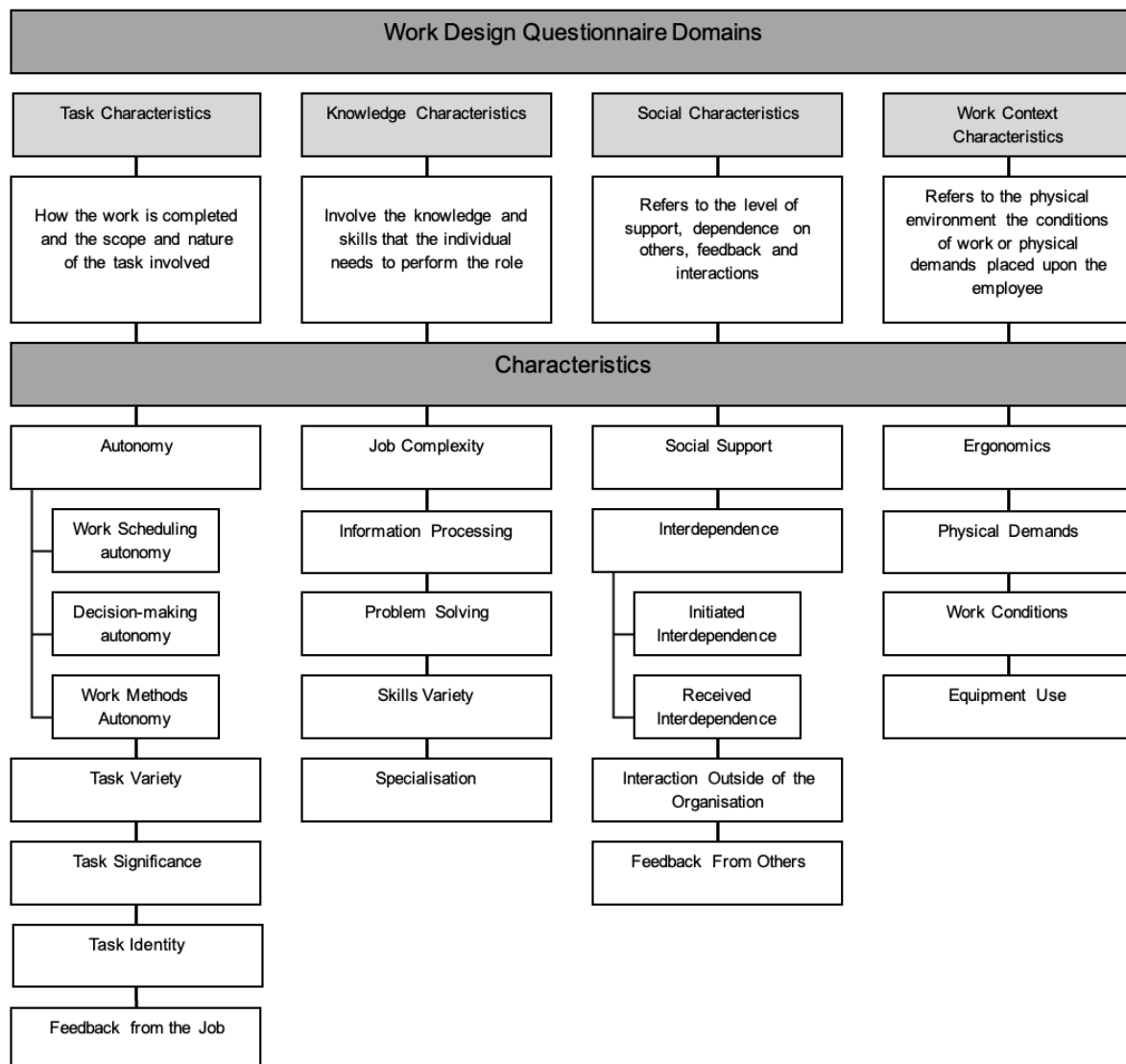
Table 4 presents detailed descriptions and example items for each characteristic.

For the current analysis, the questionnaire was adapted to assess the volunteer environment by rephrasing questionnaire items from 'job' to 'volunteer role' (e.g., "The volunteer role involves a great deal of task variety"). Items are rated on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The present study examined each of the 21 work characteristics independently. Following the reverse scoring of negatively worded items, the responses were averaged to generate total scores for each domain. Higher scores reflected a greater presence of the corresponding volunteer work design characteristic. The WDQ has

demonstrated good internal reliability across subscales (Cronbach's alpha [α] = .64-95, mean α = .86; Morgeson & Humphrey, 2006).

Figure 1

Visual Presentation of The Work Design Questionnaire Domains and Characteristics.



Note. Adapted from *A quantitative assessment of the parameters of the role of receptionists in modern primary care using the work design framework*, by M. Burrows, N. Gale, S.

Greenfield, and I. Litchfield, 2020, *BMC Family Practice*, 21(1), Article 138

(<https://doi.org/10.1186/s12875-020-01199-0>). Copyright 2020 by The Author(s).

Table 4*Descriptions and Sample Questions for the Volunteer Work Design Characteristics*

Domains and Characteristics	Descriptions	Example Items
Task characteristics		
Autonomy		
Work scheduling autonomy	Degree of freedom, independence and discretion to schedule your volunteer work.	The volunteer role allows me to make my own decisions about how to schedule my role.
Decision-making autonomy	Degree of freedom, independence and discretion to make decisions about your volunteer work.	The volunteer role allows me to make a lot of decisions on my own.
Work methods autonomy	Degree of freedom, independence and discretion to choose the methods used to perform tasks.	The volunteer role gives me considerable opportunity for independence and freedom in how I do the role.
Task variety	Degree to which the role requires volunteers to perform a wide range of tasks.	The volunteer role involves me doing a number of different things.
Task significance	Degree to which the volunteer role influences the lives or work of others.	The volunteer role itself is very significant and important in the broader scheme of things.
Task identity	Degree to which the volunteer role involves a whole piece of work, with results easily identifiable.	The volunteer role provides me to complete the work I start.
Feedback from Job	Degree to which the volunteer role provides direct and clear information about the effectiveness of task performance.	The volunteer role provides me with information about my performance.
Knowledge characteristics		
Job complexity	Extent to which the tasks within the role are complex and difficult to perform.	The volunteer role involves performing relatively simple tasks. (R)
Information processing	Degree to which the volunteer role requires attending to and processing data or other information.	The volunteer role requires that I engage in a large amount of thinking.
Problem-solving	Degree to which the volunteer role requires unique ideas or solutions.	The volunteer role often involves dealing with problems that I have not met before.
Skill variety	Extent to which the volunteer role requires an individual to use a variety of different skills.	The volunteer role requires a variety of skills.
Specialisation	Extent to which the volunteer role involves performing specialised tasks or	The volunteer role requires very specialised knowledge and skills.

	possessing specialised knowledge and skill.	
Social characteristics		
Social support	Degree to which the volunteer role provides opportunities to develop friendships and exchange support.	I have the opportunity to develop close friends in my volunteer role.
Interdependence		
Initiated interdependence	The extent to which work flows from one job to other jobs.	Unless my job gets done, other jobs cannot be completed.
Received interdependence	The extent to which the role is affected by work from other jobs.	The volunteer activities are greatly affected by the work of other people.
Interaction outside organisation	Extent to which the role requires volunteers to interact and communicate with individuals external to the organisation.	The volunteer role requires spending a great deal of time with people outside my organisation or group.
Feedback from Others	Degree to which others in the organisation provide performance information.	I receive feedback on my performance from other people in my volunteer organisation or group (such as a manager or other volunteers).
Work context characteristics		
Ergonomics	Degree to which the role allows for correct or appropriate posture and movement.	The volunteer role involves excessive reaching. (R)
Physical demands	Reflect the level of physical activity or effect required in the role.	The volunteer role requires a lot of physical effort.
Work conditions	Reflects the volunteer work environment, encompassing health hazards, noise, temperature, and cleanliness.	The climate at the workplace is comfortable in terms of temperature and humidity.
Equipment use	Reflects the variety and complexity of the technology and equipment used in the volunteer role.	A lot of time was required to learn the equipment used within the volunteer role.

Note. Reverse-scored items are denoted with an (R). Characteristics adapted from “The Work Design Questionnaire (WDQ): Developing and Validating a Comprehensive Measure for Assessing Job Design and the Nature of Work” by F. P. Morgeson and S. E. Humphrey, 2006, *Journal of Applied Psychology*, 91(6), p. 1321-1339 (<https://doi.org/10.1037/0021-9010.91.6.1321>). Copyright 2006 by the American Psychological Association.

Positive and Negative Affect. Positive and negative affect were assessed using the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2009). The SPANE is a

12-item scale that assesses recent positive and negative experiences and emotions. Items (e.g., “Good”, “Bad”) are rated on 5-point scales (1 = very rarely or never, 5 = very often or always) based on the amount of time each was experienced during the past four weeks. The SPANE produces separate summed scores for both positive (SPANE-P) and negative (SPANE-N) feelings, with higher scores indicating more positive or negative affect, respectively. The SPANE has demonstrated good internal reliability (Cronbach’s alpha [α] = .80-.88) and good convergent validity with other measures of emotion, well-being, happiness, and life satisfaction (Diener et al., 2010). The SPANE has also demonstrated consistent psychometric properties across a variety of cultures (Giuntoli et al., 2017; Li et al., 2013; Rahm et al., 2017; Silva & Caetano, 2013; Singh et al., 2016; Sumi, 2014).

Life Satisfaction. Life satisfaction was assessed using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item scale that assesses general life satisfaction. Items (e.g., “In most ways, my life is close to my ideal”, “I am satisfied with my life”) were rated on 7-point scales (1 = strongly disagree, 7 = strongly agree) and summed to create an overall life satisfaction score, with higher scores indicating greater life satisfaction. The SWLS has demonstrated good internal reliability (Cronbach’s alpha [α] = .87) and good convergent, discriminant, and predictive validity across a variety of populations (Diener et al., 1985; Pavot et al., 1991; Pavot & Diener, 1993, 2008).

Psychological Flourishing. Psychological Flourishing was assessed using the Flourishing Scale (FS; Diener et al., 2010). The 8-item scale assesses perceived success in key areas such as relationships, self-esteem, purpose, and optimism. Items (e.g., “My social relationships are supportive and rewarding”, “I actively contribute to the happiness and well-being of others”) were rated on 7-point scales (1 = strongly disagree, 7 = strongly agree) and summed to create an overall flourishing score, with higher scores indicating greater psychological flourishing. The FS has demonstrated good internal reliability (Cronbach’s alpha [α] = .86) and high convergence with similar scales (Diener et al., 2010).

Physical Functioning. Physical functioning was assessed using the 10-item ‘Physical Functioning’ subscale of the RAND 36-Item Health Survey 1.0 (Hays et al., 1993).

Items (e.g., “Lifting or carrying groceries”, “Bending, kneeling, or stooping”) were rated using a 3-point scale (1 = Yes, limited a lot, 2 = Yes, limited a little, 3 = No, not limited at all) based on the extent to which an individual’s current health limits their ability to perform each activity. Scores on this measure were summed to create an overall functional health score, with higher scores indicating greater physical functioning.

Covariates. Covariates including age, gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered) were controlled for due to empirically established associations with well-being (Diener et al., 2017). The number of volunteer roles was determined by asking participants to specify the number of separate formal volunteering roles they currently held, while volunteer hours were assessed by asking the average number of hours per week dedicated to volunteering in the previous month.

2.2.4 Statistical Analysis

The present study sought to investigate the association between the 21 volunteer work design characteristics and measures of well-being (i.e., positive and negative affect, life satisfaction, and psychological flourishing). Separate linear regressions were conducted using SPSS Statistics 27.0.1 (IMB Corp, 2020) to determine which characteristics of the volunteer environment were associated with each well-being component. First, the association of volunteering characteristics with the well-being outcomes were considered separately in models adjusted for age, gender, employment, education, relationship status, number of active volunteering roles and average volunteering hours per week. Next, main effect models were run separately for each measure of well-being, initially incorporating all volunteering characteristics into a combined model to evaluate their unique associations independently of other factors. Given the large number of predictor variables, non-significant volunteer work characteristics were progressively excluded until each main effect model included only significant characteristics. Covariates remained consistent throughout all main effect analyses. Finally, moderation analyses were conducted using the PROCESS macro in

SPSS to determine whether functional health moderated the relationships between each of the volunteer work design characteristics and the well-being outcomes. Where significant interactions emerged, these were plotted using predicted values for hypothetical individuals scoring higher 84th percentile) and lower (16th percentile) on the relevant work characteristic and physical functioning (the moderator). Given the high number of statistical comparisons, alpha was set at .01 to provide a reasonable balance between the likelihood of producing Type 1 or Type 2 errors (Anderson, 2020).

2.3 Results

2.3.1 Descriptive Statistics

Table 5 presents the means, standard deviations and ranges for the volunteer work design characteristics and well-being outcome measures (i.e., positive affect, negative affect, life satisfaction, and psychological flourishing). On average, participants showed moderate levels of agreement across the volunteer work design characteristics, with somewhat lower means for initiated interdependence, physical demands, and equipment use. In terms of outcome measures, participants on average reported elevated levels of positive affect and low levels of negative affect, and high satisfaction with life. Furthermore, participants indicated generally high levels of psychological flourishing.

Intercorrelations among respondents' ratings of the volunteer work design characteristics, well-being outcome measures and covariates are presented in Table 6 and 7. Overall, volunteer work design characteristics were more consistently correlated with psychological well-being (i.e., flourishing) compared to subjective well-being (i.e., positive and negative affect, life satisfaction). Specifically, 18 out of 21 volunteer work characteristics were positively associated with psychological flourishing, with correlations ranging from .14 to .49. Regarding associations among the WDQ characteristics, work methods autonomy was strongly and positively correlated with work scheduling autonomy, $r(400) = .74, p < .001$, and decision-making autonomy, $r(400) = .83, p < .001$. Similarly, skill variety was strongly and positively correlated with information processing, $r(400) = .72, p < .001$, and specialisation, $r(400) = .71, p < .001$. Moderate negative correlations were observed

between physical demands and ergonomics, $r(400) = -.40, p < .001$, and work conditions, $r(400) = -.48, p < .001$. Additionally, work conditions were weakly and negatively associated with job complexity, $r(400) = -.18, p < .001$, specialisation, $r(400) = -.16, p < .001$, and equipment use, $r(400) = -.22, p < .001$.

Table 5

Means and Standard Deviations for Key Study Variables

Variables	Range	Mean (SD)
Task characteristics		
Work scheduling autonomy	1-5	3.77 (0.98)
Decision-making autonomy	1-5	3.88 (0.87)
Work methods autonomy	1-5	3.69 (0.96)
Task variety	1-5	3.86 (0.82)
Task significance	1-5	3.95 (0.82)
Task identity	1-5	3.76 (0.88)
Feedback from Job	1-5	3.51 (0.86)
Knowledge characteristics		
Job complexity	1-5	3.25 (0.93)
Information processing	1-5	3.53 (0.98)
Problem-solving	1-5	3.36 (0.88)
Skill variety	1-5	3.83 (0.81)
Specialisation	1-5	3.31 (1.06)
Social characteristics		
Social support	1-5	4.17 (0.58)
Initiated interdependence	1-5	2.82 (0.97)
Received interdependence	1-5	3.32 (0.91)
Interaction outside organisation	1-5	3.12 (1.04)
Feedback from Others	1-5	3.12 (1.00)
Work context		
Ergonomics	1-5	3.66 (0.70)
Physical demands	1-5	2.43 (0.99)
Work conditions	1-5	3.78 (0.74)
Equipment use	1-5	2.77 (0.93)
Positive affect	6-30	24.09 (3.87)
Negative affect	6-30	11.01 (3.47)

Life satisfaction	5-35	25.91 (5.96)
Psychological flourishing	8-56	47.02 (6.38)

Note. (SD) = Standard Deviation.

2.3.2 Associations of Volunteer Work Design Characteristics with Well-Being

The first objective of this study was to investigate the associations between volunteer work design characteristics and well-being outcomes (i.e., positive affect, negative affect, life satisfaction, and psychological flourishing), controlling for covariates. Results of initial analyses that considered each characteristic separately are presented in Appendices A through D. The interpretation of main effects presented here is based on the results of subsequent models that included predictors run in parallel (see *Statistical Analysis*), thereby accounting for shared variance among the work characteristics. To simplify the models, non-significant WDQ characteristics were progressively excluded to arrive at the final models, presented in Table 8. Social support was the WDQ characteristic most consistently associated with well-being. Results revealed a significant association between social support and higher positive affect ($B = 0.34, p < .001, 95\% \text{ CI} = 1.59, 2.96$), lower negative affect ($B = -0.32, p < .001, 95\% \text{ CI} = -2.54, -1.34$), higher life satisfaction ($B = 0.33, p < .001, 95\% \text{ CI} = 2.40, 4.31$), and higher psychological flourishing ($B = 0.40, p < .001, 95\% \text{ CI} = 3.41, 5.44$) over and above the effects of the covariates. Work conditions (i.e., the extent to which the physical work environment is comfortable and safe) were significantly associated with higher life satisfaction ($B = 0.17, p < .001, 95\% \text{ CI} = 0.59, 2.09$) and psychological flourishing ($B = 0.20, p < .001, 95\% \text{ CI} = 0.74, 2.24$). Interaction outside of the organisation (i.e., the degree of communication with individuals external to the volunteer organisation) was associated with higher negative affect ($B = 0.15, p < .001, 95\% \text{ CI} = 0.16, 0.82$). None of the other WDQ characteristics (apart from those mentioned above) were associated with the well-being outcomes and hence are omitted from Table 8. Regression coefficients for the WDQ characteristics with a less stringent criterion alpha of .05 are displayed in an extended table in Appendix E.

Table 6*Pearson Correlations Among the 'Volunteering and Well-Being in Older Adulthood' Work Design Characteristics*

Variable s	Volunteer Work Design Characteristics																				
	WSA	DMA	WMA	TV	TS	TI	FFJ	JC	IP	PS	SV	S	SS	II	RI	IOO	FFO	E	PD	WC	EU
WSA	-																				
DMA	.687*	-																			
WMA	.738*	.823**	-																		
TV	.380*	.414**	.395**	-																	
TS	.067	.142**	.119*	.310**	-																
TI	.132*	.167**	.174**	.154**	.219**	-															
FFJ	.299*	.321**	.325**	.331**	.333**	.318**	-														
JC	.101*	.153**	.112*	.340**	.189**	.028	.126*	-													
IP	.185*	.277**	.216**	.417**	.353**	.166**	.323**	.658**	-												
PS	.224*	.334**	.337**	.484**	.316**	.135**	.327**	.503**	.654**	-											
SV	.270*	.356**	.287**	.530**	.338**	.271**	.372**	.588**	.716**	.641**	-										
S	.104*	.213**	.126*	.314**	.330**	.270**	.362**	.514**	.683**	.525**	.696**	-									
SS	.140*	.231**	.237**	.413**	.349**	.165**	.412**	.086	.216**	.275**	.303**	.171**	-								
II	.090	.136**	.128**	.213**	.190**	.175**	.201**	.359**	.445**	.309**	.365**	.380**	.136**	-							
RI	-.063	-.015	.011	.198**	.268**	.099*	.154**	.213**	.311**	.248**	.252**	.277**	.223**	.458**	-						
IOO	.061	.130**	.089	.285**	.333**	.098*	.256**	.189**	.338**	.332**	.296**	.276**	.282**	.183**	.208**	-					
FFO	.219*	.255**	.231**	.338**	.286**	.174**	.597**	.167**	.331**	.393**	.388**	.336**	.466**	.248**	.266**	.310**	-				
E	.120*	.192**	.192**	.169**	.195**	.289**	.240**	-.007	.063	.065	.178**	.101*	.375**	.082	.018	.021	.237**	-			
PD	-.076	-.081	-.097*	.103*	.043	-.081	-.006	.023	.051	.043	.004	.163**	-.014	.036	.137**	.133**	.011	.402**	-		
WC	.180*	.196**	.236**	.017	.028	.150**	.113*	-	-.105*	-.098*	-.020	-	.202**	-.015	-.101*	-.117*	.027	.499**	-	-	
EU	.038	.135**	.053	.308**	.174**	.174**	.236**	.403**	.465**	.392**	.479**	.610**	.143**	.351**	.267**	.245**	.256**	.068	.485**	-	-
PA	.156*	.190**	.197**	.183**	.211**	.188**	.271**	-.049	.057	.097	.143**	.027	.402**	-.025	.004	.054	.198**	.287**	-.100*	.213**	-.034

NA	- .137*	-.108*	-.086	-.104*	- .150**	-.075	- .142**	-.015	-.033	-.032	-.083	-.036	- .293**	-.080	.014	.042	-.121*	- .146**	-.009	-.090	-.044
LS	.173*	.164**	.184**	.167**	.127*	.185**	.235**	-.065	.041	.100*	.126*	-.001	.361**	.0160	.010	.058	.126*	.212**	-.066	.222**	-.052
Flourish	.179*	.231**	.211**	.281**	.299**	.233**	.342**	.077	.235**	.198**	.306**	.171**	.492**	.140**	.123*	.143**	.294**	.278**	-.104*	.225**	.058
Age	.091	.125*	.029	.043	-.006	.013	.012	.038	.022	-.008	-.005	.047	-.013	.006	-.041	-.047	-.017	.09	-.094	.088	.025
Gender	-.056	-.124*	-.084	-.110*	-.006	-.105*	-	-	-	-	-	-	-.075	-	-.035	-.120*	-	-.094	-.055	.138**	-
Edu.	.079	-.013	.033	.003	.007	-.07	.135**	.156**	.133**	.129**	.168**	.201**	-	.200**	-	-	.159**	-			.224**
							.011	-	-.090	-.054	-	-	.104*	-	-.078	.119*	.049	.054	.012	.044	-.043
								.194**			.174**	.173**		.131**							
Employ.	.056	.02	.059	.076	-.011	.073	.044	-.085	-.043	-.017	-.009	-.072	.125*	-.017	.046	.003	-.008	.004	-.057	.058	-.115*
Relation	-.040	-.028	-.057	-.064	-.032	-.118*	-	.033	-.009	.004	-.066	-.017	-.098*	-.006	.005	-.060	-.085	-.073	.005	-.040	-.052
							.154**														
Physical	.032	-.023	-.012	.022	-.018	.137**	.036	.011	-.014	-.031	.060	.019	-.053	-.036	-.040	-.024	-.035	.004	.205**	-.065	.024
Vol.	.145*	.127*	.133**	.232**	.167**	.018	.111*	.227**	.215**	.174**	.173**	.181**	.124*	.165**	.131**	.195**	.186**	.010	.149**	-	.254**
Hours	*																				
Vol.	.056	.102*	.066	.200**	.066	-.034	0	.090	.080	.101*	.154**	.028	.008	.043	.042	.042	-.034	-.006	-.022	-.001	.027
Roles																					

Note. Work characteristics: WSA = work scheduling autonomy, DMA = decision-making autonomy, WMA = work methods autonomy, TV =

task variety, TS = task significance, TI = task identity, FFJ = feedback from job, JC = job complexity, IP = information processing, PS = problem

solving, SV = skill variety, S = specialisation, SS = social support, II = initiated interdependence, RI = received interdependence, IOO =

interaction outside organisation, FFO = feedback from others, E = ergonomics, PD = physical demands, WC = work conditions, EU =

equipment use. **Outcome measures:** PA = positive affect, NA = negative affect, LS = life satisfaction. Flourish = psychological flourishing.

Covariates: Edu. = education, Employ. = employment, Relation. = relationship status, Physical = physical functioning.

Table 7

Pearson Correlations Among the 'Volunteering and Well-Being in Older Adulthood' Outcome Measures and Covariates

Variables	Outcome Measures				Covariates							
	PA	NA	LS	Flourish	Age	Gender	Edu.	Employ.	Relatio n.	Physica l	Vol. Hours	Vol. Roles
PA	-											
NA	-.613**	-										
LS	.633**	-.469**	-									
Flourish	.704**	-.508**	.652**	-								
Age	.079	-.120*	-.026	.037	-							
Gender	-.046	.154**	-.049	-.084	-.226**	-						
Edu.	.023	.028	-.008	-.053	.030	.053	-					
Employ.	.063	-.065	.110*	.047	.281**	-.031	.062	-				
Relation.	-.061	.031	-.189**	-.101*	.073	.148**	-.024	-.042	-			
Physical	.035	-.094	.194**	.107*	-.241**	-.029	-.184**	-.076	-.081	-		
Vol. Hours	.014	-.057	.012	.087	.004	-.150**	.101*	.018	-.027	.001	-	
Vol. Roles	.077	-.094	.051	.133**	.128**	-.047	-.063	-.010	.012	-.039	.039	-

Note. **Outcome measures:** PA = positive affect, NA = negative affect, LS = life satisfaction. Flourish = psychological flourishing.

Covariates: Edu. = education, Employ. = employment, Relation. = relationship status, Physical = physical functioning.

Table 8

Unstandardised Coefficients, Standard Errors, Standardised Coefficients, P-Values and 95% Confidence Intervals for the Main Effects

Analyses

Variables	Positive Affect			Negative Affect			Life Satisfaction			Psychological Flourishing		
	B (SE)	β	95% CI	B (SE)	β	95% CI	B (SE)	β	95% CI	B (SE)	β	95% CI
WDQ												
characteristics												
Social support	2.28 (0.35)	0.34**	1.59, 2.96	-1.94 (0.31)	-0.32**	-2.54, - 1.34	3.35 (0.49)	0.33**	2.4, 4.31	4.42 (0.52)	0.40**	3.41, 5.44
Interaction outside organisation	-	-		0.49 (0.17)	0.15**	0.16, 0.82	-	-	-	-	-	-
Work conditions	-	-	-	-	-	-	1.34 (0.38)	0.17**	0.59, 2.09	1.49 (0.38)	0.20**	0.74, 2.24
Covariates ^a												
Age	0.05 (0.03)	0.09	-0.01, 0.12	-0.06 (0.03)	-0.10	-0.12, 0	-0.02 (0.05)	-0.02	-0.11, 0.08	0.04 (0.05)	0.00	-0.06, 0.14
Gender	-0.22 (0.47)	-0.02	-1.15, 0.71	1.21 (0.43)	0.14**	0.36, 2.06	-0.57 (0.72)	-0.04	-1.98, 0.84	-0.76 (0.72)	0.00	-2.17, 0.66
Education	-0.08 (0.46)	-0.01	-0.98, 0.82	0.1 (0.43)	0.01	-0.75, 0.95	-0.15 (0.7)	-0.01	-1.52, 1.23	-1.01 (0.7)	-0.10	-2.39, 0.37
Employment	-0.4 (0.53)	-0.04	-1.44, 0.63	0.08 (0.49)	0.01	-0.89, 1.04	1.27 (0.8)	0.07	-0.31, 2.84	-0.25 (0.8)	0.00	-1.82, 1.32
Relationship	-0.04 (0.38)	-0.01	-0.78, 0.71	-0.06 (0.35)	-0.01	-0.75, 0.64	-1.52 (0.58)	-0.12**	-2.65, - 0.38	-0.5 (0.58)	0.00	-1.63, 0.63

Physical functioning	0.01 (0.01)	0.05	-0.01, 0.03	-0.02 (0.01)	-0.11	-0.04, 0	0.06 (0.01)	0.19**	0.03, 0.09	0.04 (0.01)	0.10**	0.01, 0.07
Volunteer roles	0.25 (0.15)	0.08	-0.05, 0.54	-0.24 (0.14)	-0.08	-0.52, 0.03	0.33 (0.23)	0.07	-0.12, 0.78	0.61 (0.23)	0.10**	0.16, 1.07
Volunteer hours	-0.01 (0.01)	-0.02	-0.03, 0.02	0 (0.01)	-0.02	-0.03, 0.02	-0.01 (0.02)	-0.01	-0.04, 0.03	0 (0.02)	0.0	-0.04, 0.04

Note. ** Coefficient is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

2.3.3 Moderating Role of Physical Functioning on Work Design Characteristics and Well-Being

Results of the moderation analyses revealed several interactions involving physical functioning. Results are presented below with relevant WDQ characteristics grouped according to the higher-order WDQ classifications of task, knowledge, social and contextual characteristics. Detailed statistical summaries for each interaction can be found in Appendices G to J.

2.3.3.1 Task Characteristics

Autonomy. Within the Task domain, the WDQ includes the *Autonomy* sub-dimension, which comprises three distinct characteristics: work scheduling autonomy, decision-making autonomy, and work methods autonomy (see

Table 4). Moderation analysis revealed a significant interaction between decision-making autonomy (i.e., degree of freedom and independence to make decisions about your volunteer work) and physical functioning in the prediction of life satisfaction (see Appendix F, Table F1). As illustrated in Figure 2, among those with worse physical functioning, greater decision-making autonomy was associated with higher life satisfaction ($B = 2.01$, $SE = 0.46$, $p < .001$, 95% CI = 1.11, 2.92). Conversely, for those with better physical functioning, life satisfaction remained consistently high regardless of decision-making autonomy levels ($B = 0.51$, $SE = 0.40$, $p = 0.201$, 95% CI = -0.27, 1.30).

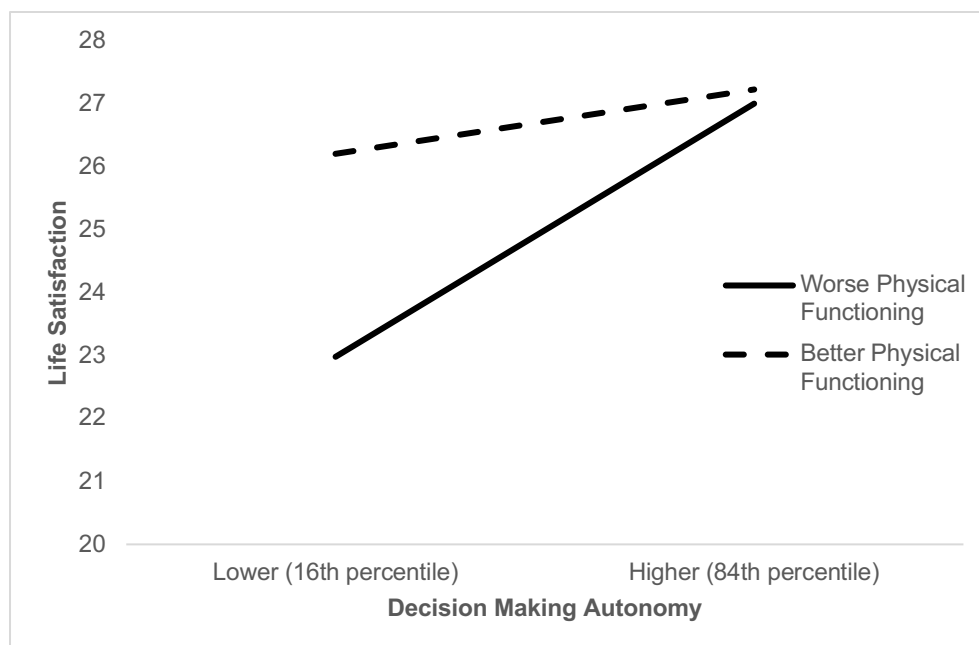
Task Significance. Task significance is one of the seven characteristics within the Task domain. It reflects the degree to which the volunteer role influences the lives of work of other people (

Table 4). Moderation analysis revealed a significant task significance x physical functioning interaction in the prediction of life satisfaction (see Appendix F, Table F2). As

illustrated in Figure 3, for those with worse physical functioning, greater task significance was associated with higher life satisfaction ($B = 2.09$, $SE = 0.53$, $p < 0.001$, 95% CI = 1.05, 3.13). Conversely, for those with better physical functioning, life satisfaction remained consistently high regardless of the level of task significance ($B = 0.22$, $SE = 0.43$, $p = 0.606$, 95% CI = -0.62, 1.07).

Figure 2

Association Between Decision-Making Autonomy and Life Satisfaction Moderated by Physical Functioning

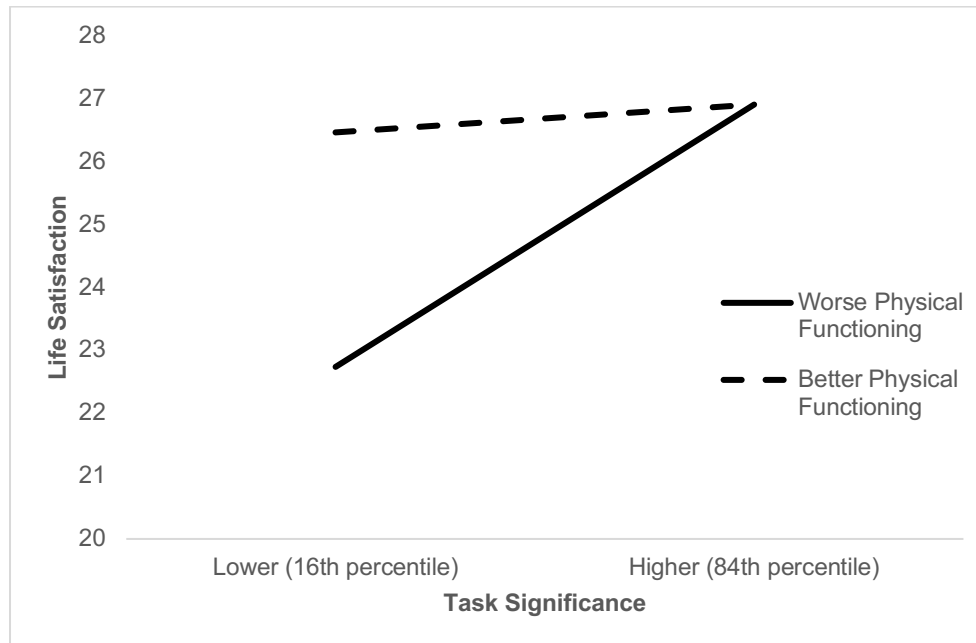


Note. 'Worse Physical Functioning' represents participants within the 16th percentile, while 'Better Physical Functioning' represents participants within the 84th percentile.

Physical functioning also moderated the relationship between task significance and psychological flourishing (see Appendix F, Table F2). Post hoc analyses showed the positive effect of task significance on psychological flourishing was stronger for individuals with worse physical functioning ($B = 3.35$, $SE = 0.57$, $p < .001$, 95% CI = 2.23, 4.46) compared to those with better physical functioning ($B = 1.51$, $SE = 0.45$, $p = .001$, 95% CI = 0.62, 2.40; see Appendix J, Figure J1).

Figure 3

Association Between Task Significance and Life Satisfaction Moderated by Physical Functioning



Note. 'Worse Physical Functioning' represents participants within the 16th percentile, while 'Better Physical Functioning' represents participants within the 84th percentile.

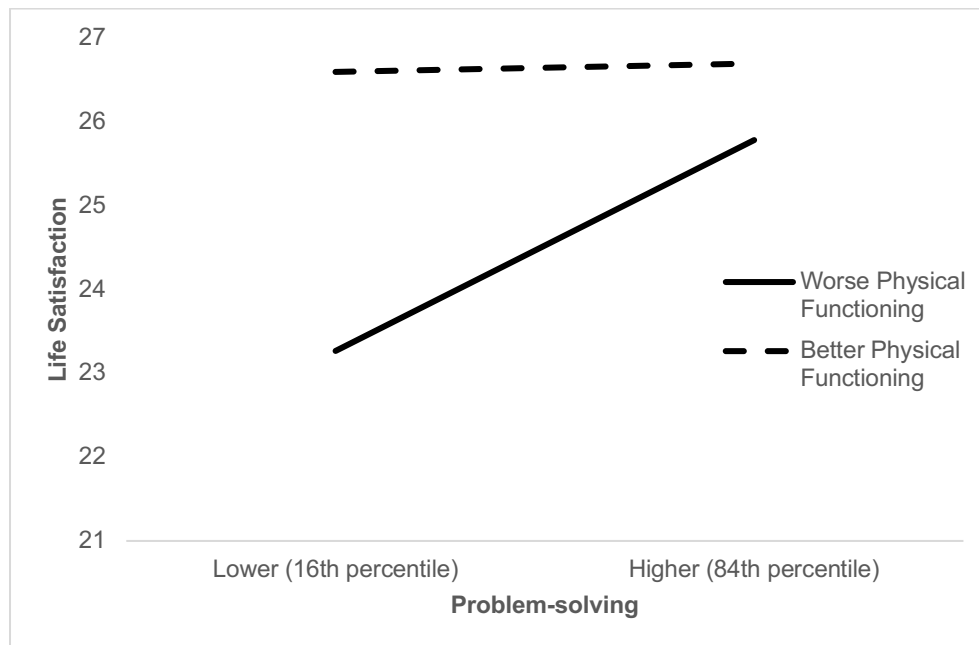
2.3.3.2 Knowledge Characteristics

Problem-solving. Problem-solving is one of the five characteristics within the Knowledge domain. It assesses the extent to which the volunteer role requires generating unique ideas or solutions to address novel or complex issues (

Table 4). Moderation analysis revealed a significant problem-solving x physical functioning interaction in the prediction of life satisfaction (see Appendix G, Table G1). As shown in Figure 4, among participants with worse physical functioning, higher scores on problem-solving were associated with higher life satisfaction ($B = 1.68$, $SE = 0.48$, $p < .001$, 95% CI = 0.74, 2.61). Conversely, for those with better physical functioning, life satisfaction scores remained consistently high regardless of the level of problem-solving ($B = 0.07$, $SE = 0.41$, $p = 0.870$, 95% CI = -0.74, 0.87).

Figure 4

Association Between Problem-solving and Life Satisfaction Moderated by Physical Functioning



Note. 'Worse Physical Functioning' represents participants within the 16th percentile, while 'Better Physical Functioning' represents participants within the 84th percentile.

2.3.3.3 Social Characteristics

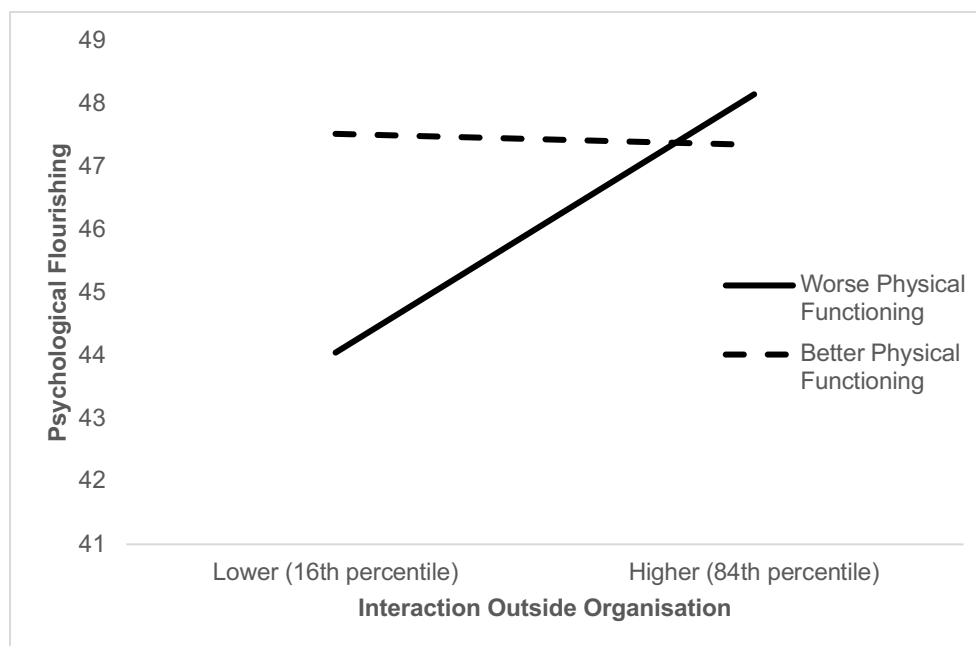
Interaction outside organisation. Interaction outside the organisation is one of the five characteristics within the Social domain. It measures the extent to which the role involves communicating and working with individuals external to the volunteer organisation (

Table 4). Moderation analysis revealed a significant interaction between interaction outside the organisation and physical functioning in the prediction of psychological flourishing (see Appendix H, Table H1). As illustrated in Figure 5, among those with worse physical functioning, greater interaction outside of the organisation was associated with higher psychological flourishing ($B = 2.05$, $SE = 0.45$, $p < .001$, $95\% CI = 1.17, 2.93$). Conversely, for those with better physical functioning, psychological flourishing remained consistently high regardless of the extent of interaction outside of the organisation ($B = -0.09$, $SE = 0.38$,

$p = 0.820$, 95% CI = -0.84, -0.67). A similar pattern of moderation for physical functioning x interaction outside the organisation was also evident in the prediction of life satisfaction (see Appendix H, Table H2), with greater outside interaction linked to higher life satisfaction for those with worse physical functioning ($B = 1.06$, $SE = 0.42$, $p = 0.011$, 95% CI = 0.25, 1.88), while life satisfaction remained consistently high for those with better physical functioning, regardless of interaction levels ($B = -0.27$, $SE = 0.36$, $p = 0.450$, 95% CI = -0.98, 0.43; see Appendix J; Figure J2).

Figure 5

*Association Between Interaction Outside Organisation and Psychological Flourishing
Moderated by Physical Functioning*



Note. 'Worse Physical Functioning' represents participants within the 16th percentile, while 'Better Physical Functioning' represents participants within the 84th percentile.

Moderation analysis also revealed a significant interaction outside of organisation x physical functioning interaction in the prediction of negative affect (See Appendix H, Table H3). Post hoc analyses showed greater interaction outside of the organisation was associated with higher negative affect among those with better physical functioning ($B = 0.59$, $SE = 0.21$, $p = 0.006$, 95% CI = 0.18, 1.01), whereas for those with worse physical functioning, the effect of interaction outside of the organisation on negative affect was non-

significant ($B = -0.22$, $SE = 0.24$, $p = 0.363$, 95% $CI = -0.69, 0.25$; see Appendix J, Figure J3).

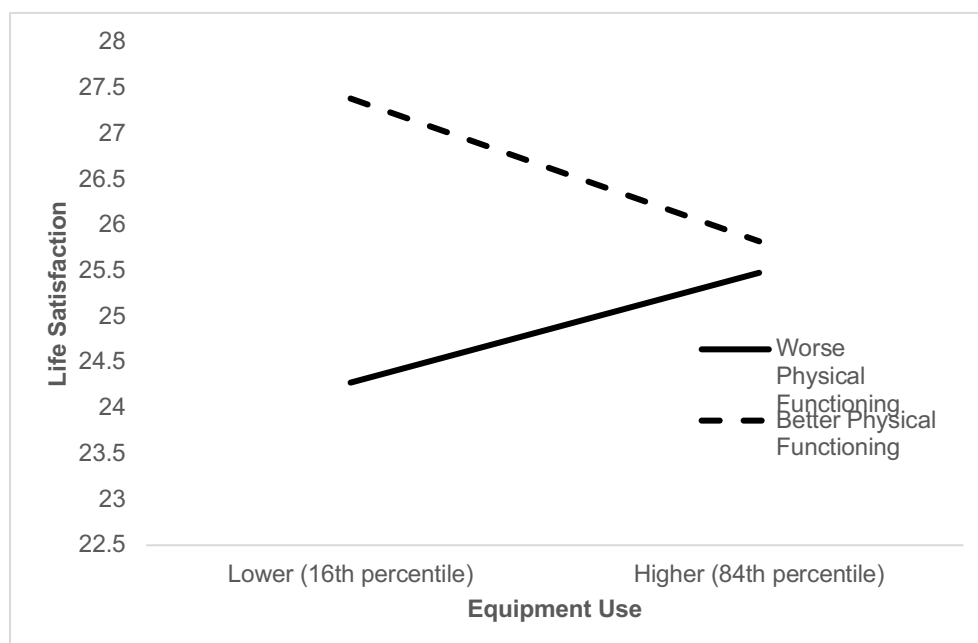
2.3.3.4 Contextual Characteristics

Equipment Use. Equipment use is one of the four characteristics within the Work Context domain. It assesses the variety and complexity of the technology and equipment that volunteers are required to use in their role (

Table 4). Moderation analysis revealed a significant interaction between equipment use and physical functioning in the prediction of life satisfaction ($B = -0.05$, $SE = 0.02$, $p = 0.006$, 95% $CI = -0.08, -0.01$). As shown in Figure 6, higher scores on equipment use were associated with lower life satisfaction for those with better physical functioning ($B = -0.94$, $SE = 0.39$, $p = 0.018$, 95% $CI = -1.71, -0.16$), whereas for those with worse physical functioning, life satisfaction remained consistent regardless of equipment use ($B = 0.72$, $SE = 0.51$, $p = 0.158$, 95% $CI = -0.28, 1.72$).

Figure 6

Association Between Equipment Use and Life Satisfaction Moderated by Physical Functioning



Note. 'Worse Physical Functioning' represents participants within the 16th percentile, while 'Better Physical Functioning' represents participants within the 84th percentile.

2.4 Discussion

The present study extends contemporary literature on the work context of volunteering and well-being in older adulthood in two ways: first, by using a comprehensive and well-established measure of work design to examine which characteristics of the volunteering experience are associated with well-being outcomes among older adults, and second, by examining physical functioning as a moderator of these associations. In the sections that follow, we first discuss broad associations between work domains and well-being, then focus on how these vary based on physical functioning.

2.4.1 Associations Between Volunteering Characteristics and Well-Being

The analysis of main effects revealed few reliable WDQ predictors, with social support emerging as the work characteristic most consistently correlated with well-being. Here, social support refers to the extent to which volunteer roles provide opportunities for interactions with others, friendship-building and the mutual exchange of support among volunteers. Results showed a positive association between social support and favourable well-being outcomes, with this effect remaining significant even after controlling for age, gender, education, employment and relationship status, and physical functioning. These findings were consistent with previous literature demonstrating similar associations between ongoing social support and socio-emotional benefits such as higher self-esteem, personal growth, meaningful engagement, socialisation, and life satisfaction among older volunteers (Pilkington et al., 2012; Tang et al., 2010). These findings also align with Fried et al.'s (2006) Social Model of Health Promotion and the Basic Psychological Needs Theory (Ryan & Deci, 2017), both of which emphasise relatedness – a sense of connection, belonging and meaningful relationships – as essential to well-being. Although we need to be cautious of making causal inferences given our cross-sectional data, our findings add to a growing body of work suggesting that facilitating social connections is a key factor through which volunteering enhances well-being. By designing roles that emphasise positive social

interaction, peer support, and friendship-building, volunteer organisations could enhance the volunteer experience and potentially amplify its positive impact among older adults.

A second characteristic within the social domain, interaction outside of the organisation, was also significantly associated with negative affect. Interaction outside of the organisation refers to the extent to which volunteers are required to interact and communicate with individuals external to their volunteering group. This aspect of the volunteering experience has received limited attention in prior research, which has primarily focused on internal interactions, such as those with other volunteers or support from managers. One potential explanation is that interactions with individuals external to the organisation may introduce additional stressors or challenges for volunteers. The Socioemotional Selectivity Theory (Carstensen, 1992) suggests that as individuals age, they become increasingly selective in their social relationships, prioritising emotionally meaningful interactions. Consequently, older adults tend to seek out positive social interactions while avoiding those perceived as less emotionally rewarding or more taxing. Considering this, older volunteers may be particularly sensitive to potentially problematic interactions outside the organisation. Research on social interactions in later life supports this idea, showing that negative social exchanges in later life, particularly those that are critical, dismissive, or conflict-laden, can have significant consequences for well-being (Rook, 2014). Persistent or unresolved interpersonal tensions have been linked to increased distress and reduced life satisfaction, suggesting that negative interactions outside of the volunteering organisation could be especially detrimental for older volunteers.

A similar pattern emerges in workplace research, where external interactions have also been identified as a source of stress. In paid employment, dealing with external stakeholders, such as customers or clients, has been shown to contribute to negative affect and reduced job satisfaction (Dormann & Zapf, 2004). For example, Dormann and Zapf (2004) found that customer-related social stressors, including hostile interactions and unrealistic demands, significantly contributed to emotional exhaustion and job dissatisfaction among employees. From a lifespan perspective, older adults are often experts at curating a

social environment that minimises social stressors, but at the same time may be less well equipped to effectively cope with such stressors when they cannot be avoided, compared with younger adults (Charles, 2010). In a volunteering context, perhaps dealing with external stakeholders represents a source of such stressors.

In contrast to these social aspects of volunteering, work conditions – a work context characteristic – were also associated with positive outcomes among older volunteers, namely, higher levels of life satisfaction and psychological flourishing. Work conditions were defined as the degree to which the volunteer environment is comfortable and free from hazards. This aspect of the volunteering experience has been largely overlooked in prior literature on contextual aspects of volunteering and well-being. However, studies of paid employment have found associations between better work conditions and increased job satisfaction, as well as reduced stress levels among employees (Humphrey & Nahrgang, 2007). Favourable work conditions may contribute to psychological well-being, whether in volunteering or paid work, by reducing discomfort, minimising fatigue, and lowering the risk of injury. These findings emphasise the importance of prioritising and investing in measures to improve work conditions within volunteering environments, such as implementing safety protocols, maintaining cleanliness, and addressing potential hazards. However, we acknowledge that for many not-for-profit organisations reliant on volunteers, large-scale investments may not always be feasible. However, creative and low-cost strategies may still contribute to a more comfortable and supportive environment. Simple ergonomic adjustments, such as foam mats in standing areas or designated rest spaces, may help reduce discomfort associated with prolonged standing. Additionally, clear safety signage, regular break reminders, and structured task rotation may help to minimise fatigue and injury risks. By fostering environments that prioritise safety and well-being, volunteer organisations can enhance the experiences of older adult volunteers and maximise the benefits of their involvement.

2.4.2 Physical Functioning as a Moderator of Associations Between Volunteering Characteristics and Well-Being

This study also examined whether relationships between work design characteristics and well-being among older volunteers were moderated by physical functioning. Overall, our findings suggest that while social aspects of volunteering support well-being overall, task and knowledge characteristics play a more significant role for those with poorer functional health.

The positive associations between social work design characteristics and well-being, which remained consistent irrespective of physical functioning levels, suggest that social connections provided through volunteering are broadly beneficial for older volunteers. These results align with Basic Psychological Need Theory, which emphasises that satisfying the need for relatedness – feeling connected to and valued by others – is central to well-being (Ryan & Deci, 2000, 2017). Volunteering provides structured and consistent opportunities for meaningful social interaction (distinguishing it from casual social encounters), which may be more sporadic or dependent on personal initiative. The predictability, accountability, and sustained engagement that volunteering offers may be particularly valuable for older adults, as it provides a regular source of social contact and opportunities to build deep and lasting relationships. Furthermore, volunteering often involves reciprocal social exchanges, in which volunteers both give and receive support, reinforcing their sense of purpose and belonging (Stephens et al., 2015; Wilson, 2000). This may explain why the well-being benefits of social characteristics were not contingent on physical functioning; because the psychological rewards of social engagement extend beyond the ability to perform specific tasks. These findings highlight the importance of designing volunteer roles that actively foster social connection, collaboration, and recognition to promote well-being for older adults. This could include team-based roles, mentorship programs, and peer support networks that encourage meaningful interactions, as well as regular appreciation events and recognition initiatives to reinforce volunteers' sense of value and belonging.

In contrast, autonomy and knowledge characteristics appeared to play a particularly important role in the well-being of older adults with poorer physical functioning. Specifically, decision-making autonomy (the freedom and discretion to make choices about the volunteer

work) and problem-solving (the extent to which the role requires unique ideas or solutions) were more strongly associated with life satisfaction for individuals with functional limitations. This suggests that volunteering may serve a compensatory role in fulfilling psychological needs of autonomy and competence that might otherwise be diminished by physical limitations (Baltes & Baltes, 1990; Ryan & Deci, 2017). In line with Baltes and Baltes' (1990) Selective Optimisation with Compensation (SOC) model, which posits that individuals adapt to age-related declines by optimising available resources and seeking out compensatory strategies when goals are blocked, volunteering may provide structured opportunities for autonomy, decision-making, and cognitive engagement that help counterbalance the challenges associated with declines in functional capacities.

For older adults with poorer functional health, roles that allow for decision-making autonomy may help reinforce a sense of control and agency, providing a context for meaningful choices about their contributions, even if physical independence is constrained (Ryan & Deci, 2017). Similarly, engaging in cognitively stimulating, problem-solving tasks may help sustain intellectual engagement and self-efficacy, enabling individuals to maintain a sense of competence despite limitations in other areas of life (Gabriel & Bowling, 2004). Thus, by integrating these elements into volunteer role design, organisations can create more inclusive and fulfilling opportunities that actively support the well-being of older adults with physical limitations. For example, ensuring that roles provide flexibility in task execution (e.g., allowing volunteers to set their schedules or modify tasks to align with their abilities), opportunities for independent decision-making (e.g., leading a project, selecting how to contribute to a cause, or mentoring others), and avenues for cognitive engagement (e.g., problem-solving tasks, strategic planning roles, or skill-based volunteering; such as tutoring or research) are likely to help satisfy autonomy and competence needs in the face of functional health constraints.

An unexpected finding was the negative association between equipment use (the variety and complexity of the equipment used) and life satisfaction among those with better physical functioning. While speculative, one possible explanation is that for individuals in

good health, time spent working with machinery may come at the expense of social interaction, which our findings suggest is a key driver of well-being in volunteering. This raises interesting questions about the role of contextual work characteristics in shaping the volunteer experience and whether they impose unintended trade-offs or opportunity costs when one type of volunteer activity (e.g., operating machinery) is undertaken at the expense of another (e.g., working with others on a collaborative task). Future research should explore how the physical and environmental aspects of volunteer roles interact with social and cognitive dimensions to optimise the volunteer experience for older adults with varying functional abilities.

2.4.3 Limitations and Strengths

These findings should be interpreted in light of several limitations. First, the cross-sectional design precludes the ability to draw causal inferences. Emerging longitudinal research suggests that well-being may drive volunteering behaviour. For instance, Bjälkebring et al. (2021) found that older adults with higher initial life satisfaction were more likely to increase their volunteer engagement over time. In the context of our study, it is possible that certain characteristics of well-being lead to engagement in particular kinds of volunteer environments.

Second, data collection occurred in 2022 during the COVID-19 pandemic, which significantly disrupted volunteering in Australia. Older adults faced heightened health risks and limited opportunities due to facility closures and restrictions (Biddle & Gray, 2020, 2021). As a result, some participants may have been unable to engage in their usual volunteer roles, or their roles may have changed in ways that do not reflect typical volunteer experiences. For instance, while physical demands may have been less relevant due to fewer in-person activities, social support may have become more critical for well-being, as pandemic-related social distancing restricted other social interactions. This shift could have amplified or altered the perceived benefits of certain volunteering characteristics, limiting the generalisability of the findings beyond the pandemic context. Additionally, COVID-related restrictions may help to explain our findings that healthier adults reported lower life

satisfaction in relation to equipment use, as some organisations may have shifted to virtual service delivery, requiring volunteers to navigate unfamiliar technologies.

Finally, this study did not account for the specific types of volunteer roles in which older adults participated. While we examined general characteristics of the volunteer environment (e.g., social support, task variety), we did not explore how different activity types, such as mentoring, administrative support, or community outreach, might uniquely impact well-being. Future research could deepen understanding by investigating how different types of volunteer roles uniquely influence well-being outcomes among older adults.

This study also offers several strengths that enhance our understanding of volunteering and well-being in older adults. First, by using the Work Design Questionnaire (WDQ; Morgeson & Humphrey, 2006), a multi-item, multi-dimensional measure of work characteristics, we provide a more comprehensive and precise identification of the aspects of volunteering that relate to well-being. Unlike previous studies relying on single-item measures to assess broad domains, our approach allowed for a more nuanced investigation. For example, rather than treating “mental activity” as a single construct, we identified that problem-solving, rather than general cognitive engagement, was particularly beneficial for volunteers with poorer functional health. Similarly, our findings highlighted that social support, rather than mere social interaction, was the strongest predictor of well-being, emphasising the importance of fostering meaningful, supportive relationships in volunteer roles. By exploring a wider range of volunteering characteristics, volunteer organisations have the potential to implement more tailored roles to enhance the well-being of older volunteers. Second, the study goes beyond prior research by examining physical functioning as a moderator, revealing how volunteer roles may serve different functions depending on an individual’s health. For instance, while social support appeared universally beneficial, roles that provided autonomy and problem-solving opportunities were especially valuable for individuals with functional limitations.

2.5 Conclusions

This study provides important contributions to our understanding of how the characteristics of volunteer roles impact well-being in older adulthood and highlights the significance of social support and work conditions as key facilitators of positive psychological outcomes. Additionally, it underscores the nuanced role that task and knowledge characteristics play in supporting well-being among volunteers with poorer functional health. These findings have direct implications for volunteer organisations seeking to design roles that maximise well-being benefits for older adults. Specifically, organisations should prioritise opportunities for social connection by fostering structured, meaningful interpersonal interactions (i.e., through team-based volunteering, mentorship programs, and peer support networks), preferably in welcoming, hazard-free physical environments. Additionally, ensuring that volunteer roles provide decision-making autonomy and cognitive engagement, particularly for individuals with functional limitations, may help counteract some of the psychological challenges associated with physical decline. Offering flexible task execution, leadership opportunities, and problem-solving responsibilities could enhance autonomy and competence, thereby improving the volunteer experience for older adults.

Future research should build on these findings by adopting longitudinal designs to better establish causal relationships between volunteering characteristics and well-being over time. Additionally, studies should explore how different types of volunteer activities (e.g., environmental work, charity-based volunteering, or educational roles) uniquely influence well-being and whether the benefits of volunteering persist across different cultural and socioeconomic contexts. Given the rapid ageing of the global population and the increasing reliance on volunteer contributions, continued research in this area is essential for informing policies and practices that support older adults' engagement in fulfilling and sustainable volunteer roles. By aligning volunteer opportunities with older adults' psychological and functional needs, organisations can not only enhance individual well-being but also strengthen the broader social and community impact of volunteerism.

CHAPTER 3

PERCEPTIONS OF AGEING AND VOLUNTEERING IN LATE LIFE: THE ROLE OF AWARENESS OF AGE-RELATED GAINS AND LOSSES ON VOLUNTEERING BEHAVIOUR

3.1 Introduction

As global populations age, there is growing interest in understanding the factors that promote healthy ageing (Rudnicka et al., 2020). One emerging area of research focuses on subjective ageing, or how individuals perceive and experience their own ageing process (Diehl et al., 2014). Subjective ageing has been linked to various health outcomes for older adults, including cognitive and emotional well-being, functional health, preventive health behaviours, and even mortality (see Kornadt & Rothermund, 2015). However, much less is known about how these perceptions influence older adults' engagement in prosocial behaviours, such as volunteering. Given the potential for volunteering to provide social, psychological, and physical benefits in later life (Morrow-Howell, 2010; Morrow-Howell et al., 2009), understanding how subjective perceptions of ageing may influence volunteering behaviour is increasingly important. This study will be the first to examine how subjective perceptions of ageing, framed through Awareness of Age-Related Change (AARC; Diehl & Wahl, 2010), are associated with both individual differences in levels of volunteering and changes in volunteering over 12 months during the COVID-19 pandemic.

3.1.1 Subjective Ageing

Subjective ageing, which refers to individuals' perceptions and experiences of their own ageing process (Diehl et al., 2014), has been a focal point of gerontological research for some time. It is part of a broader framework known as 'views on ageing', which encompasses generalised assumptions about older individuals (age stereotypes), broader societal beliefs about the ageing process (ageing stereotypes), and personal views on one's own ageing journey, including current self-perceptions and anticipated future selves (Kornadt & Rothermund, 2015). Views on ageing influence societal attitudes and behaviours towards older adults, shaping stereotypes and contributing to discrimination based on age. Importantly, these societal views are not just external pressures; they can be internalised, leading individuals to adopt these stereotypes as part of their self-concept. This process, known as self-stereotyping, affects how people perceive their own ageing, influencing their attitudes, behaviours, and even health outcomes, including life satisfaction and mortality

(Kornadt & Rothermund, 2015). For example, someone with pessimistic views about their future health might anticipate future losses in functional capacity and, in turn, be less likely to commit to a volunteering role compared with someone who holds more positive views about their health.

3.1.2 Awareness of Age-Related Change

Contemporary perspectives on subjective perceptions of ageing are increasingly grounded in the awareness of age-related change (AARC; Diehl & Wahl, 2010) framework. AARC refers to “all experiences that make an individual aware that their behaviour, level of performance, or ways of experiencing life have changed as a consequence of having grown older” (Diehl & Wahl, 2010, p. 340). Unlike earlier unidimensional constructs measuring subjective ageing that merely asked individuals how old they feel, AARC captures perceptions of both positive (AARC-gains) and negative (AARC-losses) changes across five life domains: health and physical functioning, cognitive functioning, interpersonal relationships, social-cognitive and social-emotional functioning, and lifestyle and engagement. The multidimensional AARC perspective recognises that perceptions of ageing are not uniformly positive or negative but vary depending on the context and life domain. For example, in the engagement domain, individuals might simultaneously endorse an indicator of AARC-gains, such as “I have more freedom to live my days the way I want”, while also acknowledging an AARC-losses indicator, such as “I have limits to my activities”. This coexistence of gains and losses within the same domain adds further nuance to our understanding of how people experience ageing (Diehl et al., 2021; Sabatini et al., 2020). The distinction between AARC-gains and AARC-losses is central to the present study, which examines whether these perceptions of ageing influence volunteering behaviour over time.

3.1.2.1 Awareness of Age-Related Change: Theoretical Perspectives

Diehl and Wahl's (2010) concept of awareness of age-related change aligns with broader lifespan perspectives on self-regulation that provide a conceptual framework for linking subjective ageing with volunteering behaviour. Specifically, one's perceptions regarding their own ageing are likely to influence how goals are selected and how resources

(e.g., time, energy, and financial resources) are managed to facilitate goal attainment. For instance, Brandtstädter and Rothermund (2002) dual-process model emphasises that effective self-regulation requires a dynamic balance between persistence in goal striving (assimilation) and flexible goal adjustment (accommodation). This interplay allows individuals to navigate the tension between maintaining valued goals and adapting to age-related changes. Importantly, subjective perceptions of ageing influence self-regulation by shaping how individuals prioritise and pursue their goals (Diehl & Wahl, 2010). Positive perceptions, such as AARC-gains, are likely to enhance assimilative strategies by promoting optimism, resilience, and goal persistence. Conversely, negative perceptions, such as AARC-losses, can reduce motivation and increase the likelihood of disengagement without the subsequent re-engagement with new goals. This is supported by Wilton-Harding and Windsor (2022), who found that individuals with more negative awareness of ageing tended to perceive a more limited future time perspective, which in turn was associated with a reduced likelihood of adjusting their goals in response to age-related constraints. Their findings suggest that those who perceive greater AARC-losses may be less well-equipped to maintain engagement in valued activities, including volunteering.

Taken together, we might expect that AARC operates through processes of self-regulation to influence volunteering behaviour. Specifically, individuals who perceive more AARC-gains may be more likely to maintain their volunteering engagement over time, whereas those with greater AARC-losses may be more prone to reducing their involvement or disengaging altogether when faced with challenges. The present study examines these associations by investigating whether AARC-gains and AARC-losses predict both baseline levels of volunteering and changes in volunteering over a 12-month period during post-pandemic recovery.

3.1.2.2 Awareness of Age-Related Change and Health Behaviours

Research increasingly supports the connection between positive perceptions of ageing and engagement in health-promoting behaviours. For instance, Levy and Myers (2004) found that adults aged 50 to 80 with more positive self-perceptions of ageing were

more likely to engage in preventive health behaviours compared to those with less positive perceptions. This association remained significant even after controlling for age, gender, education, and functional health. Similarly, Windsor et al. (2022) found that among adults aged 65 to 91, AARC-gains were associated with higher activity participation and greater engagement with life, whereas AARC-losses were linked to lower engagement. Collectively, these findings suggest that positive perceptions of ageing, such as AARC-gains, may encourage health-related behaviours and engagement in meaningful activities as people age; however, studies in this area to date are mostly limited to cross-sectional designs.

Despite the growing evidence linking AARC to health outcomes and health behaviours, its influence on prosocial behaviours, like volunteering, remains underexplored. Volunteering in later life can foster a sense of purpose, social connection, and well-being (see, e.g., Morrow-Howell, 2010), making it important to understand how subjective ageing may impact this behaviour. Given the established relationship between positive perceptions of ageing and greater engagement in health-promoting behaviours and engagement with life (Levy & Myers, 2004; Windsor et al., 2022), similar patterns are expected in the context of volunteering. Specifically, we anticipate that after controlling for social-contextual (e.g., employment status, partner status) factors and individual difference factors (e.g., health) that could influence volunteering behaviour, AARC-gains will be associated with higher levels of volunteering, as positive perceptions may enhance feelings of competence and capability. Conversely, AARC-losses may be associated with lesser volunteering engagement, as individuals who perceive greater losses may feel less capable of making a reliable, sustained volunteer contribution.

3.1.3 Changes in Volunteering in the Wake of COVID-19 Disruption

This association between AARC and volunteering became particularly relevant in the context of the COVID-19 pandemic, which significantly altered the landscape of volunteering in Australia. Rates of volunteering dropped sharply and remained below pre-pandemic levels through 2022 (Volunteering Australia, 2024). This was particularly true among older adults facing higher health risks and limited opportunities due to service closures and restrictions

(Biddle & Gray, 2020, 2021). In the present study, this disruption provided a valuable historical context for examining how perceptions of ageing were associated with changes in volunteering activity among Australians. For example, those with higher AARC-gains may have been more likely to resume volunteering as restrictions eased, viewing themselves as more resilient and capable (and drawing on self-regulatory resources), whereas individuals with higher AARC-losses may have felt more vulnerable and less inclined to return or re-engage at pre-pandemic levels.

3.1.4 The Present Study

This study uses a latent growth modelling approach to examine how individuals' perceptions of their own ageing, specifically their awareness of age-related gains and losses, relate to individual differences in levels of volunteering (assessed as the average number of hours spent volunteering per week), and longitudinal rates of change in volunteering over a 12-month period in the aftermath of the COVID-19 pandemic. We hypothesise that AARC-gains will be associated with higher initial levels of volunteering and increases in volunteering over time, during the post-COVID-19 recovery period. In contrast, we expect AARC-losses to be associated with lower initial levels of volunteering and greater declines in volunteering (or less increase) over time. We also anticipate an interaction effect, where the negative associations of AARC-losses with the outcome variables, including COVID-19 disruption, will be weaker among individuals with higher AARC-gains.

We controlled for several covariates that may influence both volunteering behaviour and perceptions of ageing. Consistent with previous research on AARC (e.g., Windsor et al., 2022; Windsor & Wilton-Harding, 2024), analyses controlled for age, gender, and employment status. Physical functioning was also controlled for, as poorer health has been associated with greater AARC-losses, which may reduce the capacity to volunteer (Kleinspehn-Ammerlahn et al., 2008).

Finally, the extent of general perceived disruption caused by the COVID-19 pandemic was also entered as a predictor, recognising regional differences in lockdown across different parts of Australia and the extent to which personal health concerns could

relate to both AARC and the priority given to social distancing during the pandemic (Biddle & Gray, 2020, 2021). We expected that those reporting greater COVID-19 disruption (averaged across all available assessments) would report lower engagement in volunteering, and a smaller increase in volunteering over time. We were also interested in whether AARC moderated the association between COVID-19 disruption and volunteering. Given the role of AARC-gains in facilitating effective self-regulation and goal re-engagement as described above, we expected that the negative effects of COVID-19 disruption would be weaker among those with higher AARC-gains, as they may be better equipped to overcome obstacles and adapt to changing circumstances. As a result, older adults with greater AARC-gains were expected to be more likely to maintain or increase their volunteering participation, leveraging positive self-perceptions to remain engaged despite post-pandemic challenges (Brandtstädter, 1999; Brandtstädter & Rothermund, 2002). Conversely, individuals with greater AARC-losses were expected to experience declines in volunteering, as negative perceptions of ageing could hinder motivation or perceived capacity to participate.

3.2 Methods

3.2.1 Study Design and Participants

Following approval from the Flinders University Human Research Ethics Committee (Project ID 5285), the study advertisement was distributed via (a) Flinders University's Generations Research Initiative participant database; (b) the South Australian Office for Ageing Well's feedback network; (c) eBulletins distributed to online networks predominantly comprising of older adults, such as Seniors Programs and Universities of the Third Age; and the Flinders University Facebook page. Individuals aged 60 and older were invited to participate in a 20-minute online survey via Qualtrics, examining volunteering and well-being among older adults. Advertisements emphasised that participation in the survey was open to current volunteers, former volunteers, and those who had never volunteered.

A total of 1,054 participants were recruited at baseline (Time 1). Of those recruited, 517 were excluded due to missing data on 80% or more of key study variables. An additional 23 participants were excluded for not meeting the minimum age requirement (14) or due to

duplicate entries (9). This resulted in a final sample of 514 participants at Time 1.

Participants were then invited to complete follow-up surveys 6 and 12 months after Time 1.

At Time 1, 421 participants consented to follow-up, with 255 participants completing the 6-month follow-up (Time 2) and 145 participants completing the 12-month follow-up (Time 3).

Participants were not directly compensated for their involvement. However, donations of up to \$500 per data collection period were made to selected charities based on the number of participants recruited. Charities included organisations such as the Australian Red Cross, The Smith Family, WIRES Wildlife Rescue, and others.

At Time 1, participants were aged between 60 and 90 ($M = 70.57$, $SD = 5.98$), with most participants being female (80.2% female; 19.8% male; 0% nonbinary). Most participants completed tertiary education (81.7%), were partnered (65.6%) and were not currently in the labour force (85.6%). The average physical functioning score was 79.10 ($SD = 21.09$) on a scale of 0 to 100, where 100 indicates optimal functioning, suggesting that participants generally reported relatively high physical functioning. A substantial proportion of participants were active volunteers (78.2%), with an average volunteering rate of 8.81 hours per week, surpassing the South Australian average of 19.5 hours per month (Volunteering SA&NT, 2023). To maintain consistency and comparability in the analysis, volunteering hours were capped at 40 per week for participants who reported more than 40 hours, as this exceeds the threshold for full-time work. This adjustment was made to minimise the influence of extreme outliers on the results. See Table 9 for additional demographic information about the sample.

Table 9

Baseline Demographic Characteristics of 'Volunteering and Well-Being in Older Adulthood' Survey Participants

Characteristics		$N = 514$
Volunteering hours	Mean (SD)	8.81 (9.99)
Age (Years)	Mean (SD)	70.57 (5.98)

Gender (<i>n</i> , %)	Male	102 (19.8)
	Female	412 (80.2)
Education (<i>n</i> , %)	Did not complete tertiary education	94 (18.3)
	Completed tertiary education	420 (81.7)
Relationship status (<i>n</i> , %)	Partnered	337 (65.6)
	Not partnered	177 (34.4)
Employment status (<i>n</i> , %)	In the labour force	74 (14.4)
	Not in the labour force	440 (85.6)
Volunteer status (<i>n</i> , %)	Active volunteer	402 (78.2)
	Temporarily paused due to COVID-19	28 (5.4)
	Permanently stopped due to COVID-19	5 (1.0)
	Former volunteer (non-COVID reasons)	58 (11.3)
	Never volunteered	21 (4.1)
Physical functioning	Mean (SD)	79.10 (21.09)
AARC-gains	Mean (SD)	20.52 (3.02)
AARC-losses	Mean (SD)	10.18 (3.40)
COVID-19 disruption ^a	Mean (SD)	3.89 (1.19)

Note. N = 403 total participants. (SD) = Standard Deviation.

^a Reflects the average hours volunteered per week over the past month.

Attrition analyses revealed no significant differences on key study measures between participants who dropped out after Time 1 and/or Time 2 and those who completed all assessments. Detailed attrition statistics are provided in Appendix K.

3.2.2 Measures

Awareness of Age-Related Change (AARC). AARC was assessed using the Awareness of Age-Related Change 10-item Short-Form (AARC-10 SF; Kaspar et al., 2019). The AARC-10 SF focuses on how adults' self-perceptions of ageing result in an awareness of age-related gains and losses. The measure consists of two 5-item subscales assessing awareness of gains (AARC-gains) and losses (AARC-losses) across five behavioural

domains: health and physical functioning, cognitive functioning, interpersonal relations, social–cognitive and social-emotional functioning, and lifestyle and engagement (Diehl & Wahl, 2010). Participants were provided with the stem, “With my increasing age, I realise that...” and responded to items regarding how their life may have changed as a result of growing older (see Table 10 for example items). Scores for each subscale were summed, with higher scores indicating greater AARC-gains and AARC-losses, respectively. The AARC-10 SF has demonstrated good reliability for both perceived gains ($\omega = .72$) and losses ($\omega = .80$). The measure also showed concurrent and discriminant validity when correlated with established subjective ageing measures, well-being, and health outcomes (Kaspar et al., 2019).

Table 10

Descriptions and Sample Items for the Awareness of Age-Related Change Short-Form

Behavioural domains	Descriptions	AARC-Gain Example Item	AARC-Losses Example Item
Health and physical functioning	Perceived changes related to health, and physical functioning.	I pay more attention to my health.	I have less energy.
Cognitive functioning	Perceived changes relative to all cognitive processes and abilities.	I have more experience and knowledge to evaluate things and people.	My mental capacity is declining.
Interpersonal relations	Perceived changes in social relationships, interactions, and communication.	I appreciate relationships and people much more.	I feel more dependent on the help of others.
Social-cognitive and social-emotional functioning	Perceived changes that related to the ageing self and the emotional domain.	I have a better sense of what is important to me.	I find it harder to motivate myself.

Lifestyle and engagement	Perceived changes related to overall behaviour in daily life.	I have more freedom to live my days the way I want.	I have to limit my activities.
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Note. Behavioural domain descriptions were taken from “Awareness of Age-Related Change: Examination of a (Mostly) Unexplored Concept” by M. K. Diehl and H. W. Wahl, 2010, *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65(3), p. 3403. (<https://doi.org/10.1093/geronb/gbp110>). Copyright 2009 by Oxford University Press.

Volunteering Behaviour. Participants were asked to report their volunteering status at each stage of data collection, with response options including currently volunteering, temporarily paused due to COVID-19, permanently discontinued due to COVID-19, previously volunteered but discontinued for non-COVID-19 reasons, or never formally volunteered. Given our analysis is framed within the context of COVID-19, at Time 1, 6.4% of participants reported pausing or permanently discontinuing their volunteering due to the pandemic. This percentage decreased to 2.9% by Time 2, and by Time 3, only 0.8% of participants reported that their volunteering had been paused or discontinued because of COVID-19. Those who responded “currently active as a volunteer” were asked a series of additional questions about their volunteering behaviours. The number of volunteer positions was assessed by asking participants, “How many volunteer positions are you currently active in?”. Time spent volunteering was measured with the question, “Thinking about the past month, on average, how many hours per week did you volunteer?”.

COVID-19 Disruption. Given the ongoing impact of the COVID-19 pandemic during our study (Time 1: May 2022, Time 2: November 2022, Time 3: May 2023), we included a measure to assess COVID-19-related disruption at each data collection point. COVID-19 disruption was assessed using a single-item measure: “The current situation with COVID-19 has been disruptive to your life”, rated on a 5-point Likert scale (1 = Disagree, 2 = Slightly disagree, 3 = Neither agree nor disagree, 4 = slightly agree, 5 = Agree). This measure aligns with approaches used in previous studies conducted during the same period (e.g., see

Knepple Carney et al., 2021). We calculated an average score across all available assessments (person mean) to capture individual differences in overall levels of perceived disruption due to COVID-19 across the study period.

Covariates. Consistent with prior research on the associations between awareness of age-related change and health and well-being outcomes (see, Kleinspehn-Ammerlahn et al., 2008; Windsor et al., 2022; Windsor & Wilton-Harding, 2024), all analyses controlled for Time 1 chronological age, gender (0 = male, 1 = female), education (0 = no tertiary education, 1 = completed tertiary education), time-varying relationship status (0 = partnered, 1 = not partnered), employment status (0 = in labour force, 1 = not in labour force), and mean-centred physical functioning. Physical functioning was measured using the 10-item physical functioning subscale from the RAND 36-item Health Survey (Hays et al., 1993). Participants rated the extent to which their health limits their ability to participate in certain activities (e.g., lifting groceries, walking several blocks) on a 3-point scale, ranging from “no, not limited at all” to “yes, limited a lot”. Scores were summed to create an overall physical functioning score, with higher scores indicating better physical functioning.

3.2.3 Statistical Analysis

A latent growth model (LGM; McArdle & Bell, 2000) was used to assess the relationship between AARC-gains and AARC-losses with both the initial levels (intercept) and the rates of change (slope) in volunteering over time. First, a variance components model with a random intercept was used to assess the proportion of variance in volunteering hours at both the between-person and within-person levels. The results revealed 60.53% of the variance in volunteer hours occurring between-person and 39.97% within-person, indicating differences in volunteering hours between participants as well as fluctuations in individuals' volunteering behaviour over the study period. We then fitted an unconditional growth model by including time in study (defined as months elapsed since baseline [Time 1] coded as 0, 6, and 12) as a predictor. In this model, the regression coefficient for time represents the average monthly change in volunteering hours over the one-year study interval. Next, conditional growth models were fitted including covariates (i.e., age, gender,

employment, relationship status, physical functioning and COVID-19 disruption) as predictors of both the intercept and slope for volunteer hours. Finally, baseline AARC-gains and AARC-losses scores were included as time-invariant predictors of both the intercept and slope. To explore interaction effects, additional models were fitted to assess the AARC-gains x AARC-losses interaction, and whether AARC-gains and AARC-losses moderated associations of COVID-19 disruption with levels, and rates of change in volunteering hours. Predicted values of volunteering hours at varying levels of the predictors ($M \pm 1 SD$) were plotted to illustrate the nature of interaction effects.

Participants who reported volunteering more than 40 hours per week ($N = 14$) had their score truncated at 40, given that this exceeds the standard number of hours in the typical full-time working week. Continuous predictor variables were mean-centred.

3.3 Results

3.3.1 Descriptive Statistics

On average, participants reported a gradual decline in volunteering over time. At Time 1, participants volunteered an average of 8.81 hours per week ($SD = 9.99$), which decreased to 8.16 hours at Time 2 ($SD = 9.33$), and further to 7.82 hours at Time 3 ($SD = 9.01$). Regarding AARC-gains and AARC-losses, at Time 1, participants reported moderate to high levels of AARC-gains ($M = 20.52$, $SD = 3.02$) and low levels of AARC-losses ($M = 10.18$, $SD = 3.40$). At Time 1, COVID-19 disruption had an average score of 3.89 ($SD = 1.19$), suggesting that, on average, participants experienced slight disruption due to the pandemic.

Table 11*Pearson Correlations for the 'Volunteering and Well-Being in Older Adulthood' Study Variables at Baseline*

Variables	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Gender (Female)	-.201**	-								
3. Education (Tertiary)	-.040	-.021	-							
4. Employment (Not in labour force)	.266**	-.037	-.079	-						
5. Relationship (Not partnered)	.092*	.124**	.015	-.041	-					
6. Physical functioning	-.231**	.030	.159**	-.051	-.089*	-				
7. AARC-gains	.018	.063	-.036	.104*	.112*	.051	-			
8. AARC-losses	.162**	-.072	-.068	.076	.054	-.592**	-.203**	-		
9. COVID-19 disruption	-.064	-.062	.105*	-.084	-.119**	-.080	-.061	.133**	-	
10. Volunteering hours	-.002	-.147**	-.104*	.016	-.018	-.002	-.009	-.052	-.105*	-

Notes. $N = 514$, AARC gains = Awareness of Age-Related Gains. AARC losses = Awareness of Age-Related Losses. * $p < .05$., ** $p < .01$.

Table 11 presents the intercorrelations among key study variables and covariates. AARC-gains was weakly and negatively correlated with AARC-losses, indicating that participants who reported greater awareness of age-related gains tended to report fewer age-related losses. AARC-gains showed a weak positive association with being out of the labour force and not being in a partnered relationship. Strong negative correlations between AARC-losses and physical functioning suggest that those reporting poorer physical functioning tended to report greater awareness of age-related losses. Additionally, volunteering hours were weakly and negatively correlated with gender and education, with women and those with higher education reporting slightly fewer volunteering hours at baseline compared with men and those with less education respectively.

3.3.2 Unconditional Growth Model for Volunteering

An unconditional growth model was fitted to examine changes in volunteering across the study period. Time was included as a predictor to estimate the average level of volunteering hours at baseline (intercept), rates of change in volunteering over the study interval (slope) and individual differences in levels (variance of the intercept) and rates of change (variance of the slope). As can be seen in Table 12, the effect of time (slope) was not significantly different from zero, indicating no overall pattern of increase or decrease in volunteering over the study interval in the sample. However, including a random slope for time in the model (and the intercept-slope covariance) resulted in a significant improvement in model fit ($\chi^2(3) = 180.41, p < 0.001$), indicating substantial individual differences in rates of change in volunteer hours.

Table 12

Unconditional Growth Model with Time Included as a Predictor of Volunteering Behaviour

Volunteering hours	Coefficient	SE	<i>p</i> -value	95% CI
Time ^a	-.06	.06	.267	-.17, .05
Intercept ^b	8.79	.44	.000	7.93, 9.65
Variance components				
Intercept	69.56	.10		57.09, 84.77

Slope (time)	.20	.10	.07, .55
Covariance Intercept-Slope	-1.85	.68	-3.18, -.51
Residual	31.07	3.61	24.74, 39.01

Notes. SE = Standard error. 95% CI = 95% Confidence interval.

^a Time slope = average change in weekly volunteering hours with every one month increase across the study interval.

^b Intercept = average volunteer hours at Time = 0.

3.3.3 Conditional Growth Models – Associations of Covariates and AARC with Volunteering

Covariates (i.e., age, gender, employment, relationship status, physical functioning, COVID-19 disruption) were included in the model as predictors of the intercept and slope. As shown in Table 13, several predictors were associated with the intercept (level) for volunteering. Gender was negatively associated with volunteering hours, with women volunteering fewer hours on average than men. Education was also negatively associated with volunteering hours, with those more educated volunteering less hours overall than those with lower educational levels. COVID-19 disruption had a significant negative association with volunteering hours, with participants who reported more COVID-19 disruption doing less volunteering overall.

None of the associations of the covariates with rates of change in volunteering were significant (see interactions with Time). There was, however, a trend indicating that those who were tertiary educated showed less decline in volunteering over the study period compared with those without a tertiary education.

Table 14 also shows associations of AARC-gains, AARC-losses and COVID-19 disruption with the intercept and slope of volunteer hours, which provided the key information in relation to our hypothesis tests. Consistent with predictions, AARC-losses was negatively associated with the intercept, indicating that those with greater awareness of age-related losses spent less time volunteering. However, contrary to predictions, AARC-losses was not

associated with rates of change in volunteering. Also contrary to expectations, AARC-gains was not associated with levels or rates of change in volunteering. The interaction of AARC-gains with AARC-losses was also not significantly associated with the intercept or slope (not shown). COVID-19 disruption was negatively associated with the intercept, showing that those reporting more COVID-related disruption also reported doing less volunteering overall.

Table 13

Conditional Growth Model with Time and Covariates as Predictors of Volunteering Behaviour

Variables	Coefficient	SE	<i>p</i> -value	95% CI
Age	-.08	.08	.308	-.23, .07
Time ^a	-.35	.19	.064	-.73, .02
Age x Time	.00	.01	.694	-.02, .02
Gender (Female)	-2.75	1.12	.014	-4.94, -.56
Gender x Time	.05	.14	.739	-.23, .32
Education (Tertiary)	-2.97	1.15	.010	-5.23, -.71
Education x Time	.30	.16	.058	-.01, .61
Physical functioning	.02	.02	.280	-.02, .07
Physical functioning x Time	.00	.00	.891	-.00, .01
COVID-19 disruption	-.85	.39	.027	-1.61, -.10
COVID-19 x Time	-.00	.05	.931	-.10, .09
Employment (Not in labour force)	-.60	1.06	.571	-2.69, 1.48
Relationship (Not partnered)	.18	.84	.834	-1.47, 1.83
Intercept ^b	13.89	1.68	.000	10.59, 17.19
Variance components				
Intercept	66.63	6.85		54.47, 81.51
Slope (Time)	.19	.10		.07, .54
Covariance Intercept-Slope	-1.80	.67		-3.11, -.48
Residual	30.90	3.60		24.60, 38.82

Notes. SE = Standard error. 95% CI = 95% Confidence interval.

^a Time slope = average change in weekly volunteering hours with every one month increase across the study interval.

^b Intercept = average level of volunteer hours at values of zero on the predictors.

Table 14

Conditional Growth Model with Time, Covariates and AARC as Predictors of Volunteering Behaviour

Variable	Coefficient	SE	<i>p</i> -value	95% CI
Age	-.08	.08	.312	-.23, .07
Time ^a	-.37	.19	.058	-.75, .01
Age x Time	.00	.01	.658	-.02, .02
Gender (Female)	-2.89	1.12	.010	-5.08, -.71
Gender x Time	.05	.14	.709	-.23, .33
Education (Tertiary)	-2.93	1.15	.011	-5.18, -.68
Education x Time	.31	.16	.049	.00, .63
Physical functioning	-.01	.03	.658	-.06, .04
Physical functioning x Time	.00	.00	.694	-.01, .01
COVID-19 disruption	-.80	.39	.039	-1.56, -.04
COVID-19 x Time	-.01	.05	.820	-.11, .09
AARC-gains	-.06	.15	.688	-.35, .23
AARC-gains x Time	-.02	.02	.359	-.05, .02
AARC-losses	-.38	.16	.019	-.70, -.06
AARC-losses x Time	.01	.02	.693	-.03, .05
Employment (Not in labour force)	-.33	1.07	.759	-2.43, 1.77
Relationship (Not partnered)	.26	.84	.762	-1.40, 1.91
Intercept ^b	13.72	1.69	.000	10.42, 17.03
Variance components				
Intercept	65.87	6.82		53.77, 80.70
Slope (Time)	.19	.10		.07, .54
Covariance Intercept-Slope	-1.80	.67		-3.11, -.49

Residual	30.91	3.60	24.60, 38.84
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Notes. SE = Standard error. 95% CI = 95% Confidence interval.

^a Time slope = average change in weekly volunteering hours with every one month increase across the study interval.

^b Intercept = average level of volunteer hours at values of zero on the predictors.

Finally, interactions of COVID-19 disruption with AARC losses and AARC gains were tested. The interaction between COVID-19 disruption and AARC-losses was not a significant predictor, and COVID-19 disruption x AARC-gains was not associated with rates of change in volunteering; however, there was a trend towards an interaction in the prediction of the intercept (see Table 15). The nature of the interaction is displayed in Figure 7. Here, it can be seen that for individuals with lower levels of AARC-gains (1 SD below the mean), COVID-19 disruption was associated with reduced volunteering hours. In contrast, for those with higher levels of AARC-gains (1 SD above the mean), there was no clear association of COVID-19 disruption with volunteering hours. This suggests that a greater awareness of age-related gains may have buffered against the negative impact of COVID-19 disruption on volunteering hours.

Table 15

Moderating Effect of AARC-Gains and COVID-19 Disruption on Volunteering Behaviour

Variable	Coefficient	SE	<i>p</i> -value	95% CI
Fixed Effects				
Age	-.08	.08	.304	-.23, .07
Slope ^a (Time)	-.37	.19	.054	-.74, .01
Age x Time	.00	.01	.655	-.02, .02
Gender (Female)	-2.85	1.12	.011	-5.05, -.66
Gender x Time	.05	.14	.701	-.22, .33
Education (Tertiary)	-2.95	1.15	.010	-5.20, -.69
Education x Time	.31	.16	.050	.00, .62
Physical functioning	.03	.02	.239	-.02, .07

Physical functioning x Time	.00	.00	.847	-.00, .01
COVID-19 disruption	-.96	.39	.014	-1.72, -.20
COVID-19 x Time	-.01	.05	.899	-.11, .09
AARC-gains	-.02	.13	.876	-.28, .24
COVID-19 disruption x AARC-gains	.20	.11	.078	-.02, .42
Employment (Not in labour force)	-.64	1.07	.549	-2.73, 1.45
Relationship (Not partnered)	.18	.84	.831	-1.47, 1.84
Intercept ^b	14.05	1.69	.000	10.74, 17.37
Variance components				
Intercept	65.66	6.81		53.58, 80.47
Slope	.19	.10		.07, .54
Covariance Intercept-Slope	-1.79	.67		-3.10, -.49
Residual	30.94	3.60		24.62, 38.87

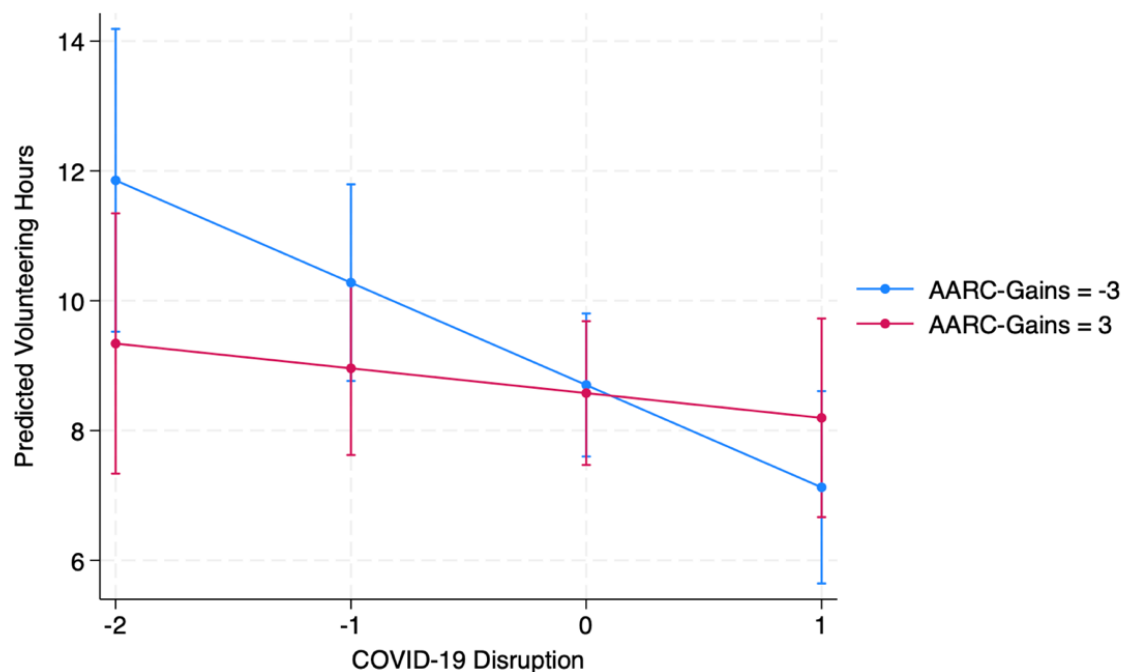
Notes. SE = Standard error. 95% CI = 95% Confidence interval.

^a Time slope = average change in weekly volunteering hours with every one month increase across the study interval.

^b Intercept = average level of volunteer hours at values of zero on the predictors.

Figure 7

Interaction between COVID-19 Disruption and AARC-Gains on Volunteering Behaviours Over Time



Note. Points plotted indicate predicted values for volunteer hours (with 95% CIs) for those scoring higher (M +1 SD) and lower (M -1 SD) on AARC-gains across (centred) values of COVID-19 disruption.

3.4 Discussion

This study advances knowledge of how subjective perceptions of ageing relate to prosocial engagement by being the first to examine the role of awareness of age-related change in predicting both general levels of volunteering and rates of change in volunteering over a 12-month period. The study provides a further unique historical lens on the role of subjective ageing in processes of adaptation, having been conducted during the COVID-19 pandemic. Our findings showed substantial individual differences in rates of change in volunteering, but no evidence for an overall increase or decrease over the 12-month study interval. AARC-losses were linked to lower baseline levels of volunteering, suggesting that individuals with more negative perceptions of ageing were less likely to volunteer initially. However, contrary to expectations, neither AARC-gains nor AARC-losses were significantly

associated with changes in volunteering over time. While AARC-gains did not significantly predict volunteering behaviour, a trend suggested that higher AARC-gains may have buffered the impact of COVID-19 disruption on volunteering among older adults.

Our findings partially align with the broader literature on subjective ageing and engagement in health-related behaviours. The observed negative association between AARC-losses and baseline levels of volunteering is consistent with research linking subjective ageing to lower engagement in preventive health behaviours. For example, Levy and Myers (2004) found that older adults with more positive ageing perceptions were significantly more likely to engage in preventive health behaviours, such as maintaining a balanced diet, regular exercise, and medication adherence, than those with less positive self-perceptions. Building on these findings, Sabatini et al. (2020) suggested that individuals with higher AARC-losses may perceive age-related changes as physically limiting, leading them to reduce participation in health-related activities rather than adapt their behaviours to accommodate these changes. This perceived limitation may similarly contribute to lower participation in volunteering, as individuals with greater AARC-losses may withdraw from activities they perceive as challenging or demanding.

Another key finding of this study was the lack of a significant association between AARC and rates of change in volunteering over time, which suggests that subjective ageing was not a primary driver of changes in volunteering behaviour during the post-pandemic recovery period. Several explanations may account for this non-significant effect. First, substantial study attrition may have reduced statistical power (Pan et al., 2018), potentially limiting the ability to detect changes over the study period. However, given that the slopes for the relevant interactions were neither approaching significance nor in the expected directions, limited power alone is unlikely to explain the absence of an effect. Second, other individual differences, such as personality traits, may – via self-regulatory processes – play a stronger role in determining volunteering behaviour than subjective ageing. Extraversion and conscientiousness, for example, are consistently linked to higher volunteering engagement (Carlo et al., 2005; Ozer & Benet-Martínez, 2006), suggesting that individuals high in these

traits may be naturally more inclined to initiate and sustain volunteering activities through the effective management of engagement-related goals.

Third, and perhaps most compellingly, volunteering decisions in the post-pandemic period may have been more strongly influenced by external contextual factors rather than intra-individual factors such as subjective ageing. The COVID-19 pandemic caused widespread disruptions to volunteer opportunities, with organisations modifying roles, limiting in-person participation, or ceasing operations altogether, particularly in highly affected regions such as Victoria and New South Wales (Biddle & Gray, 2020, 2021). From this perspective, fluctuations in volunteering engagement may have been driven more by the availability of opportunities and structural constraints than by individual perceptions of ageing. This aligns with the Context Dynamics in Ageing (CoDA) framework proposed by Wahl and Gerstorf (2018), which emphasises the importance of considering broader contextual influences – such as policy changes, organisational structures, and macro-environmental factors – when examining behaviour in later life. Thus, while subjective ageing is relevant to self-regulatory processes, external structural factors may have played a dominant role in shaping volunteering trajectories during this unique historical period.

Contrary to expectations, the study did not find significant associations between AARC-gains and levels, or rates of change in volunteering, differing from previous research linking AARC-gains to greater leisure activity participation and engagement with life (Windsor et al., 2022). This may be due to several factors, including the unique challenges posed by the COVID-19 pandemic. The availability and accessibility of volunteering opportunities during the study period, particularly due to the ongoing effects of COVID-19, likely affected the relationship between AARC-gains and volunteering. Even if individuals perceived gains associated with ageing, external factors such as health risks, social distancing measures, and changes in the availability of volunteer roles may have limited their ability to act on these positive perceptions. Research shows that the pandemic significantly reduced volunteering rates, with nearly two-thirds of volunteers ceasing activities (Biddle & Gray, 2020). Even as restrictions eased in 2021, volunteering levels remained below pre-

pandemic rates for those aged 65 and over, suggesting that contextual barriers may have played a more significant role in influencing volunteering than individual perceptions of gains. While Windsor et al. (2022) also conducted their study during the COVID-19 pandemic, they focused on life engagement and leisure activities. It may be that individuals with higher AARC-gains are more adaptable, finding a sense of purpose in alternative activities to formal volunteering, when such opportunities are limited or deemed unsafe (Baltes & Baltes, 1990; Brandtstädter, 1999; Brandtstädter & Rothermund, 2002). This aligns with the Selective Optimisation with Compensation model (Baltes & Baltes, 1990), which suggests that individuals, particularly older adults, optimise their resources and adjust their goals in response to life changes, such as physical or environmental constraints.

Furthermore, the sample, consisting predominantly of healthy and educated older adults, had moderate-to-high levels of AARC-gains. This limited variability suggests a possible ceiling effect, which may have hindered the detection of associations between higher AARC-gains and increased volunteering over the study period. In other words, if most participants already perceived significant AARC-gains, these perceptions may not have meaningfully differentiated those who volunteered more from those who volunteered less.

The study also examined the interaction between AARC and COVID-19 disruption on volunteering behaviour, with a trend suggesting that AARC-gains may have buffered the impact of COVID-19 disruption on volunteer engagement among older adults. Older adults who perceive more age-related gains may better maintain resilience during external stressors, potentially due to greater psychological resources (e.g., self-efficacy) or effective use of adaptive strategies (selection, optimisation, and compensation) that mitigate the impact of disruptions (see Baltes & Baltes, 1990). While the interaction fell just short of the .05 criterion for significance, research has shown that tests of interactions, particularly in non-experimental studies, are often underpowered (Aguinis et al., 2013), making us reluctant to dismiss the interaction as a trivial or chance finding. That said, replication is clearly required. Although it may no longer be feasible to study the role of AARC as a resource for adaptation in the context of the pandemic, future research with larger, well-powered samples

may consider how AARC gains could exert a buffering effect in the context of other external threats (e.g., chronic illness, economic stressors, social isolation) to well-being or health behaviours in older adulthood.

3.4.1 Theoretical Implications

The findings offer some, albeit limited, support for the Selective Optimisation with Compensation model (Baltes & Baltes, 1990), which suggests that older adults adapt to age-related changes by prioritising meaningful activity goals and compensating for losses where necessary to sustain efforts towards goal attainment. The negative association between AARC-losses and volunteering suggests that perceived losses may hinder individuals' ability to effectively engage in compensatory strategies (e.g., finding an alternative volunteering opportunity during pandemic-related lockdowns), potentially leading to disengagement. Additionally, the trend toward a buffering role for AARC-gains aligns with theories highlighting the adaptive potential of positive ageing perceptions (Brandtstädter, 1999; Brandtstädter & Rothermund, 2002). However, the lack of consistent significant effects (and the absence of associations with trajectories of change in volunteering) suggests that positive perceptions alone may not be sufficient to overcome barriers posed by external disruptions like the COVID-19 pandemic. It is important to note that while these interpretations are theoretically grounded, they remain speculative given that these processes were not directly measured in the present study.

3.4.2 Practical Implications

The study's findings emphasise the need for targeted strategies to promote volunteering among older adults, particularly as volunteering rates rebound in the aftermath of the pandemic (Volunteering Australia, 2024). The observed association between greater AARC-losses and lower initial volunteering suggests that individuals who perceive more negative changes due to ageing face greater barriers to participation. Interventions aimed at helping individuals recognise their ageing-related strengths may be beneficial, particularly by leveraging the potential buffering effect of AARC-gains (Windsor et al., 2022). Additionally, individuals with higher AARC-losses may benefit from setting new goals that align with their

current perceived functioning, such as choosing volunteer roles with fewer physical or cognitive demands or those offering greater social support (Brandtstädter, 1999; Brandtstädter & Rothermund, 2002). Community organisations should prioritise flexible, adaptable volunteering opportunities that address the unique challenges older adults face. Offering shorter commitments and creating supportive environments could help reinvigorate volunteer engagement and encourage the return to social and prosocial activities that promote well-being and community resilience post-pandemic (Volunteering Australia, 2021).

3.4.3 Limitations and Future Directions

The findings of this study should be considered in light of several limitations. First, the sample was composed mostly of tertiary-educated women, and participants reported higher AARC-gains than AARC-losses. As a result, the sample may not be broadly representative of older populations, particularly marginalised groups who may experience ageing differently. Additionally, the timeframe of 12 months, while valuable for capturing short-term changes, may not provide sufficient insight into longer-term trends in volunteering behaviour. Furthermore, the COVID-19 disruption measure, being a single-item assessment, may not have fully captured the nuanced impact of the pandemic on individuals' lives, such as variations in social isolation, economic challenges, or changes in health status.

A further limitation is the substantial attrition over the study period, with the sample decreasing from 514 at baseline to 137 in the final wave. Although those who remained in the study did not show significant differences in health status at baseline compared to those who dropped out, it is possible that some attrition was driven by the onset of health issues or other life disruptions post-baseline. For instance, given that poor health is associated with greater AARC-losses (Sabatini et al., 2020, 2023) and lower engagement in volunteering (Dury et al., 2015), participants who experienced worsening health may have been more likely to disengage from both the study and volunteering. If those most vulnerable to declines in volunteering were disproportionately lost to follow-up, this may have led to an underestimation of actual declines in volunteering, thereby reducing our ability to detect significant associations between AARC and changes in volunteering behaviour over time.

Similarly, ongoing post-pandemic disruptions may have contributed to attrition in ways that selectively affected certain groups of participants. For example, individuals who faced increased caregiving responsibilities or employment changes as a result of the pandemic may have had less availability to continue participating in the study. If these same individuals were also at higher risk of decreasing or withdrawing from volunteering, this attrition pattern may have further weakened the power to detect reliable associations between our predictors and volunteering trajectories. Other potential contributors to attrition include participant fatigue from completing lengthy surveys, limited compensation, and external life stressors that reduce engagement.

Future studies should examine the potential buffering effects of AARC-gains, ideally with a more diverse sample that includes a range of educational and socioeconomic backgrounds. Extending the follow-up period beyond 12 months would allow for a more comprehensive understanding of the long-term effects of subjective ageing perceptions on volunteering behaviour. To address attrition-related biases, future studies should implement strategies to enhance participant retention, such as shorter surveys, increased incentives, or alternative data collection methods (e.g., interviews or passive tracking of volunteering activities). Additionally, qualitative research may provide richer insights into how older adults experience age-related changes and how these perceptions shape their motivations for engaging (or disengaging) in volunteering, particularly during periods of disruption or transition.

3.4.4 Conclusions

Overall, this study contributes to the growing body of research on how subjective perceptions of ageing influence engagement in health behaviours, particularly by being the first to explore the role of awareness of age-related change (AARC) in predicting volunteering behaviour during the COVID-19 pandemic. AARC-losses were significantly associated with lower baseline volunteering, suggesting that negative perceptions of ageing may act as barriers to higher levels of volunteer participation, with this association potentially exacerbated in the early stages of the pandemic. However, AARC was not associated with

rates of change in volunteering, possibly due to the stronger influence of stable individual differences, such as personality traits and self-regulatory capacities, or the overriding impact of external contextual factors, such as the availability of volunteer opportunities and pandemic-related disruptions. Although AARC-gains did not significantly predict volunteering, a trend suggested that higher gains may have buffered the impact of early pandemic-related disruptions. These results highlight the need for targeted strategies that address the challenges older adults face in volunteering, particularly those who perceive more age-related losses. Future research should consider a more diverse sample, longer follow-up periods, and the use of qualitative methods to deepen our understanding of how older adults experience age-related changes and their engagement in prosocial activities during times of uncertainty.

CHAPTER 4

VOLUNTEERING AND SUBJECTIVE WELL-BEING IN OLDER ADULTHOOD: THE MEDIATING ROLE OF BASIC PSYCHOLOGICAL NEEDS

4.1 Introduction

With an ageing population, there is an increasing focus on understanding the factors contributing to optimal functioning in later life to promote healthier and more fulfilling ageing (Lloyd-Sherlock et al., 2019). In this context, formal volunteering has emerged as a key area of research. Volunteering not only provides significant benefits to communities by fostering social networks and generating economic value (Australian Bureau of Statistics, 2020; Biddle et al., 2022), but is also consistently linked to enhanced subjective well-being (SWB) among older adults (a concept encompassing life satisfaction, happiness, and emotional positivity; Diener, 1984). However, despite decades of research supporting this association, the mechanisms underlying the relationship between volunteering and SWB remain underexplored. This study addresses this gap by employing a longitudinal mediation model, guided by Self-Determination Theory (SDT), to examine how volunteering may fulfil basic psychological needs – autonomy, competence, and relatedness – and thereby enhance subjective well-being.

4.1.1 Volunteering and Subjective Well-Being in Older Adulthood

The concept of well-being is complex and multifaceted. Broadly, well-being encompasses the potential for optimal human functioning and experience (Ryan & Deci, 2001). This paper specifically focuses on subjective well-being (SWB), which refers to an individual's self-evaluation of their own life, encompassing both emotional experiences and global judgments of life satisfaction (Diener, 1984). SWB is typically operationalised using measures of positive and negative affect, reflecting the presence of positive or negative emotions and experiences, and life satisfaction, which involves a cognitive assessment of one's overall life circumstances (Diener et al., 2009). Exploring SWB in older adulthood is particularly valuable, as research suggests it may be a protective factor for health, reducing the risk of chronic illness and promoting longevity (Steptoe et al., 2015).

A substantial body of research has demonstrated a positive association between volunteering and SWB. For instance, longitudinal analyses (e.g., Binder & Freytag, 2013; Meier & Stutzer, 2008) consistently show that regular volunteering is linked to higher life

satisfaction, even after controlling for socio-demographic factors, health, and prior well-being. However, some studies suggest reverse causality, proposing that individuals with higher life satisfaction are more likely to volunteer (Hansen et al., 2018). Research shows that volunteers also report higher levels of happiness and emotional positivity compared to non-volunteers (Gimenez-Nadal & Molina, 2015; Greenfield & Marks, 2004). While the link between volunteering and positive affect is well-documented, less attention has been given to its relationship with negative affect. Some evidence suggests that volunteering may reduce symptoms of depression and anxiety, particularly in older adults (Hong et al., 2009; Shen et al., 2013). However, other research suggests that volunteering does not necessarily prevent experiences of negative affect (Greenfield & Marks, 2004). Rather than acting as a buffer against all forms of distress, volunteering has been proposed to foster a sense of purpose and engagement, helping individuals navigate life challenges (Greenfield & Marks, 2004). In general, the literature supports a positive relationship between volunteering and positive aspects of subjective well-being. However, causal relationships remain difficult to establish, with some evidence pointing to reverse causality. Furthermore, while the current literature presents a convincing argument for the association between volunteering and well-being, the mechanisms underlying this association remain unclear.

Existing research highlights various psychological and social factors proposed to mediate the link between volunteering and subjective well-being, including self-esteem, self-efficacy, optimism, perceived control, and social connectedness. For instance, Brown et al.'s (2012) cross-sectional Australian study found that self-esteem, self-efficacy, and social connectedness were all significant mediators of the volunteering–well-being relationship, with social connectedness emerging as the strongest initial pathway. Their findings also suggested a multi-step mediation process, where self-esteem further mediates the effects of self-efficacy and connectedness on well-being. In contrast, Mellor et al.'s (2008) cross-sectional Australian study of adults aged 18 and over identified optimism and perceived control (i.e., one's ability to influence or manage events and life outcomes) as the primary mediators between volunteering and well-being, rather than self-esteem. Lastly, Pilkington et

al.'s (2012) study similarly highlighted the importance of social support in mediating the relationship between volunteering and well-being. Their cross-sectional study of older adults revealed that greater social support from friends and family partially explained the positive associations between volunteering, positive affect, and life satisfaction, emphasising the role of relationships in promoting well-being.

Overall, the evidence suggests that volunteering enhances subjective well-being through a combination of psychological and social pathways. However, the literature to date is limited by its reliance on cross-sectional designs. A significant body of research has shown that statistical mediation using cross-sectional data can misrepresent the causal relationships between variables (O’Laughlin et al., 2018). For instance, while volunteering may promote social connectedness, individuals with preexisting supportive networks are often more likely to engage in volunteering due to recruitment through friends or community groups (Paik & Navarre-Jackson, 2011). The potential for these bidirectional dynamics underscores the importance of longitudinal research to disentangle causality and enhance our understanding of the mechanisms linking volunteering and SWB. To address these limitations, the present study will employ a longitudinal mediation model, assessing key variables at three time points over a 12-month period.

4.1.2 Self-Determination Theory: A Theoretical Framework

In addition to employing a longitudinal mediation model, this study seeks to enhance understanding by incorporating Self-Determination Theory (SDT; Ryan & Deci, 2000) as a unifying theoretical framework for examining how volunteering may enhance subjective well-being through the fulfilment of basic psychological needs. SDT posits that the satisfaction of three innate and universal psychological needs—autonomy, competence, and relatedness—is essential for promoting optimal functioning. Autonomy reflects the experience of volition and self-direction, competence involves a sense of effectiveness and mastery, and relatedness encompasses meaningful social connections and a sense of belonging (Tang et al., 2020).

Volunteering provides a unique opportunity to engage in self-directed and socially connected activities that have the potential to fulfil these psychological needs. Unlike many other activities, volunteering often allows individuals to choose their roles, tasks, and schedules, fostering autonomy by aligning with personal values and interests. For instance, a retired teacher mentoring children may draw on their expertise while maintaining control over how and when they contribute. Additionally, volunteering may enhance competence through skill-building and meaningful activities, such as organising events, coordinating teams, or learning new skills. Successfully leading a fundraising campaign, for example, may boost a volunteer's sense of mastery and confidence. Furthermore, the inherently social nature of volunteering promotes relatedness by facilitating collaboration and shared purpose, potentially fostering meaningful connections and a sense of belonging. These aspects of volunteering align closely with SDT, making it a particularly relevant framework for examining the mechanisms underlying the relationship between volunteering and well-being.

Existing research applying SDT to volunteering has primarily focused on motivational processes that influence volunteer retention and satisfaction. Studies found that volunteers who experienced high levels of autonomy and competence reported greater satisfaction and lower intentions to quit (Haivas et al., 2013). Autonomous motivation, defined as engagement arising from personal values or genuine interest, was positively associated with increased volunteer effort, satisfaction, and well-being. In contrast, controlled motivation, which stemmed from external pressures or obligations, was linked to emotional exhaustion and higher turnover intentions (Bidee et al., 2013; Wu & Li, 2019). Additionally, autonomy-supportive leadership, which fosters autonomy, competence, and relatedness, was shown to enhance autonomous motivation and overall volunteer satisfaction (Oostlander et al., 2014). Beyond motivation, emerging evidence suggested that volunteering enhanced well-being by strengthening individuals' sense of control and self-efficacy—concepts closely aligned with SDT's psychological needs for autonomy and competence. For instance, studies indicated that volunteering reduced loneliness in older adults through its impact on perceived control (i.e., one's belief in their ability to influence their circumstances) and social self-efficacy (i.e.,

confidence in social interactions and relationships; Lee, 2022). These findings suggested that volunteering not only promoted well-being through motivation and retention factors but also by fulfilling fundamental psychological needs that facilitated social and emotional resilience.

Although prior research has examined SDT in the context of volunteering, the specific role of basic psychological needs as mediators in the volunteering-SWB relationship remains unexplored. Given existing evidence on the importance of autonomy, competence, and relatedness in other volunteering domains (e.g., volunteer satisfaction), it is reasonable to expect that these needs could mediate the positive relationship between volunteering and well-being. Specifically, engaging in volunteer activities may enhance well-being by fostering autonomy through self-directed roles, competence through skill development and mastery, and relatedness through meaningful social connections. Understanding these mechanisms is key to explaining how and why volunteering contributes to subjective well-being beyond its motivational components.

4.1.3 The Present Study

This study aims to examine the relationship between volunteering, basic psychological needs, and SWB in older adults. Using a longitudinal mediation design, we extend previous research by investigating whether the basic psychological needs of autonomy, competence, and relatedness mediate the relationship between volunteering and subjective well-being. This is tested through (a) cross-sectional analyses capturing between-person differences (e.g., Pilkington et al., 2012) and (b) longitudinal analyses assessing within-person change over time. SWB is operationalised using measures of life satisfaction, positive affect, and negative affect (Diener, 2009). In line with previous research, we hypothesised that increasing volunteer hours would be associated with higher life satisfaction and positive affect and lower negative affect. Furthermore, we predict that autonomy, competence, and relatedness will mediate the associations between volunteering and SWB.

4.2 Methods

4.2.1 Participants and Procedure

Following approval by the Flinders University Human Research Ethics Committee (Project ID 5285), the opportunity to participate in a research study about 'Volunteering and Well-Being' was advertised through multiple outreach channels: (a) an email database of older adults who had previously expressed interest in research with the Generations Research Initiative at Flinders University; (b) the South Australian Office for Ageing Well's feedback network, including email correspondence and their digital publication *Weekend Plus* (with over 100,000 recipients); (c) eBulletins shared with members of other online networks across Australian states, predominantly comprising older adults (such as Senior Card Programs and Universities of the Third Age); and (d) the Flinders University Facebook page. Advertisements emphasised that the study was open to current volunteers, former volunteers, and those who had never volunteered.

Eligibility criteria required participants to be aged 60 and older. Individuals with missing data on 80% or more of the study variables were excluded from the analysis. At baseline (Time 1), 1054 participants were recruited, with 549 participants excluded due to excessive missing data (517), failure to meet age requirements (23), or duplicate entries (9). The final baseline sample consisted of 514 participants. Based on prior research (Pan et al., 2018), a minimum sample size of 215 is required to detect a small indirect effect (.14) in mediation analysis with 80% power, using bootstrap methods and three repeated measures. This suggests that the present study was adequately powered to detect small mediation effects. Follow-up surveys were conducted at 6 months (Time 2) and 12 months (Time 3), with consent obtained during each data collection phase. Of the baseline participants, 421 consented to follow-up, with 255 participants completing the Time 2 survey and 145 participants completing the Time 3 survey. Demographic characteristics at baseline are summarised in Table 16. To acknowledge participants' time and effort, donations of up to \$500 were made to selected charities during each data collection period, based on participant recruitment numbers.

At Time 1, participants were aged 60 to 90 ($M = 70.57$, $SD = 5.98$), with a majority being female (80.2%). A significant proportion of the sample were tertiary educated (81.7%), partnered (65.6%), and were not currently in the labour force (85.6%). The average physical functioning score was 79.10 ($SD = 21.09$) on a 0-100 scale, indicating generally high physical functioning in the sample. The majority were active volunteers (78.2%), with an average of 8.81 weekly volunteering hours ($SD = 9.99$), surpassing the national average of 5.06 hours for individuals aged 55 and older (Biddle et al., 2022). Participants reported an average COVID-disruption score of 3.89 ($SD = 1.19$) on a single-item measure (with 1 representing no disruption and 5 representing disruption), indicating a neutral to moderate agreement that the pandemic had disrupted their lives.

Attrition analyses revealed significant differences in baseline autonomy and relatedness need satisfaction between participants who completed all three assessments and those who dropped out after Time 1 and/or Time 2. Participants who completed all waves reported higher autonomy scores ($M = 16.70$, $SD = 2.77$) compared to those who dropped out after the first ($M = 15.88$, $SD = 2.77$) or second wave ($M = 16.43$, $SD = 2.54$), $p = .017$. A similar pattern was observed for relatedness, with higher baseline scores among completers ($M = 17.42$, $SD = 2.71$) compared to early dropouts (Time 1: $M = 16.78$, $SD = 2.73$; Time 2: $M = 17.51$, $SD = 2.35$), $p = .019$. No significant differences were found on other key study variables between participants who dropped out after Time 1 and/or Time 2 and those who completed all assessments. Further details on attrition analyses can be found in Appendix L.

Table 16

Sociodemographic Characteristics of Participants at Baseline (T1)

Characteristics	Range	$N = 514$
Weekly volunteer hours, M (SD)		8.81 (9.99)
Covariates		
Age, M (SD)	60-90	70.57 (5.98)
Gender, (n , %)		

Male		102 (19.8)
Female		412 (80.2)
Education (<i>n</i> , %)		
Tertiary education or higher		420 (81.7)
High school education or lower		94 (18.3)
Employment (<i>n</i> , %)		
In the labour force		74 (14.4)
Not in the labour force		440 (85.6)
Relationship status (<i>n</i> , %)		
Partnered		337 (65.6)
Not partnered		177 (34.4)
COVID-19 Disruption, <i>M</i> (<i>SD</i>)	1-5	3.89 (1.19)
Physical Functioning, <i>M</i> (<i>SD</i>)	33.33-100	79.10 (21.09)
Subjective well-being, <i>M</i> (<i>SD</i>)		
Positive affect	6-30	23.80 (3.99)
Negative affect	6-30	11.31 (3.63)
Life satisfaction	5-35	25.54 (6.10)
Basic Psychological Needs, <i>M</i> (<i>SD</i>)		
Autonomy satisfaction	4-20	16.14 (2.75)
Competence satisfaction	4-20	16.79 (2.46)
Relatedness satisfaction	4-20	17.04 (2.68)

4.2.2 Measures

Volunteering Status and Hours. Volunteering status was assessed with a single item asking participants to select one of the following options: currently volunteering, temporarily paused due to COVID-19, permanently discontinued due to COVID-19, previously volunteered but discontinued for non-COVID-19 reasons, or never formally volunteered. Participants who reported currently volunteering were asked to estimate their average weekly volunteering hours over the past month. Non-volunteers, including those who had temporarily paused their volunteering, were assigned a value of 0 hours.

Basic Psychological Needs. Basic psychological need satisfaction was assessed using the Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS; Chen et

al., 2015). This 24-item scale evaluates the satisfaction and frustration of three basic psychological needs: autonomy, competence, and relatedness. Each need is evaluated through four items assessing satisfaction and four items assessing frustration, with participants rating their experiences on a 5-point scale (1 = Not true at all, 5 = Very true). The BPNSFS produces separate summed scores for satisfaction and frustration for each need; however, for this analysis, only the satisfaction scores were used, with higher scores reflecting greater satisfaction. Example items are provided in Table 17. Subscales include autonomy satisfaction, competence satisfaction, and relatedness satisfaction. The scale has shown good internal consistency across diverse cultural contexts (Cronbach's $\alpha = .64-.89$; Chen et al., 2015).

Table 17

Descriptions and Sample Questions for the Basic Psychological Needs Satisfaction and Frustration Scale

Basic Psychological Need	Description	Need Satisfaction Example
Autonomy	Sense of volition and psychological freedom.	I feel a sense of choice and freedom in the things I undertake.
Competence	Sense of effectiveness and mastery.	I feel confident that I can do things well.
Relatedness	Sense of intimacy and connection with important others.	I feel that the people I care about also care about me.

Note. Basic Psychological Need items were reproduced from the Basic Psychological Needs Satisfaction and Frustration Scale (Chen et al., 2015).

Positive and Negative Affect. Positive and negative affect were evaluated using the Scale of Positive and Negative Experiences (SPANE; (Li et al., 2013). This 12-item measure

assesses recent emotional experiences, with a balance of high and low arousal emotion terms. Respondents rate items such as “Good” and “Bad” on a 5-point scale (1 = Very rarely or never, 5 = Very often or always) reflecting the frequency each was experienced over the past four weeks. The SPANE generates separate summed scores of positive (SPANE-P) and negative (SPANE-N) affect, with higher scores indicating greater positive or negative experiences, respectively. The SPANE has demonstrated strong internal reliability (Cronbach’s $\alpha = .80-.88$) and convergent validity with other measures of emotion, well-being, happiness, and life satisfaction (Diener et al., 2010). Additionally, the SPANE exhibits consistent psychometric properties across diverse cultural contexts (Giuntoli et al., 2017; Li et al., 2013b; Rahm et al., 2017; Silva & Caetano, 2013; Singh et al., 2016; Sumi, 2014).

Life Satisfaction. Life satisfaction was assessed using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item scale that assesses general life satisfaction. Items (e.g., “In most ways, my life is close to my ideal”, “I am satisfied with my life”) were rated on 7-point scales (1 = strongly disagree, 7 = strongly agree) and summed to create an overall life satisfaction score, with higher scores indicating greater life satisfaction. The SWLS has demonstrated strong internal reliability (Cronbach’s $\alpha = .87$) and convergent, discriminant, and predictive validity across a variety of populations (Diener et al., 1985; Pavot et al., 1991; Pavot & Diener, 1993, 2008).

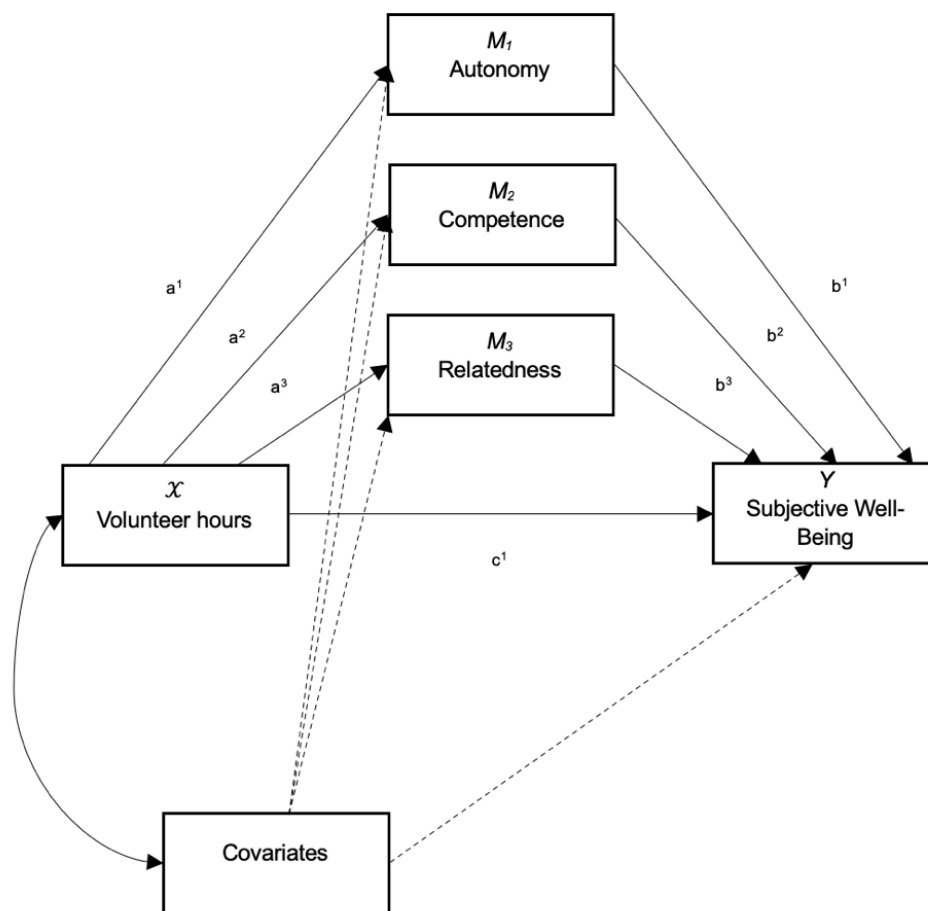
Covariates. Covariates including age, gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered) were controlled for due to empirically established associations with well-being (Diener et al., 2017). Given the ongoing impact of the COVID-19 pandemic during our study (Time 1: May 2022, Time 2: November 2022, Time 3: May 2023), we included a measure to assess COVID-19-related disruption at each data collection point. COVID-19 disruption was assessed using a single-item measure: “The current situation with COVID-19 has been disruptive to your life,” rated on a 5-point Likert scale (1 = Disagree, 2 = Slightly disagree, 3 = Neither agree nor disagree, 4 = Slightly agree, 5 = Agree). This measure aligns with

approaches used in previous studies conducted during the same period (e.g., see Knepple Carney et al., 2021). For the present study, baseline (Time 1) COVID-19 disruption was used in all analyses. Physical functioning was assessed using the 10-item 'Physical Functioning' subscale of the RAND 36-Item Health Survey 1.0 (Hays et al., 1993). Items (e.g., "Climbing several flights of stairs", "Walking more than a mile [1.6 km]") were rated using a 3-point scale (1 = Yes, limited a lot, 2 = Yes, limited a little, 3 = No, not limited at all) based on the extent to which an individual's current health limits their ability to perform each activity. Scores on this measure were summed to create an overall functional health score, with higher scores indicating greater physical functioning.

4.2.3 Statistical Analysis

Cross-sectional and longitudinal mediation analyses were conducted using Mplus Version 8.9 (Muthén & Muthén, 2024) to examine the relationships between volunteering hours, basic psychological needs (autonomy, competence, and relatedness), and subjective well-being (SWB) outcomes (positive affect, negative affect, and life satisfaction). The primary hypothesis of interest was that basic psychological needs (autonomy, competence, relatedness) would mediate the relationship between volunteering hours and SWB outcomes (positive affect, negative affect, and life satisfaction).

For the cross-sectional analyses, we tested the direct effects of linear volunteering hours (preliminary analyses did not reveal any quadratic associations of volunteer hours with subjective well-being) on each of the SWB outcomes, with basic psychological needs (autonomy, competence, and relatedness) acting as mediators. We also included several covariates (age, gender, education level, labour force status, COVID-19 disruption) in the model. Figure 8 illustrates the multiple mediation models outlined in the hypotheses for the cross-sectional analyses. Regression models were specified for each outcome, with indirect effects (a^1b^1 through a^3b^3) tested using bootstrapped confidence intervals (5000 resamples) to assess their significance (Preacher & Hayes, 2008). Missing data were handled using Full Information Maximum Likelihood (FIML) estimation.

Figure 8*Indirect Effects Between Volunteering and SWB for the Cross-Sectional Analyses*

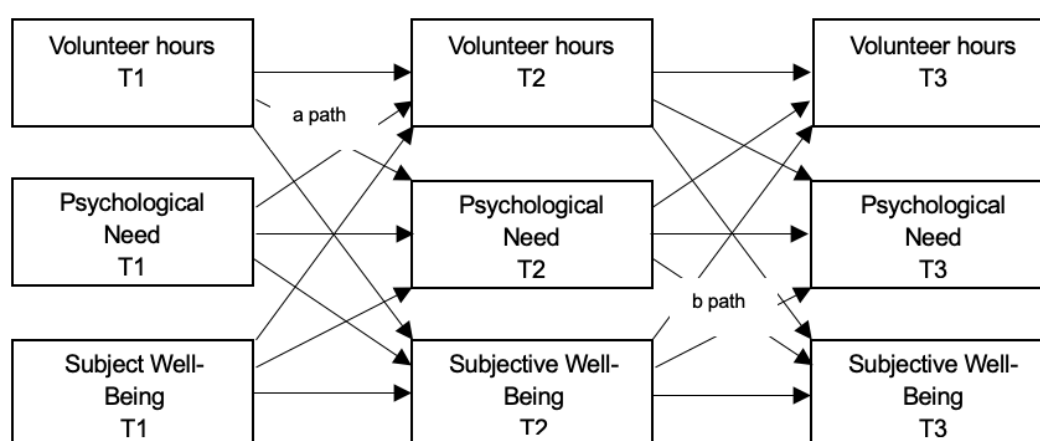
Note. In this figure, X represents the predictor variable, M the mediating variable, and Y the outcome variable.

In the longitudinal analyses, we extended the cross-sectional model to examine the temporal relationships between volunteering hours, basic psychological needs, and SWB outcomes across three-time points over a 12-month time interval. For each combination of mediator (basic psychological needs) and outcome (SWB), we assessed both direct and indirect effects over time following methods outlined by Jose (2016). Figure 9 illustrates the multiple mediation models tested for the longitudinal analyses. The same covariates from the cross-sectional model were included, with additional paths linking mediators and outcomes across time. Specifically, we were interested in whether Time 1 volunteering hours predicted

changes in basic psychological needs from Time 1 to Time 2, and whether changes in the mediators were in turn associated with changes in subjective well-being from Time 2 to Time 3. Inclusion of alternative pathways in the model allowed for examination of possible reverse causation effects (e.g., an increase in well-being preceding an increase in volunteering). In the longitudinal mediation analysis, separate models were fitted to test each psychological need as a mediator in turn (allowing estimation of temporal a and b paths), with the additional needs included among the covariates (Jose, 2016). Indirect effects were assessed using bootstrapping (1000 resamples), with confidence intervals obtained using BCBOOTSTRAP. Model fit for the longitudinal analyses was evaluated using standard fit indices (c^2 , CFI, RMSEA).

Figure 9

Indirect Effects Between Volunteering and SWB for the Longitudinal Analyses



4.3 Results

4.3.1 Descriptive Statistics

Table 18 presents the means, standard deviations, and ranges for the key study variables, including volunteering hours and the basic psychological needs of autonomy, competence, and relatedness, across three-time points: Baseline (T1), 6 months (T2), and 12 months (T3). On average, volunteering hours increased from T1 to T2 but declined slightly at T3. Participants generally reported high levels of autonomy, competence, and relatedness satisfaction throughout the 12-month study period. Regarding outcome

measures, participants reported high levels of positive affect and low levels of negative affect on average (Diener et al., 2009), along with high life satisfaction based on interpretive categories developed by Diener et al. (1985).

Table 18

Means (M) and Standard Deviations (SD) for Key Study Variables at Baseline (T1), 6 Months (T2), and 12 Months (T3)

Characteristics	Range	T1	T2	T3
		N = 514	N = 238	N = 137
Weekly volunteer hours ^a , M (SD)	0-40	8.81 (9.99)	10.41 (9.36)	9.83 (9.07)
Subjective well-being, M (SD)				
Positive affect	6-30	23.80 (3.99)	24.12 (4.01)	24.26 (3.77)
Negative affect	6-30	11.31 (3.63)	11.16 (3.68)	10.99 (3.86)
Life satisfaction	5-35	25.54 (6.10)	26 (5.93)	25.9 (6.49)
Basic Psychological Needs, M (SD)				
Autonomy satisfaction	4-20	16.14 (2.75)	16.49 (2.77)	16.72 (2.65)
Competence satisfaction	4-20	16.79 (2.46)	16.77 (2.56)	17.09 (2.52)
Relatedness satisfaction	4-20	17.04 (2.68)	17.41 (2.53)	17.63 (2.51)

Note. ^aVolunteering hours reflect the average number of hours volunteered per week in the past month.

Table 19 presents intercorrelations among key study variables and covariates at baseline. Volunteering hours was weakly associated with gender and COVID-19 disruption, with women and those experiencing greater disruption volunteering fewer hours on average. Basic psychological needs – autonomy, competence and relatedness – were moderately intercorrelated, with higher satisfaction in one need associated with higher satisfaction in the others. The basic psychological needs also demonstrated strong associations with well-being measures. Autonomy, competence, and relatedness were positively correlated with positive affect and life satisfaction. While negative affect was negatively associated with

autonomy, competence, and relatedness satisfaction. Contrary to expectations, volunteer hours were not associated with need satisfaction or subjective well-being in the unadjusted analyses.

4.3.2 Cross-Sectional Mediation Analyses

The primary objective of this study was to examine whether basic psychological needs satisfaction mediates the relationship between volunteering and well-being in older adults. Results of the cross-sectional mediation analyses for well-being outcomes – positive affect, negative affect, and life satisfaction – are presented in Table 20 through 22.

Positive Affect. Table 20 displays the results of analyses examining the mediation effect of autonomy, competence, and relatedness satisfaction on the association between volunteer hours and positive affect. After controlling for covariates and mediators, consistent with the unadjusted correlations, the association between weekly volunteering hours and positive affect was non-significant ($B = -.01$, $SE = .01$, $p = .711$). Autonomy ($B = .39$, $SE = .09$, $p < .001$), competence ($B = .30$, $SE = .08$, $p < .001$), and relatedness satisfaction ($B = .49$, $SE = .08$, $p < .001$) were all positively associated with higher positive affect in the controlled analysis. Mediation analyses demonstrated that the total indirect effect of weekly volunteering hours on positive affect via basic psychological needs satisfaction was significant ($ab = .065$, 95% CI = .001, .051, $p = .041$). Specifically, autonomy ($a_1b_1 = .032$, 95% CI = .001, .025, $p = .034$) and competence ($a_2b_2 = .021$, 95% CI = .001, .016, $p = .033$) satisfaction were significant mediators, whereas relatedness satisfaction was not ($a_3b_3 = .011$, 95% CI = -.008, .016, $p = .474$). These findings provide partial support for the hypothesis, as autonomy and competence satisfaction significantly mediated the relationship between volunteering hours and positive affect.

Table 19*Pearson Correlations for the 'Volunteering and Well-Being in Older Adulthood' Study Variables at Baseline*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Weekly volunteer hours	-													
2. Age	-.028	-												
3. Female	-.089*	-.201**	-											
4. Tertiary education	-.114**	-.040	-.021	-										
5. Not in labour force	.014	.266**	-.037	-.079	-									
6. Not partnered	-.018	.092*	.124**	.015	-.041	-								
7. COVID-19 disruption	-.111*	-.064	-.062	.105*	-.084	-.119**	-							
8. Physical functioning	.046	-.231**	.030	.159**	-.051	-.089*	-.080	-						
9. Positive affect	-0.07	.112	.173*	-.023	.144	.021	-.093	.069	-					
10. Negative affect	.061	-.079	-.069	.072	-.107	.045	.080	-.094	-.659**	-				
11. Life satisfaction	.047	.057	.042	-.02	.177*	-.136	-.053	.099	.669**	-.600**	-			
12. Autonomy satisfaction	.044	.105	.096	.128	.109	.000	-.140	.096	.671**	-.570**	.682**	-		
13. Competence satisfaction	-.038	.079	.027	.039	.121	-.015	-.140	.288**	.518**	-.525**	.525**	.614**	-	
14. Relatedness satisfaction	-.027	.118	.162	.11	.066	-.056	-.117	.085	.589**	-.320**	.465**	.543**	.430**	-

Note. N = 514. * $p < .05$., ** $p < .01$.

Table 20*Mediation Analysis Examining Predictors of Positive Affect*

Predictor variables	Positive Affect			
	B (SE)	β	95% CI	<i>p</i>
Weekly volunteer hours	-.005 (.014)	-.013	-.032, .022	.711
Covariates ^a				
Age	.048 (.026)	.072	-.003, .099	.066
Female	.201 (.363)	.020	-.510, .912	.580
Tertiary Education	.124 (.360)	.012	-.582, .830	.730
Not in Labor Force	-.212 (.373)	-.019	-.944, .519	.570
No Partner	-.202 (.289)	-.024	-.769, .365	.486
COVID-19 Disruption	-.199 (.118)	-.059	-.430, .032	.091
Physical Functioning	.006 (.007)	.030	-.008, .020	.423
Basic Psychological Needs				
Autonomy satisfaction	.386 (.088)	.266	.214, .558	.000
Competence satisfaction	.298 (.084)	.181	.132, .463	.000
Relatedness satisfaction	.478 (.080)	.321	.322, .635	.000
R^2		.447		

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Negative Affect. Table 21 presents the mediation results for negative affect. After controlling for covariates and mediators, consistent with the unadjusted correlations, the association of weekly volunteering hours on negative affect was non-significant ($B = -.00$, $SE = .01$, $p = .750$). Autonomy ($B = -.22$, $SE = .08$, $p = .005$), competence ($B = -.41$, $SE = .08$, $p < .001$), and relatedness satisfaction ($B = -.18$, $SE = .08$, $p = .029$) were all significantly associated with lower negative affect in the controlled analysis. Mediation analyses indicated that the total indirect effect of weekly volunteering hours on negative affect was significant ($ab = -.021$, 95% CI = $-.038, -.007$, $p = .016$). Specifically, competence satisfaction was a significant mediator ($a_2b_2 = -.012$, 95% CI = $-.022, -.002$, $p = .020$), while autonomy ($a_1b_1 = -.007$, 95% CI = $-.015, .001$, $p = .067$) and relatedness satisfaction ($a_3b_3 = -.002$, 95% CI = $-.007, .003$, $p = .518$) were not. These findings provide partial support for the hypothesis, as only competence satisfaction significantly mediated the relationship between volunteering hours and negative affect.

Life Satisfaction. Table 22 summarises the mediation results for life satisfaction. After controlling for covariates and mediators, consistent with the unadjusted correlations, the association between volunteering hours and life satisfaction was non-significant ($B = -.01$, $SE = .03$, $p = .846$). The model indicated that autonomy ($B = .62$, $SE = .13$, $p < .001$) and relatedness satisfaction ($B = .54$, $SE = .13$, $p < .001$) were significantly associated with higher life satisfaction, whereas competence satisfaction was not ($B = .23$, $SE = .13$, $p = .076$). Mediation analyses revealed that the total indirect effect of volunteering hours on life satisfaction was significant ($ab = .052$, 95% CI = $.000, .063$, $p = .044$). Autonomy satisfaction was a significant mediator of this relationship ($a_1b_1 = .034$, 95% CI = $.001, .040$, $p = .031$), while competence ($a_2b_2 = .011$, 95% CI = $-.002, .015$, $p = .155$) and relatedness satisfaction ($a_3b_3 = .007$, 95% CI = $-.009, .018$, $p = .502$) were not. These findings again partially support the hypothesis, as autonomy satisfaction mediated the relationship, but competence and relatedness satisfaction did not.

Table 21*Mediation Analysis Examining Predictors of Negative Affect*

Predictor variables	Negative Affect			
	B (SE)	β	95% CI	<i>p</i>
Weekly volunteer hours	-.004 (.014)	-.012	-.032, .023	.750
Covariates ^a				
Age	-.049 (.025)	-.081	-.099, .000	.050
Female	.685 (.369)	.075	-.039, 1.409	.064
Tertiary Education	-.283 (.373)	-.030	-1.015, .449	.448
Not in Labor Force	.535 (.405)	.052	-.259, 1.328	.186
No Partner	-.207 (.291)	.027	-.778, .364	.478
COVID-19 Disruption	.269 (.120)	.088	.034, .504	.025
Physical Functioning	-.015 (.007)	-.085	-.029, .000	.044
Basic Psychological Needs				
Autonomy satisfaction	-.219 (.078)	-.166	-.372, -.067	.005
Competence satisfaction	-.410 (.075)	-.273	-.557, -.262	.000
Relatedness satisfaction	-.180 (.083)	-.132	-.342, -.018	.029
R^2		.285		

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Table 22*Mediation Analysis Examining Predictors of Life Satisfaction*

Predictor variables	Life Satisfaction			
	B (SE)	β	95% CI	<i>p</i>
Weekly volunteer hours	-.005 (.025)	-.008	-.053, .044	.846
Covariates ^a				
Age	-.020 (.043)	-.020	-.104, .064	.634
Female	.013 (.575)	.001	-1.114, 1.139	.982
Tertiary Education	.424 (.674)	.027	-.897, 1.745	.530
Not in Labor Force	.887 (.674)	.051	-.435, 2.208	.188
No Partner	-1.653 (.519)	-.129	-2.670, -.637	.001
COVID-19 Disruption	-.411 (.209)	-.080	-.819, -.002	.049
Physical Functioning	.042 (.013)	.145	.017, .067	.001
Basic Psychological Needs				
Autonomy satisfaction	.623 (.133)	.280	.362, .884	.000
Competence satisfaction	.228 (.129)	.090	-.024, .480	.076
Relatedness satisfaction	.538 (.126)	.235	.290, .785	.000
R^2		.344		

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

4.3.3 Longitudinal Mediation Analyses

Results of the longitudinal mediation analyses are summarised in Appendix M, Tables M1 through M9, which report estimates of indirect effects, and Appendix N, Figures N1 through N5, which show significant path coefficients between weekly volunteer hours, basic psychological needs, and SWB outcomes across three-time points. Results provided no evidence for direct effects of baseline volunteering on changes in psychological needs (autonomy, competence, and relatedness) or well-being outcomes (positive affect, negative affect, and life satisfaction). Specifically, volunteering at T1 did not significantly predict autonomy ($B = .006$, $SE = .014$, $p = .680$), competence ($B = -.019$, $SE = .015$, $p = .204$), or relatedness ($B = -.001$, $SE = .014$, $p = .957$) at T2. Furthermore, changes in autonomy and relatedness (T2) did not significantly predict changes in positive affect (autonomy: $B = .176$, $SE = .113$, $p = .119$; relatedness: $B = .142$, $SE = .094$, $p = .128$), negative affect (autonomy: $B = -.062$, $SE = .133$, $p = .643$; relatedness: $B = -.029$, $SE = .083$, $p = .729$), or life satisfaction (autonomy: $B = .059$, $SE = .203$, $p = .773$; relatedness: $B = .285$, $SE = .166$, $p = .087$) from T2 to T3. An exception was competence; changes in competence from T1 to T2 was significantly and positively associated with changes in life satisfaction from T2 to T3 ($B = .296$, $SE = .148$, $p = .046$) and showed a trend toward significance in predicting a decrease in negative affect from T2 to T3 ($B = -.188$, $SE = .096$, $p = .051$).

Several additional temporal associations that were not hypothesised were revealed by the longitudinal analyses (see Appendix N, Figures N1 to N5). Positive affect at T1 significantly predicted increases in autonomy ($B = .139$, $SE = .040$, $p = .001$) and relatedness ($B = .086$, $SE = .042$, $p = .043$) from T1 to T2. For negative affect, T1 levels significantly predicted decreases in autonomy ($B = -.137$, $SE = .046$, $p = .003$) and increases in relatedness ($B = .001$, $SE = .061$, $p = .013$) from T1 to T2, while negative affect at T2 predicted increases in autonomy from T2 to T3 ($B = .134$, $SE = .057$, $p = .019$). Relatedness at T1 also significantly predicted lower negative affect at T2 ($B = -.123$, $SE = .062$, $p = .048$). For life satisfaction, higher levels at baseline and T2 significantly predicted subsequent

increases in autonomy at T1 to T2 ($B = .111$, $SE = .031$, $p < .001$) and T2 to T3 respectively ($B = .082$, $SE = .037$, $p = .027$).

Regarding indirect effects, no significant mediation pathways were observed across any of the mediator-outcome combinations, with detailed results presented in Appendix M, Tables M1 through M9.

4.4 Discussion

The present study builds on growing evidence linking volunteering to well-being in older adults by being the first to examine the role of basic psychological needs in mediating the relationship between volunteering and subjective well-being using both cross-sectional (focusing on between-person differences) and longitudinal (capturing within-person change) data. Cross-sectional findings revealed partial support for the hypothesised mechanisms, with autonomy mediating the relationship between volunteering and both positive affect and life satisfaction and competence satisfaction mediating the relationship between volunteering and affective well-being. However, relatedness satisfaction did not mediate any well-being outcomes, and no significant mediation effects were identified in the longitudinal analyses for any of the mediator-outcome combinations.

It is worth noting that, contrary to the findings of previous studies (e.g., Binder & Freytag, 2013; Meier & Stutzer, 2008), the direct cross-sectional associations between weekly volunteering hours and well-being outcomes were non-significant in both unadjusted and adjusted models. Nonetheless, the presence of significant indirect effects via autonomy and competence satisfaction supports the validity of mediation pathways. As noted in prior work (Hayes, 2017; Preacher & Hayes, 2004), significant indirect effects can still provide meaningful evidence for mediation (e.g., volunteering may enhance feelings of autonomy, which in turn contributes to positive affect), even in the absence of direct effects.

4.4.1 Cross-Sectional Mediation Analyses

A key finding of the present study was that autonomy satisfaction, defined as a sense of volition and psychological freedom, mediated the relationship between volunteering and both positive affect and life satisfaction. These findings were consistent with Self-

Determination Theory (SDT), which highlights the importance of volition and self-direction in promoting well-being (Deci et al., 2017). According to SDT, autonomy-supportive environments enable individuals to engage in activities that align with their intrinsic motivations and personal values, thereby enhancing well-being (Deci et al., 2017). In this context, the findings suggest that volunteers who have greater freedom to select roles and activities that reflect their values, interests, and schedules experience a stronger sense of autonomy. It is plausible that this autonomy empowers individuals to engage more meaningfully with their volunteer work, contributing to greater positive emotional experiences and overall life satisfaction. However, the absence of autonomy as a mediator in the relationship between volunteering and negative affect indicates that alternative psychosocial mechanisms may underlie links between volunteering and negative affect. This finding aligns with previous research (and concepts of eudaemonic well-being) demonstrating that while autonomy promotes positive emotions, it does not necessarily protect individuals from negative emotional experiences (Greenfield & Marks, 2004; Windsor et al., 2014). For example, Windsor et al.'s (2014) study on social exchanges and ageing suggests that while higher levels of social engagement may enhance opportunities for positive interactions, they may also heighten exposure to stressors and negative social exchanges. Applied to the volunteering context, this may imply that while greater autonomy fosters meaningful engagement and well-being benefits, it may also increase exposure to role strain, time pressures, and interpersonal challenges.

Competence satisfaction also emerged as a mediator in the relationship between volunteering and affective well-being but not life satisfaction. This finding aligns with research on ageing and control beliefs, which emphasises the role of perceived capability in maintaining emotional stability (Lachman, 2006). Control beliefs refer to an individual's perception of their ability to influence outcomes and manage life's demands. Individuals with stronger control beliefs tend to experience greater emotional stability, as this sense of control enables them to navigate challenges and setbacks more effectively (Lachman, 2006). Volunteering may provide a meaningful context for reinforcing this sense of

competence by offering opportunities to engage in meaningful activities, develop new skills, and contribute to valued outcomes. These experiences may enhance a sense of mastery, as volunteers gain confidence in their ability to solve problems, manage tasks, and achieve meaningful goals. This improved sense of competence may, in turn, promote emotional well-being by acting as a buffer against negative feelings like frustration and self-doubt, while also encouraging positive emotions such as pride and a sense of accomplishment. Long-term engagement in volunteering may thus serve as a pathway for individuals to maintain their well-being, highlighting the importance of perceived capability in shaping emotional experiences.

While prior research has demonstrated that self-efficacy – a related construct – mediates the relationship between volunteering and life satisfaction (Brown et al., 2012), competence satisfaction did not emerge as a mediator for life satisfaction in our study. Although we can only speculate regarding this lack of consistency, this discrepancy may be due to differences in how these constructs are conceptualised. Self-efficacy is inherently goal-directed and future-oriented, emphasising one's perceived ability to succeed in specific tasks over time, whereas competence satisfaction reflects a broader, present-focused sense of mastery in daily activities. Given this distinction, competence satisfaction may be more closely linked to momentary affective experiences rather than to life satisfaction, which involves a more global and reflective evaluation of overall quality of life. Additionally, the broader life context, such as external constraints and disruptions experienced during the COVID-19 pandemic, may have undermined global life satisfaction despite competence satisfaction being reinforced through volunteering.

Contrary to expectations and previous research, relatedness satisfaction did not mediate the relationship between volunteering and SWB outcomes. This finding differs from Pilkington et al. (2012), who found that social support partially explained the positive association between volunteering and well-being, including life satisfaction and positive affect in older adults. This discrepancy may stem from differences in how relatedness and social support are conceptualised and measured. Pilkington et al. using the Lubben Social

Network Scale (LSNS; Lubben & Gironda, 2003), assessed social support in terms of structural aspects, such as network size and availability. In contrast, relatedness satisfaction, as assessed by the Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2015), focuses on the subjective quality of social connections, emphasising emotional closeness and feelings of being valued. It is plausible that volunteering expands the breadth of social networks by fostering diverse and frequent interactions, captured by the LSNS, but does not necessarily deepen the emotional intimacy required to satisfy relatedness needs.

This interpretation is supported by the present study's cross-sectional results, which showed that while relatedness satisfaction was a reliable predictor of subjective well-being, volunteering was not a reliable predictor of relatedness satisfaction. This suggests that volunteering may help older adults expand the structure of their social networks but does not necessarily enhance the emotional depth of relationships in a way that fulfils relatedness needs. Work by Huxhold et al. (2013) highlights the multi-dimensional nature of social networks and how this can have implications for different aspects of functioning and well-being. Their study showed that while larger, more diverse networks, which can be sustained through activities like volunteering, offer cognitive benefits, smaller, emotionally intimate networks are more strongly linked to emotional well-being. These results suggest that the mechanisms linking volunteering with well-being may be better assessed through measures of network structure rather than social exchange quality and closeness (e.g., Newsom et al., 2005), which are central to psychological relatedness. Thus, the findings highlight potential differences in the social functions through which volunteering influences well-being, underscoring the need for future research to consider both structural and psychological dimensions when examining its effects.

4.4.2 Longitudinal Mediation Analyses

Although, as discussed above, we found evidence for cross-sectional mediation, longitudinal analyses revealed no significant mediation effects for any mediator-outcome

combination across the 12-month time interval. To reconcile these differences, we consider both conceptual and methodological explanations.

4.4.3 Conceptual Considerations

One possible explanation for the discrepancies in findings may stem from the cross-sectional associations observed in this study, as well as in prior research, reflecting between-person differences in aspects of cognition, mood and behaviour developed over a lifetime, rather than short-term changes observable over 12-month study interval. For example, individuals who volunteer more may be those who have a generally stronger prosocial motivation, a disposition often shaped earlier in life through parenting and social experiences (e.g., see Davidov et al., 2016) for review on motivational foundations of prosocial behaviour). Prosocial individuals often model their behaviour on close others – parents, partners, or friends – who, in turn, provide social and emotional support, fostering relatedness and creating autonomy- and competence-supportive life contexts (Davidov et al., 2016). From this perspective, volunteering, well-being, and psychological need satisfaction may co-occur not because volunteering directly produces these benefits, but because they emerge from a broader pattern of early experiences that encourage prosocial engagement and personal growth. Individuals raised in environments that emphasise social responsibility and community involvement may internalise these values, making them more likely to engage in volunteering while also developing the emotional resilience and self-efficacy that contribute to well-being (Davidov et al., 2016). Thus, the cross-sectional relationships observed between volunteering, well-being, and need satisfaction may reflect stable, long-term tendencies rather than causal effects of volunteering itself.

Another possibility is that unmeasured and relatively stable personality traits, rather than volunteering, account for the observed cross-sectional relationships. Research on approach-avoidance motivation suggests that individuals with a strong approach temperament are more likely to engage in goal-directed behaviours that fulfil psychological needs, leading to consistent patterns of need satisfaction and well-being over time (Elliot & Thrash, 2002). Additionally, traits such as extraversion and conscientiousness have been

found to predict both volunteering and well-being (e.g., see Hansen et al., 2018). This raises the possibility that the cross-sectional associations of volunteering with basic psychological need satisfaction may not be a direct consequence of volunteering itself but rather reflect pre-existing dispositional factors that influence both volunteering behaviour and psychological well-being.

4.4.4 Methodological Considerations

While the conceptual explanations outlined above may account for the discrepancy between our cross-sectional and longitudinal results, several methodological factors may also have contributed to the absence of longitudinal mediation effects. The absence of these pathways may be partly due to the relatively short timeframe of our study, which spanned 12 months with assessments at baseline, 6 months, and 12 months. It is plausible that the satisfaction of basic psychological needs—autonomy, competence, and relatedness—is a gradual process that requires sustained engagement over extended periods to produce measurable well-being improvements. For example, enhancing a sense of competence through volunteering likely requires repeated practice and sustained involvement that may require years (rather than months) to be demonstrable. Volunteers may need time to familiarise themselves with tasks, overcome initial challenges, and gradually build a sense of mastery. As such, our one-year timeframe may have been insufficient to observe the long-term effects hypothesised in our model, underscoring the importance of future research employing longer-term longitudinal designs.

Another plausible explanation for the lack of significant longitudinal mediation effects concerns reduced statistical power resulting from the substantial attrition in our longitudinal sample. Specifically, we observed positive associations between volunteering and autonomy, as well as between psychological needs and favourable well-being outcomes (e.g., positive affect and life satisfaction) over time. The coefficients followed the expected pattern, supporting the possibility that our null results may reflect our study being underpowered. Indeed, Pan et al. (2018) demonstrated that the ability to detect significant mediation effects declines as attrition increases. To address this challenge, future

longitudinal studies should employ larger initial sample sizes to account for drop-out and consider stronger incentives for participants to take part in repeated assessments.

Another important consideration is that the psychological benefits of volunteering may depend on the nature of the volunteer role. Different types of volunteering may provide distinct opportunities for satisfying psychological needs. For example, administrative roles may foster a sense of competence through structured tasks but may not inherently satisfy relatedness needs. Conversely, roles that involve social engagement, such as caregiving, may enhance relatedness but provide fewer opportunities for competence development. Since this study did not differentiate between types of volunteering activities, the observed relationships may have been influenced by unmeasured variability in volunteer experiences. The unexpected negative associations between competence and relatedness with volunteering suggest that some forms of volunteering may not be equally beneficial across all psychological needs. Future research should refine the measurement of volunteering experiences by distinguishing between different types of roles to better understand how specific activities contribute to needs satisfaction.

4.4.5 Study Limitations

In addition to the previously noted limitations of the study's brief longitudinal timeframe and participant attrition, several other limitations warrant consideration when interpreting the findings. First, the generalisability of findings may be limited by the characteristics of the sample. Participants were predominantly female (80.2%), tertiary educated (81.7%), and reported relatively high levels of physical functioning, with most no longer in the labour force. This sample composition likely reflects the nature of the recruitment channels used and may overrepresent individuals with the time, resources, and health to participate in both research and volunteering. As such, the findings may not extend to more diverse populations of older adults, including those with lower education levels, limited physical capacity, or from culturally and linguistically diverse backgrounds, who may face additional barriers to volunteering.

Secondly, while the study, grounded in the principles of SDT, focused on the satisfaction of autonomy, competence, and relatedness as mechanisms linking volunteering to well-being, it is possible that the integrative approach offered by this conceptual framework did not adequately capture other dimensions of well-being with particular relevance to older adults. Volunteering in later life has been associated with other eudaimonic outcomes, such as purpose in life and generativity (Greenfield & Marks, 2004; Gruenewald et al., 2016), which are not directly captured within the basic psychological needs framework. This may partly explain the absence of stronger or more consistent mediation effects observed in the current study. Future research should consider including a broader range of well-being outcomes to capture the full extent of volunteering's benefits for well-being.

Third, the relatively high baseline scores across several well-being measures suggest the possibility of ceiling effects, where participants had limited room to improve over time. This may have been particularly relevant to the absence of significant mediation effects in the longitudinal analysis, despite cross-sectional findings showing that autonomy mediated the relationship between volunteering and both positive affect and life satisfaction, and competence mediated the relationship between volunteering and affective well-being. High starting scores may have constrained the potential for change in autonomy, competence, and relatedness satisfaction over the follow-up period, thereby limiting the ability to detect within-person mediation effects. Such ceiling effects have also been reported in other studies with healthy, high-functioning older adults (e.g., Ball et al., 2002). Future studies may benefit from recruiting participants with greater variability in baseline well-being, or from using measures with increased sensitivity at the upper end of the scale.

Finally, the premise of the mediation analysis was that older adults choosing to volunteer could enhance satisfaction of psychological needs and, in turn, well-being. However, the historical context of the research (COVID-19) meant that participants may have exercised less volitional control over their degree of volunteering (due to lockdowns, social distancing requirements and pauses on volunteer activity) than would be typical,

resulting in smaller associations among the variables of interest than might be expected during 'normal' non-pandemic times.

4.4.6 Conclusions

This study contributes to the growing body of research on the relationship between volunteering and subjective well-being in older adults by examining the role of basic psychological needs as mediators using both cross-sectional and longitudinal data. While the cross-sectional findings provided partial support for autonomy and competence satisfaction as mechanisms linking volunteering to well-being, the absence of significant mediation effects in the longitudinal component suggest that these relationships may either be driven by unmeasured variables (e.g., personality, early life experiences) or unfold over longer time intervals than were available in the current study. Future research should employ longer longitudinal designs, refine measurements of volunteering experiences, and account for additional possible confounders to better understand how volunteering fosters well-being over time. By addressing these complexities, future studies can provide a more nuanced perspective on the role of volunteering in supporting psychological needs and promoting well-being in older adulthood.

CHAPTER 5

THE WISDOM CLUB: A PILOT PROGRAM FOR AGEING WELL THROUGH INTERGENERATIONAL CONNECTIONS

5.1 Introduction

As the population ages, there is growing interest in programs that promote healthy ageing (Lloyd-Sherlock et al., 2019). In this context, intergenerational programs have gained significant attention. Intergenerational programs refer to organised, ongoing interactions between younger and older generations for the benefit of all participants (Lloyd-Sherlock et al., 2019). While the type of program can vary, common aims are to enhance interaction and understanding between generations, promote physical and psychological well-being, foster meaningful relationships, and achieve educational and community goals (Giraudeau & Bailly, 2019). Despite their increasing popularity, the evidence base for the effectiveness of these programs is still developing (Teater, 2016). To this end, the present study sought to contribute to the existing literature by co-designing and piloting an intergenerational program that recruited and trained older volunteers, developed with a view to broader implementation in the context of South Australian public primary schools.

Early intergenerational programs initially focused on changing attitudes towards ageing, but recent decades have placed greater focus on the broader benefits for all involved (Teater, 2016). Several studies have documented the benefits of intergenerational programs for both younger and older generations. For younger generations, participation has been associated with improvements in attitudes towards older adults (Chorn Dunham & Casadonte, 2009; Femia et al., 2008; Heyman et al., 2011; Lynott & Merola, 2007; Meshel & McGlynn, 2004), as well as improved communication skills, academic performance, and prosocial behaviours (Fried, 2004; Fried et al., 2013; Rebok et al., 2019). For older generations, participation has been associated with enhanced well-being (Gamlie & Gabay, 2014; Hernandez & Gonzalez, 2008; Meshel & McGlynn, 2004), memory function (Bielak et al., 2019; Carlson et al., 2015), physical mobility, and a stronger sense of social connectedness (Fried et al., 2013; Hong & Morrow-Howell, 2010). Despite the growing evidence supporting the benefits of intergenerational programs, comprehensive evaluations of their effectiveness remain limited (Canedo-García et al., 2017; Giraudeau & Bailly, 2019; Martins et al., 2019). This highlights the need for a deeper understanding of the key

components of successful programs and the mechanisms that drive these positive outcomes, to better inform future program development.

The present study sought to develop an evidence-based framework for an Australian intergenerational program titled *The Wisdom Club*. Inspired by the successful Experience Corps® (EC; Fried, 2004) model in the United States, this study aims to adapt the EC model to the Australian public education context. The EC model involves partnering with schools to identify areas of unmet needs and training older adult volunteers to support students and teachers in meeting these needs. EC was designed with older adult participants as the primary intended beneficiaries, offering meaningful roles that promote health, social engagement, and cognitive vitality. The program also seeks to support educational outcomes for children in Kindergarten to Year 3, creating a low-cost, high-impact "win-win-win" scenario benefiting children, older volunteers, and broader school communities. Unlike most intergenerational programs, EC has been consistently and rigorously evaluated, providing substantial evidence supporting its effectiveness in promoting positive educational outcomes for children and health, social, and cognitive outcomes for volunteers (Fried, 2004; Fried et al., 2013; Rebok et al., 2011).

Despite its thorough evaluation, a direct replication of the United States EC model may not be feasible or successful in Australia due to differences in school systems, cultural norms, regional community resources and needs, and regulatory requirements. While the number of intergenerational programs in Australia has grown (MacCallum et al., 2010), published evaluations have not demonstrated a clear and simultaneous focus on both improving educational outcomes for students and promoting the well-being of older adults, even though these dual aims likely underpin program design. This lack of evidence limits understanding of how programs might achieve benefits for both groups in practice.

Although Australia performed above the international average in literacy and numeracy, it continued to lag behind many top-performing nations. In 2016, Australian students outperformed their peers in 24 countries on an international literacy assessment but were outperformed by students in 13 others. In numeracy, Australian students ranked higher

than those in 20 countries but behind students in 21 others (Australian Institute of Health and Welfare, 2022). The data suggested particular challenges in numeracy, with only 9% of Australian students reaching the Advanced international benchmark—well below Singapore’s 50% and Northern Ireland’s 27% (Australian Institute of Health and Welfare, 2022). These national trends were further reflected in regional disparities, with South Australia consistently performing below the national average in key NAPLAN areas such as numeracy, spelling, and grammar (Australian Curriculum, Assessment and Reporting Authority, 2018, 2023). For example, South Australian Year 3 students are less likely to achieve the “Exceeding” category compared to those in New South Wales and Victoria, while a higher proportion require additional support in foundational skills (Australian Curriculum, Assessment and Reporting Authority, 2023). These statistics underscore the need for innovative strategies to enhance student outcomes. Intergenerational programs, which integrate the knowledge and experience of older adults with student learning needs, present a unique opportunity to address these educational gaps. By fostering meaningful connections and purposeful engagement, such programs could simultaneously support student achievement and enhance older adults' well-being, creating a mutually beneficial model for schools and communities.

To address this gap, the present study focused on developing a pilot intergenerational program co-designed with older volunteers, school representatives, and project partners to adapt the program to the specific needs of participating schools. Co-design involved stakeholders in the development process, using their diverse perspectives to create practical, user-centred solutions (Sakaguchi-Tang et al., 2021; Xie et al., 2012). By engaging those who would implement and benefit from the program, we aimed to develop an approach that was effective, sustainable, and customised to local needs. Our eventual goal was to develop a flexible intergenerational model that could be applied broadly across different school contexts and refined through co-design to address specific needs. Central to the ultimate success of such a program would be the evaluation of health, well-being and cognitive outcomes for older volunteers (Fried, 2004), and well-being and educational

outcomes for younger participants (Fried, 2004); however, a comprehensive evaluation of this type was beyond the scope of the initial pilot. In the present study, we were concerned with establishing “proof-of-concept” for the appropriateness of a co-designed intergenerational approach inspired by EC in the Australian public educational context. Relying primarily on qualitative focus group data obtained from older participants and members of the school community, we evaluated the strengths and weaknesses of our approach, as well as older participants’ perceptions of both the challenges and successes associated with implementing this intergenerational pilot program.

5.1.1 Theoretical Background

The current study was grounded in Self-Determination Theory (SDT; Ryan & Deci, 2004). According to SDT, behaviours that are autonomously and intrinsically motivated (i.e., engaging in an activity because it is inherently enjoyable, interesting, or satisfying) are considered self-determined, and are linked to increased well-being due to greater effort, persistence, performance, and quality of subjective experience (Walker et al., 2024). Self-determination is strengthened when behaviour and experience leads to the satisfaction of three fundamental psychological needs: autonomy (independence in decision-making), competence (feeling effective and skilled in interactions and pursuits), and relatedness (feeling connected, belonging, and having meaningful relationships with others; Walker et al., 2024). SDT proposes that activities that fulfil these needs are more likely to be sustainable and beneficial to those undertaking them (Deci & Ryan, 2008).

Informed by SDT, we aimed to develop a collaborative context between researchers and participants that worked to support older volunteers’ satisfaction of basic psychological needs. To this end, and through processes of co-design and training, the older participants were explicitly recognised as partners in the research process. For example, older volunteers were consulted on the choice and structure of activities and encouraged to modify activities where appropriate, supporting autonomy. Providing training to help older adults support children's numeracy skills was undertaken with a view to enhancing competency. Intergenerational interactions were facilitated to build meaningful relationships between older

adults and children, promoting relatedness. Informed by the broader SDT perspective on motivation and well-being, we worked closely with school representatives and older volunteers to develop a model for engagement that also fitted with practical considerations and the pedagogical goals of the participating school.

5.1.2 The Present Study

Through a co-design process with older adults, school communities, and project partners, we aimed to adapt the core features of Experience Corps® for local implementation in Adelaide, South Australia. Our project, The Wisdom Club, aimed to bring older volunteers into school communities to (1) create opportunities for purposeful engagement for older adults, (2) enhance developmental outcomes for children, focusing on numeracy skills, and well-being outcomes for older adults, and (3) strengthen school communities. The overarching aims were to co-design a model for an intergenerational program focusing on older adult volunteers supporting educational opportunities in South Australia and to conduct a feasibility study and process evaluation to refine the model and provide supporting data for future program implementation.

It was hypothesised that participation in the program would be associated with increases in subjective well-being (including lower negative affect, higher positive affect, and life satisfaction) and psychological well-being (i.e., greater psychological flourishing, greater sense of purpose in life), among the older adult volunteers. Moreover, in addition to assessing within-person changes in the outcome measures described above, the acceptability, feasibility, and sustainability of the intervention were explored via focus groups conducted with older volunteers and members of the school community.

5.2 Method

5.2.1 Participants

A community-based sample of 25 older participants was recruited through the distribution of the study advertisement via (1) a pre-existing participant database held by the research team, (2) Onkaparinga City Positive Ageing Centre and feedback network (via email), (3) South Australian Office for Ageing Well's feedback network (via email) and digital

publication (“Weekend Plus”), and (4) providers of retirement village accommodation in the Adelaide metropolitan area. Eligibility criteria required participants to be aged 65 years or older, fluent in English, and to complete the required regulatory screenings (national police checks and mandatory online response to abuse and neglect training provided by the South Australian Department of Education) and training to volunteer in a school setting. Six participants withdrew from the study before commencing training in the implementation of the program due to (2) discontinued communication with their retirement communities, (2) the program not aligning with expectations, (1) scheduling conflicts, and (1) non-response. One participant withdrew due to health issues following training. Demographic characteristics are provided in Table 23 for all available baseline data ($N = 25$). The final sample consisted of 18 participants. Post-program data was unavailable for one participant due to non-response. The program was piloted in partnership with a primary school in the southern suburbs of metropolitan Adelaide. School children taking part in the program were from a Year 3/4 class (ages 8 to 10). The pilot study focused on the experiences of our older volunteers and school staff; no data were collected from the children.

Table 23*Demographic Characteristics of ‘The Wisdom Club’ Participants*

Characteristics		Baseline N = 25
Age (Years)	Mean (SD)	76.16 (7.20)
Gender (n, %)	Female	18 (72)
	Male	6 (24)
	Non-binary	1 (4)
Education (n, %)	Did not complete High School	4 (16)
	Completed High School or Equivalent	5 (20)
	Some College or Tertiary	7 (28)
	Bachelor’s Degree	6 (24)
	Postgraduate Degree	3 (12)

Relationship Status (n, %)	Single (never married)	0 (0)
	Married/Domestic Partnership	9 (36)
	Separated	1 (4)
	Divorced	7 (28)
	Widowed	8 (32)
Employment Status (n, %)	Full-Time Employment	0 (0)
	Part-Time Employment	2 (8)
	Casual Employment	0 (0)
	Unemployed (Inc. Retirement)	23 (92)

5.2.2 Procedure

The Wisdom Club program took place across five phases outlined below. The study protocol was reviewed and approved by the Flinders University Human Research Ethics Committee (Project ID 4325) and the Department for Education (Reference No: 2022-0055).

Phase 1: Establishing Core Program Feature. The initial phase involved reviewing relevant Experience Corps® literature to create a draft implementation model. Following co-design principles, school representatives and project partners (i.e., members from the SA Department for Education and Child Development and the City of Onkaparinga Positive Ageing Centre) contributed to, reviewed, and critiqued the draft 'Wisdom Club' model. Knowledge exchange occurred through meetings and feedback on draft project documents and policies. While the initial goal was to establish a working model, the collaborative partnerships formed in Phase 1 continued to guide program development and adaptation through subsequent phases.

Phase 2: Development of Training Program and Manuals. The research team created training materials and program schedules (See Appendix O and P), which were reviewed by project partners before volunteers began their training. The training covered three main areas: (1) self-development for volunteers, including necessary checks for

working with children and understanding policies and procedures around mandatory reporting of abuse, (2) strategies to enhance children's social and emotional learning, including interpersonal skills for working with children, and (3) contemporary methods to support early numeracy skills development through games and interactive activities. The program specifically aimed to strengthen children's understanding of numbers, patterns, and relationships in alignment with the Australian Curriculum. This was achieved through interactive and engaging activities delivered in both one-on-one and group settings. Games were selected in collaboration with researchers specialising in early childhood development and education to ensure alignment with Australian Curriculum standards for Year 3/4 students (for national standards, see Australian Curriculum, Assessment and Reporting Authority, 2015).

The focus on numeracy emerged from consultations with school representatives. Initially, the program was anticipated to support student literacy, consistent with the early implementation of EC. However, school representatives highlighted that teaching their phonics-based literacy approach required specialised instruction, making it less suitable for volunteer involvement. In contrast, numeracy was identified as an area where volunteers could provide meaningful support without the risk of inadvertently undermining existing teaching methods. Consequently, the program was adapted to emphasise numeracy development, reinforcing children's comprehension of numerical concepts in accordance with the Australian Curriculum. This shift underscored the importance of a co-design process in ensuring that program delivery aligned with school needs and instructional frameworks, ultimately fostering a more effective and contextually relevant intervention.

Phase 3: Recruitment and Training of Volunteers. Following approval by the Flinders University Human Research Ethics Committee and the Department for Education, an invitation to participate in a research program titled "The Wisdom Club: Enhancing Education and Well-Being through Intergenerational Connections" was circulated to potential participants (See Appendix Q). Interested individuals were provided with the researchers' contact details and supplementary study information, including eligibility criteria and consent

forms, either by post or email (See Appendix R). Eligible participants were then contacted by telephone and invited to attend two training sessions, scheduled one week apart in consultation with school representatives. Before attending the training, participants were required to provide proof of their COVID-19 vaccination status, as per the Department of Education guidelines applicable during the study period.

Participants (older volunteers) received training in a group format led by members of the research team. Training sessions were held at Noarlunga Downs Primary School. On the first day of training, participants were asked to complete a questionnaire. The questionnaire included questions about their current social and activity engagement, their subjective and psychological well-being, and aspects of physical health (See Appendix S). Following completion of the questionnaire, participants were briefed on school policies and procedures by school representatives. Training then focused on participants engaging with a range of numeracy-based games (e.g., board games, dice games, card games) and skills for interacting with students, including collaboration, appropriate questioning, relationship building, and gameplay tips. We based the activities around “old-school” board games rather than computer or other digitally based games, on the basis that these would be more familiar to many of the older volunteers. Participants were asked to trial and provide feedback on the games during training, which informed the final selection of those ultimately included in the feasibility trial.

On the second day, participants underwent essential training and obtained the required clearances for working with children in a school environment, including the Working With Children Check (WWCC) and Responding to Risks of Harm, Abuse, and Neglect in Educational and Care Settings (RRHAN-EC). The WWCC involved a police background check to assess suitability for working with children, while the RRHAN-EC training provided foundational knowledge on recognising, responding to, and reporting child harm or abuse in educational settings. Both the WWCC application and RRHAN-EC training were conducted online, with the latter requiring participants to create an account and log in via a third-party

website using a personal email address. All training and clearances were organised through the school at no cost to participants.

Many older participants were not regular users of computers, which presented challenges in completing the required online training. To support them, an in-house session was set up at the school, where two research team members assisted 15–20 participants using school laptops. Research staff provided one-on-one guidance as needed, helping volunteers navigate the online systems, set up email accounts, create log in credentials, and complete their clearances. To accommodate varying needs, three additional days were offered for participants to finalise any remaining clearances or practice the numeracy games at the school. Most participants returned for at least one unscheduled extra session, either to complete their training requirements or to gain additional practice with the program materials.

Phase 4: School-based Feasibility Trial. Following the completion of training, participants began a single-group feasibility trial at Noarlunga Downs Primary School. Coordinated with school representatives and members of the research team, the participants engaged in numeracy-based activities with students for one hour and 20 minutes each week over six consecutive weeks, with sessions held on Wednesday afternoons. Participants worked either one-on-one or in small groups of two or three with students, using games designed to enhance children's skills in working with numbers.

Phase 5: Process Evaluation. Upon completing the program, participants were invited to complete a follow-up questionnaire and join a post-program focus group. Additionally, school and community officials involved in the program were invited to participate in individual interviews (See Appendix T for focus group/interview information and consent forms). A process evaluation was conducted to (1) assess the feasibility of implementing the project on a larger scale, (2) identify areas for improvement, and (3) gather pilot data on the experiences of older adult volunteers. This evaluation included both quantitative and qualitative methods.

Quantitative data on program effectiveness was collected through pre- and post-trial self-report questionnaires administered to the volunteers. The qualitative component involved four semi-structured interviews with relevant school and community officials and two focus groups with participants post the program. Interviews with school representatives were conducted over the phone by a member of the research team and lasted approximately 10 minutes. Two focus groups, each consisting of 6-8 participants, were conducted in person at Noarlunga Downs Primary School by members of the research team and lasted for approximately 60 minutes. Questions were asked verbatim of all groups (see Table 24 and 25). The discussions aimed to explore project partners' and volunteers' subjective experiences of the program, focusing on acceptability, barriers, facilitators, sustainability, and feasibility. Interviews and focus groups were recorded and transcribed.

Table 24*Focus Group Questions for Volunteers*

Questions
<ul style="list-style-type: none"> • Describe your experience of the program. • What, if any, benefits did you receive from the program? • To what extent do you feel that you successfully delivered the program? • What, if anything, helped you to deliver the program successfully? • What, if anything, got in the way of you delivering the program as intended? • If you could change anything about the program, what would it be? • Would you take part in this program as a volunteer again? Why or why not?

Note. Questions were adapted from “Development and application of the RE-AIM QuEST mixed methods framework for program evaluation” by J. Forman, M. Heisler, L. J.

Damschroder, E. Kaselitz, and E. A. Kerr, 2017, *Preventive Medicine Reports*, 6, p. 322-328. (<http://doi.org/10.1016/j.pmedr.2017.04.002>). Copyright by Elsevier.

Table 25*Interview Questions for School Representatives and Project Partners*

Questions
<ul style="list-style-type: none"> • What do you understand about the reasons for us running the Wisdom Club program? • What, if any, were the benefits of the program? • Did the program cause any harm or create any problems? • What aspects of the program do you believe students/volunteers found the most useful? What aspects did they enjoy most/receive the greatest benefit from? • What aspect of the program do you believe students/volunteers found the least useful? What aspects did they like the least/receive the least benefit from? • What were the main factors that contributed to the successful aspects of the program? • If you could change anything about the program, what would it be? • Would your organisation take part in this program again? Why or why not? • Do you believe students/volunteers would take part in this program again? Why or why not?

Note. Questions were adapted from “Development and application of the RE-AIM QuEST mixed methods framework for program evaluation” by J. Forman, M. Heisler, L. J. Damschroder, E. Kaselitz, and E. A. Kerr, 2017, *Preventive Medicine Reports*, 6, p. 322-328. (<http://doi.org/10.1016/j.pmedr.2017.04.002>). Copyright by Elsevier.

5.2.3 Measures

The following measures were included in the pre- and post-program questionnaires completed by older volunteers.

Positive and Negative Affect. Positive and negative affect were assessed using the Scale of Positive and Negative Experiences (SPANE; Li et al., 2013). The SPANE is a 12-item scale that assesses recent positive and negative experiences and emotions. Items

(e.g., “Good”, “Bad”) are rated on 5-point scales (1 = very rarely or never, 5 = very often or always) based on the amount of time each was experienced during the past four weeks. The SPANE produces separate summed scores for both positive (SPANE-P) and negative (SPANE-N) feelings, with higher scores indicating more positive or negative affect, respectively. The SPANE has demonstrated good internal reliability (Cronbach’s alpha [α] = .80-.88) and good convergent validity with other measures of emotion, well-being, happiness, and life satisfaction (Diener et al., 2010). The SPANE has also demonstrated consistent psychometrics across a variety of cultures (Giuntoli et al., 2017; Li et al., 2013; Rahm et al., 2017; Silva & Caetano, 2013; Singh et al., 2016; Sumi, 2014).

Life Satisfaction. Life satisfaction was assessed using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item scale that assesses general life satisfaction. Items (e.g., “In most ways, my life is close to my ideal”, “I am satisfied with my life”) were rated on 7-point scales (1 = strongly disagree, 7 = strongly agree) and summed to create an overall life satisfaction score, with higher scores indicating greater life satisfaction. The SWLS has demonstrated good internal reliability (Cronbach’s alpha [α] = .87) and good convergent, discriminant, and predictive validity across a variety of populations (Diener et al., 1985; Pavot et al., 1991; Pavot & Diener, 1993, 2008).

Psychological Flourishing. Psychological Flourishing was assessed using the Flourishing Scale (FS; Diener et al., 2010). The 8-item scale assesses perceived success in key areas such as relationships, self-esteem, purpose, and optimism. Items (e.g., “My social relationships are supportive and rewarding”, “I actively contribute to the happiness and well-being of others”) were rated on 7-point scales (1 = strongly disagree, 7 = strongly agree) and summed to create an overall flourishing score, with higher scores indicating greater psychological flourishing. The FS has demonstrated good internal reliability (Cronbach’s alpha [α] = .86) and high convergence with similar scales (Diener et al., 2010).

Life Engagement. Life engagement was assessed using the Life Engagement Test (LET; Scheier et al., 2006). The LET is a 6-item scale designed to measure purpose in life, defined in terms of the extent to which a person engages in activities that are personally

valued. Items (e.g., “To me, the things I do are all worthwhile”) are rated on 5-point scales (1= strongly disagree, 5 = strongly agree) and summed to create an overall life engagement score, with higher scores indicating greater levels of purpose in life. The LET has demonstrated good internal reliability (Cronbach’s alpha [α] = .72-.87) and moderate convergence with other measures of optimism, life satisfaction, general health and self-esteem (Scheier et al., 2006).

5.2.4 Data Analysis

5.2.4.1 Quantitative Data Analysis.

The study employed a single-group pre-test-post-test design, with measures of well-being (i.e., positive affect, negative affect, life satisfaction, psychological flourishing, and life engagement) and physical functioning as primary outcome variables. Paired samples t-tests were conducted to assess changes in well-being outcomes among volunteers over time. Due to the small sample size and associated limitations to power (Cohen, 2013), the quantitative component was intended to provide valuable pilot data on effect sizes to inform power calculations for future larger-scale programs of this type. Expressing effect sizes in terms of Cohen’s d , we regarded a change from pre- to post-test of $d = 0.2$ as small, $d = 0.5$ (ranging from 0.21 to 0.79) as moderate, and $d \geq 0.8$ as large (Sullivan & Feinn, 2012).

5.2.4.2 Qualitative Data Analysis.

A thematic analysis was conducted to analyse the qualitative data, focusing on identifying, organising, and examining patterns of meaning within the data (Braun & Clarke, 2012). A framework approach (Gale et al., 2013) was selected as it supports the generation of emergent themes (inductive analysis) while also allowing consideration of predetermined areas of interest (deductive analysis). In this study, coding was primarily inductive, but the organisation and interpretation of themes were informed by Self-Determination Theory (SDT) and the feasibility outcomes described by Bowen et al. (2009) – acceptability, practicality, and demand. These theory-based expectations guided how themes were grouped and interpreted, rather than being applied as a strictly a priori coding framework.

The qualitative data were transcribed verbatim by an external company and then imported into NVivo 11 for analysis. The analysis occurred across six stages:

Stage 1: Ms Harvey (interviewer) reviewed all transcripts to familiarise herself with the data, noting initial thoughts and impressions regarding project members' and volunteers' experiences and the barriers or facilitators for program implementation.

Stage 2: Ms Harvey applied descriptive codes to the transcripts, identifying key themes and concepts using both inductive and deductive approaches. Dr Windsor (interviewer), independently analysed two transcripts (one focus group, one interview) to ensure diverse perspectives.

Stage 3: The interviewers met to discuss the codes and generated a list of themes and sub-themes, agreeing upon a working framework for subsequent transcripts.

Stage 4: Ms. Harvey coded the remaining transcripts using the existing themes and sub-themes, with NVivo used for efficiency.

Stage 5: A thematic map of the analysis was generated. The interviewers identified illustrative quotations, which were inserted into a framework containing themes and sub-themes.

Stage 6: A back-and-forth process of mutual reflection was performed by the interviewers to further define and finalise themes.

5.3 Results

5.3.1 Quantitative Analysis

It was hypothesised that older adult volunteers participating in the Wisdom Club program would demonstrate increased well-being over the six-week study period. Table 26 presents the means and standard deviations of paired sample t-tests for the respective outcomes. As predicted, on average, positive affect increased over the study period compared to baseline measures, $t(13) = -3.74$, $p = .002$. This was a medium effect ($d = 0.66$) according to Cohen's criteria. The strong correlation between pre-program and post-program scores on positive affect ($r = .79$, $N = 14$, $p = <.001$) suggests a relatively consistent pattern of change (high rank-order stability) across participants. Changes in negative affect, $t(13) =$

1.78, $p = .098$, life satisfaction, $t(14) = .07$, $p = .949$, psychological flourishing, $t(12) = -.58$, $p = .575$, and life engagement, $t(15) = -.11$, $p = .918$, were not significant, and effect sizes were substantially smaller, with only the effect size for negative affect, which decreased from pre- to post-test, bordering on moderate size. Taken together, the quantitative results therefore provided only limited support for the hypothesis.

Table 26

Means (M) and Standard Deviations (SD) for Key Study Variables at Baseline and Post-program

Outcome variables	Range	Baseline	Post-program	Cohen's d
		M (SD)	M (SD)	
Positive affect	6-30	22.29 (2.87)	24.29 (3.22)	-1.00
Negative affect	6-30	12.00 (3.26)	10.79 (3.36)	.48
Life satisfaction	5-35	24.73 (5.66)	24.67 (5.83)	.02
Psychological flourishing	8-56	44.77 (4.99)	45.46 (5.83)	-.16
Life engagement	6-30	24.00 (2.73)	24.06 (3.99)	-.03

5.3.2 Qualitative Analysis

It was also hypothesised that the program would be experienced as acceptable, feasible, and sustainable by volunteers, school representatives, and project partners. When asked to describe their experiences of the program, volunteers, school representatives, and other project partners' accounts fell under four main themes, highlighted in Table 27 and discussed in the sections that follow.

Table 27

Themes Identified in Focus Group and Interviews

Themes	Subthemes
Program Engagement and Sustainability	Program satisfaction

	Intention to continue use
	Impact of COVID-19 and lockdowns
Program Impact	Social connection
	Community engagement
	Positive feelings and experiences
	Generativity
	Cognitive stimulation and mutual learning
	Maths fluency
Structural and Environmental Factors Affecting Participation	Program Logistics
	Technical issues
	Environmental conditions
	Time commitment and consistency
	Relationship with program organisers
Personal Barriers and Enablers	Participant resilience
	Individual adaptability
	Math proficiency

Program Engagement and Sustainability. Our first theme concerned the nature of volunteers' and school representatives' perceptions of the success of the program, and its potential to provide an ongoing resource for older adults, students and the school community. In general, the volunteers viewed their experiences positively but also acknowledged that it was not always easy. One volunteer noted: *"I'd say it was rewarding but challenging"* (Volunteer 4; the nature of the specific challenges faced will be explored in subsequent sections). The view of school representatives was positive; one interviewee noted: *"I think it was really good. I would like to work out how I can roll it out to the other classes and actually have it continue on through our schools"* (School representative 1). The generally favourable impression of the program aligned with interest from volunteers [*"I really, really want to, and I'd like to be able to attend every one...I think it's a brilliant idea"*, Volunteer 6] and the school [*"I'd highly recommend it to – it's a two-way street. It gets*

volunteers into the school community again, plus it gives students those interactions. I think absolutely we'd recommend it", School representative 2] to maintain the program, or something similar in the future.

The timing of Wisdom Club was also such that there was a particular appetite for engagement given the recent lifting of social restrictions arising from COVID-19 (e.g., Biddle & Gray, 2021; Volunteering Australia, 2024), which, may have increased its value for some participants. One participant (Volunteer 8) commented: *"When Covid and all that came, I was, 'What are you doing, God? I'm sitting here on the chair doing nothing'. This came and I said, 'Wow! I'm back again to where I love to be'"*. Overall, the data pointed to a high degree of satisfaction and engagement from volunteers. This is perhaps unsurprising, as those who did not enjoy participation may have dropped out prior to the follow-up interviews; however, it is encouraging that the enthusiasm for the concept expressed by volunteers was matched by school staff.

Program Impact. Our second theme addressed the perceived positive impacts of the program on older adults, students, and the school community. Social connection emerged as a significant subtheme, with many volunteers describing the bonds they formed with particular students. One volunteer noted: *"I mean, it might take the whole six weeks or whatever it is to know that person, but in that time there's a bonding with you and that child"* (Volunteer 6). Some volunteers also expressed a sense of friendship and mutual trust among their peers. One volunteer noted: *"...the camaraderie too. Just, you know, getting to know the other volunteers a bit more"* (Volunteer 2). Social benefits were also observed by school staff, with one member commenting on the unexpected openness of students: *"The benefits for our children were not just mathematical but were also social, the social and emotional. There were so many of our kids that divulged so much stuff to the volunteers, which was a bit of a surprise to me"* (School representative 1). Additionally, another member highlighted the benefits of the unique relational opportunities provided by the program, saying: *"I had lots of kids who really seemed to come out of their shells with the older*

people. They had the chance to form relationships with adults they don't usually get to interact with" (School representative 3).

The program also fostered broader community engagement. A school representative noted: *"I think we've had lots [of volunteers], quite a few say that they would like to come back, and they'd like to help out in other ways within the school, which I think is fantastic"* (School representative 1), indicating a desire among volunteers to remain involved and contribute to the school community beyond the initial program.

Many participants described the program as a source of enjoyment and positive feelings. They described the rewards of spending time with the children as something that brought them joy, with one volunteer sharing, *"You get joy from, you know, the chatter and the laughing, and they're [the children] excited"* (Volunteer 10). Another volunteer added, *"They bring so much joy. I have not felt that joy for so many years"* (Volunteer 3). This sentiment was echoed by school staff who observed the mutual joy and excitement between volunteers and students. One school representative noted, *"...the huge grins the kids had when they go in and the huge grins that the experienced adults had as the kids came in each time, and them greeting them and how well they got to know them over such a short period of time"* (School representative 1).

In addition to this shared joy, some participants found that the benefits of the program extended beyond just spending time with the children to actively helping them improve. A project partner described it as *"...a different way of learning for the children, and it just brings a big smile to her face [a volunteer] that she could help the kids"* (Project partner). This sense of fulfilment from giving back was complemented by an unexpected sense of reciprocity, as highlighted by one volunteer: *"I thought I'd be giving to them, but really they're giving to you, aren't they?"* (Volunteer 2).

Moreover, the program's activities also provided cognitive stimulation for some volunteers. One volunteer specifically mentioned how the program helped her feel mentally reassured: *"Before, I always thought I had Alzheimer's, and because of Covid, I got Covid..."*

This time I joined this group and I played the mathematics, and I practised the games which practised my brain a lot. I found I was still fast." (Volunteer 7).

School representatives also noted that the supportive relationships formed with volunteers encouraging students to engage more confidently with challenging tasks. A school representative observed, *"I think the fact that some of the really tricky kids really gelled with the experienced adults and therefore were prepared to have a go at things that they perhaps wouldn't have a go at in the past, I think those are the benefits there"* (School representative 1).

Structural and Environmental Factors Affecting Participation. Our next theme, structural and environmental factors affecting participation, examines how various operational and environmental factors influenced the involvement and experiences of both volunteers and students in the program. Subthemes include game selection and management, training and preparation, environmental conditions, and program consistency.

The selection and management of games played an important role in shaping the participants' experiences. One volunteer highlighted the challenge of pairing students with differing abilities, noting, *"If you've got a group of children, you might have a couple of people, it's not so noticeable. I felt like that when I was at school. If you were up against the top of the class in maths and you were back struggling, you did not want to be paired off with that person"* (Volunteer 2). Several volunteers suggested making the program less competitive by having either one-on-one interactions with a volunteer or group activities to buffer against potential negative effects for students, reflecting, *"It's trying to interact to make it not competitive by putting a bit of fun in it and changing a few things. Even one little move, if the one that was struggling, not making a big deal of that because the other one would be winning It was just – you couldn't change that because it was just coincidence. I guess in hindsight, I guess if I've got any criticism, it may have been better to have, I don't know, one on one or a group, because two, it's one against the other"* (Volunteer 2). A school representative added that some activities were too advanced for the students, stating, *"I think there were some games that probably weren't hitting where they were at, so there were*

some that were quite challenging for them that were looking at multiplication, division, which they're just not ready for" (School representative 3).

Another commonly mentioned subtheme related to the training and preparation involved in the program. Many volunteers suggested the need to streamline the initial training process. One volunteer remarked, *"As a criticism, I thought it took us about a couple of weeks to get into doing something. We have to probably go through all that, those sorts of things of safety with children and those sorts of things. Can we sort of break it down so that one session and we do get through all those things, or is it too much in one?"* (Volunteer 5). Volunteers also expressed a desire for more flexibility with training materials, with one saying, *"What I was saying was sometimes I thought, 'Oh, if only I could take that game home for this week, I could look at it'"* (Volunteer 1).

From an organisational perspective, training was seen as an important component of the program, significantly contributing to both recruitment and retention. A project partner noted that offering comprehensive training impacted volunteer recruitment: *"As soon as I approached people to ask them, I said, 'Look, it's for kids.' 'I don't know if I can do children.' I'd say, 'Well, why?' 'Because they wouldn't understand me.' 'No, no. You're going to be trained in what you have to teach them.' 'Oh, well, if that's the case.' I think when they found out that they would be offered all the tools they needed, that made a big difference to them as well"* (Project partner). Additionally, a school representative highlighted the importance of thorough training, even if it initially seemed challenging: *"I know it probably didn't seem like it at the time, but taking the time to actually help those experienced adults get through that really difficult part at the start, being able to actually have an email address and to get – although that might've seemed difficult at the time, that was a big successful part of getting these people on board. Because, otherwise, they would have just quit and gone, 'That's too hard. I'm not doing it.' Actually taking the time to go through all of that is really important 'cause that means that they could actually contribute and be part of it"* (School representative 1).

Environmental conditions were commonly recognised as a factor that affected participants' ability to effectively engage in the program. One volunteer mentioned the noise level as a challenge to engagement, stating, *"We were all talking different things with different people, it would've been better if the groups had been in four rooms rather than one room because it was just so loud"* (Volunteer 12). Another volunteer added that sharing the same room increased distractions among children, making it harder for them to engage fully: *"The kids were being distracted by other kids as well. I mean, they were curious about what 'Johnny' was doing, what was going on at that table. We're fighting against that as well"* (Volunteer 14).

School staff highlighted consistency in the program's structure as a positive aspect. One school representative praised the program's consistent routine, noting, *"It was repetitive. It was consistent, where our students knew exactly what was happening. Then they expected it, and the volunteers delivered"* (School representative 2). Overall, attention to various factors such as game design and implementation, training and preparation, having manageable environmental conditions, and finding a balance between consistency and flexibility were found to be important factors for optimising the experience for all participants.

Personal Barriers and Enablers. Participant vulnerability was a common theme among volunteers, many of whom expressed initial insecurity about their ability to engage with children due to a lack of recent contact or perceived inadequacies in their maths skills. One volunteer shared, *"I felt very insecure about being able, because I haven't had any contact with children for so many years, but no, it was, I'm glad I did it, but I didn't have any pre skills"* (Volunteer 1). Additionally, some volunteers admitted feeling "nervous" at the beginning of the program due to maths not being a personal "strength": *"Well my maths aren't the best. I've never been good at arithmetic. It was a learning experience to me. I used to pick out the easy games 'cause some of 'em I didn't understand"* (Volunteer 8). Another volunteer emphasised the complexity of engaging with children beyond just teaching maths, highlighting the importance of social interaction and communication skills: *"It's not just the maths that you're engaging you with the kids, it's how you engage with the kids socially,*

body language, talk, topics. It's not just the maths tools, it's the general communication tools with the massive variety of kids with different personalities, different interests" (Volunteer 14).

However, despite their initial apprehensions, participants demonstrated adaptability in their approach to engaging with children. Volunteers successfully adjusted activities to better suit the children's abilities, even when the activities were not initially targeted at the appropriate level. As one school representative noted, *"Most of them [the games] seemed to be targeted at roughly their age limit. Even when they weren't, some of the experienced adults are really good at going, 'Right, this is clearly pitched to too high a level. Let's make it a little bit simpler here'"* (School representative 2). Moreover, volunteers expressed a growing acceptance of not having all the answers and embracing the unpredictability of working with children. As one volunteer reflected, *"I've come to the conclusion it's okay not to run a tight ship. It's okay not to know what you're doing all the time, because children are human, aren't they? They don't fit neatly in little boxes"* (Volunteer 10).

5.3.3 Summary of Key Qualitative Findings

The qualitative analysis revealed strong engagement and enthusiasm for the program among volunteers and school representatives, with many viewing the program as a valuable and potentially ongoing resource for students, older adults, and the school community. While volunteers found participation both rewarding and challenging, many expressed a strong interest in continuing, a sentiment echoed by school staff who saw value in expanding its reach. The program's timing, coinciding with the easing of COVID-19 restrictions, may have further heightened enthusiasm, particularly among volunteers seeking renewed purpose and connection. Participants described meaningful social connections, with volunteers forming bonds with students and fostering camaraderie among peers, while school representatives observed increased student confidence and openness. Some volunteers also experienced cognitive benefits, with structured activities providing mental stimulation and reassurance of their abilities. Despite these positive outcomes, structural and environmental factors influenced participation, including the need for better tailoring of

learning activities, streamlined training, and improvements to learning environments such as noise levels and shared spaces. However, the program's consistency and structure were seen as beneficial, helping to establish routine and predictability for students. Individual factors also shaped participation, with some volunteers initially feeling insecure due to a lack of recent experience with children or confidence in their mathematical skills. Over time, many adapted, adjusting activities to better suit students' needs and becoming more comfortable with the unpredictability of working with children, a sentiment echoed by school representatives.

Overall, the findings suggest that the program was generally valued by both volunteers and school representatives. While some logistical and environmental challenges were identified, the enthusiasm for sustaining and expanding the initiative indicates its potential as a meaningful and mutually beneficial program for both older adults and students.

5.4 Discussion

The present study aimed to evaluate the effectiveness and feasibility of an intergenerational program involving older adults supporting educational opportunities for primary school-aged students in South Australia, from the perspectives of older volunteers, and school and community members. In the following section, we discuss our preliminary findings concerning (a) the effectiveness of the Wisdom Club program for older adults, as indicated by changes in well-being outcomes over the study period, and (b) the feasibility of the program as reflected by the experiences and perceived impact of the program on participants, school officials and project partners.

5.4.1 Efficacy of the Wisdom Club Program for Older Adults' Well-Being

Our findings offered some preliminary evidence on the efficacy of the Wisdom Club program for older adults' subjective well-being. It was predicted that participation in the program would be associated with increased well-being. Findings showed partial support for this hypothesis, with participants experiencing a significant increase in positive affect following completion of the program. The significant increase in positive affect may be partly explained by satisfaction of SDT's basic psychological needs: relatedness, seen in

volunteers' bonds with students and camaraderie with peers, and competence, shown in their success supporting learning by adapting activities to students' needs. However, no significant changes were observed for negative affect, life satisfaction, psychological flourishing, or life engagement. These results indicate that the program effectively enhanced positive emotions among older volunteers but had a limited impact on broader psychological well-being.

The lack of statistical change could be attributed to several factors. First, the study's small sample size ($N = 25$) limited the statistical power to detect significant differences pre-post. While the change in negative affect was non-significant, the effect size (Cohen's $d = .48$, bordering on conventional benchmarks for a medium effect) points to a potentially meaningful change. Future studies should increase the sample to better assess whether the observed patterns represent genuine improvements or statistical noise. Secondly, while the six-week program may have been sufficient to impact affective well-being, the small effects for life satisfaction, flourishing and life engagement suggest that it did not influence broader aspects of evaluative and psychological well-being. Research using daily diary methods suggests that affective states, such as daily mood and emotional experiences, respond dynamically to immediate social interactions and experiences (Altermatt, 2015; Hay & Diehl, 2011). In contrast, psychological well-being, which involves the pursuit of meaning and self-actualisation, is likely shaped by longer-term developmental processes, including stable personality traits and the cumulative effects of reinforcement contingencies over time (Lent, 2004; Ryff, 2014). For example, a sense of mastery – a key component of psychological well-being – may develop through sustained engagement, repeated practice, and the gradual overcoming of challenges rather than being fully realised through short-term experiences alone. Given this, while the present program may have successfully boosted short-term positive affect, such as moments of joy or enjoyment during interactions, it may not have provided the duration or intensity required to foster deeper, more enduring psychological changes. Future research could explore factors that contribute to long-term

psychological well-being to better understand how intergenerational programs might foster more lasting benefits.

Lastly, participants' engagement and commitment levels may have influenced the program's outcomes. A recent systematic review of intergenerational programs identified program duration and total contact time as key factors affecting effectiveness (Martins et al., 2019). The review found that programs with only 4–6 hours of intergenerational contact failed to produce significant changes in a range of psychosocial outcomes, such as attitudes toward students, older volunteers, and generativity. Our program provided approximately eight hours of total contact time (1 hour 20 minutes per session across six weeks), which, while exceeding the threshold identified in the review, remains substantially lower than the commitment required for some intergenerational programs. For example, the original EC model (Fried, 2004) required volunteers to commit at least 15 hours per week for one to two school years, fostering deep relationship-building and sustained engagement. It is plausible that higher "doses" of volunteer engagement may better optimise well-being benefits by giving participants more time to build relationships, feel comfortable in an unfamiliar environment, and develop meaningful bonds. In contrast, the relatively low-intensity engagement in the current program may explain why only short-term affective benefits were observed. More intensive and long-term commitments, such as those in EC, may be necessary to achieve broader psychological benefits.

5.4.2 Feasibility of The Wisdom Club Program

Another primary aim of the present study was to gain deeper insights into volunteers, school representatives, and project partners' experiences and the perceived impact of the Wisdom Club program. It was predicted that the program would be experienced as acceptable, feasible, and sustainable by volunteers, school representatives, and project partners. Overall, the qualitative findings pointed to a high degree of satisfaction and engagement from volunteers. This was perhaps unsurprising, as those who did not enjoy participation may have dropped out before the follow-up interviews; however, it was encouraging that the enthusiasm for the concept expressed by volunteers was matched by

school representatives and a representative of the local government's positive ageing program who helped to recruit and organise transport for volunteers.

Our interviews also highlighted several benefits of the program for participants and the wider community, including greater social connectedness and community engagement (e.g., willingness to participate in school activities), positive emotional experiences, a sense of generativity and reciprocity, and mutual learning. From the perspective of school representatives, the program not only fostered meaningful bonds between students and older adults but also increased students' confidence in tackling challenging tasks and enhanced their math automaticity. However, a key limitation was the absence of a formal assessment of students' mathematical abilities pre- and post-intervention, as well as the lack of control groups for comparison. Future research should incorporate standardised outcome measures to determine whether these perceived benefits translate into objective improvements in academic performance. Older adults reported experiencing joy and excitement (consistent with our quantitative findings), and the general perceptions of value attached to the program were supported by a strong interest among older volunteers and school representatives in continuing the intergenerational connections beyond the initial pilot phase. These findings broadly align with the "win-win-win" scenario originally advocated by the Experience Corps® model (Fried et al., 2004), with the program's benefits reaching students, volunteers, and the broader community. These findings were also consistent with other international intergenerational programs that showed educational improvements in children, enhanced well-being outcomes in older adults, and strengthened bonding between both generations (Fried, 2004; Fried et al., 2013; Gamliel & Gabay, 2014).

Our interviews identified key factors influencing participation and program success, highlighting both barriers to, and facilitators of, effective implementation. Barriers included the selection and management of activities, particularly when they were not age-appropriate or when students had varying mathematical abilities. These findings align with existing literature, which suggests that developmentally appropriate activities enhance engagement, whereas activities that are not developmentally appropriate reduce engagement (Kirsnan et

al., 2023). Activity mismatches may have undermined volunteers' competence by limiting their confidence in both delivering activities and supporting students effectively. Volunteers also indicated a need for streamlined and flexible training processes. From an SDT perspective, increasing training flexibility – for example, by allowing more preparation time and opportunities to take materials home – could better support autonomy by allowing volunteers to prepare in ways that suit their preferences, pace, and learning styles.

A key consideration in these challenges was the co-design process. While games and activities were selected based on the school curriculum, COVID-19 disruptions limited early consultation with teachers, making it difficult to tailor activities to students' skill levels before implementation. Although the program incorporated multiple sessions with older volunteers to collaboratively select games from various options, a more structured, school-led approach may have been beneficial. For instance, an alternative model might have involved first working with teachers to identify preferred games aligned with student needs, followed by providing more focused training for volunteers. This approach could have helped ensure that activities were better suited to students' skill levels, enhancing their learning experience, while also providing volunteers with a clearer, more structured process, reducing uncertainty and potentially improving program delivery. The downside of such an approach would be a reduced opportunity for the older volunteers to contribute creatively to co-design and selection of activities. This highlights a broader challenge in balancing 'bottom-up' participatory design approaches, which emphasise volunteer input, with 'top-down' approaches that integrate institutional expertise earlier in the process. Future intergenerational programs may benefit from considering creative ways to optimise this balance to enhance program effectiveness and ease of implementation.

Additionally, environmental conditions, such as noise levels, also impacted engagement, underscoring the need for an appropriate physical environment to minimise distractions and encourage meaningful interactions. Moreover, while school staff appreciated the program's consistent weekly format, volunteers expressed a preference for greater schedule flexibility to accommodate their other commitments. This need for adaptable

participation aligns with the *South Australian Plan for Ageing Well 2020-2025*, which emphasises the importance of flexible volunteering arrangements to support retention (Department for Health and Wellbeing, 2020). Similar themes were echoed in the *Re-Imagining Volunteering* report by Flinders University, which highlights the role of flexible models in sustaining long-term volunteer engagement (Windsor et al., n.d.).

Furthermore, interviews revealed that individual perceived strengths and weaknesses played a role in shaping the quality of volunteer engagement. Several volunteers initially felt uncertain about working with students, citing their lack of recent contact with children and perceived inadequacies in their math skills. This suggests that self-perceived competence may act as a barrier to participation, as volunteers who doubt their abilities may hesitate to participate or fully engage in the program. This finding aligns with Haivas et al. (2013), who found that volunteers who experience greater competence satisfaction (i.e., a felt sense of mastery or effectiveness in the volunteering environment) demonstrated higher engagement and lower intention to quit their volunteer roles. Despite these initial hesitations, volunteers adapted by adjusting activities to match students' abilities and embracing the unpredictability of working with diverse personalities and learning styles. To further support volunteers in future intergenerational programs, mentorship models could help bridge this initial confidence gap. Pairing less experienced volunteers with seasoned mentors may help ease initial anxieties, provide role modelling, and facilitate skill development in a low-pressure setting. This approach could not only enhance self-perceived competence but also promote long-term volunteer engagement by fostering a more supportive and collaborative learning environment.

The co-design process played a key role in shaping the program's focus on numeracy. While initial discussions considered whether the model could support literacy, the school expressed concerns about the appropriateness of volunteers assisting in this domain. This caution aligns with contemporary education literature, which emphasises the structured and systematic teaching of phonics as essential for literacy development (Castles et al., 2018). Given the specialised knowledge required for effective phonics instruction, schools

may have been wary of introducing informal literacy support that did not align with evidence-based practices. While the Experience Corps® (EC) model has historically positioned literacy as a core focus of volunteer support, EC requires volunteers to complete a formal training program – a 30-hour, two-week structured course – to ensure they are adequately prepared for their roles. The importance of rigorous volunteer training is further reinforced by research on volunteer-led reading programs, which shows high variability in effectiveness (Slavin et al., 2011). Wasik's (1998) review highlights key factors influencing success, including the need for certified specialists to supervise volunteers, ongoing training and feedback, and structured, intensive tutoring sessions. Without these components in place, volunteer-led literacy interventions may risk inconsistency, divert teacher attention from core curriculum delivery, and result in volunteers feeling underutilised or unprepared. This divergence from literacy support underscores the importance of co-design in tailoring intergenerational programs to the specific educational priorities of participating schools.

5.4.3 Limitations and Strengths

Our results should be interpreted with several limitations in mind. First, the study's small sample size and implementation in a single school limit the generalisability and the applicability of the results, which may not hold in more diverse populations of older adults and across different school contexts. Secondly, while this pilot study aimed to provide preliminary evidence of feasibility, the lack of a control group of older adults and the pre-post design restricts our ability to directly attribute observed changes to the program and draw more definitive conclusions. Lastly, the study did not include direct assessments of student outcomes. Although qualitative interviews with school staff offered insights into perceived benefits for students, a more comprehensive evaluation, including standardised assessments, will be necessary to demonstrate educational benefits for students.

Despite these limitations, this study provides valuable insights as the first to our knowledge to trial a model targeting both student academic outcomes and older adults' well-being within an Australian context. The study also made use of co-design, ensuring that program activities were collaboratively developed with volunteers, school representatives,

and project partners (i.e., members from the SA Department for Education and Child Development and the City of Onkaparinga Positive Ageing Centre) to align with participant needs and institutional priorities. This participatory approach likely contributed to the high levels of engagement and perceived value reported by stakeholders (Sakaguchi-Tang et al., 2021; Xie et al., 2012). However, challenges in co-design were also evident, particularly in balancing volunteer input with school-identified priorities. Future research could explore whether starting the co-design process with teachers' input on curriculum needs, alongside early involvement of volunteers to adapt and deliver activities, leads to better program alignment and effectiveness. In this way, teachers' knowledge of student learning needs would guide the pedagogical focus, while volunteers' creativity, lived experience, and practical insights would inform how activities are shaped and implemented. This dual involvement from the outset could ensure activities are both developmentally appropriate and engaging, while preserving the collaborative spirit central to the program's co-design approach.

Additionally, future studies should consider involving students in the co-design process. Engaging students as active participants in program development could enhance the relevance and appeal of activities, fostering a sense of ownership and increasing engagement. This could be achieved through workshops or feedback sessions where students contribute ideas and preferences, ensuring that activities are both educational and enjoyable.

5.4.4 Future Directions

Future research should employ randomised controlled trials to more rigorously assess the efficacy and sustainability of the Wisdom Club program among older adults, as well as its potential benefits for student numeracy outcomes. Incorporating active control groups and long-term follow-ups will provide more reliable evidence of the program's impact (Martins et al., 2019). Expanding the sample size and conducting trials across multiple sites, rather than limiting to a single school, will enhance the generalisability of findings by capturing a broader range of educational settings and participant demographics. A valuable

addition to this research could be the integration of standardised assessments (e.g., NAPLAN testing) to objectively measure changes in students' numeracy skills over time. By comparing results against national benchmarks, this approach could offer a clearer indication of the program's effectiveness in improving students' numeracy skills at a systemic level. Additionally, partnering with the public education system in Australia for larger-scale trials could help integrate the Wisdom Club program into school curricula, expand its reach to diverse student populations, and provide robust empirical evidence to inform educational policy decisions. This would not only support the program's widespread adoption but also enhance intergenerational learning opportunities, improving both students' numeracy outcomes and older adults' cognitive engagement and social participation.

From a practical standpoint, the findings highlight the need for comprehensive training, thoughtful selection of activities, attention to environmental factors in program design, and a balance between consistency and flexibility in implementation. Future intergenerational programs may benefit from more structured training models. The selection of activities should also be more closely aligned with school-identified priorities to ensure developmental appropriateness and maximise student engagement. As previously discussed, a more structured "top-down" process, where teachers contribute their curriculum expertise to identify key learning gaps and preferred activities early in the co-design process, could improve alignment with educational goals. Environmental conditions, particularly noise levels and distractions, were identified as barriers to engagement, suggesting that future programs should consider structural modifications such as smaller group sizes, designated quiet areas, or alternative classroom integration models. Finally, while school representatives valued the program's structured schedule, volunteers expressed a need for greater flexibility. Future research could explore hybrid participation models that allow for both structured and flexible involvement or examine how different time commitments impact volunteer retention and student outcomes. Addressing these practical considerations will be essential for ensuring the scalability, effectiveness, and sustainability of intergenerational programs, maximising benefits for both volunteers and students.

Beyond core academic outcomes, there is also potential for intergenerational programs to provide support in areas beyond traditional curriculum subjects. With appropriate training, older volunteers could play a role in fostering socioemotional development, including conflict resolution, emotion regulation, and social skills. This raises broader questions about volunteer selection and program expectations – should intergenerational programs take a strengths-based approach, tailoring roles to volunteers' existing expertise (e.g., utilising retired teachers or psychologists differently than volunteers from other backgrounds), or should they be more standardised to ensure consistency in delivery? While addressing these considerations is beyond the scope of this paper, they warrant further exploration in future research on volunteer-driven educational support models.

Lastly, intergenerational programs should be designed to support the psychological needs of participants, as outlined in self-determination theory (SDT). The present study's findings suggest that volunteering in The Wisdom Club provided older adults with opportunities for meaningful social engagement and skill-building – factors that align with SDT's core needs of relatedness, competence, and autonomy. By intentionally structuring programs to enhance these elements – such as offering training to build volunteers' confidence (competence), allowing choice in activities (autonomy), and fostering deeper connections with students and school staff (relatedness) – future initiatives may further strengthen volunteer commitment and well-being. Given the role these psychological needs play in sustaining motivation and engagement (Deci & Ryan, 2008; Haivas et al., 2013), ensuring they are met may not only enhance the volunteer experience but also contribute to the long-term success and scalability of intergenerational programs.

5.4.5 Conclusions

The present study evaluated the effectiveness and feasibility of an intergenerational program involving older adults supporting educational opportunities for primary school-aged students in an Australian context. Overall, participating in the Wisdom Club program appeared to produce a boost in positive affect of older volunteers. Although no other

changes were evident in the quantitative well-being data, qualitative findings suggested broader benefits of the program for students, volunteers, and the community, including social connections, enhanced numeracy confidence, community engagement, and mutual joy. Addressing structural and environmental factors and supporting volunteers' ability to engage with all aspects of the program (e.g., helping those with limited digital literacy complete training or offering offline options) will be important for optimising the program's success. These findings underscore the potential of intergenerational programs to enhance well-being, contribute to academic support, and foster meaningful connections across generations. Future research should focus on scaling up such programs through public education partnerships, employing randomised controlled trials to rigorously assess long-term efficacy, and integrating standardised assessments like NAPLAN to measure objective improvements in student numeracy. Increasing sample sizes through conducting multi-site trials will further enhance generalisability, while refining training models and implementation strategies will help maximise program sustainability and impact.

CHAPTER 6

DISCUSSION

6.1 Summary of Research Findings and Contribution

This thesis makes several novel contributions to the existing body of knowledge on volunteering and well-being among older adults. Chapter 2 employed a cross-sectional design to examine the specific conditions under which volunteering is associated with higher well-being among older adults, and whether such associations varied as a function of health. Chapter 3 adopted a longitudinal approach to explore the relationship between older adults' perceptions of ageing (i.e., how individuals perceive and experience their own ageing process) and their volunteering behaviour during the COVID-19 pandemic. In particular, it focused on how awareness of age-related gains and losses was associated with both individual differences in volunteering levels and rates of change in volunteering over a 12-month period during the COVID-19 pandemic. Chapter 4 addressed a key theoretical gap by employing a longitudinal mediation model, guided by Self-Determination Theory (SDT; Ryan & Deci, 2000), to examine whether volunteering supports the fulfilment of basic psychological needs – autonomy, competence and relatedness – and whether need fulfilment in turn enhances subjective well-being. Finally, Chapter 5 involved the co-design and pilot implementation of a newly developed intergenerational program aimed at enhancing educational outcomes for children while simultaneously promoting well-being among older volunteers.

By integrating longitudinal designs, robust theoretical frameworks and mixed-methods evaluations, this research not only deepened the understanding of how volunteering contributes to well-being but also offered actionable insights for developing more effective, inclusive and evidence-based volunteer programs. The findings have practical implications for policymakers, organisations and community initiatives aiming to leverage volunteering as a strategy to support ageing populations and foster intergenerational engagement. In the following sections, I outline each study's significance, key findings and unique contributions; synthesise insights across studies; examine broader implications for theory, policy and practice; and discuss methodological limitations alongside potential directions for future research.

6.1.1 Volunteering and Well-Being in Older Adulthood

As discussed in Chapters 1 and 2, a substantial body of research has demonstrated a positive association between formal volunteering and well-being in later life. This includes enhanced subjective well-being (e.g., greater positive affect and life satisfaction; Baker et al., 2005; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; Meier & Stutzer, 2008; Van Willigen, 2000; Windsor et al., 2008) and psychological well-being (e.g., greater purpose in life, self-esteem, self-efficacy, and social support; Greenfield & Marks, 2004; Ho, 2017; Jongenelis et al., 2022; Jongenelis & Pettigrew, 2021; Piliavin & Siegl, 2007). However, questions remain regarding the specific contextual features of volunteering, such as the nature of the tasks performed and the characteristics of the work environment, that may influence the extent to which volunteering enhances well-being. In other words, under what conditions does volunteering promote well-being for older adults? To address this gap and inform the design of volunteer roles that maximise positive outcomes for older adults, Chapter 2 utilised a large community-based sample of adults aged 60 and older. The study examined how specific characteristics of the volunteering experience relate to both subjective and psychological well-being, and whether these associations were moderated by individuals' functional health status.

6.1.1.1 Associations Between Volunteering Characteristics and Well-Being

The first objective of Chapter 2 was to investigate the associations between volunteer work design characteristics and well-being. A key overarching finding was the consistent positive association between social support, defined as the extent to which the volunteer role provides opportunities to develop friendships and exchange support, and multiple well-being outcomes. This included higher levels of positive affect, life satisfaction and psychological flourishing. Importantly, these associations remained significant even after controlling for age, gender, education, employment and relationship status, and physical functioning. These results support the broader volunteering literature, which has repeatedly demonstrated that ongoing social support is linked to socio-emotional benefits such as higher self-esteem, personal growth, meaningful engagement, socialisation and life

satisfaction among older volunteers (e.g., Pilkington et al., 2012; Tang et al., 2010). The findings also align with Fried et al.'s (2006) Social Model of Health Promotion and Ryan and Deci's (2017) Basic Psychological Needs Theory, both of which emphasise relatedness or a sense of connection, belonging and meaningful relationships as a fundamental component of well-being.

Although caution is warranted in making causal claims due to the cross-sectional nature of the data, these findings contribute to a growing body of evidence suggesting that facilitating social connections is a central mechanism through which volunteering enhances well-being. As discussed earlier in Chapter 2 (Section 2.4.2), volunteering offers structured and consistent opportunities for meaningful social interaction, distinguishing it from casual social encounters, which may be more sporadic or dependent on personal initiative. The predictability, accountability and sustained engagement inherent in volunteering may be especially valuable for older adults, providing a regular source of social contact and opportunities to build deep, lasting relationships. Furthermore, volunteering often involves reciprocal exchanges in which individuals both give and receive support, which may reinforce a sense of purpose and belonging (Stephens et al., 2015; Wilson, 2000). In Chapter 2 (Section 2.4.2), I argue that it may be the opportunities for diverse exchanges and cognitive stimulation (beyond emotionally supportive relationships) afforded by volunteering that are of particular value to well-being.

In addition to social elements, work conditions were also positively associated with well-being among older volunteers, suggesting that safe, comfortable and hazard-free environments contribute to higher levels of life satisfaction and psychological flourishing. While this aspect of volunteering has received little empirical attention, findings from the paid workforce have linked favourable work conditions to greater job satisfaction and reduced stress (Humphrey & Nahrgang, 2007). As discussed in Chapter 2 (Section 2.4.1), volunteers may interpret positive work environments as a sign that they are respected and valued by the organisation, which in turn enhances psychological well-being by reinforcing a sense of self-worth, purpose and belonging.

Conversely, the study identified a negative association between interaction outside the organisation and negative affect. This refers to the extent to which volunteers engage with individuals external to the organisation (e.g., clients, community members). While previous research has focused mainly on internal relationships, such as those with fellow volunteers or supervisors, interactions with external individuals may pose unique challenges for older volunteers. As suggested in Chapter 2 (Section 2.4.1), one possible explanation is that external interactions may introduce stressors that undermine emotional well-being. According to Socioemotional Selectivity Theory (Carstensen, 1992), older adults tend to prioritise emotionally meaningful relationships and actively avoid interactions perceived as stressful or unrewarding. This selectivity may make older volunteers particularly sensitive to negative or demanding external encounters. Indeed, research shows that negative social exchanges (especially those marked by conflict or criticism) can significantly impact well-being in later life (Rook, 2014). Similar patterns have been observed in workplace settings, where external interactions (e.g., with customers or clients) have been linked to emotional exhaustion and reduced job satisfaction (Dormann & Zapf, 2004).

In addition, Hess's Selective Engagement Theory (Hess, 2014) suggests that as cognitive resources decline with age, older adults become increasingly selective in how they invest their cognitive and emotional resources. As the cost of cognitive engagement increases with age (e.g., greater fatigue and effort), older adults are more likely to avoid novel, demanding, or stressful situations that could expose cognitive limitations. Instead, they prefer familiar, rewarding interactions where the benefits justify the effort. From this perspective, it is possible that engaging with individuals external to their usual role may present both emotional (e.g., dealing with conflict or criticism) and cognitive strain (e.g., navigating unfamiliar or unpredictable situations), making these interactions particularly taxing. Although older adults are typically skilled at minimising avoidable stressors (Charles, 2010), when such demands are unavoidable, as in external-facing volunteer roles, they may have a disproportionate impact on emotional well-being. Taken together, these frameworks outline possible explanations for why external-facing volunteer work may represent an

underappreciated source of emotional strain for older adult volunteers. However, the current measure did not capture the quality or nature of these interactions, limiting our ability to identify mechanisms underlying this association. Future research employing more nuanced measures to better understand why external contact was associated with negative affect for some volunteers.

6.1.1.2 Functional Health as a Moderator of The Volunteering-Well-Being

Relationship

The secondary aim of Chapter 2 was to examine whether the associations between task, knowledge, social and contextual characteristics of the volunteer experience and well-being were moderated by functional health. As outlined in Chapter 2 (Section 2.1.2), this was based on evidence that physical decline is common in later life and can influence both the capacity to engage in certain volunteer roles and the psychological benefits derived from them (Hobfoll, 2010; Li & Ferraro, 2006; Townsend et al., 2021; Windsor et al., 2022).

The positive associations between social support and well-being, which remained consistent irrespective of physical functioning levels, suggest that the social connections fostered through volunteering are broadly beneficial for older adults. I speculate that this may be because the psychological rewards of social engagement extend beyond one's physical capacity to perform specific tasks. While physical limitations may restrict the types of volunteer activities an individual can undertake, they do not necessarily impede opportunities for meaningful connection, emotional support, or a sense of belonging, core components of well-being that may be fulfilled through the social interactions inherent in volunteering. In other words, even when volunteers are less physically active or take on less demanding roles, the experience of being socially integrated, valued and emotionally connected likely still offers substantial psychological benefits. These findings provide further support for the earlier argument that the social aspects of volunteering serve as a critical pathway to well-being. They also underscore the importance of designing volunteer roles that actively promote connection, collaboration and recognition.

While social support was broadly beneficial regardless of health status, task and knowledge characteristics, particularly decision-making autonomy (the freedom to make choices about one's volunteer work) and problem-solving (the need for creative thinking or unique solutions), were more strongly associated with life satisfaction among individuals with poorer functional health. As discussed in Chapter 2 (Section 2.4.2), these findings align with the Selective Optimisation with Compensation (SOC) model (Baltes & Baltes, 1990), which suggests that older adults adapt to decline by optimising available resources and adopting compensatory strategies. Volunteering roles that offer autonomy and cognitive challenge may serve this compensatory function. In other words, roles that support decision-making autonomy may help reinforce a sense of control and agency, allowing individuals to make meaningful contributions even when physical independence is limited (Ryan & Deci, 2017). Similarly, cognitively stimulating tasks, such as those requiring problem-solving, may sustain intellectual engagement and self-efficacy, helping individuals maintain a sense of competence despite limitations in other areas of life (Gabriel & Bowling, 2004). Additionally, it is also possible that for adults with better functional health, problem-solving opportunities in volunteering are less strongly associated with well-being because similar cognitive challenges are already met through other life roles, such as employment, caregiving, or demanding hobbies. In this case, volunteering may serve different functions for those with better functional health, with social or physical aspects of the role taking precedence over autonomy-supportive features and cognitively stimulating tasks.

An unexpected finding was the negative association between equipment use (reflecting the variety and complexity of the technology and equipment used in the volunteer role) and life satisfaction among those with better physical functioning. As proposed in Chapter 2 (Section 2.4.2), and while speculative, it may be that time spent operating machinery reduces opportunities for social interaction, which our findings suggest is a key driver of well-being. This may reflect a trade-off inherent in certain volunteer tasks, where fulfilling one role demand could limit opportunities or engagement in more socially or cognitively rewarding aspects of volunteering.

Together, these findings offer a more nuanced understanding of how different aspects of the volunteering experience influence well-being in later life. Rather than treating volunteering as a uniform experience, Chapter 2 underscores the importance of thoughtful role design, particularly for individuals with functional limitations. As proposed in Chapter 2 and reinforced here, volunteer organisations can enhance well-being outcomes by prioritising meaningful social connection, ensuring safe and comfortable environments and offering cognitively engaging and autonomy-supportive roles. These insights support a more tailored and inclusive approach to volunteerism, one that recognises the diverse needs and capacities of older adults and seeks to design roles that may help counteract some of the psychological challenges associated with physical decline.

6.1.2 From Conditions to Mechanisms: Understanding How Volunteering Enhances Well-Being.

As demonstrated in Chapter 2, certain contextual features of the volunteer environment, particularly social support and work conditions, appear to influence the extent to which older adults derive psychological benefits from volunteering. However, beyond understanding the conditions under which volunteering promotes well-being, an important question remains: how does volunteering produce these effects? Although decades of research have supported a positive association between volunteering and subjective well-being (SWB) in older adulthood (e.g., Meier & Stutzer, 2008; Windsor et al., 2008; Gimenez-Nadal & Molina, 2015), the mechanisms underlying this relationship remain relatively underexplored (Morrow-Howell, 2010; Stuart et al., 2020). Chapter 4 of this thesis addressed this gap by employing a longitudinal mediation model, guided by Self-Determination Theory (SDT), to examine how volunteering may fulfil basic psychological needs – autonomy, competence and relatedness – and in turn, enhance subjective well-being.

SDT posits that the satisfaction of three basic psychological needs – autonomy, competence and relatedness – is essential for psychological growth, motivation and well-being. As discussed in Chapter 4 (Section 4.1.2), it was speculated that volunteering may represent a uniquely effective context for fulfilling these needs: enabling individuals to

engage in activities that reflect personal values (autonomy), develop or apply meaningful skills (competence) and form meaningful social connections (relatedness). Although previous research has linked autonomy- and competence-supportive volunteer environments to increased motivation and satisfaction (Haivas et al., 2013; Oostlander et al., 2014), the study described in Chapter 4 was the first to examine the role of basic psychological needs in mediating the volunteering-subjective-well-being relationship using both cross-sectional (focusing on between-person differences) and longitudinal (capturing within-person change) data.

To summarise the findings of Chapter 4, cross-sectional findings revealed partial support for the hypothesised mechanisms, with autonomy mediating the relationship between volunteering and both positive affect and life satisfaction and competence satisfaction mediating the relationship between volunteering and affective well-being. However, relatedness satisfaction did not mediate any well-being outcomes, and no significant mediation effects were identified in the longitudinal analyses for any of the mediator-outcome combinations. The following sections will explore these findings in more depth.

6.1.2.1 Cross-Sectional Findings

A key finding from Chapter 4 was that autonomy satisfaction – defined as a sense of volition and psychological freedom – mediated the relationship between volunteering and both positive affect and life satisfaction. According to Self-Determination Theory (SDT) autonomy-supportive environments allow individuals to engage in activities that align with their intrinsic motivations and personal values, thereby enhancing well-being (Deci et al., 2017). In this context, the findings suggest that volunteers who have greater freedom to choose roles that reflect their values, interests and schedules experience a stronger sense of autonomy. This autonomy may foster more meaningful engagement, contributing to higher positive affect and overall life satisfaction.

However, the absence of autonomy as a mediator between volunteering and negative affect suggests that autonomy may play a more limited role in buffering negative

emotional experiences in the volunteering context. While speculative, this interpretation is consistent with previous research showing that autonomy is more strongly linked to the presence of positive emotions than to the absence of negative ones (Greenfield & Marks, 2004; Windsor et al., 2014). As discussed in Chapter 4 (Section 4.4.1), greater autonomy in volunteering may bring with it added responsibilities, decision-making, or task complexity. When individuals have more freedom to shape their roles, they may also take on higher-stakes activities, such as leading projects, managing others, or navigating interpersonal dynamics. These added demands, while potentially meaningful, may also increase exposure to time pressures, role strain, or conflict, thereby limiting autonomy's capacity to protect against negative emotional experiences. In this way, autonomy may enhance purpose and engagement without necessarily shielding individuals from the emotional challenges that can arise in more autonomous roles.

Competence satisfaction also emerged as a cross-sectional mediator, but only in relation to affective well-being. As discussed in Chapter 4 (Section 4.4.1), this finding aligns with prior research on ageing and control beliefs, which underscores the role of perceived capability in maintaining emotional stability in later life (Lachman, 2006). In the context of volunteering, roles that offer appropriate challenges, provide clear feedback and allow individuals to achieve meaningful outcomes may support the satisfaction of competence – that is, the basic psychological need to feel effective and capable in one's actions (Deci & Ryan, 2017). This sense of effectiveness may, in turn, promote positive emotional states such as confidence, pride and emotional stability.

However, competence satisfaction did not mediate the relationship between volunteering and life satisfaction. As previously discussed in Chapter 4 (Section 4.4.1), this finding stands in contrast to earlier research, for example, Brown et al. (2012), who found that self-efficacy mediated the volunteering–life satisfaction relationship. One possible explanation for this discrepancy lies in the conceptual distinction between competence satisfaction and self-efficacy. While self-efficacy refers to a goal-oriented, future-focused belief in one's ability to achieve specific outcomes, competence satisfaction reflects a more

immediate sense of effectiveness in current activities (Deci & Ryan, 2017). Given this distinction, it is plausible that competence satisfaction is more strongly associated with momentary affective well-being, whereas self-efficacy may be a better predictor of life satisfaction, which reflects a broader, evaluative judgment of one's overall life circumstances (Diener, 2009).

6.1.2.2 *Inconsistent Findings Related to The Social Elements Of Volunteering*

A notable discrepancy emerged across studies regarding the role of social connection. In Chapter 2, social support, defined as the degree to which the volunteer role provides opportunities to develop friendships and exchange support, was the most consistent predictor of well-being among older volunteers. In contrast, Chapter 4 found that relatedness satisfaction, defined as emotional closeness and feeling valued, did not mediate the volunteering–well-being relationship. I speculate that this divergence likely reflects differences in the type of social connection captured by the measures used. While social support in Chapter 2 reflects structural opportunities for interaction and social participation (Morgeson & Humphrey, 2006), relatedness satisfaction in Chapter 4 focuses on emotional depth and intimacy (Chen et al., 2015). As argued in Chapter 4 (Section 4.4.1), volunteering may provide broad opportunities for social contact and role-based cooperation, but not necessarily the emotionally meaningful exchanges required to fulfil psychological relatedness needs. This perspective suggests that volunteering may enhance well-being through structured, goal-directed social participation, even when close emotional bonds are not formed.

A relevant theoretical perspective comes from Granovetter's (1973) theory of “weak ties”, which highlights the value of peripheral social connections (i.e., those that are more casual or acquaintance-based) in providing access to social resources, information and opportunities. Although originally developed in the context of employment and social networks, this framework offers a useful lens for interpreting the role of volunteering in later life. Volunteering often involves regular interaction with a broad range of people, including acquaintances or loosely connected individuals, rather than emotionally intimate others.

These weaker social ties, while lacking emotional depth, can still foster a sense of identity, belonging and social integration. In the context of ageing, when opportunities to form new close relationships may be more limited, such ties may be especially valuable, helping to maintain social engagement and support overall well-being, even in the absence of deep emotional bonds. This view aligns with the Social Model of Health Promotion (Fried et al., 2004), which emphasises the role of regular, structured social engagement, rather than emotional closeness in promoting health and well-being. Further empirical support comes from Pilkington et al. (2012), who found that social support partially mediated the relationship between volunteering and well-being. Their use of the Lubben Social Network Scale (Lubben & Gironde, 2003), which measures structural aspects such as network size and contact frequency, parallels the social support subscale used Chapter 2. Taken together, these findings suggest that the well-being benefits of volunteering in later life may be driven more by the structured, predictable and socially engaging nature of volunteer roles (and the diversity of social interactions they provide) than by the emotional intimacy of the relationships formed.

6.1.2.3 Longitudinal Findings

While cross-sectional findings supported the proposed mediation model, the longitudinal analyses revealed no significant effects over the 12-month period. Volunteering did not predict changes in autonomy, competence, or relatedness satisfaction over time, nor did changes in these needs predict later improvements in well-being.

As discussed in Chapter 4 (Section 4.4.2.2), one conceptual explanation is that these associations reflect between-person differences rather than within-person change. Individuals who engage in volunteering may already possess traits such as prosocial motivation or a tendency toward growth-oriented behaviours – dispositions shaped by early life experiences and supportive socialisation (Davidov et al., 2016). From this perspective, volunteering, psychological need satisfaction and well-being may co-occur because they stem from longstanding personality or motivational factors. Methodological factors may also have contributed to the null longitudinal findings. A 12-month window may be insufficient to

capture long-term changes, and high attrition likely reduced statistical power (see Chapter 4, Section 4.4.2.2).

Taken together, findings from the first study of this thesis suggest that the relationship between volunteering and well-being is complex and context dependent. The findings also highlight that autonomy and competence satisfaction may be more central mechanisms to sustaining well-being than relatedness, and that structured social engagement affording a network of weak ties, rather than emotional intimacy, may provide the social context through which volunteering confers psychological benefits.

6.2 Subjective Ageing and Volunteering Trajectories

Building on Chapters 2 and 4's focus on how contextual and psychological characteristics shape volunteering outcomes, research described in Chapter 3 examined how individual differences in older adults' self-perceptions of ageing were associated with both their initial levels of volunteering and changes in their volunteering behaviour over time. While substantial research has shown that positive perceptions of ageing, such as feeling more in control, having a better sense of what matters, or gaining life experience, are associated with better health, motivation and functional outcomes (Diehl et al., 2014; Kornadt & Rothermund, 2015), less is known about how these perceptions influence prosocial engagement, including volunteering. Using the Awareness of Age-Related Change (AARC) framework, research described in Chapter 3 was the first to examine whether AARC-gains (e.g., "I have a better sense of what is important to me" or "I pay more attention to my health") and AARC-losses (e.g., "I have to limit my activities" or "My mental capacity is declining") are associated with both individual differences in levels of volunteering and changes in volunteering over a 12-month period during the COVID-19 pandemic.

Findings showed that greater AARC-losses were associated with lower baseline levels of volunteering, suggesting that individuals who perceived more age-related declines were less likely to engage in volunteering initially. This aligns with previous research showing that negative self-perceptions of ageing are linked to reduced participation in health-promoting behaviours, such as maintaining a balanced diet, exercising regularly and

adhering to medications (Levy & Myers, 2004). As discussed in Chapter 3 (Sections 3.4 and 3.4.1), individuals with high AARC-losses may view themselves as less physically or cognitively capable, such as believing they tire more easily or are less able to learn new things, which could reduce both their motivation to volunteer and their perceived ability to contribute meaningfully (Sabatini et al., 2020). These perceptions may function as internal barriers, limiting engagement regardless of external opportunities. This internal limitation may also prompt individuals to withdraw from activities they perceive as too challenging or demanding, further reducing their likelihood of volunteering.

Contrary to expectations, Chapter 3 found no significant associations between AARC-gains and either baseline levels or changes in volunteering, diverging from previous research linking AARC-gains to greater engagement in leisure activities (Windsor et al., 2022). While it was hypothesised that those who view ageing as a time of growth, learning or social contribution would more proactively (re)engage with volunteering roles, this was not supported by the data. As discussed in Chapter 3 (Section 3.4.1), it may be that positive perceptions alone may not be sufficient to drive behaviour in the face of external constraints. Even if individuals felt motivated and capable, ongoing pandemic-related disruptions, including limited volunteer role availability, health concerns and social distancing (Biddle & Gray, 2020), may have restricted their ability to act on these motivations. This underscores an important distinction: positive self-perceptions may support willingness but opportunity structures could ultimately play a stronger role in determining actual engagement (Huxhold et al., 2022).

The study also revealed a trend that suggests AARC-gains may have buffered the impact of COVID-19 disruption on older adults' volunteering. This aligns with theoretical models of adaptive self-regulation, such as the Selective Optimization with Compensation (SOC) model (Baltes & Baltes, 1990) and Brandtstädter's dual-process model (Brandtstädter & Rothermund, 2002), which propose that older adults use adaptive strategies, like goal adjustment, flexible problem-solving and resource reallocation, to sustain meaningful activities under constraint. From this perspective, older adults with higher AARC-gains may

have maintained volunteering not because conditions were ideal but because they demonstrated psychological flexibility and motivation to adapt, for example, by seeking safer roles, adjusting expectations or re-engaging once social distancing requirements were relaxed.

Taken together, the findings from Chapter 3 make several important contributions to the literature. First, this is the first study to examine AARC in relation to both volunteering levels and trajectories of longitudinal change, extending a small but growing body of research linking subjective ageing to behavioural outcomes in later life (e.g., Levy & Myers, 2004; Windsor et al., 2022). Second, by situating the study within the broader context of the COVID-19 pandemic, the findings underscore the need for an integrated perspective, one that considers both psychological and structural influences on behaviour in later life. Understanding volunteering trajectories requires attention not just to individual attitudes and beliefs but also to the external conditions that enable or constrain action (Wahl & Gerstorf, 2018).

From a practical perspective, the results suggest several avenues for intervention. Supporting older adults with high AARC-losses by helping them reframe negative perceptions or by designing volunteer roles that accommodate perceived limitations may lower psychological barriers to engagement. At the same time, the potential buffering effect of AARC-gains indicates that promoting positive self-perceptions of ageing may help older adults maintain engagement in the face of external constraints.

6.3 The Wisdom Club: Intergenerational Volunteering.

Building on earlier chapters exploring the conditions under which volunteering supports well-being (Chapter 2), the mechanisms underlying these benefits (Chapter 4), and the individual characteristics shaping engagement (Chapter 3), Chapter 5 focused on applied intervention. Specifically, it examined the impact of a newly developed, school-based intergenerational volunteering program on older adults' well-being as well as the feasibility of implementing such a program in a real-world educational setting.

Findings provided initial support for the program's efficacy. Participation in the Wisdom Club was associated with a significant increase in positive affect among older volunteers. However, no significant changes were observed in other domains of well-being, including negative affect, life satisfaction, psychological flourishing or life engagement. These results suggest that while the program may have effectively enhanced positive emotions its impact on broader psychological well-being was limited.

As discussed in Chapter 5 (Section 5.4.1), this may reflect both methodological and conceptual factors. Most notably, the small sample size ($N = 25$) likely constrained statistical power, limiting the ability to detect meaningful change. Additionally, while six weeks of engagement may be sufficient to influence affective states, the small effects observed for broader outcomes suggest the program lacked the duration or intensity required to promote deeper psychological shifts. Research using daily diary methods indicates that affective states, such as mood and emotional responses, are highly responsive to immediate social interactions (Altermatt, 2015; Hay & Diehl, 2011). In contrast, psychological well-being, rooted in meaning, mastery and self-actualisation, likely develops through longer-term processes, including repeated engagement, personal growth and reinforcement over time (Lent, 2004; Ryff, 2014). Thus, while the program may have promoted moments of joy and connection, it may not have offered the intensity or duration needed for more enduring change.

Participant engagement and program intensity may also have influenced outcomes. As noted in Chapter 5 (Section 5.4.1), a recent review identified contact time and program length as key factors in intergenerational program effectiveness (Martins et al., 2019). While the Wisdom Club provided approximately eight hours of intergenerational contact over six weeks – exceeding the 4–6 hour threshold below which programs often fail to produce meaningful psychosocial outcomes (Martins et al., 2019) – it remained considerably less intensive than high-dose models such as Experience Corps®, which (at least in its original model) required around 15 hours per week across one to two academic years (Fried et al., 2004). Although such higher levels of involvement may offer more opportunities for

relationship-building and potentially reinforce psychological benefits for some participants, they carry notable drawbacks, including challenges with sustainability, increased opportunity costs, volunteer fatigue, and scheduling conflicts. As a result, these models may not be suitable or appealing for all volunteers, particularly those seeking more flexible forms of engagement. This is supported by Windsor et al. (2008), who found that while moderate levels of volunteering (approximately 100–800 hours per year) are associated with greater life satisfaction and positive affect, high levels of volunteering (exceeding 15 hours per week) were linked to increases in negative affect, particularly among individuals without strong personal support systems. These findings reinforce the need to avoid a one-size-fits-all approach to volunteer engagement.

In contrast, the lower-intensity format of the current study yielded modest affective benefits but may represent a more accessible model for older adults who actively balance caregiving, part-time employment, travel and leisure and other roles or commitments. Flexibility and role alignment are particularly crucial, as many volunteers fit their participation around other aspects of their lives. As Windsor et al. (2023) highlight in their report, *Factors Influencing Older Adults' Decisions to Volunteer*, a key consideration for engaging older volunteers is recognising that the nature of volunteering itself is evolving. Their findings point to a shift away from traditional, long-term “collective” volunteering, anchored in civic duty and stable organisational roles, toward more “reflexive” volunteering, where participation is guided by personal interest, intrinsic motivation and lifestyle fit. This transition reflects broader changes in how older adults conceptualise their roles and commitments in later life. If volunteer opportunities do not reflect this shift, there is a risk of disengaging potential contributors who might otherwise participate meaningfully if offered greater autonomy and flexibility.

Taken together, these findings suggest a potential need for diversified models of volunteer engagement. For example, policymakers and volunteer organisations might consider designing and marketing dual pathways: one aimed at volunteers seeking continuity, structure and deeper role immersion, and another tailored toward ‘micro

volunteering', for those preferring short-term, low-commitment opportunities that still provide meaningful engagement (and may provide a gateway to a greater commitment). Such an approach could enhance inclusivity, optimise resource allocation, and broaden the reach of intergenerational and other volunteer programs, particularly as older adult populations become increasingly diverse in their preferences, lifestyles and competing priorities. Alongside the quantitative findings, qualitative interviews with volunteers, school staff and project partners provided valuable insight into the program's feasibility, acceptability and perceived impact. Across stakeholder groups, participants reported high satisfaction, citing benefits such as enhanced social connection, mutual learning, emotional enjoyment and increased student confidence. These outcomes broadly align with the "win-win-win" vision of Experience Corps®, in which students, older adults and communities all benefit (Fried, 2004).

However, participants also identified key challenges. Some volunteers expressed initial uncertainty about working with children or supporting numeracy, reflecting self-doubt about their ability to contribute meaningfully. This aligns with previous research highlighting the influence of competence beliefs on volunteer motivation and engagement (Haivas et al., 2013). School staff similarly noted occasional mismatches between activities and students' developmental levels. Together, these findings underscore the importance of aligning program content with both student needs and volunteer capabilities. As discussed in Chapter 5, role fit and volunteer confidence rather than the quantity of training alone may be central to ensuring a meaningful and effective experience for all parties.

These insights raise important design questions. While the program's co-design approach helped generate high buy-in and enthusiasm, it also led to some disconnects between selected activities and students' actual learning needs. Future programs may benefit from models that combine "bottom-up" participatory design with "top-down" educational expertise. For example, educators and curriculum designers could first identify developmentally appropriate activities aligned with curricular goals, then provide volunteers with a curated menu of options. This would help ensure that activities are developmentally

appropriate while still preserving volunteers' sense of autonomy and choice. In the context of the Wisdom Club, autonomy was likely supported when volunteers contributed to planning but competence may have been undermined by uncertainty around volunteers' capacity to support children with specific academic tasks. Designing programs that intentionally balance volunteer input with expert guidance may be key to supporting both volunteer motivation and the educational value of the intervention.

A further question concerns the kinds of roles older adults can meaningfully and effectively occupy in school settings. Ensuring that these roles engender purpose and are well-matched to individual strengths may be key to sustaining motivation and impact. Importantly, older adults typically self-select into volunteer roles making it likely they will gravitate toward opportunities that align with their values, interests and sense of contribution (Windsor et al., 2023). While many programs adopt relatively standardised models, there is growing potential to consider a strengths-based approach that aligns volunteer roles with individual backgrounds and expertise (Volunteering Queensland, 2024; Windsor et al., 2023). For instance, retired teachers, psychologists or social workers may be uniquely positioned to support students in areas beyond the traditional curriculum, such as socioemotional development, conflict resolution or emotion regulation. Volunteers without directly relevant professional experience may still bring deep relational insight, mentorship capacity or lived experience that enhances student engagement in other ways. This raises the broader question of whether role differentiation, based on skill sets, interests and training, might strengthen both program outcomes and volunteer satisfaction.

At the same time, more tailored models would require organisations to rethink recruitment, training and supervision processes to support more diverse volunteer profiles. Should programs differentiate roles based on expertise and interest or maintain a more uniform structure for simplicity and scalability? While this study was not designed to test such models directly its findings suggest that flexibility and alignment are likely to enhance both engagement and impact. Future program development could benefit from exploring how volunteer roles might be more intentionally designed – not only to fit the needs of

educational institutions but also to make the most of the diverse and valuable skills older adults bring. One possibility would be to engage skilled volunteers not just to work with children in the classroom but to design and implement the volunteer programs themselves.

Taken together, the final study presented in Chapter 5 contributes to the literature by being one of the first to pilot a school-based intergenerational volunteering program in an Australian context that explicitly aimed to support both older adult well-being and educational engagement in schools. While many prior studies have focused primarily on either older volunteers' experiences or student learning outcomes, this study integrated both perspectives through a co-designed, low-intensity intervention model developed in collaboration with volunteers, schools and community partners. Although the study was limited by a small sample size and did not include formal assessments of student outcomes, qualitative feedback from school staff suggested perceived benefits for student confidence and engagement. Importantly, the study provided preliminary evidence that even short-term intergenerational engagement can enhance positive affect among older adults while also identifying key factors – such as role clarity, volunteer confidence and program alignment with school needs – that shape the feasibility and effectiveness of such programs. As discussed in Chapter 5, these findings highlight the growing importance of designing flexible, differentiated models of volunteering that reflect the diverse motivations, capabilities and life circumstances of older adults. While short-term programs may offer meaningful emotional and social benefits, more intensive or sustained forms of engagement may be needed to produce lasting changes in psychological well-being. This study offers novel insights into how intergenerational volunteering can be adapted to contemporary educational and demographic contexts informing future program development, policy and research.

6.4 Implications for Policy and Practice

Drawing on findings from all four studies, this section outlines the broader implications of the thesis for policy and practice, particularly regarding how volunteer roles can be designed, implemented and supported to maximise well-being among older adults. It builds on the empirical results presented earlier and connects them to actionable strategies

for policymakers and organisations to strengthen volunteering as a pathway to enhance well-being in later life.

6.4.1 *Optimising Volunteer Roles to Maximise Well-Being.*

Findings from Chapter 2 offer targeted guidance for the development of policies and volunteer role designs that enhance psychological well-being in older adulthood. Most notably, our results show that not all volunteering experiences are equally beneficial; specific work design characteristics play a central role in shaping well-being outcomes. Social support emerged as the most consistent predictor of well-being. Volunteer organisations and policymakers should therefore prioritise role structures that actively facilitate interpersonal connection, given its strong and consistent association with subjective and psychological well-being in later life both within this thesis and previous literature (Jongenelis & Pettigrew, 2021; Pilkington et al., 2012; Tang et al., 2010). Beyond simply placing volunteers in social settings, this means intentionally designing roles that promote meaningful, ongoing interactions. Examples include team-based roles where collaboration is essential, intergenerational mentorship programs that foster reciprocal learning, and peer support networks that build community among volunteers themselves.

In addition to role design, regular appreciation events and recognition initiatives, such as volunteer spotlights, thank-you gatherings, or milestone awards, may further reinforce a sense of value, belonging and shared purpose. This is supported by research showing that older volunteers who feel appreciated for their contributions report higher quality of life and overall life satisfaction compared to those who do not receive similar recognition (Jongenelis & Pettigrew, 2021; McMunn et al., 2009; Wahrendorf et al., 2006). This emphasis on volunteer appreciation and experience is also reflected in broader sector priorities, such as Volunteering Queensland's (2024) strategic call to improve volunteer management and recognition practices as a pathway to increasing engagement. Ultimately, fostering social bonds within volunteer programs is not just a means of boosting morale, it is a strategic lever for enhancing the psychological rewards that make volunteering an enriching experience for older adults.

Additionally, Chapter 2 extends prior research by identifying comfortable and hazard-free working conditions as a significant, though often overlooked, contributor to well-being. In contrast to earlier studies focused primarily on social and cognitive dimensions (Jongenelis & Pettigrew, 2021; Tang et al., 2010), our findings highlighted that the physical and environmental context in which volunteering occurs also matters. These findings emphasise the importance of prioritising and investing in measures to improve work conditions within volunteering environments, such as implementing safety protocols, maintaining cleanliness and addressing potential hazards. However, we acknowledge that for many not-for-profit organisations reliant on volunteers, large-scale investments may not always be feasible. That said, creative and low-cost strategies may still contribute to a more comfortable and supportive environment. Simple ergonomic adjustments, such as foam mats in standing areas or designated rest spaces, may help reduce discomfort associated with prolonged standing. Additionally, clear safety signage, regular break reminders and structured task rotation may help to minimise fatigue and injury risks. By fostering age-friendly (World Health Organization, 2002, 2021) volunteer environments that prioritise safety and well-being, volunteer organisations can enhance the experiences of older adult volunteers and maximise the benefits of their involvement.

Importantly, the study outlined in Chapter 2 is the only one, to our knowledge, to demonstrate that the benefits of certain work characteristics depend on older adults' physical functioning. Specifically, decision-making autonomy (the degree of freedom and discretion to make choices about volunteer work) and problem-solving (the extent to which the role requires unique ideas or solutions) were particularly beneficial for volunteers with poorer functional health, likely because they provide opportunities to maintain a sense of agency and competency in the face of physical limitations (Baltes & Baltes, 1990; Ryan & Deci, 2017). This underscores the need for inclusive role design that recognises functional diversity within the older population. For example, ensuring that roles provide flexibility in task execution (e.g., allowing volunteers to set their own schedules or modify tasks to align with their abilities), opportunities for independent decision-making (e.g., leading a project,

selecting how to contribute to a cause, or mentoring others), and avenues for cognitive engagement (e.g., problem-solving tasks, strategic planning roles, or skill-based volunteering such as tutoring or research) are likely to help satisfy autonomy and competence needs in the face of functional health constraints.

By using a validated, multidimensional measure of work design, Chapter 2 provides greater precision than previous research in identifying the specific features of volunteer roles that support well-being. Policies that encourage volunteer organisations to assess and tailor the social, cognitive and environmental aspects of their roles, rather than relying on generic engagement strategies, will be best placed to support the diverse psychological needs of older volunteers. This approach not only maximises the personal benefits of volunteering but also promotes longer, more meaningful engagement, ultimately strengthening the sustainability and social value of the volunteer sector.

Chapter 4 builds on these insights by providing evidence for the psychological mechanisms through which these benefits occur. Given the central role of autonomy and competence in mediating the relationship between volunteering and well-being cross-sectionally, it seems important that volunteer programs offer opportunities that promote these needs. Creating autonomy- and competence-supportive environments may help to foster a stronger sense of volition and personal investment in their volunteer work, ultimately contributing to enhanced life satisfaction and positive affect. These recommendations are consistent with findings from *The Great (Volunteer) Resignation: An Evidence-Based Strategy for Retaining Volunteers* (Forner et al., 2022), which identified autonomy and voice as strong predictors of volunteer retention. The authors emphasise the importance of empowering volunteers to make decisions and contribute meaningfully to organisational operations as a means of sustaining engagement. Similarly, *Factors Influencing Older Adults' Decisions to Volunteer* (Windsor et al., 2023) highlights the importance of flexibility in volunteering opportunities, noting that older adults are more likely to participate when roles are designed to accommodate diverse motivations, skills and life circumstances.

Volunteer organisations can support autonomy by offering volunteers choice over their tasks, flexibility in scheduling and opportunities to shape or evolve their roles over time. Involving volunteers in program design or decision-making processes can further strengthen their sense of ownership and alignment with organisational goals. To support competence, programs should provide clearly defined tasks, appropriate training, opportunities for skill development and regular, meaningful feedback. Visible impact, such as mentoring outcomes or completed projects, can further reinforce a sense of mastery and contribution.

Together, the recommended strategies reflect a broader shift toward more reflexive forms of volunteering, in which individuals seek roles that align with their personal interests, values and lifestyles rather than making commitments born out of long-term organisational loyalty. Designing roles that are flexible, personalised and purposeful can help meet older adults' psychological needs for autonomy and competence. As Forner et al. (2022) caution, inefficient or under-stimulating volunteer experiences can lead to dissatisfaction and attrition, underscoring the importance of ensuring volunteers' time is used meaningfully and their contributions are valued.

6.4.2 *Expanding Volunteer Opportunities in New Domains: The Intergenerational Context.*

Chapter 5 extends the thesis's implications by demonstrating the potential of intergenerational volunteering programs to deliver emotional and social benefits for older adults, while also promoting broader community engagement. The outcomes of the Wisdom Club study underscore the potential of intergenerational volunteering as a meaningful avenue for promoting emotional well-being, social connectedness and community engagement among older adults. However, the findings also highlight the need for careful program design and longer-term engagement to realise broader psychological benefits.

Designing Flexible and Responsive Roles. To sustain engagement, volunteer roles must be flexible, developmentally appropriate and responsive to older adults' diverse skills, motivations and life circumstances. This echoes recommendations from Windsor et al. (2023) and Volunteering Queensland (2024), which emphasise the importance of flexible

scheduling, role duration and task selection. In practice, this means offering roles that vary in time commitment, from one-off opportunities to ongoing placements, and allowing volunteers to join or step back in line with their availability. It also involves creating a bank of activities tailored to different comfort and skill levels, such as reading support, creative projects or classroom assistance, so that volunteers can select tasks that feel manageable and meaningful. Programs should also offer seasonal or term-based entry points, enabling older adults to opt in when it suits their routines.

One specific approach to operationalising flexibility could involve a “trial volunteering” model, where older adults participate in short-term placements (e.g., four to six weeks) before deciding whether to commit to longer-term roles. This aligns with earlier suggestions around hybrid participation models (e.g., short- vs. long-term volunteering) and “micro-volunteering” approaches, offering lower-intensity, flexible opportunities that better accommodate older adults’ diverse life commitments. Trial volunteering could help reduce barriers to initial participation (such as concerns around time commitments; Windsor et al., 2023) and gradually build volunteer confidence. The trial volunteering may also function as a form of “buy-in”, with improvements in affective well-being (e.g., positive emotions and experiences) during short-term involvement encouraging ongoing engagement. This is particularly relevant given findings from Chapter 5, where participation in a lower-intensity format yielded improvements in affective well-being, highlighting the potential of flexible models to foster positive initial experiences that may motivate future volunteering.

At the same time, I acknowledge that this level of flexibility can present challenges for schools, particularly in ensuring consistency and continuity for students. Building relationships and maintaining classroom routines often requires a degree of stability, which may be disrupted by irregular volunteer attendance. Addressing this tension may require careful coordination, such as pairing flexible volunteers with longer-term core volunteers or ensuring handover processes are in place when roles shift. For example, schools could pilot a dual “buddy system”, pairing each child with a primary volunteer and a flexible “back-up” buddy. This structure would maintain continuity and relationship-building for students and

older adults looking for longer-term volunteering opportunities, while also providing flexibility for those requiring more variable commitment, thereby balancing the needs of both groups.

A buddy system could also scaffold confidence for newer or more hesitant volunteers, offering social support and modelling successful engagement, which may assist new volunteers in acclimating to their roles. Given the importance of competence beliefs in shaping volunteer motivation and engagement (Haivas et al., 2013), it is important to create low-pressure entry points, such as trial volunteering, and to implement structures that actively support volunteer confidence. In addition to these structural adaptations, volunteer organisations could also consider hosting information sessions where current or former volunteers share their experiences. Hearing firsthand accounts may help address potential volunteers' uncertainties about their competence or role fit, offering relatable role models and normalising initial anxieties. This peer-led approach could further reinforce confidence-building efforts and create a more welcoming entry pathway for older adults new to volunteering.

Nonetheless, programs must acknowledge and plan for this balance – and potential tension – between volunteer flexibility and classroom continuity, ensuring the needs of both older adults and the schools they support are met.

Strengthening System-Level Supports. Beyond individual factors, the findings from Chapter 5 point to the need for system-level supports that reduce barriers to volunteering, especially in regulated environments like schools. Policies should focus on making the onboarding process as simple and accessible as possible. For example, by streamlining access to background checks and offering transport subsidies where needed. A key proposal outlined in Volunteering Queensland's (2024) *Submission to the Parliamentary Inquiry* is the creation of a "volunteer passport": a portable, centralised record of a volunteer's credentials, background checks, training and experience. This would eliminate the need to repeat the same screening processes across different organisations and make it easier for volunteers to move between roles. In broader terms, this system could also be linked to a centralised database of opportunities and volunteer-involving organisations,

supporting better role-matching based on availability, skills and preferences. In the context of education-based programs, where compliance and coordination are critical, this approach could reduce administrative workload while ensuring a consistent standard of safety and preparedness.

Complementing this are proposals for community-based volunteering hubs. For example, Volunteering Queensland (2024) proposed the establishment of local community-based hubs to provide on-the-ground support for recruitment, onboarding and cross-sector coordination. Building on this, regional volunteer resource centres could be embedded within accessible community spaces such as libraries or council offices, offering in-person support for volunteering queries, onboarding and troubleshooting (World Health Organization, 2002, 2021). While services such as Volunteering South Australia & Northern Territory provide valuable digital platforms for role-matching and volunteer engagement, reliance on online systems alone may create barriers for some older adults, particularly those who experience digital exclusion or prefer in-person interaction. Establishing physical, community-based hubs could complement existing digital services by offering face-to-face support, strengthening social connections and fostering a more inclusive and accessible volunteering infrastructure. In intergenerational contexts specifically, these hubs could serve as dedicated liaison points between schools and volunteers, coordinating communication, helping with activity planning and supporting smooth implementation across different sites. They could also serve as resource centres, helping volunteers troubleshoot issues, access professional development or connect with others in similar roles.

Furthermore, strengthening relational infrastructure is particularly important given the role of older adults in sustaining communities through informal volunteering and support, as highlighted by Warburton and McLaughlin (2005). Without formal infrastructures to recognise and support these contributions, they risk remaining undervalued, disconnected and less sustainable over time. Ultimately, developing accessible, relational infrastructure is essential for bridging the gap between informal civic contributions and structured, sustained volunteering pathways.

In summary, Chapter 5 demonstrates that intergenerational volunteering can contribute meaningfully to older adults' emotional well-being and sense of community. However, to fully realise this potential, programs must be paired with integrated policy responses and social infrastructure investment. This includes designing roles that are flexible and accessible, as well as building the systems needed to support training, role-matching and coordination at scale. By embedding these strategies into policy and practice, intergenerational volunteering can evolve into a lasting and impactful model that strengthens individual well-being, fosters cross-generational understanding, reduces ageism (Mikton et al., 2021) and contributes to broader social cohesion.

6.4.3 *Improving Volunteer Recruitment and Retention*

A further implication of this thesis lies in strengthening recruitment and retention strategies, particularly in light of recent disruptions to the volunteering landscape. The findings in Chapter 3 emphasise the need for targeted strategies to promote volunteering among older adults, particularly as participation continues to gradually rebound in the aftermath of the COVID-19 pandemic (Volunteering Australia, 2024). The observed association between higher levels of AARC-losses and lower initial volunteering suggests that individuals who perceive more negative age-related changes, such as declining energy, memory or independence, may face greater psychological barriers to engaging in volunteer activities. These self-perceptions may undermine confidence and reduce motivation, even when suitable opportunities are available.

To address this, interventions should focus not only on increasing access to volunteering roles but also on supporting individuals to recognise and reframe their ageing experiences. This includes highlighting personal strengths and perceived gains, such as increased empathy, life experience or emotional insight, qualities that can make older adults uniquely valuable contributors. As suggested by Brandtstädter's dual-process model (1999), older adults with greater awareness of loss may benefit from adjusting their goals and selecting volunteer roles that better align with their current capacities, such as those requiring less physical effort, and/or prioritising social connection. Community organisations

and policymakers can support such efforts by creating more flexible and adaptable volunteering opportunities. This might involve offering shorter or trial-based commitments, building opportunities for social support and peer mentoring or ensuring a range of roles suited to varying physical and cognitive needs. Such efforts are especially important as many older adults continue to re-establish routines and seek meaningful ways to reconnect following extended periods of social distancing and disruption. By offering volunteering pathways that are psychologically supportive and practically accessible, organisations can help rebuild participation, support individual well-being and strengthen community resilience in the post-pandemic recovery phase (Volunteering Australia, 2021, 2024).

In this context, it is also important to recognise that the COVID-19 pandemic accelerated digital engagement among many older adults, opening up new possibilities for flexible volunteering delivery. During the pandemic, a significant number of older Australians adopted technologies such as video conferencing to maintain social and civic participation (Australian Communications and Media Authority, 2020; Strutt et al., 2022). For instance, in a study examining the experiences of older Australians during COVID-19 lockdowns, Strutt et al. (2022) found that 63% of participants reported adopting new technologies, with 82% using video conferencing platforms such as Zoom, Skype, or Microsoft Teams. Notably, 27% reported using these technologies specifically for volunteer work or committee participation, highlighting the potential for expanded virtual volunteering pathways.

Alongside these trends, emerging research has demonstrated the broader benefits of digital models for older adults, including reductions in loneliness, improved social connection and enhanced mental well-being (Lachance, 2021; Strutt et al., 2022). Flexible, digitally mediated roles, such as remote tutoring, administrative support and online mentoring, could therefore form an important component of future volunteering pathways for older adults.

However, emerging evidence also highlights that while access to technology has improved, significant challenges around digital competence and confidence remain. Sun et al. (2021) found that even among older adults with relatively high levels of technological proficiency, uncertainty about using digital platforms for activities such as tutoring children

was common. These findings suggest that bridging the "digital divide" is not solely a matter of technology access but also requires targeted support, training and the design of user-friendly virtual volunteering opportunities. Without such measures, digital volunteering risks excluding some older adults or limiting the types of roles they feel able to undertake.

Integrating well-supported digital options alongside traditional in-person roles may therefore be critical for ensuring that volunteering pathways are flexible, inclusive and responsive to the evolving needs and capacities of older adults, particularly in the context of ongoing post-pandemic recovery efforts (Sun et al., 2021).

6.4.4 Government and Organisational Support

Finally, the findings of this thesis support the growing case for stronger and more coordinated government and organisational support for volunteering initiatives targeting older adults. While volunteering is acknowledged in various state and local strategies, such as *South Australia's Plan for Ageing Well 2020-2025* (Department for Health and Wellbeing, 2020), there remains a need for greater consistency, investment and integration at the national level. Much of the current infrastructure continues to rely on under-resourced community organisations, despite the fact that the benefits of volunteering extend well beyond the individual. Volunteering contributes to healthier ageing, civic participation and community resilience, and should be more explicitly embedded within active ageing and public health frameworks.

As this thesis has demonstrated, volunteering is associated with key components of psychological well-being – including autonomy, competence and social connectedness – as well as subjective well-being. These outcomes are not only essential for individual quality of life but are also linked to broader public benefits, including improved health and longevity, increased prosocial engagement and strengthened community cohesion (Berkman et al., 2000; Diener et al., 2009; Steptoe et al., 2015; Thoits & Hewitt, 2001). Recognising volunteering as a high-impact health promotion strategy would help justify increased investment in the infrastructure required to support and sustain it. This includes physical infrastructure such as community venues where programs could take place, accessible

transport options to enable participation and digital or in-person platforms to manage volunteer recruitment, training and communication. Organisational infrastructure could involve government-funded program coordinators, formalised volunteer training pathways, and systems for matching older adults with roles that reflect their skills, interests and needs. Policy reform should explicitly embed volunteering within healthy ageing and aged care strategies, and provide sustained funding for coordinated volunteer hubs, administrative support and program delivery, ensuring older adults have access to meaningful, well-supported opportunities. These recommendations align with the priorities outlined in the National Strategy for Volunteering (2023) report, which emphasises the need for inclusive, well-resourced and digitally enabled volunteer infrastructure.

As the broader literature and recent submissions (e.g., Volunteering Queensland, 2024) have emphasised, resourcing volunteer programs is not simply a matter of goodwill or civic contribution, but of strategic importance to the health, cohesion and sustainability of ageing societies. For these benefits to be fully realised, volunteering must be supported not only through local initiatives but also through coordinated, long-term government policy and investment.

6.5 Limitations and Future Directions

Taken together, the findings across the four studies in this thesis highlight a range of methodological, conceptual and practical considerations that should guide future research on volunteering and well-being in older adulthood. A primary limitation evident across multiple studies was the reliance on short-term or cross-sectional designs, which restricted the ability to draw firm conclusions about causality or long-term patterns of change. For example, in Chapters 2 and 4, associations between volunteering and well-being outcomes were based on cross-sectional data, leaving open the possibility that individuals with higher baseline well-being were more inclined to volunteer, rather than volunteering directly enhancing well-being. While Chapters 3 and 4 incorporated longitudinal data, the 12-month follow-up window may have been insufficient to capture more gradual psychological changes or shifts in volunteering behaviour, particularly for mechanisms like competence or mastery

that may require extended, sustained engagement to develop. To address this, future research should employ longer-term longitudinal designs with multiple follow-up points to examine how volunteering-related benefits unfold and persist over time.

Attrition and sample representativeness also posed significant challenges across the longitudinal studies. Both Chapter 3 and Chapter 4 experienced notable participant dropout across waves, introducing the potential for bias, especially if individuals who disengaged from the research were also those most likely to reduce or cease volunteering. This likely reduced statistical power, particularly for detecting indirect effects in Chapter 4. In Chapter 3, those who remained in the study tended to report higher AARC-gains and better functioning overall, raising concerns that the impact of negative ageing perceptions may have been underestimated. The present project was constrained by a limited budget (as is common in postgraduate research); future studies should consider employing more inclusive recruitment and retention strategies, such as shorter or staggered surveys, tailored follow-ups, or mixed methods approaches (e.g., interviews or passive behavioural tracking through app-based activity logs), to reduce dropout and enhance representativeness, particularly among participants with greater health, economic or social barriers.

Another key limitation relates to sample diversity. Across all studies, participants tended to be relatively homogenous, predominantly women (72%-80.2%), tertiary-educated (64%-81.7%) and partnered (65.5%-66.5%), with most no longer in the labour force. This composition likely reflects the recruitment channels used and may overrepresent individuals with the time, resources and health to participate in both research and volunteering. As such, the findings may not extend to more diverse populations of older adults, including those from culturally and linguistically diverse backgrounds or those with cognitive limitations, who may face additional barriers to volunteering. Addressing this gap requires future research to adopt more diverse sampling strategies, potentially including stratified recruitment or targeted outreach to ensure the perspectives and experiences of underrepresented populations are meaningfully captured.

Several studies also faced limitations in how volunteering itself was measured. Chapters 2 and 4 relied on broad indices, such as total hours volunteered, without differentiating between types of roles, activities or organisational settings. However, findings across the thesis suggest that specific role features, such as opportunities for social support, autonomy or problem-solving, could play a critical role in determining well-being outcomes. Future work should incorporate more detailed role-level data, using approaches such as experience sampling or diary methods, to better understand the relationship between daily volunteer experiences and fluctuations in well-being. This would also allow researchers to identify which types of roles are most effective for different individuals or needs and draw stronger causal inferences regarding associations of volunteering with well-being by using lead-lag models.

From a conceptual standpoint, Chapters 3 and 4 raised the possibility that stable individual differences, such as personality traits, long-standing health conditions, or early life experiences, may underlie both volunteering behaviour and well-being, complicating assumptions regarding causality. This highlights the importance of designing studies that can better account for such dispositional influences. Including measures of personality, prosocial motivation or early socialisation experiences in future longitudinal studies may help disentangle the direct effects of volunteering from broader life-course patterns and trait-like dispositions.

In addition to these methodological and conceptual limitations, Chapter 5 highlighted several practical implementation challenges associated with applied program delivery. The Wisdom Club pilot evaluation was designed as a feasibility study, and its limitations, such as small sample size, single-site implementation, the absence of a control group and lack of formal student outcome measures, were acknowledged from the outset. Nevertheless, qualitative interviews and a co-design approach provided rich contextual insight that helped interpret the findings and informed suggestions for future iterations. Building on this foundation, future evaluations of intergenerational volunteering initiatives should adopt more rigorous designs, including randomised controlled trials, standardised academic

assessments of younger participants and implementation across multiple sites, to robustly assess long-term efficacy and scalability.

Importantly, future research should also explore how different models of volunteer engagement influence outcomes. For example, structured, long-term placements may provide more opportunity for sustained skill development and relationship-building, while flexible or episodic “micro-volunteering” roles may appeal to older adults balancing other commitments. Hybrid participation models, offering both regular and drop-in formats or allowing movement between roles of varying intensity, may strike a better balance between program consistency and volunteer autonomy. In the context of intergenerational programs such as The Wisdom Club, future research should explore how the model can be adapted for broader application, including delivery through public school systems, after-school programs, virtual mentoring, or differentiated roles tailored to volunteers’ backgrounds and strengths.

Finally, a consistent theme across all studies was the importance of tailoring volunteer roles to meet both psychological and contextual needs. The recurring significance of autonomy, competence and social connection in shaping well-being supports the use of Self-Determination Theory as a valuable guiding framework for volunteer program design. Future research should continue to investigate how specific volunteer experiences contribute to need satisfaction, and whether interventions targeting these needs, such as skill-building opportunities, co-designed roles, or structured peer mentoring, can enhance psychological outcomes. While this thesis focused primarily on older adults, there is also scope to examine intergenerational differences in how volunteering supports psychological well-being, as well as the potential for cross-age programs to foster community resilience and mutual growth.

6.6 Conclusion

Together, the findings of this thesis provide a multifaceted contribution to the literature on volunteering and well-being in older adulthood. Across four empirical studies, the research moves beyond simple associations to examine the contextual, psychological and structural conditions under which volunteering contributes to positive outcomes in later life.

Chapter 2 demonstrated that not all volunteer experiences are equally beneficial, highlighting the importance of role characteristics – particularly social support, cognitive engagement and task autonomy – in shaping well-being, especially for those with poorer physical functioning. Chapter 3 extended this focus by showing that subjective ageing perceptions, particularly awareness of age-related losses, can shape who volunteers and under what conditions, especially during periods of external disruption like the COVID-19 pandemic. Chapter 4 provided partial support for the idea that volunteering promotes well-being through the satisfaction of basic psychological needs, particularly autonomy and competence, though longitudinal findings indicated that such effects may unfold more gradually or may be confounded with stable individual differences. Finally, Chapter 5 demonstrated the potential of intergenerational programs to foster emotional well-being, social connection and mutual benefit for older adults and school communities, while also identifying practical considerations around engagement intensity, program design and role alignment. Collectively, these studies underscore the importance of flexible, psychologically supportive and contextually responsive volunteer opportunities that reflect the diversity of older adults' capabilities, motivations and life circumstances. Future research should continue to explore long-term trajectories, expand to more diverse populations and assess the scalability of interventions in real-world settings. In doing so, scholars and practitioners alike can better harness the potential of volunteering as a meaningful and sustainable pathway to healthy ageing.

References

- Advisory Panel on the Economic Potential of Senior Australians. (2011). *Realising the economic potential of senior Australians: Turning grey into gold*. Commonwealth of Australia. https://treasury.gov.au/sites/default/files/2019-03/grey_gold.pdf
- Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-Practice Recommendations for Estimating Cross-Level Interaction Effects Using Multilevel Modeling. *Journal of Management*, 39(6), 1490–1528. <https://doi.org/10.1177/0149206313478188>
- Altermatt, E. R. (2015). Predicting day-to-day changes in students' school-related affect from daily academic experiences and social interactions. *The Journal of Experimental Education*, 83(2), 218–235. <https://doi.org/10.1080/00220973.2014.938855>
- Anderson, S. F. (2020). Misinterpreting p: The discrepancy between p values and the probability the null hypothesis is true, the influence of multiple testing, and implications for the replication crisis. *Psychological Methods*, 25(5), 596–609. <https://doi.org/10.1037/met0000248>
- Australian Bureau of Statistics. (2007). *Voluntary work, Australia*. Australian Bureau of Statistics. [https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/C52862862C082577CA25731000198615/\\$File/44410_2006.pdf](https://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/C52862862C082577CA25731000198615/$File/44410_2006.pdf)
- Australian Bureau of Statistics. (2020). *General social survey: Summary results, Australia (Catalogue No. 4159.0)*. <https://www.abs.gov.au/statistics/people/people-and-communities/general-social-survey-summary-results-australia/latest-release>
- Australian Bureau of Statistics. (2022). *Population projections, Australia*. Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>
- Australian Communications and Media Authority. (2020). *Trends in online behaviour and technology usage: ACMA consumer survey 2020*. ACMA. https://www.acma.gov.au/sites/default/files/2021-02/Trends-in-online-behaviour-and-technology-usage_ACMA-consumer-survey-2020.pdf

- Australian Curriculum, Assessment and Reporting Authority. (2015). *Learning 3–6*. ACARA. <https://www.australiancurriculum.edu.au/f-10-curriculum/learning-3-6/>
- Australian Curriculum, Assessment and Reporting Authority. (2018). *NAPLAN achievement in reading, writing, language conventions and numeracy: National report for 2018*. ACARA. <https://www.nap.edu.au/docs/default-source/resources/naplan-2018-national-report.pdf>
- Australian Curriculum, Assessment and Reporting Authority. (2023). *NAPLAN national results*. ACARA. <https://www.acara.edu.au/reporting/national-report-on-schooling-in-australia/naplan-national-results>
- Australian Institute of Health and Welfare. (2015). *Australia's welfare 2015*. 500. <https://doi.org/10.25816/5EBA2CC774755>
- Australian Institute of Health and Welfare. (2022). *Australia's children*. 389. <https://doi.org/10.25816/5EBCA4D0FA7DD>
- Australian Institute of Health and Welfare. (2024). *Older Australians*. <https://www.aihw.gov.au/reports/older-people/older-australians>
- Baker, L. A., Cahalin, L. P., Gerst, K., & Burr, J. A. (2005). Productive activities and subjective well-being among older adults: The influence of number of activities and time commitment. *Social Indicators Research*, 73(3), 431–458. <https://doi.org/10.1007/s11205-005-0805-6>
- Ball, K., Berch, D. B., Helmers, K. F., Jobe, J. B., Leveck, M. D., Marsiske, M., Morris, J. N., Rebok, G. W., Smith, D. M., Tennstedt, S. L., Unverzagt, F. W., Willis, S. L., & for the ACTIVE Study Group. (2002). Effects of Cognitive Training Interventions With Older Adults: A Randomized Controlled Trial. *JAMA*, 288(18), 2271. <https://doi.org/10.1001/jama.288.18.2271>
- Baltes, M. M., & Carstensen, L. L. (1996). The Process of Successful Ageing. *Ageing and Society*, 16(4), 397–422. <https://doi.org/10.1017/S0144686X00003603>
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes

- (Eds.), *Successful Aging* (1st ed., pp. 1–34). Cambridge University Press.
<https://doi.org/10.1017/CBO9780511665684.003>
- Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine*, 51(6), 843–857.
[https://doi.org/10.1016/S0277-9536\(00\)00065-4](https://doi.org/10.1016/S0277-9536(00)00065-4)
- Biddle, N., Boyer, C., Gray, M., & Jahromi, M. (2022). *Volunteering in Australia: The volunteer perspective*. Volunteering Australia. <https://volunteeringstrategy.org.au/wp-content/uploads/2022/10/Volunteering-in-Australia-2022-The-Volunteer-Perspective.pdf>
- Biddle, N., & Gray, M. (2020). *The experience of volunteers during the early stages of the COVID-19 pandemic (Australia)*. ANU Centre for Social Research & Methods.
<https://apo.org.au/node/305249>
- Biddle, N., & Gray, M. (2021). *Volunteering during the first year of the COVID-19 pandemic (April 2021)*. ANU Centre for Social Research & Methods.
<https://apo.org.au/node/312367>
- Bidee, J., Vantilborgh, T., Pepermans, R., Huybrechts, G., Willems, J., Jegers, M., & Hofmans, J. (2013). Autonomous motivation stimulates volunteers' work effort: A self-determination theory approach to volunteerism. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 24(1), 32–47. <https://doi.org/10.1007/s11266-012-9269-x>
- Bielak, A. A., Brydges, C. R., Carlson, M. C., Andrews, R. M., & Rebok, G. W. (2019). COGNITIVE INTRAINDIVIDUAL VARIABILITY TO MEASURE INTERVENTION EFFECTIVENESS: BALTIMORE EXPERIENCE CORPS TRIAL. *Innovation in Aging*, 3(Supplement_1), S707–S708. <https://doi.org/10.1093/geroni/igz038.2600>
- Binder, M., & Freytag, A. (2013). Volunteering, subjective well-being and public policy. *Journal of Economic Psychology*, 34, 97–119.
<https://doi.org/10.1016/j.joep.2012.11.008>

- Bjälkebring, P., Henning, G., Västfjäll, D., Dickert, S., Brehmer, Y., Buratti, S., Hansson, I., & Johansson, B. (2021). Helping out or helping yourself? Volunteering and life satisfaction across the retirement transition. *Psychology and Aging, 36*(1), 119–130. <https://doi.org/10.1037/pag0000576>
- Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., Bakken, S., Kaplan, C. P., Squiers, L., Fabrizio, C., & Fernandez, M. (2009). How We Design Feasibility Studies. *American Journal of Preventive Medicine, 36*(5), 452–457. <https://doi.org/10.1016/j.amepre.2009.02.002>
- Brandtstädter, J. (1999). The Self in Action and Development: Cultural, Biosocial, and Ontogenetic Bases of Intentional Self-Development. In *Action & Self-Development: Theory and Research Through the Life Span* (pp. 37–66). SAGE Publications, Inc. <https://doi.org/10.4135/9781452204802.n2>
- Brandtstädter, J., & Rothermund, K. (2002). The Life-Course Dynamics of Goal Pursuit and Goal Adjustment: A Two-Process Framework. *Developmental Review, 22*(1), 117–150. <https://doi.org/10.1006/drev.2001.0539>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. (pp. 57–71). American Psychological Association. <https://doi.org/10.1037/13620-004>
- Brown, K. M., Hoye, R., & Nicholson, M. (2012). Self-esteem, self-efficacy, and social connectedness as mediators of the relationship between volunteering and well-being. *Journal of Social Service Research, 38*(4), 468–483. <https://doi.org/10.1080/01488376.2012.687706>
- Canedo-García, A., García-Sánchez, J.-N., & Pacheco-Sanz, D.-I. (2017). A systematic review of the effectiveness of intergenerational programs. *Frontiers in Psychology, 8*, 1882. <https://doi.org/10.3389/fpsyg.2017.01882>

- Carlo, G., Okun, M. A., Knight, G. P., & De Guzman, M. R. T. (2005). The interplay of traits and motives on volunteering: Agreeableness, extraversion and prosocial value motivation. *Personality and Individual Differences*, 38(6), 1293–1305.
<https://doi.org/10.1016/j.paid.2004.08.012>
- Carlson, M. C., Kuo, J. H., Chuang, Y., Varma, V. R., Harris, G., Albert, M. S., Erickson, K. I., Kramer, A. F., Parisi, J. M., Xue, Q., Tan, E. J., Tanner, E. K., Gross, A. L., Seeman, T. E., Gruenewald, T. L., McGill, S., Rebok, G. W., & Fried, L. P. (2015). Impact of the Baltimore Experience Corps Trial on cortical and hippocampal volumes. *Alzheimer's & Dementia*, 11(11), 1340–1348.
<https://doi.org/10.1016/j.jalz.2014.12.005>
- Carlson, M. C., Saczynski, J. S., Rebok, G. W., Seeman, T., Glass, T. A., McGill, S., Tielsch, J., Frick, K. D., Hill, J., & Fried, L. P. (2008). Exploring the effects of an “everyday” activity program on executive function and memory in older adults: Experience Corps®. *The Gerontologist*, 48(6), 793–801. <https://doi.org/10.1093/geront/48.6.793>
- Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging*, 7(3), 331–338.
<https://doi.org/10.1037/0882-7974.7.3.331>
- Carstensen, L. L., Mikels, J. A., & Mather, M. (2006). Aging and the Intersection of Cognition, Motivation, and Emotion. In *Handbook of the Psychology of Aging* (pp. 343–362). Elsevier. <https://doi.org/10.1016/B978-012101264-9/50018-5>
- Castles, A., Rastle, K., & Nation, K. (2018). Ending the Reading Wars: Reading Acquisition From Novice to Expert. *Psychological Science in the Public Interest*, 19(1), 5–51.
<https://doi.org/10.1177/1529100618772271>
- Charles, S. T. (2010). Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*, 136(6), 1068–1091.
<https://doi.org/10.1037/a0021232>
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van Der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M.,

- Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39(2), 216–236. <https://doi.org/10.1007/s11031-014-9450-1>
- Chorn Dunham, C., & Casadonte, D. (2009). Children's attitudes and classroom interaction in an intergenerational education program. *Educational Gerontology*, 35(5), 453–464. <https://doi.org/10.1080/03601270802605473>
- Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences* (0 ed.). Routledge. <https://doi.org/10.4324/9780203771587>
- Connolly, S., & O'shea, E. (2015). The perceived benefits of participating in voluntary activities among older people: Do they differ by volunteer characteristics? *Activities, Adaptation & Aging*, 39(2), 95–108. <https://doi.org/10.1080/01924788.2015.1024075>
- Davidov, M., Vaish, A., Knafo-Noam, A., & Hastings, P. D. (2016). The motivational foundations of prosocial behavior from a developmental perspective—evolutionary roots and key psychological mechanisms: Introduction to the special section. *Child Development*, 87(6), 1655–1667. <https://doi.org/10.1111/cdev.12639>
- De Vaus, D., Gray, M., & Stanton, D. (2003). *Measuring the value of unpaid household, caring and voluntary work of older Australians* (34). Australian Institute of Family Studies.
- Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, 4(1), 19–43. <https://doi.org/10.1146/annurev-orgpsych-032516-113108>
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology / Psychologie Canadienne*, 49(3), 182–185. <https://doi.org/10.1037/a0012801>
- Deci, E. L., & Ryan, R. M. (2012). Self-Determination Theory. In P. Van Lange, A. Kruglanski, & E. Higgins, *Handbook of Theories of Social Psychology: Volume 1* (pp. 416–437). SAGE Publications Ltd. <https://doi.org/10.4135/9781446249215.n21>

- Department for Health and Wellbeing. (2020). *South Australia's Plan for Ageing Well 2020-2025*. Government of South Australia.
https://www.sahealth.sa.gov.au/wps/wcm/connect/f70e6b01-72ea-40e3-af7d-f3f641f24645/South+Australia%27s+Plan+for+Ageing+Well+2020-2025_WEB.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-f70e6b01-72ea-40e3-af7d-f3f641f24645-o-H0Cjm
- Diehl, M. K., & Wahl, H. W. (2010). Awareness of Age-Related Change: Examination of a (Mostly) Unexplored Concept. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65B(3), 340–350.
<https://doi.org/10.1093/geronb/gbp110>
- Diehl, M., Wahl, H.-W., Barrett, A. E., Brothers, A. F., Miche, M., Montepare, J. M., Westerhof, G. J., & Wurm, S. (2014). Awareness of aging: Theoretical considerations on an emerging concept. *Developmental Review*, 34(2), 93–113.
<https://doi.org/10.1016/j.dr.2014.01.001>
- Diehl, M., Wettstein, M., Spuling, S. M., & Wurm, S. (2021). Age-related change in self-perceptions of aging: Longitudinal trajectories and predictors of change. *Psychology and Aging*, 36(3), 344–359. <https://doi.org/10.1037/pag0000585>
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542–575.
<https://doi.org/10.1037/0033-2909.95.3.542>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71–75.
https://doi.org/10.1207/s15327752jpa4901_13
- Diener, E., Pressman, S. D., Hunter, J., & Delgadillo-Chase, D. (2017). If, Why, and When Subjective Well-Being Influences Health, and Future Needed Research. *Applied Psychology: Health and Well-Being*, 9(2), 133–167.
<https://doi.org/10.1111/aphw.12090>
- Diener, E., Wirtz, D., Biswas-Diener, R., Tov, W., Kim-Prieto, C., Choi, D., & Oishi, S. (2009). New Measures of Well-Being. In E. Diener (Ed.), *Assessing Well-Being* (Vol.

- 39, pp. 247–266). Springer Netherlands. https://doi.org/10.1007/978-90-481-2354-4_12
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2010). New Well-being Measures: Short Scales to Assess Flourishing and Positive and Negative Feelings. *Social Indicators Research*, 97(2), 143–156. <https://doi.org/10.1007/s11205-009-9493-y>
- Dormann, C., & Zapf, D. (2004). Customer-Related Social Stressors and Burnout. *Journal of Occupational Health Psychology*, 9(1), 61–82. <https://doi.org/10.1037/1076-8998.9.1.61>
- Dury, S., De Donder, L., De Witte, N., Buffel, T., Jacquet, W., & Verté, D. (2015). To Volunteer or Not: The Influence of Individual Characteristics, Resources, and Social Factors on the Likelihood of Volunteering by Older Adults. *Nonprofit and Voluntary Sector Quarterly*, 44(6), 1107–1128. <https://doi.org/10.1177/0899764014556773>
- Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82(5), 804–818. <https://doi.org/10.1037/0022-3514.82.5.804>
- Femia, E. E., Zarit, S. H., Blair, C., Jarrott, S. E., & Bruno, K. (2008). Intergenerational preschool experiences and the young child: Potential benefits to development. *Early Childhood Research Quarterly*, 23(2), 272–287. <https://doi.org/10.1016/j.ecresq.2007.05.001>
- Fengler, A. P. (1984). Life Satisfaction of Subpopulations of Elderly: The Comparative Effects of Volunteerism, Employment, and Meal Site Participation. *Research on Aging*, 6(2), 189–212. <https://doi.org/10.1177/0164027584006002003>
- Forner, V. W., Holtrop, D., Kragt, D., & Johnson, A. (2022). *The great (volunteer) resignation: An evidence-based strategy for retaining volunteers*. Volunteering Australia.

- Fredrickson, B. L., & Joiner, T. (2018). Reflections on Positive Emotions and Upward Spirals. *Perspectives on Psychological Science*, 13(2), 194–199.
<https://doi.org/10.1177/1745691617692106>
- Fried, L. P. (2004). A Social Model for Health Promotion for an Aging Population: Initial Evidence on the Experience Corps Model. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 81(1), 64–78. <https://doi.org/10.1093/jurban/jth094>
- Fried, L. P., Carlson, M. C., McGill, S., Seeman, T., Xue, Q.-L., Frick, K., Tan, E., Tanner, E. K., Barron, J., Frangakis, C., Piferi, R., Martinez, I., Gruenewald, T., Martin, B. K., Berry-Vaughn, L., Stewart, J., Dickersin, K., Willging, P. R., & Rebok, G. W. (2013). Experience Corps: A dual trial to promote the health of older adults and children's academic success. *Contemporary Clinical Trials*, 36(1), 1–13.
<https://doi.org/10.1016/j.cct.2013.05.003>
- Gabriel, Z., & Bowling, A. (2004). Quality of life from the perspectives of older people. *Ageing and Society*, 24(5), 675–691. <https://doi.org/10.1017/S0144686X03001582>
- Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*, 13(1), 117.
<https://doi.org/10.1186/1471-2288-13-117>
- Gamliel, T., & Gabay, N. (2014). Knowledge Exchange, Social Interactions, and Empowerment in an Intergenerational Technology Program at School. *Educational Gerontology*, 40(8), 597–617. <https://doi.org/10.1080/03601277.2013.863097>
- Gendron, T. L., Inker, J., & Welleford, A. (2018). “How Old Do You Feel?” The Difficulties and Ethics of Operationalizing Subjective Age. *The Gerontologist*, 58(4), 618–624.
<https://doi.org/10.1093/geront/gnx098>
- Gimenez-Nadal, J. I., & Molina, J. A. (2015). Voluntary activities and daily happiness in the United States. *Economic Inquiry*, 53(4), 1735–1750.
<https://doi.org/10.1111/ecin.12227>

- Giraudeau, C., & Bailly, N. (2019). Intergenerational programs: What can school-age children and older people expect from them? A systematic review. *European Journal of Ageing*, 16(3), 363–376. <https://doi.org/10.1007/s10433-018-00497-4>
- Giuntoli, L., Ceccarini, F., Sica, C., & Caudek, C. (2017). Validation of the Italian Versions of the Flourishing Scale and of the Scale of Positive and Negative Experience. *Sage Open*, 7(1), 2158244016682293. <https://doi.org/10.1177/2158244016682293>
- Glass, T. A. (2004). Experience Corps: Design of an Intergenerational Program to Boost Social Capital and Promote the Health of an Aging Society. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 81(1), 94–105. <https://doi.org/10.1093/jurban/jth096>
- Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78(6), 1360–1380.
- Greenfield, E. A., & Marks, N. F. (2004). Formal Volunteering as a Protective Factor for Older Adults' Psychological Well-Being. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 59(5), S258–S264. <https://doi.org/10.1093/geronb/59.5.S258>
- Gruenewald, T. L., Tanner, E. K., Fried, L. P., Carlson, M. C., Xue, Q.-L., Parisi, J. M., Rebok, G. W., Yarnell, L. M., & Seeman, T. E. (2016). The Baltimore Experience Corps Trial: Enhancing Generativity via Intergenerational Activity Engagement in Later Life. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 71(4), 661–670. <https://doi.org/10.1093/geronb/gbv005>
- Haivas, S., Hofmans, J., & Pepermans, R. (2013). Volunteer engagement and intention to quit from a self-determination theory perspective. *Journal of Applied Social Psychology*, 43(9), 1869–1880. <https://doi.org/10.1111/jasp.12149>
- Hansen, T., Aartsen, M., Slagsvold, B., & Deindl, C. (2018). Dynamics of Volunteering and Life Satisfaction in Midlife and Old Age: Findings from 12 European Countries. *Social Sciences*, 7(5), 78. <https://doi.org/10.3390/socsci7050078>

- Hay, E. L., & Diehl, M. (2011). Emotion complexity and emotion regulation across adulthood. *European Journal of Ageing*, 8(3), 157–168. <https://doi.org/10.1007/s10433-011-0191-7>
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (Second). The Guilford Press.
- Hays, R. D., Sherbourne, C. D., & Mazel, R. M. (1993). The rand 36-item health survey 1.0. *Health Economics*, 2(3), 217–227. <https://doi.org/10.1002/hec.4730020305>
- Hernandez, C. R., & Gonzalez, M. Z. (2008). Effects of Intergenerational Interaction on Aging. *Educational Gerontology*, 34(4), 292–305. <https://doi.org/10.1080/03601270701883908>
- Hess, T. M. (2014). Selective Engagement of Cognitive Resources: Motivational Influences on Older Adults' Cognitive Functioning. *Perspectives on Psychological Science*, 9(4), 388–407. <https://doi.org/10.1177/1745691614527465>
- Heyman, J. C., Gutheil, I. A., & White-Ryan, L. (2011). Preschool Children's Attitudes Toward Older Adults: Comparison of Intergenerational and Traditional Day Care. *Journal of Intergenerational Relationships*, 9(4), 435–444. <https://doi.org/10.1080/15350770.2011.618381>
- Ho, H.-C. (2017). Elderly volunteering and psychological well-being. *International Social Work*, 60(4), 1028–1038. <https://doi.org/10.1177/0020872815595111>
- Hobfoll, S. E. (2010). *Conservation of Resources Theory: Its Implication for Stress, Health, and Resilience*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195375343.013.0007>
- Hong, S. I., & Morrow-Howell, N. (2010). Health outcomes of Experience Corps ®: A high-commitment volunteer program. *Social Science & Medicine*, 71(2), 414–420. <https://doi.org/10.1016/j.socscimed.2010.04.009>
- Hong, S.-I., Hasche, L., & Bowland, S. (2009). Structural Relationships Between Social Activities and Longitudinal Trajectories of Depression Among Older Adults. *The Gerontologist*, 49(1), 1–11. <https://doi.org/10.1093/geront/gnp006>

- Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology, 92*(5), 1332–1356. <https://doi.org/10.1037/0021-9010.92.5.1332>
- Huo, M., Miller, L. M. S., Kim, K., & Liu, S. (2021). Volunteering, Self-Perceptions of Aging, and Mental Health in Later Life. *The Gerontologist, 61*(7), 1131–1140. <https://doi.org/10.1093/geront/gnaa164>
- Huxhold, O., Fiori, K. L., & Windsor, T. D. (2013). The dynamic interplay of social network characteristics, subjective well-being, and health: The costs and benefits of socio-emotional selectivity. *Psychology and Aging, 28*(1), 3–16. <https://doi.org/10.1037/a0030170>
- IMB Corp. (2020). *IMB SPSS Statistics for Windows* (Version 21.0) [Computer software]. IMP Corp.
- Jenkinson, C. E., Dickens, A. P., Jones, K., Thompson-Coon, J., Taylor, R. S., Rogers, M., Bamba, C. L., Lang, I., & Richards, S. H. (2013). Is volunteering a public health intervention? A systematic review and meta-analysis of the health and survival of volunteers. *BMC Public Health, 13*(1), 773. <https://doi.org/10.1186/1471-2458-13-773>
- Jongenelis, M. I., Jackson, B., Newton, R. U., & Pettigrew, S. (2022). Longitudinal associations between formal volunteering and well-being among retired older people: Follow-up results from a randomized controlled trial. *Aging & Mental Health, 26*(2), 368–375. <https://doi.org/10.1080/13607863.2021.1884845>
- Jongenelis, M. I., Jackson, B., Warburton, J., Newton, R. U., & Pettigrew, S. (2022). Aspects of formal volunteering that contribute to favourable psychological outcomes in older adults. *European Journal of Ageing, 19*(1), 107–116. <https://doi.org/10.1007/s10433-021-00618-6>
- Jongenelis, M. I., & Pettigrew, S. (2021). Aspects of the volunteering experience associated with well-being in older adults. *Health Promotion Journal of Australia, 32*(S2), 384–390. <https://doi.org/10.1002/hpja.399>

- Jose, P. E. (2016). The Merits of Using Longitudinal Mediation. *Educational Psychologist*, 51(3–4), 331–341. <https://doi.org/10.1080/00461520.2016.1207175>
- Kaspar, R., Gabrian, M., Brothers, A., Wahl, H.-W., & Diehl, M. (2019). Measuring Awareness of Age-Related Change: Development of a 10-Item Short Form for Use in Large-Scale Surveys. *The Gerontologist*, 59(3), e130–e140. <https://doi.org/10.1093/geront/gnx213>
- Kirsnan, L., Kosiol, J., Golenko, X., Radford, K., & Fitzgerald, J. A. (2023). Barriers and Enablers for Enhancing Engagement of Older People in Intergenerational Programs in Australia. *Journal of Intergenerational Relationships*, 21(3), 360–379. <https://doi.org/10.1080/15350770.2022.2065400>
- Kleinspehn-Ammerlahn, A., Kotter-Gruhn, D., & Smith, J. (2008). Self-Perceptions of Aging: Do Subjective Age and Satisfaction With Aging Change During Old Age? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(6), P377–P385. <https://doi.org/10.1093/geronb/63.6.P377>
- Knepple Carney, A., Graf, A. S., Hudson, G., & Wilson, E. (2021). Age Moderates Perceived COVID-19 Disruption on Well-Being. *The Gerontologist*, 61(1), 30–35. <https://doi.org/10.1093/geront/gnaa106>
- Konrath, S., Fuhrel-Forbis, A., Lou, A., & Brown, S. (2012). Motives for volunteering are associated with mortality risk in older adults. *Health Psychology*, 31(1), 87–96. <https://doi.org/10.1037/a0025226>
- Kornadt, A. E., & Rothermund, K. (2015). Views on Aging: Domain-Specific Approaches and Implications for Developmental Regulation. *Annual Review of Gerontology and Geriatrics*, 35(1), 121–144. <https://doi.org/10.1891/0198-8794.35.121>
- Lachance, E. L. (2021). COVID-19 and its Impact on Volunteering: Moving Towards Virtual Volunteering. *Leisure Sciences*, 43(1–2), 104–110. <https://doi.org/10.1080/01490400.2020.1773990>

- Lachman, M. E. (2006). Perceived Control Over Aging-Related Declines: Adaptive Beliefs and Behaviors. *Current Directions in Psychological Science*, 15(6), 282–286.
<https://doi.org/10.1111/j.1467-8721.2006.00453.x>
- Lawton, R. N., Gramatki, I., Watt, W., & Fujiwara, D. (2021). Does Volunteering Make Us Happier, or Are Happier People More Likely to Volunteer? Addressing the Problem of Reverse Causality When Estimating the Wellbeing Impacts of Volunteering. *Journal of Happiness Studies*, 22(2), 599–624. <https://doi.org/10.1007/s10902-020-00242-8>
- Lee, S. (2022). Volunteering and loneliness in older adults: A parallel mediation model. *Aging & Mental Health*, 26(6), 1234–1241.
<https://doi.org/10.1080/13607863.2021.1913477>
- Lent, R. W. (2004). Toward a Unifying Theoretical and Practical Perspective on Well-Being and Psychosocial Adjustment. *Journal of Counseling Psychology*, 51(4), 482–509.
<https://doi.org/10.1037/0022-0167.51.4.482>
- Levy, B. R., & Myers, L. M. (2004). Preventive health behaviors influenced by self-perceptions of aging. *Preventive Medicine*, 39(3), 625–629.
<https://doi.org/10.1016/j.ypmed.2004.02.029>
- Li, F., Bai, X., & Wang, Y. (2013). The Scale of Positive and Negative Experience (SPANE): Psychometric Properties and Normative Data in a Large Chinese Sample. *PLoS ONE*, 8(4), e61137. <https://doi.org/10.1371/journal.pone.0061137>
- Li, Y., & Ferraro, K. F. (2006). Volunteering in Middle and Later Life: Is Health a Benefit, Barrier or Both? *Social Forces*, 85(1), 497–519.
<https://doi.org/10.1353/sof.2006.0132>
- Linning, M., & Jackson, G. (2018). *Volunteering, Health and Wellbeing – What does the evidence tell us?* Volunteer Scotland. <https://www.volunteerscotland.net/wp-content/uploads/2022/11/Volunteering-Health-and-Wellbeing-Full-Report.pdf>
- Lloyd-Sherlock, P., Kalache, A., Kirkwood, T., McKee, M., & Prince, M. (2019). WHO's proposal for a decade of healthy ageing. *The Lancet*, 394(10215), 2152–2153.
[https://doi.org/10.1016/S0140-6736\(19\)32522-X](https://doi.org/10.1016/S0140-6736(19)32522-X)

- Lubben, J., & Gironde, M. (2003). Centrality of Social Ties to the Health and Well-Being of Older Adults. In *Social Work and Health Care in an Aging Society: Education, Policy, Practice, and Research*. Springer Publishing Company, Incorporated.
- Lynott, P. P., & Merola, P. R. (2007). Improving the Attitudes of 4th Graders Toward Older People Through a Multidimensional Intergenerational Program. *Educational Gerontology*, 33(1), 63–74. <https://doi.org/10.1080/03601270600864041>
- MacCallum, J., Palmer, D., Wright, P., Cumming-Potvin, W., Brooker, M., & Tero, C. (2010). Australian Perspectives: Community Building Through Intergenerational Exchange Programs. *Journal of Intergenerational Relationships*, 8(2), 113–127. <https://doi.org/10.1080/15350771003741899>
- Martins, T., Midão, L., Martínez Veiga, S., Dequech, L., Busse, G., Bertram, M., McDonald, A., Gilliland, G., Orte, C., Vives, M., & Costa, E. (2019). Intergenerational Programs Review: Study Design and Characteristics of Intervention, Outcomes, and Effectiveness: Research. *Journal of Intergenerational Relationships*, 17(1), 93–109. <https://doi.org/10.1080/15350770.2018.1500333>
- McArdle, J. J., & Bell, R. Q. (2000). An introduction to latent growth models for developmental data analysis. In *Modeling longitudinal and multilevel data: Practical issues, applied approaches, and specific examples* (1st ed., pp. 69–107). Lawrence Erlbaum Associates Publishers.
- McMunn, A., Nazroo, J., Wahrendorf, M., Breeze, E., & Zaninotto, P. (2009). Participation in socially-productive activities, reciprocity and wellbeing in later life: Baseline results in England. *Ageing and Society*, 29(5), 765–782. <https://doi.org/10.1017/S0144686X08008350>
- Meier, S., & Stutzer, A. (2008). Is Volunteering Rewarding in Itself? *Economica*, 75(297), 39–59. <https://doi.org/10.1111/j.1468-0335.2007.00597.x>
- Mellor, D., Hayashi, Y., Firth, L., Stokes, M., Chambers, S., & Cummins, R. (2008). Volunteering and Well-Being: Do Self-Esteem, Optimism, and Perceived Control

- Mediate the Relationship? *Journal of Social Service Research*, 34(4), 61–70.
<https://doi.org/10.1080/01488370802162483>
- Meshel, D. S., & MCGlynn, R. P. (2004). Intergenerational contact, attitudes, and stereotypes of adolescents and older people. *Educational Gerontology*, 30(6), 457–479. <https://doi.org/10.1080/03601270490445078>
- Mikton, C., de la Fuente-Núñez, V., Officer, A., & Krug, E. (2021). Ageism: A social determinant of health that has come of age. *The Lancet*, 397(10282), 1333–1334. [https://doi.org/10.1016/S0140-6736\(21\)00524-9](https://doi.org/10.1016/S0140-6736(21)00524-9)
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91(6), 1321–1339. <https://doi.org/10.1037/0021-9010.91.6.1321>
- Morrow-Howell, N. (2010). Volunteering in Later Life: Research Frontiers. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65B(4), 461–469. <https://doi.org/10.1093/geronb/gbq024>
- Morrow-Howell, N., Hong, S.-I., & Tang, F. (2009). Who Benefits From Volunteering? Variations in Perceived Benefits. *The Gerontologist*, 49(1), 91–102. <https://doi.org/10.1093/geront/gnp007>
- Musick, M. A., Herzog, A. R., & House, J. S. (1999). Volunteering and Mortality Among Older Adults: Findings From a National Sample. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 54B(3), S173–S180. <https://doi.org/10.1093/geronb/54B.3.S173>
- Muthén, B., & Muthén, L. (2024). *Mplus* (Version 8.9) [Computer software].
- National Strategy for Volunteering. (2023). *National Strategy for Volunteering 2023–2033*. Volunteering Australia. <https://volunteeringstrategy.org.au/the-strategy/>
- Newsom, J. T., Rook, K. S., Nishishiba, M., Sorkin, D. H., & Mahan, T. L. (2005). Understanding the Relative Importance of Positive and Negative Social Exchanges:

- Examining Specific Domains and Appraisals. *The Journals of Gerontology: Series B*, 60(6), P304–P312. <https://doi.org/10.1093/geronb/60.6.P304>
- Okun, M. A., Barr, A., & Herzog, A. R. (1998). Motivation to volunteer by older adults: A test of competing measurement models. *Psychology and Aging*, 13(4), 608–621. <https://doi.org/10.1037/0882-7974.13.4.608>
- O’Laughlin, K. D., Martin, M. J., & Ferrer, E. (2018). Cross-Sectional Analysis of Longitudinal Mediation Processes. *Multivariate Behavioral Research*, 53(3), 375–402. <https://doi.org/10.1080/00273171.2018.1454822>
- Oostlander, J., Güntert, S. T., & Wehner, T. (2014). Linking Autonomy-Supportive Leadership to Volunteer Satisfaction: A Self-Determination Theory Perspective. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 25(6), 1368–1387. <https://doi.org/10.1007/s11266-013-9395-0>
- Ozer, D. J., & Benet-Martínez, V. (2006). Personality and the Prediction of Consequential Outcomes. *Annual Review of Psychology*, 57(1), 401–421. <https://doi.org/10.1146/annurev.psych.57.102904.190127>
- Paik, A., & Navarre-Jackson, L. (2011). Social Networks, Recruitment, and Volunteering: Are Social Capital Effects Conditional on Recruitment? *Nonprofit and Voluntary Sector Quarterly*, 40(3), 476–496. <https://doi.org/10.1177/0899764009354647>
- Pan, H., Liu, S., Miao, D., & Yuan, Y. (2018). Sample size determination for mediation analysis of longitudinal data. *BMC Medical Research Methodology*, 18(1), 32. <https://doi.org/10.1186/s12874-018-0473-2>
- Parisi, J. M., Kuo, J., Rebok, G. W., Xue, Q.-L., Fried, L. P., Gruenewald, T. L., Huang, J., Seeman, T. E., Roth, D. L., Tanner, E. K., & Carlson, M. C. (2015). Increases in Lifestyle Activities as a Result of Experience Corps® Participation. *Journal of Urban Health*, 92(1), 55–66. <https://doi.org/10.1007/s11524-014-9918-z>
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment*, 5(2), 164–172. <https://doi.org/10.1037/1040-3590.5.2.164>

- Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, 3(2), 137–152.
<https://doi.org/10.1080/17439760701756946>
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further Validation of the Satisfaction With Life Scale: Evidence for the Cross-Method Convergence of Well-Being Measures. *Journal of Personality Assessment*, 57(1), 149–161.
https://doi.org/10.1207/s15327752jpa5701_17
- Peters, R., Ee, N., Ward, S. A., Kenning, G., Radford, K., Goldwater, M., Dodge, H. H., Lewis, E., Xu, Y., Kudrna, G., Hamilton, M., Peters, J., Anstey, K. J., Lautenschlager, N. T., Fitzgerald, A., & Rockwood, K. (2021). Intergenerational Programmes bringing together community dwelling non-familial older adults and children: A Systematic Review. *Archives of Gerontology and Geriatrics*, 94, 104356.
<https://doi.org/10.1016/j.archger.2021.104356>
- Piliavin, J. A., & Siegl, E. (2007). Health Benefits of Volunteering in the Wisconsin Longitudinal Study. *Journal of Health and Social Behavior*, 48(4), 450–464.
<https://doi.org/10.1177/002214650704800408>
- Pilkington, P. D., Windsor, T. D., & Crisp, D. A. (2012). Volunteering and Subjective Well-Being in Midlife and Older Adults: The Role of Supportive Social Networks. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67B(2), 249–260. <https://doi.org/10.1093/geronb/gbr154>
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717–731. <https://doi.org/10.3758/BF03206553>
- Rahm, T., Heise, E., & Schuldt, M. (2017). Measuring the frequency of emotions—Validation of the Scale of Positive and Negative Experience (SPANE) in Germany. *PLOS ONE*, 12(2), e0171288. <https://doi.org/10.1371/journal.pone.0171288>
- Rebok, G. W. (2004). Short-Term Impact of Experience Corps(R) Participation on Children and Schools: Results From a Pilot Randomized Trial. *Journal of Urban Health:*

- Bulletin of the New York Academy of Medicine*, 81(1), 79–93.
<https://doi.org/10.1093/jurban/jth095>
- Rebok, G. W., Parisi, J. M., Barron, J. S., Carlson, M. C., DiIorio, I., Frick, K. D., Fried, L. P., Gruenewald, T. L., Huang, J., McGill, S., Ramsey, C. M., Romani, W. A., Seeman, T. E., Tan, E., Tanner, E. K., Xing, L., & Xue, Q.-L. (2019). Impact of Experience Corps® Participation on Children's Academic Achievement and School Behavior. *Prevention Science*, 20(4), 478–487. <https://doi.org/10.1007/s11121-018-0972-8>
- Robbins, S. B., & Kliever, W. L. (2000). Advances in theory and research on subjective well-being. In *Handbook of counseling psychology* (3rd ed., pp. 310–345). John Wiley & Sons, Inc.
- Rook, K. S. (2014). The Health Effects of Negative Social Exchanges in Later Life. *Generations*, 38(1), 15–23.
- Rudnicka, E., Napierała, P., Podfigurna, A., Męczekalski, B., Smolarczyk, R., & Grymowicz, M. (2020). The World Health Organization (WHO) approach to healthy ageing. *Maturitas*, 139, 6–11. <https://doi.org/10.1016/j.maturitas.2020.05.018>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., & Deci, E. L. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology*, 52(1), 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Ryan, R. M., & Deci, E. L. (Eds.). (2017). *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. Guilford Press.
<https://doi.org/10.1521/978.14625/28806>
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069–1081. <https://doi.org/10.1037/0022-3514.57.6.1069>

- Ryff, C. D. (2014). Psychological Well-Being Revisited: Advances in the Science and Practice of Eudaimonia. *Psychotherapy and Psychosomatics*, 83(1), 10–28.
<https://doi.org/10.1159/000353263>
- Rynes, S. L., Gerhart, B., & Minette, K. A. (2004). The importance of pay in employee motivation: Discrepancies between what people say and what they do. *Human Resource Management*, 43(4), 381–394. <https://doi.org/10.1002/hrm.20031>
- Sabatini, S., Silarova, B., Martyr, A., Collins, R., Ballard, C., Anstey, K. J., Kim, S., & Clare, L. (2020). Associations of Awareness of Age-Related Change With Emotional and Physical Well-being: A Systematic Review and Meta-analysis. *The Gerontologist*, 60(6), e477–e490. <https://doi.org/10.1093/geront/gnz101>
- Sabatini, S., Turner, S., Brooker, H., Ballard, C., Corbett, A., & Hampshire, A. (2023). Physical and mental health conditions account for variability in awareness of age-related changes. *Frontiers in Psychiatry*, 14, 1152177.
<https://doi.org/10.3389/fpsy.2023.1152177>
- Sakaguchi-Tang, D. K., Cunningham, J. L., Roldan, W., Yip, J., & Kientz, J. A. (2021). Co-Design with Older Adults: Examining and Reflecting on Collaboration with Aging Communities. *Proceedings of the ACM on Human-Computer Interaction*, 5(CSCW2), 1–28. <https://doi.org/10.1145/3479506>
- Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., Schulz, R., & Zdaniuk, B. (2006). The Life Engagement Test: Assessing Purpose in Life. *Journal of Behavioral Medicine*, 29(3), 291–298. <https://doi.org/10.1007/s10865-005-9044-1>
- Shen, H.-W., Pickard, J. G., & Johnson, S. D. (2013). Self-Esteem Mediates the Relationship Between Volunteering and Depression for African American Caregivers. *Journal of Gerontological Social Work*, 56(5), 438–451.
<https://doi.org/10.1080/01634372.2013.791907>
- Silva, A. J., & Caetano, A. (2013). Validation of the Flourishing Scale and Scale of Positive and Negative Experience in Portugal. *Social Indicators Research*, 110(2), 469–478.
<https://doi.org/10.1007/s11205-011-9938-y>

- Singh, K., Junnarkar, M., & Jaswal, S. (2016). Validating the Flourishing Scale and the Scale of Positive and Negative Experience in India. *Mental Health, Religion & Culture*, 19(8), 943–954. <https://doi.org/10.1080/13674676.2016.1229289>
- Slavin, R. E., Lake, C., Davis, S., & Madden, N. A. (2011). Effective programs for struggling readers: A best-evidence synthesis. *Educational Research Review*, 6(1), 1–26. <https://doi.org/10.1016/j.edurev.2010.07.002>
- Son, J., & Wilson, J. (2012). Volunteer Work and Hedonic, Eudemonic, and Social Well-Being. *Sociological Forum*, 27(3), 658–681. <https://doi.org/10.1111/j.1573-7861.2012.01340.x>
- StataCorp. (2023). *Stata Statistical Software: Release 18* [Computer software]. StataCorp LLC.
- Stephens, C., Breheny, M., & Mansvelt, J. (2015). Volunteering as reciprocity: Beneficial and harmful effects of social policies to encourage contribution in older age. *Journal of Aging Studies*, 33, 22–27. <https://doi.org/10.1016/j.jaging.2015.02.003>
- Stephoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. *The Lancet*, 385(9968), 640–648. [https://doi.org/10.1016/S0140-6736\(13\)61489-0](https://doi.org/10.1016/S0140-6736(13)61489-0)
- Stephoe, A., & Fancourt, D. (2020). An outcome-wide analysis of bidirectional associations between changes in meaningfulness of life and health, emotional, behavioural, and social factors. *Scientific Reports*, 10(1), 6463. <https://doi.org/10.1038/s41598-020-63600-9>
- Strutt, P. A., Johnco, C. J., Chen, J., Muir, C., Maurice, O., Dawes, P., Siette, J., Botelho Dias, C., Hillebrandt, H., & Wuthrich, V. M. (2022). Stress and Coping in Older Australians During COVID-19: Health, Service Utilization, Grandparenting, and Technology Use. *Clinical Gerontologist*, 45(1), 106–119. <https://doi.org/10.1080/07317115.2021.1884158>
- Stuart, J., Kamerāde, D., Connolly, S., Paine, A. E., Nichols, G., & Grotz, J. (2020). *The impacts of volunteering on the subjective wellbeing of volunteers: A rapid evidence assessment*.

- Sullivan, G. M., & Feinn, R. (2012). Using Effect Size—Or Why the P Value Is Not Enough. *Journal of Graduate Medical Education*, 4(3), 279–282.
<https://doi.org/10.4300/JGME-D-12-00156.1>
- Sumi, K. (2014). Reliability and Validity of Japanese Versions of the Flourishing Scale and the Scale of Positive and Negative Experience. *Social Indicators Research*, 118(2), 601–615. <https://doi.org/10.1007/s11205-013-0432-6>
- Sun, P. C., Morrow-Howell, N., Pawloski, E., & Helbach, A. (2021). Older Adults' Attitudes Toward Virtual Volunteering During the COVID-19 Pandemic. *Journal of Applied Gerontology*, 40(9), 953–957. <https://doi.org/10.1177/07334648211006978>
- Tang, F., Choi, E., & Morrow-Howell, N. (2010). Organizational Support and Volunteering Benefits for Older Adults. *The Gerontologist*, 50(5), 603–612.
<https://doi.org/10.1093/geront/gnq020>
- Tang, M., Wang, D., & Guerrien, A. (2020). A systematic review and meta-analysis on basic psychological need satisfaction, motivation, and well-being in later life: Contributions of self-determination theory. *PsyCh Journal*, 9(1), 5–33.
<https://doi.org/10.1002/pchj.293>
- Teater, B. (2016). Intergenerational Programs to Promote Active Aging: The Experiences and Perspectives of Older Adults. *Activities, Adaptation & Aging*, 40(1), 1–19.
<https://doi.org/10.1080/01924788.2016.1127041>
- Thibault Landry, A., Gagné, M., Forest, J., Guerrero, S., Séguin, M., & Papachristopoulos, K. (2017). The Relation Between Financial Incentives, Motivation, and Performance: An Integrative SDT-Based Investigation. *Journal of Personnel Psychology*, 16(2), 61–76.
<https://doi.org/10.1027/1866-5888/a000182>
- Thoits, P. A. (2012). Role-Identity Salience, Purpose and Meaning in Life, and Well-Being among Volunteers. *Social Psychology Quarterly*, 75(4), 360–384.
<https://doi.org/10.1177/0190272512459662>
- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer Work and Well-Being. *Journal of Health and Social Behavior*, 42(2), 115. <https://doi.org/10.2307/3090173>

- Townsend, B. G., Chen, J. T.-H., & Wuthrich, V. M. (2021). Barriers and Facilitators to Social Participation in Older Adults: A Systematic Literature Review. *Clinical Gerontologist*, 44(4), 359–380. <https://doi.org/10.1080/07317115.2020.1863890>
- Van Willigen, M. (2000). Differential Benefits of Volunteering Across the Life Course. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 55(5), S308–S318. <https://doi.org/10.1093/geronb/55.5.S308>
- Volunteering Australia. (2015). *Volunteering Australia Project: The Review of the Definition of Volunteering*. Volunteering Australia. <https://www.volunteeringaustralia.org/wp-content/uploads/Definition-of-Volunteering-27-July-20151.pdf>
- Volunteering Australia. (2021). *Re-engaging Volunteers and COVID-19*. Volunteering Australia. <https://www.volunteeringaustralia.org/wp-content/uploads/2021.02.08-Re-engaging-Volunteers-and-COVID-19-Report.pdf>
- Volunteering Australia. (2024). *Key Volunteering Statistics*. Volunteering Australia. <https://www.volunteeringaustralia.org/wp-content/uploads/Volunteering-Australia-Key-Volunteering-Statistics-2024-Update.pdf>
- Volunteering Queensland. (2024). *Submission to the Inquiry into Volunteering in Queensland*. Volunteering Queensland. <https://volunteeringqld.org.au/resources/volunteering-queenslands-submission-to-the-inquiry-into-volunteering/>
- Wahl, H.-W., & Gerstorf, D. (2018). A conceptual framework for studying context dynamics in aging (CODA). *Developmental Review*, 50, 155–176. <https://doi.org/10.1016/j.dr.2018.09.003>
- Wahrendorf, M., von dem Knesebeck, O., & Siegrist, J. (2006). Social productivity and well-being of older people: Baseline results from the SHARE study. *European Journal of Ageing*, 3(2), 67–73. <https://doi.org/10.1007/s10433-006-0028-y>
- Walker, R., Belperio, I., Scott, J., Luszcz, M., Mazzucchelli, T., Evans, T., & Windsor, T. D. (2024). Older Adults' Views on Characteristics of Groups to Support Engagement.

- Activities, Adaptation & Aging*, 48(4), 562–582.
<https://doi.org/10.1080/01924788.2023.2249722>
- Warburton, J., & McLaughlin, D. (2005). 'Lots of little kindnesses': Valuing the role of older Australians as informal volunteers in the community. *Ageing and Society*, 25(5), 715–730. <https://doi.org/10.1017/S0144686X05003648>
- Warner, L. M., Yeung, D. Y., Jiang, D., Choi, N. G., Ho, R. T. H., Kwok, J. Y. Y., & Chou, K.-L. (2024). Effects of volunteering over six months on loneliness, social and mental health outcomes among older adults: The HEAL-HOA Dual Randomized Controlled Trial. *The American Journal of Geriatric Psychiatry*, 32(5), 598–610.
<https://doi.org/10.1016/j.jagp.2023.12.022>
- Wasik, B. A. (1998). Using volunteers as reading tutors: Guidelines for successful practices. *The Reading Teacher*, 51(7), 562–570.
- Wescott, A., & Healy, T. C. (2011). The Memory Bridge Initiative on Service Learners. *Educational Gerontology*, 37(4), 307–326.
<https://doi.org/10.1080/03601271003608860>
- Wilson, J. (2000). Volunteering. *Annual Review of Sociology*, 26(1), 215–240.
<https://doi.org/10.1146/annurev.soc.26.1.215>
- Wilton-Harding, B., & Windsor, T. D. (2022). Awareness of age-related change, future time perspective, and implications for goal adjustment in older adulthood. *Aging & Mental Health*, 26(6), 1189–1197. <https://doi.org/10.1080/13607863.2021.1893269>
- Windsor, T. D., Abbott, M. J., Cations, M., Howard, A. J., & Wilton-Harding, B. (2022). Subjective perceptions of age-related gains buffer negative associations of perceived age-related losses with health, well-being, and engagement. *International Journal of Behavioral Development*, 46(2), 118–124.
<https://doi.org/10.1177/01650254211039025>
- Windsor, T. D., Anstey, K. J., & Rodgers, B. (2008). Volunteering and Psychological Well-Being Among Young-Old Adults: How Much Is Too Much? *The Gerontologist*, 48(1), 59–70. <https://doi.org/10.1093/geront/48.1.59>

- Windsor, T. D., Gerstorf, D., Pearson, E., Ryan, L. H., & Anstey, K. J. (2014). Positive and negative social exchanges and cognitive aging in young-old adults: Differential associations across family, friend, and spouse domains. *Psychology and Aging*, 29(1), 28–43. <https://doi.org/10.1037/a0035256>
- Windsor, T., Mahlo, L., Gordon, S., Champion, S., & Rosso, E. (2023). *Factors influencing older adults' decisions to volunteer*. Volunteering Australia. Factors influencing older adults' decisions to volunteer. Volunteering Australia. https://volunteeringstrategy.org.au/VRP_Factors-influencing-older-adults-decisions-to-volunteer
- Windsor, T., Mahlo, L., Gordon, S., & Rosso, E. (n.d.). *Re-imagining volunteering: Older adults and volunteering in South Australia*. Flinders University.
- World Health Organization. (2002). Active Ageing: A Policy Framework. *The Aging Male*, 5(1), 1–37. <https://doi.org/10.1080/tam.5.1.1.37>
- World Health Organization. (2021). *Decade of healthy ageing: Baseline report*. World Health Organization. <https://www.who.int/publications/i/item/9789240017900>
- Wu, Y., & Li, C. (2019). Helping Others Helps? A Self-Determination Theory Approach on Work Climate and Wellbeing among Volunteers. *Applied Research in Quality of Life*, 14(4), 1099–1111. <https://doi.org/10.1007/s11482-018-9642-z>
- Xie, B., Druin, A., Fails, J., Massey, S., Golub, E., Franckel, S., & Schneider, K. (2012). Connecting generations: Developing co-design methods for older adults and children. *Behaviour & Information Technology*, 31(4), 413–423. <https://doi.org/10.1080/01449291003793793>

Appendices

Appendix A

Unstandardised And Standardised Parameter Estimates For Task Characteristics

Task characteristics	Positive affect				Negative affect				Life satisfaction				Flourishing			
	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B
Work-scheduling autonomy	-0.06 (0.29)	- 0.015	0.839	-0.64, 0.52	-0.5 (0.28)	-0.14	0.07	-1.05, 0.04	0.26 (0.44)	0.042	0.559	-0.61, 1.13	-0.02 (0.46)	- 0.003	0.961	-0.93, 0.88
Decision-making autonomy	0.03 (0.4)	0.006	0.943	-0.76, 0.82	-0.07 (0.37)	- 0.018	0.847	-0.8, 0.66	0.19 (0.6)	0.027	0.755	-1, 1.37	0.58 (0.62)	0.078	0.353	-0.65, 1.81
Work methods autonomy	0.42 (0.38)	0.103	0.275	-0.33, 1.16	0.23 (0.35)	0.064	0.51	-0.46, 0.93	0.33 (0.58)	0.053	0.566	-0.8, 1.46	0.09 (0.6)	0.013	0.883	-1.08, 1.26
Task variety	0.05 (0.27)	0.011	0.842	-0.48, 0.59	0.1 (0.25)	0.024	0.681	-0.39, 0.6	0.33 (0.41)	0.045	0.424	-0.48, 1.14	0.67 (0.43)	0.086	0.117	-0.17, 1.51
Task significance	0.59 (0.25)	0.125	0.02	0.09, 1.08	-0.51 (0.23)	- 0.118	0.031	-0.97, -0.05	0.36 (0.38)	0.049	0.352	-0.4, 1.11	1.27 (0.4)	0.162	0.002	0.49, 2.05
Task identity	0.42 (0.23)	0.095	0.068	-0.03, 0.87	0.03 (0.21)	0.007	0.888	-0.39, 0.45	0.43 (0.35)	0.064	0.211	-0.25, 1.12	0.67 (0.36)	0.092	0.063	-0.04, 1.38
Feedback from job	0.74 (0.25)	0.166	0.004	0.24, 1.24	-0.26 (0.24)	- 0.065	0.263	-0.72, 0.2	0.84 (0.38)	0.122	0.028	0.09, 1.59	1.46 (0.4)	0.197	<.001	0.68, 2.24
Covariates ^a																
Age	0.04 (0.04)	0.066	0.226	-0.03, 0.11	-0.04 (0.03)	- 0.075	0.181	-0.11, 0.02	-0.01 (0.05)	- 0.015	0.787	-0.12, 0.09	0.02 (0.06)	0.02	0.698	-0.09, 0.13

Gender	0.14 (0.49)	0.014	0.784	-0.83, 1.1	1.02 (0.45)	0.119	0.025	0.13, 1.92	0.15 (0.75)	0.01	0.844	-1.32, 1.61	-0.04 (0.77)	-	0.959	-1.56, 1.48
Education	0.29 (0.49)	0.03	0.551	-0.66, 1.24	0.21 (0.45)	0.023	0.644	-0.67, 1.09	0.16 (0.74)	0.011	0.826	-1.29, 1.61	-0.59 (0.76)	-	0.444	-2.09, 0.92
Employment	0.19 (0.56)	0.017	0.735	-0.91, 1.29	-0.32 (0.52)	-	0.541	-1.33, 0.7	1.76 (0.85)	0.103	0.039	0.09, 3.44	0.28 (0.88)	0.015	0.747	-1.45, 2.02
Relationship status	-0.15 (0.4)	-	0.716	-0.94, 0.65	-0.04 (0.38)	-	0.926	-0.77, 0.7	-1.73 (0.61)	-	0.005	-2.94, -0.52	-0.55 (0.64)	-0.04	0.392	-1.8, 0.71
Physical functioning	0.01 (0.01)	0.052	0.306	-0.01, 0.03	-0.02 (0.01)	-	0.036	-0.04, 0	0.05 (0.02)	0.179	<.001	0.02, 0.08	0.03 (0.02)	0.099	0.042	0, 0.06
Volunteering roles	0.21 (0.16)	0.064	0.198	-0.11, 0.54	-0.21 (0.15)	-	0.175	-0.51, 0.09	0.19 (0.25)	0.037	0.453	-0.3, 0.68	0.53 (0.26)	0.096	0.043	0.02, 1.04
Volunteering hours	-0.02 (0.01)	-	0.227	-0.04, 0.01	0 (0.01)	0.002	0.974	-0.03, 0.03	-0.02 (0.02)	-	0.362	-0.06, 0.02	-0.01 (0.02)	-	0.766	-0.05, 0.04

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or

lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix B

Unstandardised And Standardised Parameter Estimates For Knowledge Characteristics

Knowledge characteristics	Positive affect				Negative affect				Life satisfaction				Flourishing			
	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B
Job complexity	-0.77 (0.29)	- 0.185	0.008	-1.34, -0.2	0.19 (0.26)	0.05	0.471	-0.33, 0.7	-1.26 (0.43)	- 0.195	0.004	-2.11, -0.41	-1.34 (0.46)	- 0.196	0.004	-2.23, -0.44
Information processing	0.03 (0.35)	0.007	0.934	-0.65, 0.71	0.07 (0.31)	0.019	0.829	-0.55, 0.68	0.26 (0.52)	0.043	0.611	-0.75, 1.28	1.07 (0.55)	0.164	0.051	-0.01, 2.15
Problem solving	0.34 (0.31)	0.078	0.26	-0.26, 0.94	0.02 (0.28)	0.004	0.953	-0.53, 0.56	0.79 (0.46)	0.115	0.087	-0.11, 1.69	0.18 (0.48)	0.025	0.703	-0.77, 1.13
Skill variety	1.2 (0.42)	0.247	0.004	0.38, 2.02	-0.49 (0.38)	-0.11	0.199	-1.23, 0.26	1.35 (0.62)	0.179	0.03	0.13, 2.58	2.12 (0.66)	0.265	0.001	0.83, 3.42
Specialisation	-0.34 (0.28)	- 0.092	0.229	-0.9, 0.22	0.15 (0.26)	0.044	0.566	-0.36, 0.65	-0.69 (0.42)	- 0.121	0.101	-1.53, 0.14	-0.33 (0.45)	- 0.055	0.457	-1.21, 0.55
Covariates ^a																
Age	0.06 (0.04)	0.097	0.079	-0.01, 0.13	-0.06 (0.03)	-	0.078	-0.12, 0.01	0.01 (0.05)	0.007	0.895	-0.1, 0.11	0.06 (0.06)	0.053	0.32	-0.05, 0.17
Gender	-0.05 (0.51)	- 0.005	0.92	-1.05, 0.95	1.05 (0.46)	0.122	0.023	0.15, 1.96	-0.28 (0.76)	- 0.019	0.717	-1.77, 1.22	-0.2 (0.8)	- 0.013	0.805	-1.78, 1.38
Education	0.23 (0.52)	0.023	0.659	-0.79, 1.24	0.19 (0.47)	0.022	0.679	-0.73, 1.11	0.05 (0.77)	0.003	0.951	-1.47, 1.56	-0.22 (0.82)	- 0.014	0.786	-1.83, 1.38
Employment	0.14 (0.58)	0.013	0.803	-0.99, 1.27	-0.2 (0.52)	-0.02	0.7	-1.22, 0.82	1.68 (0.86)	0.098	0.052	-0.02, 3.37	0.4 (0.91)	0.022	0.658	-1.39, 2.19

Relationship status	-0.38 (0.42)	- 0.046	0.363	-1.2, 0.44	0 (0.38)	0	0.998	-0.74, 0.74	-1.9 (0.62)	-0.15	0.002	-3.12, -0.67	-1.01 (0.66)	- 0.075	0.127	-2.3, 0.29
Physical functioning	0.01 (0.01)	0.054	0.298	-0.01, 0.03	-0.02 (0.01)	- 0.104	0.047	-0.04, 0	0.06 (0.02)	0.192	<.001	0.03, 0.09	0.04 (0.02)	0.115	0.023	0.01, 0.07
Volunteering roles	0.14 (0.17)	0.042	0.405	-0.19, 0.47	-0.21 (0.15)	- 0.069	0.18	-0.5, 0.1	0.16 (0.25)	0.031	0.527	-0.34, 0.65	0.48 (0.27)	0.088	0.074	-0.05, 1
Volunteering hours	0 (0.01)	0.003	0.951	-0.03, 0.03	-0.01 (0.01)	- 0.045	0.389	-0.04, 0.01	0 (0.02)	0.009	0.86	-0.04, 0.04	0.02 (0.02)	0.039	0.439	-0.03, 0.06

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix C

Unstandardised And Standardised Parameter Estimates For Social Characteristics

Social Characteristics	Positive Affect				Negative Affect				Life Satisfaction				Flourishing			
	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B	B (SE)	β	<i>p</i>	95% CI for B
Social support	2.75 (0.36)	0.412	<.001	2.05, 3.45	-2.03 (0.34)	-	<.001	-2.69, -1.37	4.05 (0.55)	0.39	<.001	2.98, 5.13	5.09 (0.55)	0.458	<.001	4, 6.17
Initiated interdependence	-0.21 (0.22)	-	0.335	-0.63, 0.22	-0.26 (0.2)	-0.07	0.199	-0.65, 0.14	0.04 (0.33)	0.006	0.906	-0.61, 0.69	0.43 (0.33)	0.064	0.2	-0.23, 1.09
Received interdependence	-0.25 (0.23)	-	0.278	-0.69, 0.2	0.36 (0.21)	0.092	0.089	-0.05, 0.77	-0.43 (0.35)	-	0.218	-1.11, 0.25	-0.2 (0.35)	-	0.564	-0.89, 0.49
Interaction outside of organisation	-0.16 (0.19)	-	0.386	-0.53, 0.21	0.49 (0.17)	0.145	0.005	0.15, 0.83	-0.18 (0.29)	-	0.521	-0.75, 0.38	-0.06 (0.29)	-0.01	0.829	-0.63, 0.51
Feedback from others	0.28 (0.21)	0.071	0.194	-0.14, 0.69	-0.05 (0.2)	-	0.814	-0.43, 0.34	-0.13 (0.32)	-	0.679	-0.77, 0.5	0.6 (0.33)	0.093	0.07	-0.05, 1.24
Covariates ^a																
Age	0.06 (0.03)	0.096	0.063	0, 0.13	-0.05 (0.03)	-	0.076	-0.11, 0.01	0 (0.05)	0.002	0.966	-0.1, 0.1	0.07 (0.05)	0.068	0.155	-0.03, 0.17
Gender	0.07 (0.48)	0.007	0.884	-0.87, 1.01	0.92 (0.44)	0.106	0.039	0.05, 1.78	-0.05 (0.73)	-	0.943	-1.49, 1.38	0.22 (0.74)	0.014	0.768	-1.24, 1.67
Education	-0.22 (0.47)	-	0.646	-1.14, 0.71	0.22 (0.44)	0.025	0.611	-0.63, 1.08	-0.29 (0.72)	-	0.687	-1.71, 1.13	-1.26 (0.73)	-	0.086	-2.7, 0.18

Employment	-0.11 (0.54)	-0.01	0.831	-1.17, 0.94	0.03 (0.49)	0.003	0.958	-0.95, 1	1.32 (0.82)	0.077	0.109	-0.3, 2.94	-0.36 (0.83)	- 0.019	0.667	-1.99, 1.27
Relationship status	-0.18 (0.39)	- 0.021	0.648	-0.93, 0.58	-0.1 (0.36)	- 0.014	0.771	-0.8, 0.6	-1.65 (0.59)	-0.13	0.005	-2.81, -0.49	-0.62 (0.6)	- 0.045	0.302	-1.79, 0.56
Physical functioning	0.02 (0.01)	0.074	0.127	0, 0.03	-0.02 (0.01)	- 0.123	0.013	-0.04, -0.01	0.06 (0.01)	0.203	<.001	0.03, 0.09	0.05 (0.02)	0.142	0.002	0.02, 0.08
Volunteering roles	0.24 (0.15)	0.073	0.118	-0.06, 0.54	-0.24 (0.14)	- 0.081	0.09	-0.52, 0.04	0.29 (0.24)	0.056	0.227	-0.18, 0.75	0.66 (0.24)	0.121	0.005	0.2, 1.13
Volunteering hours	-0.01 (0.01)	- 0.034	0.482	-0.04, 0.02	-0.01 (0.01)	- 0.023	0.637	-0.03, 0.02	-0.01 (0.02)	- 0.022	0.645	-0.05, 0.03	0 (0.02)	- 0.001	0.982	-0.04, 0.04

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix D

Unstandardised And Standardised Parameter Estimates For Contextual Characteristics

Contextual Characteristics	Positive Affect				Negative Affect				Life Satisfaction				Flourishing			
	B	β	p	95%	B	β	p	95%	B	β	p	95%	B	β	p	95%
	(SE)			CI for B	(SE)			CI for B	(SE)			CI for B	(SE)			CI for B
Ergonomics	1.27 (0.33)	0.23	<.001	0.62, 1.92	-0.56 (0.31)	-	0.066	-1.16, 0.04	1.19 (0.5)	0.139	0.018	0.21 (2.17)	1.68 (0.53)	0.185	0.002	0.63 (2.73)
Physical demands	0.23 (0.24)	0.06	0.326	-0.23, 0.7	-0.28 (0.22)	-	0.201	-0.7, 0.15	0.36 (0.36)	0.059	0.314	-0.34 (1.06)	0.05 (0.38)	0.008	0.899	-0.7 (0.8)
Work conditions	0.71 (0.32)	0.136	0.027	0.08, 1.34	-0.47 (0.3)	-	0.116	-1.05, 0.12	1.52 (0.49)	0.188	0.002	0.56 (2.47)	1.51 (0.52)	0.175	0.004	0.48 (2.53)
Equipment use	-0.22 (0.23)	-	0.346	-0.67, 0.23	-0.03 (0.21)	-	0.897	-0.44, 0.39	-0.31 (0.35)	-	0.365	-0.99 (0.37)	0.35 (0.37)	0.05	0.351	-0.38 (1.08)
Covariates ^a																
Age	0.03 (0.04)	0.042	0.44	-0.04, 0.1	-0.04 (0.03)	-	0.184	-0.11, 0.02	-0.05 (0.05)	-0.05	0.347	-0.15 (0.05)	-0.01 (0.06)	-0.01	0.852	-0.12 (0.1)
Gender	-0.24 (0.5)	-	0.637	-1.23, 0.75	1.05 (0.46)	0.122	0.024	0.14, 1.96	-0.69 (0.76)	-	0.365	-2.19 (0.81)	-0.73 (0.82)	-	0.374	-2.33 (0.88)
Education	0.04 (0.49)	0.004	0.943	-0.92, 0.99	0.24 (0.45)	0.027	0.601	-0.65, 1.12	-0.04 (0.74)	-	0.952	-1.49 (1.4)	-0.86 (0.79)	-	0.28	-2.41 (0.7)
Employment	0.35 (0.56)	0.031	0.537	-0.76, 1.45	-0.33 (0.52)	-	0.519	-1.34, 0.68	1.95 (0.85)	0.113	0.022	0.28 (3.61)	0.69 (0.91)	0.038	0.448	-1.1 (2.48)

Relationship status	-0.31 (0.4)	- 0.038	0.441 0.411	-1.11, 0.48	-0.03 (0.37)	- 0.005	0.928 0.067	-0.77, -0.04,	-1.78 0.06	-0.14 0.18	0.004 <.001	-2.98 0.02	-0.84 0.04	- 0.107	0.202 0.036	-2.13 0
Physical functioning	(0.01)			0.03 (0.01)	-0.02 (0.01)	- 0.097	0.114 0	-0.53, 0	0.33 (0.02)	0.064 0.18		-0.15 (0.09)	0.72 (0.02)	0.132	0.006	0.21 (0.07)
Volunteering roles	0.26 (0.16)	0.078	0.112	-0.06, 0.57	-0.23 (0.15)	- 0.079	0.114 0.06	-0.53, 0.06	0.33 (0.24)	0.064	0.18	-0.15 (0.81)	0.72 (0.26)	0.132	0.006	0.21 (1.23)
Volunteering hours	0.01 (0.01)	0.02	0.693	-0.02, 0.03	-0.01 (0.01)	- 0.036	0.486 0.02	-0.03, 0.02	0.01 (0.02)	0.027	0.579	-0.03 (0.05)	0.04 (0.02)	0.079	0.11	-0.01 (0.08)

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered)

Unstandardised Coefficients, Standard Errors, Standardised Coefficients, P-Values and 95% Confidence Intervals for the Main Effects

[illegible]

Age	0.05 (0.03)	0.09	0.10	-0.01, 0.12	-0.06 (0.03)	-0.10	0.065	-0.12, 0	-0.02 (0.05)	-0.02	0.751	-0.11, 0.08	0.04 (0.05)	0.04	0.405	-0.06, 0.14
Gender	-0.22 (0.47)	-0.02	0.64	-1.15, 0.71	1.21 (0.43)	0.14	0.006	0.36, 2.06	-0.57 (0.72)	-0.04	0.425	-1.98, 0.84	-0.76 (0.72)	-0.05	0.293	-2.17, 0.66
Education	-0.08 (0.46)	-0.01	0.87	-0.98, 0.82	0.1 (0.43)	0.01	0.818	-0.75, 0.95	-0.15 (0.7)	-0.01	0.835	-1.52, 1.23	-1.01 (0.7)	-0.06	0.151	-2.39, 0.37
Employment	-0.4 (0.53)	-0.04	0.45	-1.44, 0.63	0.08 (0.49)	0.01	0.877	-0.89, 1.04	1.27 (0.8)	0.07	0.114	-0.31, 2.84	-0.25 (0.8)	-0.01	0.754	-1.82, 1.32
Relationship status	-0.04 (0.38)	-0.01	0.92	-0.78, 0.71	-0.06 (0.35)	-0.01	0.874	-0.75, 0.64	-1.52 (0.58)	-0.12	0.009	-2.65, -0.38	-0.5 (0.58)	-0.04	0.386	-1.63, 0.63
Physical functioning	0.01 (0.01)	0.05	0.27	-0.01, 0.03	-0.02 (0.01)	-0.11	0.031	-0.04, 0	0.06 (0.01)	0.19	<.001	0.03, 0.09	0.04 (0.01)	0.13	0.005	0.01, 0.07
Volunteering roles	0.25 (0.15)	0.08	0.10	-0.05, 0.54	-0.24 (0.14)	-0.08	0.085	-0.52, 0.03	0.33 (0.23)	0.07	0.153	-0.12, 0.78	0.61 (0.23)	0.11	0.008	0.16, 1.07
Volunteering hours	-0.01 (0.01)	-0.02	0.70	-0.03, 0.02	0 (0.01)	-0.02	0.746	-0.03, 0.02	-0.01 (0.02)	-0.01	0.765	-0.04, 0.03	0 (0.02)	0.00	0.949	-0.04, 0.04

Note. ^aBinary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix F

Statistical Summaries for Task Characteristic Interaction Effects

Table F1

Interaction Between Decision-Making Autonomy and Physical Functioning in Predicting Life Satisfaction

Variables	Life Satisfaction				
	B	SE	t	p-value	95% CI
Constant	26.90	3.75	7.17	.000	(19.52, 34.28)
Decision-making autonomy	1.14	.34	3.39	.001	(.48, 1.79)
Physical functioning	.05	.01	3.57	.000	(.02, .08)
Decision-making autonomy x physical functioning	-.04	.01	-2.83	.005	(-.07, -.01)
Age	-.03	.05	-.65	.516	(-.14, .07)
Gender	-.29	.75	-.38	.703	(-1.76, 1.18)
Education	.25	.74	.34	.735	(-1.21, 1.71)
Employment	2.17	.84	2.58	.010	(.52, 3.83)
Relationship status	-2.11	.61	-3.45	.001	(-3.31, -.91)
Volunteer roles	.28	.24	1.13	.258	(-.20, .76)
Volunteer hours	-.01	.02	-.57	.568	(-.05, .03)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), , education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Table F2*Interaction Between Task Significance and Physical Functioning in Predicting Life Satisfaction*

Variables	Life Satisfaction				
	B	SE	t	p-value	95% CI
Constant	26.46	3.77	7.03	.000	(19.06, 33.87)
Task significance	1.00	.35	2.82	.005	(.30, 1.69)
Physical functioning	.06	.01	3.65	.000	(.03, .09)
Task significance x physical functioning	-.05	.02	-2.91	.004	(-.09, -.02)
Age	-.03	.05	-.49	.623	(-.13, .08)
Gender	-.70	.76	-.92	.357	(-2.18, .79)
Education	.74	.76	.98	.329	(-.75, 2.23)
Employment	2.17	.85	2.55	.011	(.49, 3.85)
Relationship status	-2.07	.62	-3.35	.001	(-3.28, -.85)
Volunteer roles	.29	.25	1.19	.233	(-.19, .78)
Volunteer hours	-.01	.02	-.47	.640	(-.05, .03)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), , education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Table F3

Interaction Between Task Significance and Physical Functioning in Predicting Psychological Flourishing

Variable	Psychological Flourishing				
	B	SE	t	p-value	95% CI
Constant	44.46	3.97	11.19	.000	(36.65, 52.27)
Task significance	2.25	.37	6.03	.000	(1.52, 2.99)
Physical functioning	.04	.02	2.17	.031	(.00, .07)
Task significance x physical functioning	-.05	.02	-2.59	.010	(-.09, -.01)
Age	.03	.06	.48	.628	(-.08, .14)
Gender	-1.16	.80	-1.45	.147	(-2.72, .41)
Education	-.17	.80	-.21	.834	(-1.74, 1.40)
Employment	.79	.90	.87	.383	(-.98, 2.55)
Relationship status	-1.16	.65	-1.78	.075	(-2.44, .12)
Volunteer roles	.61	.26	2.36	.019	(.10, 1.13)
Volunteer hours	.01	.02	.28	.782	(-.04, .05)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix G

Statistical Summaries for Knowledge Characteristic Interaction Effects

Table G1

Interaction Between Problem-Solving and Physical Functioning in Predicting Life Satisfaction

Variables	Life Satisfaction				
	B	SE	t	p-value	95% CI
Constant	26.69	3.81	7.01	.000	(19.20, 34.18)
Problem solving	.74	.34	2.18	.030	(.07, 1.40)
Physical functioning	.06	.01	3.61	.000	(.03, .09)
Problem solving x physical functioning	-.05	.02	-2.85	.005	(-.08, -.01)
Age	-.03	.05	-.51	.611	(-.13, .08)
Gender	-.56	.77	-.72	.469	(-2.07, .95)
Education	.68	.76	.91	.366	(-.80, 2.17)
Employment	2.06	.85	2.41	.016	(.38, 3.74)
Relationship status	-2.23	.62	-3.60	.000	(-3.45, -1.01)
Volunteer roles	.26	.25	1.03	.301	(-.23, .75)
Volunteer hours	-.01	.02	-.64	.524	(-.05, .03)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix H

Statistical Summaries for Social Characteristic Interaction Effects

Table H1

Interaction Between Interaction Outside of the Organisation and Physical Functioning in Predicting Psychological Flourishing

Variable	Psychological Flourishing				
	B	SE	t	p-value	95% CI
Constant	43.67	4.08	1.70	.000	(35.65, 51.69)
Interaction outside organisation	.80	.31	2.57	.010	(.19, 1.40)
Physical functioning	.03	.02	1.88	.061	(-.00, .06)
Interaction outside organisation x physical functioning	-.06	.02	-3.90	.000	(-.09, -.03)
Age	.04	.06	.75	.454	(-.07, .15)
Gender	-1.19	.83	-1.44	.151	(-2.82, .44)
Education	-.65	.81	-.80	.423	(-2.25, .95)
Employment	.52	.92	.57	.568	(-1.28, 2.33)
Relationship status	-1.15	.67	-1.73	.084	(-2.46, .16)
Volunteer roles	.54	.27	1.99	.047	(.01, 1.07)
Volunteer hours	.02	.02	.85	.393	(-.03, .06)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Table H2

Interaction Between Interaction Outside of the Organisation and Physical Functioning in Predicting Life Satisfaction

Variable	Life Satisfaction				
	B	SE	t	p-value	95% CI
Constant	26.09	3.82	6.83	.000	(18.59, 33.60)
Interaction outside organisation	.28	.29	.98	.326	(-.28, .85)
Physical functioning	.05	.01	3.39	.001	(.02, .08)
Interaction outside organisation x physical functioning	-.04	.01	-2.60	.010	(-.07, -.01)
Age	-.02	.05	-.32	.753	(-.12, .09)
Gender	-.73	.78	-.94	.345	(-2.26, .79)
Education	.34	.76	.45	.656	(-1.15, 1.83)
Employment	2.00	.86	2.33	.021	(.31, 3.69)
Relationship status	-2.01	.62	-3.23	.001	(-3.24, -.79)
Volunteer roles	.24	.25	.96	.338	(-.25, .74)
Volunteer hours	-.00	.02	-.20	.844	(-.04, .04)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Table H3

Interaction Between Interaction Outside of the Organisation and Physical Functioning in Predicting Negative Affect

Variables	Negative Affect				
	B	SE	t	p-value	95% CI
Constant	13.99	2.26	6.18	.000	(9.54, 18.44)
Interaction outside organisation	.25	.17	1.47	.143	(-.09, .59)
Physical functioning	-.02	.01	-1.90	.058	(-.04, .00)
Interaction outside organisation x physical functioning	.02	.01	2.74	.006	(.01, .04)
Age	-.05	.03	-1.54	.123	(-.11, .01)
Gender	1.52	.46	3.32	.001	(.62, 2.42)
Education	-.10	.45	-.23	.815	(-.98, .78)
Employment	-.30	.51	-.60	.546	(-1.30, .69)
Relationship status	.11	.37	.29	.772	(-.61, .83)
Volunteer roles	-.18	.15	-1.21	.228	(-.47, .11)
Volunteer hours	-.01	.01	-.71	.481	(-.03, .02)

Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix I

Statistical Summaries for Contextual Characteristic Interaction Effects

Table I1

Interaction Between Equipment Use and Physical Functioning in Predicting Life Satisfaction

Variables	Life Satisfaction				
	B	SE	t	p-value	95% CI
Constant	26.50	3.80	6.97	.000	(19.03, 33.98)
Equipment use	-.25	.33	-.75	.456	(-.90, .41)
Physical functioning	.05	.01	3.37	.001	(.02, .08)
Equipment use x physical functioning	-.05	.02	-2.75	.006	(-.08, -.01)
Age	-.02	.05	-.45	.652	(-.13, .08)
Gender	-.82	.77	-1.06	.291	(-2.34, .70)
Education	.65	.76	.86	.392	(-.85, 2.15)
Employment	1.97	.87	2.27	.024	(.26, 3.67)
Relationship status	-2.23	.62	-3.57	.000	(-3.45, -1.00)
Volunteer roles	.32	.25	1.27	.204	(-.17, .81)
Volunteer hours	.00	.02	.15	.882	(-.04, .04)

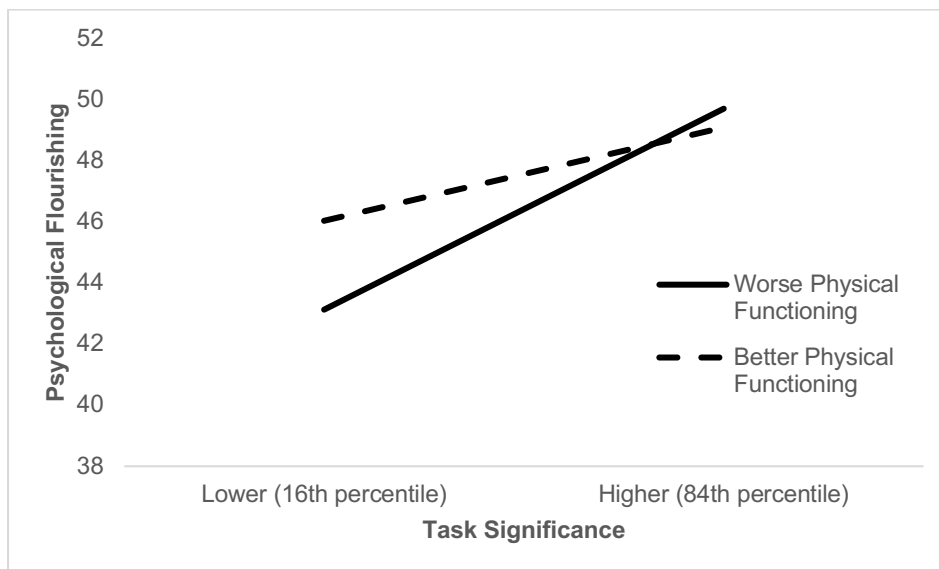
Note. Binary covariates were coded as follows: gender (0 = male, 1 = female), education (coded 0 = tertiary education, 1 = high school or lower), employment status (coded 0 = employed, 1 = unemployed), and relationship status (coded 0 = partnered, 1 = unpartnered).

Appendix J

Interactions Between Physical Health and Well-being Measures

Figure J1

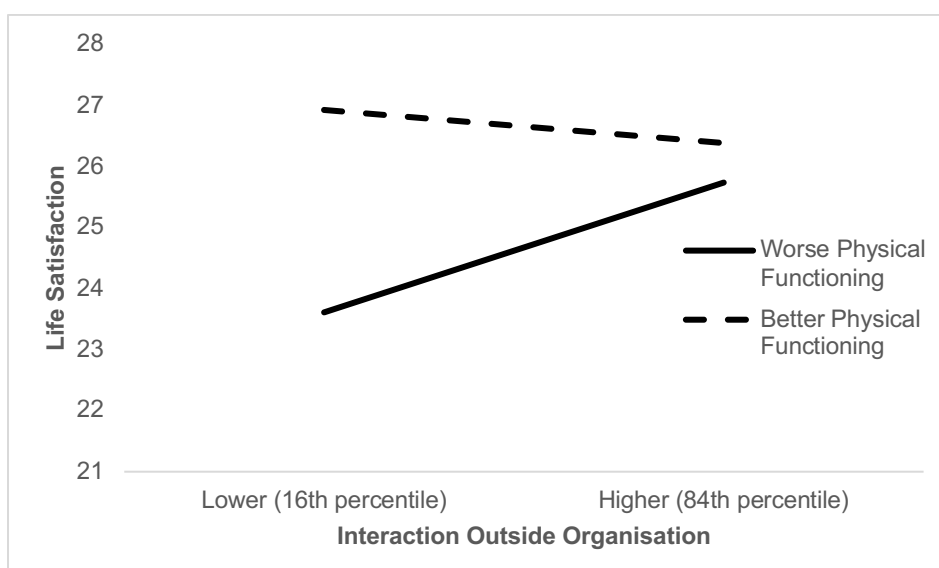
Association Between Task Significance and Psychological Flourishing Moderated by Physical Functioning.



Note. 'Worse Physical Health' represents participants within the 16th percentile, while 'Better Physical Health' represents participants within the 84th percentile.

Figure J2

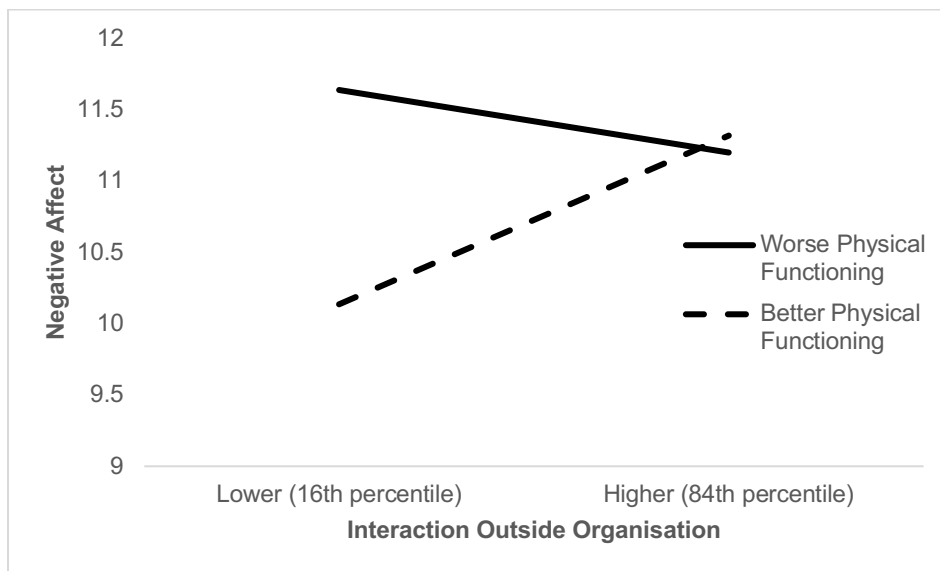
Association Between Interaction Outside of the Organisation and Life Satisfaction Moderated by Physical Functioning.



Note. 'Worse Physical Health' represents participants within the 16th percentile, while 'Better Physical Health' represents participants within the 84th percentile.

Figure J3

Association Between Interaction Outside of the Organisation and Negative Affect Moderated by Physical Functioning.



Note. 'Worse Physical Health' represents participants within the 16th percentile, while 'Better Physical Health' represents participants within the 84th percentile.

Appendix K
Attrition Analyses for Chapter 3

Table K1

Attrition Analyses for Groups 1, 2 and 3 Compared to Baseline Characteristics.

	Group 1 (N = 276)	Group 2 (N = 103)	Group 3 (N=135)
Characteristics	Completed the first wave only	Completed first and second waves	Completed all three waves
Volunteer hours, M (SD)	9.03 (10.23)	9.00 (10.20)	8.19 (9.36)
Covariates			
Age, M (SD)	70.45 (5.97)	70.53 (6.09)	70.84 (5.94)
Gender (N)			
Male	54	15	33
Female	222	88	102
Education (N)			
Tertiary or higher	216	90	114
High school or lower	60	13	21
Employment (N)			
In the labour force	39	14	21
Not in the labour force	237	89	114
Relationship status (N)			
Partnered	182	70	85
Not partnered	94	33	50
Volunteer status			
Active volunteer	218	83	101
Temporarily paused (COVID-19)	16	6	6
Permanently stopped (COVID-19)	2	0	3
Former volunteer (non-COVID reasons)	30	11	17
Never volunteered	10	3	8
Physical functioning, M (SD)	78.50 (21.32)	80.92 (18.05)	78.92 (22.79)

AARC-gains	20.33 (3.03)	20.83 (2.82)	20.65 (3.16)
AARC-losses	10.26 (3.42)	9.98 (3.12)	10.18 (3.56)
COVID-19 disruption, M (SD)	3.88 (1.18)	3.88 (1.24)	3.91 (1.20)

Attrition analyses revealed no significant differences on key study measures between participants who dropped out after Time 1 and/or Time 2 and those who completed all assessments.

Appendix L
Attrition Analyses for Chapter 4

Table L1

Attrition Analyses for Groups 1, 2, and 3 Compared to Baseline Characteristics.

Characteristics	Group 1 (N=322)	Group 2 (N=90)	Group 3 (N=102)
	Completed the first wave	Completed the first and second wave	Completed all three waves
Volunteer hours, M (SD)	7.98 (10.03)	10.48 (10.52)	9.93 (9.16)
Covariates			
Age, M (SD)	70.48 (5.97)	71.00 (5.99)	70.46 (6.04)
Gender (N)			
Male	64	15	23
Female	258	75	79
Education (N)			
Tertiary or higher	256	79	85
High school or lower	66	11	17
Employment (N)			
In the labour force	43	13	18
Not in the labour force	279	77	84
Relationship status (N)			
Partnered	213	59	65
Not partnered	109	31	37
COVID-19 disruption, M (SD)	3.89 (1.19)	3.84 (1.28)	3.92 (1.15)
Physical functioning, M (SD)	78.25 (21.63)	81.11 (17.59)	80.00 (22.21)
Subjective well-being, M (SD)			
Positive affect	23.56 (3.90)	24.12 (3.81)	24.25 (4.41)
Negative affect	11.39 (3.59)	11.60 (3.80)	10.80 (3.60)
Life satisfaction	25.26 (6.32)	25.67 (5.18)	26.29 (6.13)
Basic psychological needs, M (SD)			

Autonomy	15.88 (2.77)	16.43 (2.54)	16.70 (2.77)
Competence	16.60 (2.49)	17.13 (2.22)	17.09 (2.56)
Relatedness	16.78 (2.73)	17.51 (2.35)	17.42 (2.71)

Attrition analyses revealed significant differences in baseline autonomy and relatedness need satisfaction between participants who completed all three assessments and those who dropped out after Time 1 and/or Time 2. Participants who completed all waves reported higher autonomy scores compared to those who dropped out after the first or second wave, $p = .017$. A similar pattern was observed for relatedness, with higher baseline scores among completers compared to early dropouts, $p = .019$. No significant differences were found on other key study variables between participants who dropped out after Time 1 and/or Time 2 and those who completed all assessments.

Appendix M
Longitudinal Mediation: Estimates of Indirect Effects
Positive Affect

Table M1

Longitudinal Associations Between Volunteering Hours, Autonomy, and Positive Affect

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Autonomy – Positive Affect	.001	.003	-.003, .009	.726
Volunteering – Positive Affect – Autonomy	-.003	.003	-.013, .001	.342
Autonomy – Volunteering – Positive Affect	-.003	.013	-.049, .010	.784
Autonomy – Positive Affect – Volunteering	-.020	.053	-.265, .063	.702
Positive Affect – Autonomy – Volunteering	.037	.072	-.110, .209	.610
Positive Affect – Volunteering – Autonomy	.001	.004	-.003, .016	.804

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded a good fit for positive affect ($\chi^2(6) = 5.50$, $p = 0.48$, RMSEA = 0.00, 90% CI = 0.00–0.06, CFI = 1.00, TLI = 1.00).

Table M2

Longitudinal Associations Between Volunteering Hours, Competence, and Positive Affect

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Competence – Positive Affect	-.003	.003	-.012, .001	.400

Volunteering – Positive Affect – Competence	.001	.002	-.003, .007	.621
Competence – Volunteering – Positive Affect	.000	.013	-.026, .028	.990
Competence – Positive Affect – Volunteering	.001	.036	-.081, .080	.971
Positive Affect – Competence – Volunteering	-.005	.035	-.104, .048	.890
Positive Affect – Volunteering – Competence	.001	.004	-.004, .014	.848

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded a good fit for positive affect ($\chi^2(6) = 7.95$, $p = 0.24$, RMSEA = 0.03, 90% CI = 0.00–0.07, CFI = 1.00, TLI = 0.97).

Table M3

Longitudinal Associations Between Volunteering Hours, Relatedness, and Positive Affect

Order	Estimate of Indirect Effects	SE	95% CI	p
Volunteering – Relatedness – Positive Affect	.000	.002	-.006, .004	.964
Volunteering – Positive Affect – Relatedness	-.002	.010	-.009, .003	.503
Relatedness – Volunteering – Positive Affect	-.001	.008	-.031, .008	.862
Relatedness – Positive Affect – Volunteering	-.008	.032	-.073, .043	.811
Positive Affect – Relatedness – Volunteering	.018	.047	-.049, .160	.697
Positive Affect – Volunteering – Relatedness	.001	.004	-.005, .017	.859

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded a good fit for positive affect ($\chi^2(6) = 8.83$, $p = 0.18$, RMSEA = 0.03, 90% CI = 0.00–0.07, CFI = 1.00, TLI = 0.96).

Negative Affect

Table M4

Longitudinal Associations Between Volunteering Hours, Autonomy, and Negative Affect

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Autonomy – Negative Affect	.000	.002	-.008, .003	.865
Volunteering – Negative Affect – Autonomy	-.001	.003	-.009, .003	.629
Autonomy – Volunteering – Negative Affect	.010	.019	-.014, .069	.604
Autonomy – Negative Affect – Volunteering	-.003	.024	-.077, .031	.902
Negative Affect – Autonomy – Volunteering	-.032	.053	-.155, .065	.550
Negative Affect – Volunteering – Autonomy	-.001	.004	-.014, .005	.894

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 7.32$, $p = 0.29$, RMSEA = 0.02, 90% CI = 0.00–0.06, CFI = 1.00, TLI = 0.98).

Table M5

Longitudinal Associations Between Volunteering Hours, Competence, and Negative Affect

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Competence – Negative Affect	.003	.004	-.001, .013	.337
Volunteering – Negative Affect – Competence	.000	.001	-.001, .003	.947
Competence – Volunteering – Negative Affect	-.016	.017	-.083, .004	.360

Competence – Negative Affect – Volunteering	.002	.028	-.034, .093	.938
Negative Affect – Competence – Volunteering	.000	.028	-.057, .059	.998
Negative Affect – Volunteering – Competence	.000	.004	-.014, .004	.905

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 6.46$, $p = 0.37$, RMSEA = 0.01, 90% CI = 0.00–0.06, CFI = 1.00, TLI = 0.99).

Table M6

Longitudinal Associations Between Volunteering Hours, Relatedness, and Negative Affect

Order	Estimate of Indirect Effects	SE	95% CI	p
Volunteering – Relatedness – Negative Affect	.000	.002	-.005, .004	.998
Volunteering – Negative Affect – Relatedness	.000	.001	-.001, .004	.692
Relatedness – Volunteering – Negative Affect	.009	.013	-.009, .046	.499
Relatedness – Negative Affect – Volunteering	-.015	.046	-.134, .066	.742
Negative Affect – Relatedness – Volunteering	-.009	.056	-.162, .083	.871
Negative Affect – Volunteering – Relatedness	-.001	.005	-.017, .005	.901

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 9.48$, $p = 0.15$, RMSEA = 0.03, 90% CI = 0.00–0.07, CFI = 1.00, TLI = 0.94).

Life Satisfaction

Table M7

Longitudinal Associations Between Volunteering Hours, Autonomy, and Life Satisfaction

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Autonomy – Life Satisfaction	.000	.003	-.004, .009	.930
Volunteering – Life Satisfaction – Autonomy	.000	.002	-.006, .004	.850
Autonomy – Volunteering – Life Satisfaction	.000	.022	-.043, .060	.985
Autonomy – Life Satisfaction – Volunteering	-.052	.076	-.265, .042	.495
Life Satisfaction – Autonomy – Volunteering	.049	.056	-.041, .176	.376
Life Satisfaction – Volunteering – Autonomy	.002	.004	-.003, .012	.611

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 8.56$, $p = 0.20$, RMSEA = 0.03, 90% CI = 0.00–0.07, CFI = 1.00, TLI = 0.97).

Table M8

Longitudinal Associations Between Volunteering Hours, Competence, and Life Satisfaction

Order	Estimate of Indirect Effects	SE	95% CI	<i>p</i>
Volunteering – Competence – Life Satisfaction	-.005	.006	-.020, .002	.330
Volunteering – Life Satisfaction – Competence	-.001	.009	-.005, .002	.684
Competence – Volunteering – Life Satisfaction	-.005	.024	-.080, .028	.848

Competence – Life Satisfaction – Volunteering	.007	.035	-.037, .119	.835
Life Satisfaction – Competence – Volunteering	.001	.016	-.025, .049	.941
Life Satisfaction – Volunteering – Competence	.001	.003	-.003, .013	.755

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 7.72$, $p = 0.26$, RMSEA = 0.02, 90% CI = 0.00–0.07, CFI = 1.00, TLI = 0.98).

Table M9

Longitudinal Associations Between Volunteering Hours, Relatedness, and Life Satisfaction

Order	Estimate of Indirect Effects	SE	95% CI	p
Volunteering – Relatedness – Life Satisfaction	.000	.005	-.012, .010	.959
Volunteering – Life Satisfaction – Relatedness	.000	.002	-.006, .001	.778
Relatedness – Volunteering – Life Satisfaction	.003	.016	-.015, .066	.858
Relatedness – Life Satisfaction – Volunteering	-.010	.042	-.139, .038	.805
Life Satisfaction – Relatedness – Volunteering	.005	.019	-.017, .076	.803
Life Satisfaction – Volunteering – Relatedness	.002	.004	-.003, .013	.647

Note. Using maximum likelihood estimators with 1000 bootstrapped iterations, the model yielded good fit for positive affect ($\chi^2(6) = 7.39$, $p = 0.29$, RMSEA = 0.02, 90% CI = 0.00–0.06, CFI = 1.00, TLI = 0.98).

Appendix N

Path Coefficients Between Weekly Volunteer Hours, Basic Psychological Needs, And Subjective Well-Being Outcomes Across Three-Time Points.

Positive Affect

Figure N1

Longitudinal Associations Between Volunteering Hours, Autonomy, and Positive Affect.

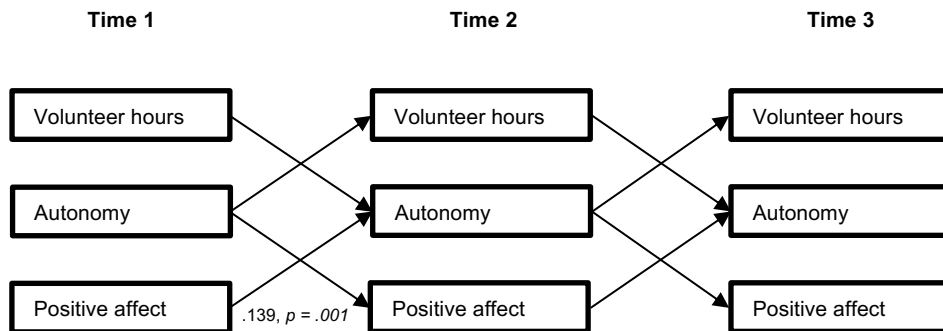
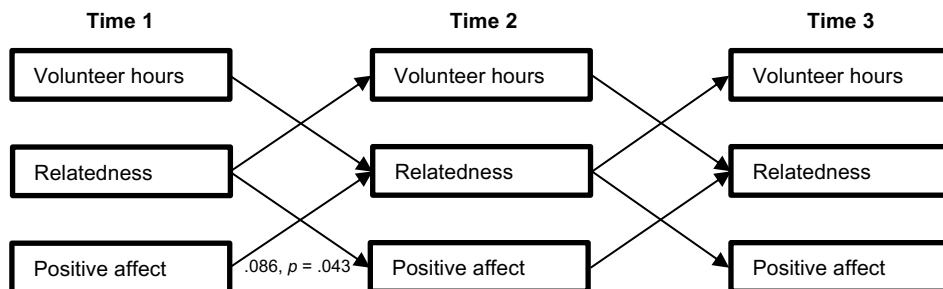


Figure N2

Longitudinal Associations Between Volunteering Hours, Relatedness, and Positive Affect.



Negative Affect

Figure N3

Longitudinal Associations Between Volunteering Hours, Autonomy, and Negative Affect.

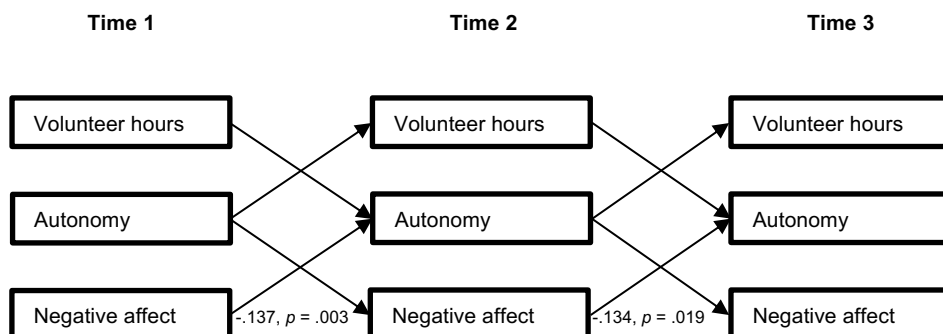
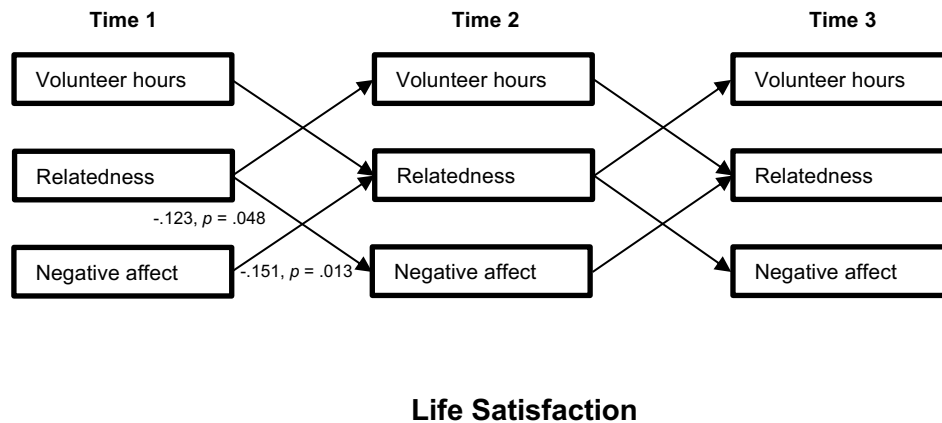
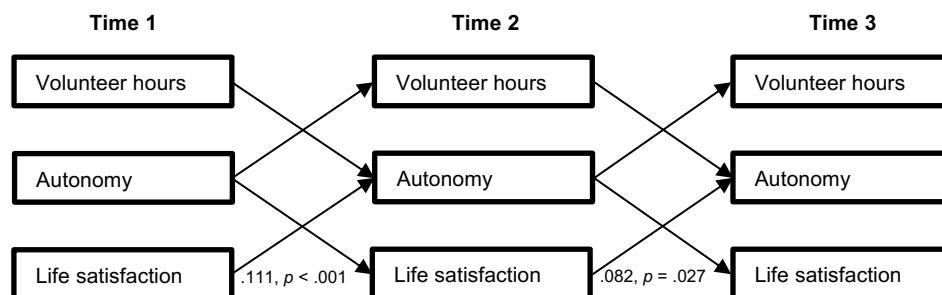


Figure N4

Longitudinal Associations Between Volunteering Hours, Relatedness, and Negative Affect.

**Figure N5**

Longitudinal Associations Between Volunteering Hours, Autonomy, and Life Satisfaction.



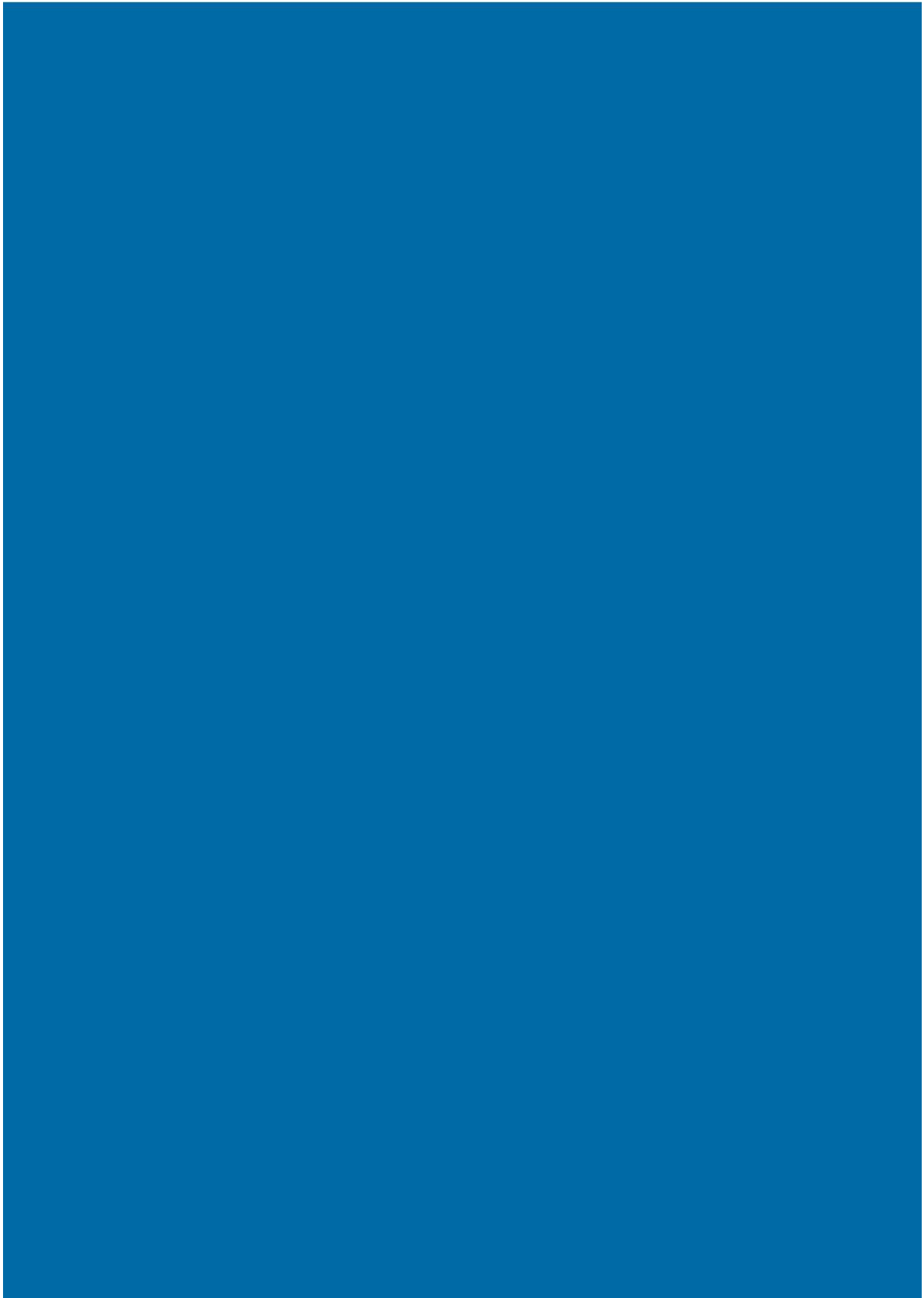
Appendix O

The Wisdom Club Volunteer Training Manual



THE WISDOM CLUB

Training Manual for Volunteers



This project is generously supported by

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INSTITUTE



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WELCOME TO THE PROGRAM

THE WISDOM CLUB

Welcome to the Program



This intergenerational program was developed to create new opportunities for children and volunteers to interact with a view to strengthening school communities.

In this program, our volunteers will work with primary school aged children to help support their learning through participating in fun and engaging collaborative activities (think boardgames, dice-based games and more!). This booklet provides information about the '*Wisdom Club*' program, program activities, and some helpful tips for working with children.

INTRODUCTION

Background

In the United States, the intergenerational program Experience Corps® has been operating for over 20 years. Experience Corps® was designed as a low-cost, high impact intervention to support educational outcomes in children and to promote health and well-being in older volunteers. The program involves older volunteers working with primary school age children to support learning in the classroom.

There is now a good deal of evidence showing that Experience Corps® results in good outcomes for kids, older volunteers, and school communities. Our research team at Flinders University wanted to try something similar in South Australia- and “Wisdom Club” was born. Our first goal is to see how a program of this type might be best set up to meet the needs of younger and older Australians, within the Australian public school system.

We hope that- working together- we can come up with a model that works well for students, older volunteers, and schools. Our long-term goal is to see programs like Wisdom Club become a normal part of school life, giving older Australians the opportunity to share their skills and invest in the education and well-being of future generations.

How Will Wisdom Club Work?

First, our older volunteers will receive an orientation to the program, and some

training in the games that will be the focus of collaborative activity with the children. The games include a combination of boardgames, card-based games, and dice-based games and are focused around increasing students’ maths-related skills and their language related to number concepts.

Following training, the program will commence. We expect the initial Wisdom Club trial to run for 6 weeks, with volunteers spending 1-2 hours with students per week.

Benefits for Children and Schools

Through Wisdom Club, the goals are to (a) foster a positive environment for interactions between students and older volunteers, and (b) engage students, support their learning and enhance their social skills in ways that complement the work of classroom teachers.

Benefits for Older Adults

Remaining engaged with life through valued social connections and meaningful activities is recognised as a hallmark of ageing well. The project provides a volunteering opportunity for older adults that supports social, intellectual and community engagement. Importantly, the program will also expose children to diverse older role models in ways that we hope will challenge negative stereotypes about older people and ageing.

ACTIVITIES

THE WISDOM CLUB

ABSOLUTE ZERO

How many people: 2-4 players

Level of difficulty: Black cards only (easier), Black and Red cards (moderate-more difficult)

RULES

The objective of the game is to have a sum of zero in your hands!

1. Start by dealing every player 3-5 cards (the more cards you have, the more challenging the game will be!)
2. Place the remainder of the deck face down in the center of the table
3. Flip over the top card on the deck, this will now be your discard pile
4. Player left of the dealer starts
5. Turn starts with drawing a card, either from the top of the face down deck OR the top of the face up discard pile
6. If the deck runs out, reshuffle the discard pile and repeat steps 2 and 3 before resuming play
7. When a player has a value of zero in their hand, they show it and win!
8. You can keep score by counting up the absolute value in each hand. Go as many rounds as you want. Lowest score wins the game!

ADDITION/MULTIPLICATION WAR (using 'Absolute Zero' cards)

How many people: 2 players

Level of difficulty: Black cards only (easier), Black and Red cards (moderate-more difficult)

RULES

The objective is to collect the most cards!

1. Deal out the entire deck so that each player has half of the deck
2. The players then play in rounds starting with flipping over the top card of their own deck simultaneously
3. The players must then add or multiply (depending on the game) the two numbers
4. The first person to find the sum or product (depending on the game) wins the round and collects the 2 played cards in order to keep score
5. Steps 2-4 are repeated until the player decks run out
6. The person with the most collected cards wins the game!

FIND THE DIFFERENCE (using 'Absolute Zero' cards)

How many people: 2 players

Level of difficulty: Black cards only (easier), Black and Red cards (moderate-more difficult)

RULES

The objective is to collect the most cards!

1. Deal out the entire deck so that each player has half of the deck
2. The players then play in rounds starting with flipping over the top 2 cards of their own deck
3. Each player then finds the difference of their 2 cards
4. The person with the greatest difference wins the round and collects all 4 of the played cards in order to keep score
5. The person with the most collected cards wins the game!

24 GAME

How many people: 2-4 players

Level of difficulty: 1 Dot (easier), 2 Dots (medium) and 3 Dots (challenging)

RULES

The objective is to make the number 24 using the four numbers on the game card.

You can add, subtract, multiply and divide. You must use all four numbers, but you are only allowed to use each number once. There is at least one solution to every card.

Example 1:



Possible solution:

$$\begin{aligned} 4 \times 3 &= 12 \\ 2 \times 1 &= 2 \\ 2 \times 12 &= 24 \end{aligned}$$

Example 2:



Possible solution:

$$\begin{aligned} 8 - 6 &= 2 \\ 2 / 2 &= 1 \\ 1 \times 24 &= 24 \end{aligned}$$

NUMERO

How many people: 2-4 players

Level of difficulty: Using cards 1-10 only (easier), Using all cards (moderate-more difficult)

GAME SETUP

Tips before commencing the game:

1. Select only the Number Cards from the pack (all cards 1–15). These are the only cards you use at this stage.
2. Ignore the colours and points on some cards.

To begin to play Numero, follow these simple steps:

1. First, deal five cards to each player.
2. For each player, place one card face up in the centre of the table. Note: The number of cards in the centre will vary during play. At times there will be fewer (sometimes no cards at all) and at other times, more than one card for each player.
3. Place the remainder of the deck in the centre of the table (face down).

You are now ready to play Numero!

1. The non-dealer takes the first turn. Players take turns.
2. Each player plays a Number Card from his/her hand to the centre and must either take, build or discard (see next page for details).

NUMERO (continued)

How many people: 2-4 players

Level of difficulty: Using cards 1-10 only (easy), Using all cards (medium-tough)

RULES - TAKE

Take

A **take** is when a single Number Card from your hand is matched to a card, or combination of cards, equalling the same number in the center.

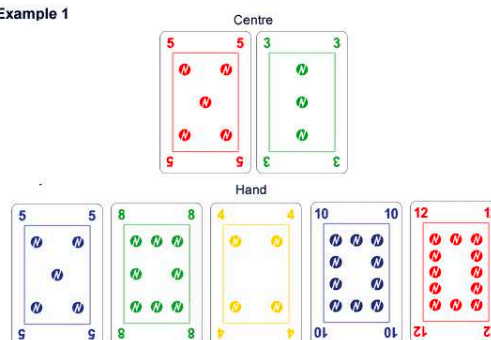
The cards in the take and the matching card from the hand are then placed face down on the table near the player. This is your 'winning pile', and these cards are counted at the end of the game to determine the winner. The hand is restored to five cards from the deck. It is important to always restore your hand to five cards at the completion of each turn.

Example:

Play the 5 from the hand to win the 5 from the centre. However, a better alternative is to add the 5 and 3 in the centre to make 8. Then play the 8 from the hand to win both cards (the 5 and 3 from the centre).

Note: Although you may use only one Number Card from your hand, you may win any cards from the centre that equal, or combine to equal, a single card in your hand.

Example 1



NUMERO (continued)

How many people: 2-4 players

Level of difficulty: Using cards 1-10 only (easier), Using all cards (medium-more difficult)

RULES - BUILD

Build

It is not always possible to **take**. If you cannot **take**, you try to **build**. A **build** is when a card from the hand is added to a single card, or combination of cards, from the centre. This creates a new number, ready for a later **take**.

When you **BUILD**, you **MUST** have the answer in your hand in a **SINGLE** card.

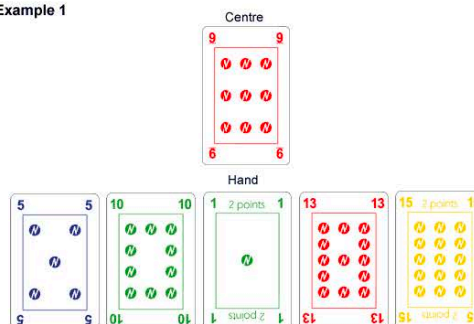
Example:

Not being able to match the 9 for a **take**, you look to **build**.

Play the 1 from the hand, adding it to the 9, for a **build** of 10 (saying out loud, '9 + 1 = 10').

The **build** of 10 is valid, as you have the answer to the **build** in your hand in a single card. (It is recommended that players show the answer card to their opponent to **prove** the **build** is **valid**.)

Example 1



Note: As you can play only one Number Card from your hand each turn, a build finishes your turn. You cannot take until your next turn. Restore your hand to five from the pack.

NUMERO (continued)

How many people: 2-4 players

Level of difficulty: Using cards 1-10 only (easy), Using all cards (medium-tough)

RULES - DISCARD

Discard

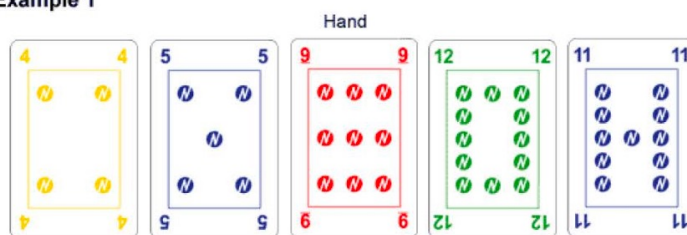
If you cannot take or build, you must **discard**.

A **discard** is placed as a single card in the centre, not on top of other cards. Always restore your hand to five cards after every turn. This is the only way the cards in the centre are replenished (to be used in later **takes** and **builds**). You may **discard** any card from your hand. However, where possible, plan ahead and discard a card you could use on your next turn.

Example:

One of the first things to look for when discarding is a number sentence. With your 4 and 5 adding to 9, you would **discard** the 4 or the 5 (usually the higher of the two numbers you wish to build). If it is still there for your next turn, you could add the other number to it for a **build** of 9, which can be taken in the following turn.

Example 1



NUMERO (continued)

How many people: 2-4 players

Level of difficulty: Using cards 1-10 only (easy), Using all cards (medium-tough)

RULES**End of Game**

1. When the deck is finished, keep playing until one player is out of cards.
2. The other player is then given a final chance to play, but only if able to take. The game is then over.
3. Any cards left in the centre are added to the 'winning pile' of the player who did the last take of the game.
4. Any cards left in the final player's hands, means that number of cards are subtracted from that person's 'winning pile'.
5. All players' 'winning piles' are then counted and the player with the most cards is the winner.
6. Stop! Stop! Stop!

OTHER ACTIVITIES

Other games are available as part of Wisdom Club, and volunteers can decide whether they would like to try some different options with the students as the program develops. Most have relatively straightforward rules to follow (instructions are provided with the games):

50 DICE ACTIVITIES

50 Dice Activities is a set of 50 double-sided activity cards for teaching maths skills using dice. The front side of the card provides teaching objectives, resources used and procedures. The reverse side provides visual examples.



MATHS BOARDGAMES

These boardgames are designed for children to practise and revise the 4 operations (addition, subtraction, multiplication and division) and other key maths concepts.



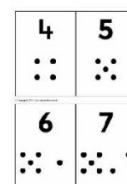
MATHS SMART INFLATABLE BALLS

A fun way to develop fast, accurate numeracy skills (and some hand-eye coordination!) Players may be challenged to solve a maths problem before passing it on. A great group activity!



DOT CARDS

Designed for children to practise and revise the 4 operations (addition, subtraction, multiplication and division) and other key maths concepts. These dot cards can be used to play multiple different games!



INTER- PERSONAL SKILLS

HELPFUL TIPS FOR
INTERACTING WITH
STUDENTS

Helpful Tips

Fostering Learning

1. Get to Know the Child and their Interests

- Children learn best when they feel comfortable and make personal connections with their teachers. To help children feel comfortable, you could start the session by asking something they like to do in their spare time, or what games they like to play.
- You could also share something about yourself of your interests or talk about things that you enjoy doing.
- Although the focus of the Wisdom Club activities is around playing the maths games, the project is also about giving children the opportunity to meet and interact with a diverse group of older people. So, it doesn't have to be "straight down to business" – taking time to get to know each other is a valuable part of the activity.

2. Work Collaboratively

- Work through the rules of the game together and allow the child to read through and teach you the rules of the game (if they are comfortable doing so). Allowing the child to read through the rules of the game can support their language skills around number-based concepts.

3. Ask Questions

- Encourage children to talk through what they are doing and why they are doing this. Allowing children to talk through their thought process can also help solidify their learning!

Helpful Tips

Fostering Learning (Continued)

4. Expect Mistakes!

- The best learning takes place from understanding and correcting your own mistakes. Do not criticise the children for the things they do wrong, instead praise them for giving it a go.
- Help them learn and grow from their missteps by talking openly about any errors (maybe even share a time when you have made a mistake!) and reframe their mistake as an opportunity for learning.
- You might find that you make errors here and there too- especially as the games become more challenging. Use your own mistakes as an opportunity to model good-humour and persistence in ways that the children can learn from.

5. Allow Time for Children to Solve Problems

- It can be tempting to jump in with the right answer when a child seems stuck or makes a mistake. Try to pause first to allow the child time to find a solution on their own.
- If they are still stuck after some time, or look to you for help, try prompting them with a small hint, and again give them some extra time to find the answer.
- If they are still stuck, praise them for having a go and then suggest a solution. This approach will help the child to become more self-directed instead of relying on adults to provide the answers.

Helpful Tips

Fostering Learning (Continued)

6. Keep it Entertaining

- Some children find maths difficult and might be reluctant to participate unless it seems like a fun game instead of 'work'. So be enthusiastic when working with the children.
- If you are excited about the game the children will be too!

7. Encourage and Praise Effort!

- Encourage the children to try new things, to make mistakes and to learn through new experiences.
- When you see a child making an effort on the games or activities offer praises such as **"well done!"**, **"good work!"** or **"I can see you are trying really hard!"**.

POLICIES AND PROCEDURES

Working with Children
Information for Volunteers

Working with Children

Information for Volunteers

It is a standard requirement for volunteers in schools to have a current Working with Children Check. This will be arranged for you through the school before commencement of the program.

As part of the program, volunteers will also be required to complete training in Responding to Risks of Harm, Abuse and Neglect in Educational and Care settings (RRHAN-EC). This training provides important information regarding legal responsibilities of volunteers and schools, and issues around professional boundaries for volunteers working with children and young people. You can complete the training in your own time, or with the help of the research team who will organise separate sessions for this purpose.

The main intent of this information is to safeguard the emotional and physical wellbeing of children and young people by helping adult volunteers to understand their responsibilities and appropriate professional boundaries. By following the guidelines presented as part of the RRHAN-EC training, volunteers can feel confident about meeting their professional and ethical responsibilities.

If you have any questions about the information provided through the RRHAN-EC training or any concerns regarding your responsibilities as a volunteer in an educational setting, please contact the Chief Investigator, Amy Harvey (amy.harvey@flinders.edu.au).

The following are resources provided in the RRHAN-EC training, which can be accessed throughout the training as needed by clicking the link. If you wish to receive a hard copy of these resources, please contact the Chief Investigator (see above for details).

[Guidelines for Volunteering in Educational Settings](#)

[Mandatory Reporting Guide](#)

[Notification Checklist - RRHAN-EC](#)

[Concerns Checklist - RRHAN-EC](#)

Appendix P

The Wisdom Club Program Itinerary



The Wisdom Club - Itinerary

Tuesday 14th February

Training Session

09:30	Arrival of participants taking part in <u>Focus Group</u> discussions. Please note: Individuals who are not participating in the Focus Group discussions are invited to arrive for training at 10:30AM.
10:00	Welcome to participants taking part in <u>Focus Group</u> discussions. Complete Wisdom Club Questionnaire. Conduct Focus Groups (discussion anticipated to run from 10:20AM-11:00AM).
10:30	Arrival of participants <u>not</u> taking part in Focus Group discussions. Complete Wisdom Club Questionnaire.
11:00	Morning Tea
11:30	Session One – Overview of School Policies and Procedures
12:00	Session Two –Skills for Working with Children
12:30	Lunch
13:30	Session Three – Learning the Games
15:00	End of Day

Please note: Training sessions will be held at *Noarlunga Downs Primary School* located at Canterbury Crescent, Noarlunga Downs SA 5168.



The Wisdom Club - Itinerary

Thursday 16th February

Training Session

09:30	Arrival of participants.
10:00	Complete <u>Working With Children Check</u> (WWCC). Start <u>Responding to Risks of Harm, Abuse and Neglect in Educational and Care Settings</u> (RRHAN-EC) training.
11:00	Morning Tea
11:30	Continue <u>Responding to Risks of Harm, Abuse and Neglect in Educational and Care Settings</u> (RRHAN-EC) training.
13:00	Lunch/End of Day

Please note: Training sessions will be held at *Noarlunga Downs Primary School* located at Canterbury Crescent, Noarlunga Downs SA 5168.

Laptops will also be provided to participants on the day to complete the respective checks and trainings.



The Wisdom Club - Itinerary

Program Sessions

See the below session dates:

- Wednesday 1st March 2023
- Wednesday 8th March 2023
- Wednesday 15th March 2023
- Wednesday 22nd March 2023
- Wednesday 29th March 2023
- Wednesday 5th April 2023

Please note: All Wednesday afternoon sessions will run from **1:50PM** to **3:10PM** at

Noarlunga Downs Primary School located at Canterbury Crescent, Noarlunga Downs SA 5168.

Appendix Q

The Wisdom Club Participation Recruitment Flyer



Research Project. Call for Volunteers

Are you aged 65 or older? We are looking for older volunteers to work on fun and engaging activities with children in primary schools

What is the study about?

Researchers at Flinders University are trialing a new program for adults aged **65 and over**. The program focuses on creating opportunities for older adults to be part of school communities working with primary school aged children on fun and engaging activities. The goal of the program is to create opportunities for older people to form new community connections and to provide an extra support for student learning in schools. The project is funded by the Breakthrough Mental Health Research Foundation and conducted in partnership with the SA Department of Education and Onkaparinga City.

Who can participate?

We are looking for adults aged 65 and over. Participants will be asked to complete a cognitive screening assessment to determine their eligibility to participate. Participants will be required to provide evidence of an up-to-date COVID-19 vaccination record and will need to obtain necessary clearances for working with children (clearances will be organised through participating schools at no cost to participants).

What is involved?

The program will first involve taking part in a one-day training session to become familiar with the program activities and in working collaboratively with children, teachers, and other school community members. Following training, volunteers will work one-on-one and in small groups of 2 or 3 with students in the classroom over a 1-to-2-hour period, once or twice a week for six weeks. The games selected focus on increasing children's skills in working with numbers. Activities include a combination of boardgames, card-based games, and dice-based games. So that we can best understand people's experiences of the program and evaluate its effectiveness, participants will be asked to complete some questionnaires and participate in focus group discussions.

Why get involved?

Remaining engaged with life through valued social connections and meaningful activity is recognised as a hallmark of ageing well. The project will provide a volunteering opportunity for older adults that supports social, intellectual and community engagement and reduces negative stereotypes about ageing.

How can I contact the Researcher?

If you would like to find out more about this study and register your interest, please contact Amy Harvey on amy.harvey@flinders.edu.au or [+61 8 8201 5818](tel:+61882015818). We will then either post or email further information according to your preference.

Ethic Committee Approval

This project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325).

**INSPIRING
ACHIEVEMENT**

Appendix R

The Wisdom Club Study Information and Consent Forms

PARTICIPANT INFORMATION SHEET

Wisdom Club

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Description of the study

Researchers at Flinders University are developing a new program that focuses on creating opportunities for older adults to engage with school communities. The program will involve older volunteers working with primary school aged children to help support their learning by participating in fun and engaging collaborative activities. The project is funded by the Breakthrough Mental Health Research Foundation and conducted in partnership with the SA Department of Education and Onkaparinga City.

Purpose of the study

The purpose of this study is to develop a model for involvement of older volunteers in schools with input from older adults and school communities. We hope that the information we obtain from this project will help us to design a program that can be implemented more widely across South Australian schools.

What benefit will I gain from being involved in the study?

Participants in the study will have the opportunity to make new social connections and participate in activities in schools that we expect will be enjoyable for both older volunteers and students. Participants may feel good about contributing something positive in the community, and there may be opportunities to continue volunteering beyond the research project if this is of interest to participants and schools.

What will I be asked to do?

Participating in the study will involve taking part in a series of four phases over approximately 3 months.

Phase 1. Interested participants will be asked to complete a cognitive screening assessment over the phone to determine their eligibility to participate. The screening assessment will take place at a time convenient to the participant and researcher. Participants will also be required to provide evidence of an up-to-date COVID-19 vaccination record. Following screening measures, participants will be asked whether they are willing to participate in a focus group discussion to learn more about their expectations of the program.

Phase 2. Phase 2 will take place one week after Phase 1 and will involve receiving training in the planned activities and skills for working on the activities with children in schools. Participants (our older volunteers) will receive training in a group format led by members of the research team. Training sessions will be held on **Tuesday 14th February 2023** from 9:30AM to 3:00PM and **Thursday 16th February 2023** from 9:30AM to 1:00PM. Training sessions will be held at Noarlunga Downs Primary School located at Canterbury Cres, Noarlunga Downs SA 5168.

Participants will also be asked to complete a questionnaire on the day of training. The questionnaire will include questions about your current social and activity engagement (e.g., the extent to which you feel your social relationships are supportive, whether you feel there is currently enough purpose in your life), your emotional well-being and satisfaction with life and aspects of physical health (e.g., whether your health limits you in the activities you can do).

As a requirement of the study, participants will need to obtain the necessary clearances for working with children that are standard for volunteers working in schools (e.g., Working with Children Check, Responding to Risk of Harm, Abuse and Neglect Training). Participants will have the opportunity to complete these checks on the day of training with support from the research team. All clearances will be organized through the participating school (Noarlunga Downs Primary School) at no cost to participants.

Phase 3. Following training and beginning early March, volunteers will play games with students in the classroom at Noarlunga Downs Primary School for one to two hours per week for a six-week period. Volunteers will work one-on-one or in small groups of 2 or 3 with students. The games selected focus on increasing children's skills in working with numbers. The program is scheduled to start on **Wednesday 1st March 2023** and will run each Wednesday afternoon from **1:50PM to 3:10PM**, with the last session on **Wednesday 5th April 2023**.

Phase 4. Phase 4 will take place around one week after Phase 3. At this time, participants will be asked to complete the same questionnaire that they completed in Phase 2 and will also be invited to participate in a second focus group discussion to enable the researchers to learn about participants' experiences of the program including what worked well and how they think it could be improved.

We expect the total time commitment for the study to amount to around 1-2 hours per week over a period of around 3 months.

Will I be identifiable by being involved in this study?

If you decide to participate, you will be identifiable to other participants as part of the volunteer group, as well as to the research team and members of school communities involved in the project. However, the responses you individually provide as part of the questionnaire components of the study described above will remain strictly confidential. We

will need to maintain a register of participants' contact details so that we can track peoples' progress through the different phases of the study. However, questionnaire responses will be labelled using unique ID numbers, so that personally identifying information will not be stored alongside the answers that people provide. Personal details will be stored electronically (on a password protected computer) and only members of the research team will be able to match peoples' personal details with their responses, and this will only be done when needed to monitor study progress. Participants will not be personally identifiable in any publications arising from the study. If you decide to participate in the focus group discussions (described above under Phases 1 and 4) your responses will be known to others in the group and the group facilitator, however no names will be linked with specific responses or views expressed in the focus groups in subsequent publications. A separate information sheet and consent will be distributed to participants in relation to the focus groups.

Are there any potential risks or discomforts if I am involved?

Participants will be asked to complete a cognitive screening assessment to determine their eligibility to participate. Those who fall below a standardized cut-off on the assessment will not be eligible to participate. The research team is not able to make any formal diagnosis regarding cognitive status, therefore those falling below the cut-off will be informed and advised to contact their general practitioner if they have any concerns regarding their memory.

As the program is undertaken in school environments, there is a possibility that negotiating unfamiliar environments could introduce new challenges. For example, participants may have to negotiate sets of stairs to access school classrooms. Issues of accessibility will be evaluated by the research team and arrangements will be made to reduce potential risk for physical harm.

Participants will also be asked to answer some personal questions about their health and well-being, which could produce emotional discomfort. If participating in the study results in any experiences of emotional discomfort, you may wish to raise this with the research team or telephone Lifeline on 13 11 14 for free support / counselling. You can also discuss any concerns you may have with your general practitioner.

Withdrawal Rights

If you decide to take part in the study and later change your mind, you may, without any penalty, withdraw at any time without providing an explanation. To withdraw, please contact a member of the research team. If you choose to withdraw, we will- upon request and where possible- securely destroy any data you provided up to the point of your withdrawal.

Confidentiality and Privacy

Only researchers listed on this form have access to the individual information provided by you. Privacy and confidentiality will be assured at all times. The research outcomes may be presented at conferences, written up for publication or used for other research purposes as described in this information form. However, the privacy and confidentiality of individuals will be protected at all times. You will not be named, and your individual information will not be identifiable in any research products without your explicit consent.

No data, including identifiable, non-identifiable and de-identified datasets, will be shared or used in future research projects without your explicit consent.

Data Storage

The information collected may be stored securely on a password protected computer and/or Flinders University server throughout the study. Any identifiable data will be de-identified for data storage purposes unless indicated otherwise. All data will be securely transferred to and stored at Flinders University for five years after publication of the results. Following the required data storage period, all data will be securely destroyed according to

university protocols.

How do I agree to participate?

A consent form accompanies this information sheet. If you agree to participate, please read and sign the form, which will be collected by the researchers.

How will I receive feedback?

You will be given the opportunity to opt-in to receive feedback on the study findings. If you wish to receive feedback, summary of the outcomes will be provided to you after completion of the research.

Ethics Committee Approval

The project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325).

Queries and Concerns

Queries or concerns regarding the research can be directed to the research team. If you have any complaints or reservations about the ethical conduct of this study, you may contact the Flinders University's Research Ethics & Compliance Office team via telephone 08 8201 2543 or email human.researchethics@flinders.edu.au.

Thank you for taking the time to read this information sheet which is yours to keep. If you accept our invitation to be involved, please sign the enclosed Consent Form.



CONSENT FORM FOR PARTICIPATION IN RESEARCH

**(Program and
Questionnaires)**

The Wisdom Club: Ageing Well Through Intergenerational Connections
--

- ☐ I have read and understood the information about the research, and I understand I am being asked to provide informed consent to participate in this research study.
- ☐ I am not aware of any condition that would prevent my participation, and I agree to participate in this project.
- ☐ I understand that I am free to withdraw at any time during the study.
- ☐ I understand that I can contact Flinders University's Research Ethics & Compliance Office if I have any complaints or reservations about the ethical conduct of this study.
- ☐ I understand that due to the nature of this study, the research team cannot guarantee my participation will be anonymous and confidential. However, I understand that the responses I provide as part of the questionnaire components will remain confidential.
- ☐ I understand that the information collected may be published and that I will not be identified in any research products.

I further consent to:

- ☐ Completing provided questionnaires
- ☐ Providing evidence for my current COVID-19 vaccination status
- ☐ My data and information being used in this project and other related projects for an extended period of time (no more than 5 years after publication of the data)

Participant's name.....

Participant's signature.....**Date**.....

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher's

name.....

Researcher's**signature.....Date.....**

This research project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325). For more information regarding ethical approval of the project you may contact Flinders University's Research Ethics & Compliance Office team

Appendix S**The Wisdom Club Participant Questionnaire****PARTICIPANT QUESTIONNAIRE**

1. What is your date of birth?

Day		Month		Year	

2. What is your gender?

- ☐ Female
- ☐ Male
- ☐ Non-binary
- ☐ Prefer not to say

3. What is your marital status?

- ☐ Single or never married
- ☐ Widowed
- ☐ Divorced/Separated
- ☐ Married/De facto

4. Do you speak a language at home other than English?

- ☐ No (*please continue to question 6*)
- ☐ Yes (please specify): _____

5. Which language do you prefer to use most of the time?

- ☐ English
- ☐ Other

6. Which of these categories best describes your ethnicity?

- ☐ Australian
- ☐ Australian - Aboriginal
- ☐ Australian - South Sea Islander
- ☐ Australian - Torres Strait Islander
- ☐ Maori
- ☐ New Zealander (Other)
- ☐ Other Oceanian Peoples
- ☐ European (including British and Irish)
- ☐ North African and Middle Eastern
- ☐ Sub-Saharan African
- ☐ Central and West African
- ☐ Southern and East African
- ☐ South-East Asian
- ☐ North-East Asian
- ☐ Southern and Central Asian
- ☐ North American
- ☐ South American, Central American, or Caribbean Islander
- ☐ Other

7. What is the highest year of primary or secondary school that you completed?

- ☐ Year 12 or equivalent
- ☐ Year 11 or equivalent
- ☐ Year 10 or equivalent

- ☐ Year 9 or equivalent
- ☐ Year 8 or below
- ☐ Did not go to school.

8. Have you completed any further education or training? (e.g. trade certificate, Bachelor degree, associate diploma, Certificate II, Masters)

- ☐ No
- ☐ Yes, please specify *highest* qualification completed:

9. Do you current live alone, or with others?

- ☐ Live alone
- ☐ Live with others

10. Do you own your own home outright, are you paying a mortgage, or do you rent?

- ☐ Own home outright
- ☐ Paying a mortgage
- ☐ Rent

11. Who is the rent paid to?

- ☐ WA Housing Authority
- ☐ Other Landlord or Estate Agent
- ☐ Someone else that you live with
- ☐ Other

12. Have you moved in the last 12 months?

- ☐ Yes
- ☐ No

13. Are you currently in paid employment?

- ☐ Yes, full time (30+ hours a week)
- ☐ Yes, part time
- ☐ Yes, casual
- ☐ No, Full-time student
- ☐ No, unemployed and looking for work
- ☐ No, not in paid employment (including retired)

14. Regarding disposable income, please indicate which applies:

- ☐ After essential expenses, we have enough money left over that we can comfortably purchase most of the things we really want.
- ☐ After essential expenses, we have enough money left over that we can purchase only some of the things we really want.
- ☐ After essential expenses, we do not have enough money left over to purchase much of anything we really want.

Life Engagement Test

Instructions: Please answer the following questions about yourself by indicating the extent of your agreement using the following scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree. Be as honest as you can throughout and try not to let your response to one question influence your response to other questions. There are no right or wrong answers.

1. There is not enough purpose in my life.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

2. To me, the things I do are all worthwhile.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

3. Most of what I do seems trivial and unimportant to me.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

4. I value my activities a lot.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

5. I don't care very much about the things I do.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

6. I have lots of reasons for living.

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., Zdaniuk, B. (2006). The Life Engagement Test: Assessing Purpose in Life. *Journal of Behavioral Medicine*, 29, 291. doi:10.1007/s10865-005-9044-1

Flourishing Scale

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by circling the point on the scale that you feel is most appropriate in describing you. Please be open and honest in your responding.

1. I lead a purposeful and meaningful life.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

2. My social relationships are supportive and rewarding.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

3. I am engaged and interested in my daily activities.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

4. I actively contribute to the happiness and well-being of others.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

5. I am competent and capable in the activities that are important to me.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

6. I am a good person and live a good life.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

7. I am optimistic about my future.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

8. People respect me.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D. W., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social indicators research*, 97(2), 143-156. <http://doi.org/10.1007/s11205-009-9493-y>

Scale of Positive and Negative Experiences (SPANE)

Please think about what you have been doing and experiencing during the past four weeks. Then report how much you experienced each of the following feelings, using the scale below. For each item, select a number from 1 to 5, and indicate that number on your response sheet.

1	2	3	4	5
Very Rarely or Never	Rarely	Sometimes	Often	Very Often or Always

	Score		Score
Positive		Happy	
Negative		Sad	
Good		Afraid	
Bad		Joyful	
Pleasant		Angry	
Unpleasant		Contented	

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D.-w., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, 97, 143-156. doi:10.1007/978-90-481-2354-4_12

Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by circling the point on the scale that you feel is most appropriate in describing you. Please be open and honest in your responding.

1. In most ways my life is close to my ideal.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

2. The conditions of my life are excellent.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

3. I am satisfied with my life.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

4. So far, I have gotten the important things I want in life.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

5. If I could live my life over, I would change almost nothing.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

Physical Functioning Scale, Bodily pain, Self-Rated Health

1. How much bodily pain have you had in the past 4 weeks?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None	Very mild	Mild	Moderate	Severe	Very severe

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a) <u>Vigorous activities</u> , such as running, lifting heavy objects, participating in strenuous sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Lifting or carrying groceries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Climbing <u>several</u> flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Climbing <u>one</u> flight of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Bending, kneeling, or stooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Walking <u>more than a kilometre</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Walking <u>several hundred metres</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Walking <u>one hundred metres</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Bathing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ware, J.E., and Sherbourne, C. D. (1992) The MOS 36-item short-form health survey (Sf-36): I. Conceptual framework and item selection. *Medical Care* 30, 473-483

3. How would you rate your overall health at the present time?

- ☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor

4. Has a doctor or health professional ever told you that you have any of the following? Please mark all that apply:

- ☐ Hypertension
- ☐ Diabetes
- ☐ Heart Disease
- ☐ Cancer
- ☐ Osteoporosis
- ☐ Asthma/Bronchitis/Emphysema
- ☐ Tendonitis
- ☐ Circulation Problems
- ☐ Mild cognitive impairment or dementia
- ☐ None of the above

Appendix T**The Wisdom Club Focus Group and Interview Information and Consent Forms.****PARTICIPANT INFORMATION SHEET****Wisdom Club Focus Groups****Chief Investigator**

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Description of the study

Researchers at Flinders University are developing a new program that focuses on creating opportunities for older adults to engage with school communities. The program will involve older volunteers working with primary school aged children to help support their learning by participating in fun and engaging collaborative activities. The project is funded by the Breakthrough Mental Health Research Foundation and conducted in partnership with the SA Department of Education and Onkaparinga City.

Purpose of the study

The purpose of this study is to develop a model for involvement of older volunteers in schools with input from older adults and school communities. We hope that the information we obtain from this project will help us to design a program that can be implemented more widely across South Australian schools.

What benefit will I gain from being involved in the study?

Participants will have the opportunity to make new social connections with other participants within the focus groups. Participants may also find sharing their expectations and experiences of the program interesting and useful. If the program is seen as valuable by both the volunteers and schools, this could lead to more ongoing opportunities for volunteering beyond the life of the program.

What will I be asked to do?

Participants will be invited to take part in a focus group discussion. Focus groups will be facilitated by a member of the research team and will consist of approximately 5-6 participants, with discussion expected to last for around an hour. Focus groups will be held on Tuesday 14th February from 10:00am to 11:00am. During the focus groups, participants will be asked questions regarding their expectations (e.g., what, if anything, do you expect to gain from this program?) and experiences related to the program (e.g., what aspects of the program did you enjoy the most? If you could change anything about the program, what would it be?). Focus group discussions will be audio recorded.

Will I be identifiable by being involved in this study?

If you decide to participate in the focus group discussions your responses will be known to others in the group and the group facilitator, however no names will be linked with specific responses or mentioned in any publications arising from the study.

Are there any potential risks or discomforts if I am involved?

The researchers do not expect focus groups discussions to cause any harm or discomfort to you. However, participants may have disagreements about the topic of conversation depending on their views of the program. If participating in focus group discussion results in any experiences of emotional discomfort, you may wish to raise this with your program facilitator. You can also contact the following services for support:

Lifeline – 13 11 14

Beyond Blue – 1300 22 4636

Withdrawal Rights

You may, without any penalty, decline to take part in this research study. If you decide to take part and later change your mind, you may, without any penalty, withdraw from the focus group discussions at any time.

If you decide to withdraw, you may request that the information you provide not be incorporated in subsequent analysis of the data. The researchers will comply with this request wherever it is possible to identify your unique responses in the audio recordings.

Confidentiality and Privacy

All focus groups will be recorded and transcribed, however no names will be linked to specific responses or views expressed within the discussions. The research outcomes may be presented at conferences, written up for publication or used for other research purposes as described in this information sheet. However, the privacy and confidentiality of individuals will be protected at all times. You will not be named, and your individual information will not be identifiable in any research products without your explicit consent.

No data, including identifiable, non-identifiable and de-identified datasets, will be shared or used in future research projects without your explicit consent.

Data Storage

The information collected may be stored securely on a password protected computer and/or Flinders University server throughout the study. All data will be securely transferred to and stored at Flinders University for five years after publication of the results. Following the required data storage period, all data will be securely destroyed according to university protocols.

How do I agree to participate?

A consent form accompanies this information sheet. If you agree to participate, please read and sign the form, which will be collected by the researchers.

How will I receive feedback?

You will be given the opportunity to opt-in to receive feedback on the study findings. If you wish to receive feedback, a summary of the outcomes will be provided to you after completion of the research.

Ethics Committee Approval

The project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325).

Queries and Concerns

Queries or concerns regarding the research can be directed to the research team. If you have any complaints or reservations about the ethical conduct of this study, you may contact the Flinders University's Research Ethics & Compliance Office team via telephone 08 8201 2543 or email human.researchethics@flinders.edu.au.

Thank you for taking the time to read this information sheet which is yours to keep. If you accept our invitation to be involved, please sign the enclosed Consent Form.



CONSENT FORM FOR PARTICIPATION IN RESEARCH

(Focus Group)

The Wisdom Club: Ageing Well Through Intergenerational Connections

- ☐ I have read and understood the information about the research, and I understand I am being asked to provide informed consent to participate in this research study.
- ☐ I am not aware of any condition that would prevent my participation, and I agree to participate in this project.
- ☐ I understand that I am free to withdraw at any time during the study.
- ☐ I understand that I can contact Flinders University's Research Ethics & Compliance Office if I have any complaints or reservations about the ethical conduct of this study.
- ☐ I agree to maintain the confidentiality of the information discussed by all participants and researchers during focus group sessions.
- ☐ I understand that due to the nature of focus groups, the research team cannot guarantee my participation will be anonymous and confidential.
- ☐ I understand that the information collected may be published and that I will not be identified in any research products.
- ☐ I understand that I may be unable to withdraw my data and information from this project. I also understand that this data will be used for this research study.

I further consent to:

- ☐ Participating in a Focus Group discussion
- ☐ Having my information and participation audio recorded
- ☐ My data and information being used in this project and other related projects for an extended period of time (no more than 5 years after publication of the data)

Participant's name.....

Participant's signature.....**Date**.....

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher's name.....

Researcher's signature.....**Date**.....

This research project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325). For more information regarding ethical approval of the project you may contact Flinders University's Research Ethics & Compliance Office team

The Wisdom Club Focus Group and Interview Information and Consent Forms.**PARTICIPANT INFORMATION SHEET****Wisdom Club Interviews****Chief Investigator**

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Description of the study

Researchers at Flinders University are developing a new program that focuses on creating opportunities for older adults to engage with school communities. The program will involve older volunteers working with primary school aged children to help support their learning by participating in fun and engaging collaborative activities. The project is funded by the Breakthrough Mental Health Research Foundation and conducted in partnership with the SA Department of Education and Onkaparinga City.

Purpose of the study

The purpose of this study is to develop a model for involvement of older volunteers in schools with input from older adults and school communities. We hope that the information we obtain from this project will help us to design a program that can be implemented more widely across South Australian schools.

What benefit will I gain from being involved in the study?

Participants may find contributing to their community through co-designing the program rewarding. Participants may also find sharing their experiences of the program interesting and useful. If the program is successful it may lead to ongoing opportunities for classroom support and community building in schools.

What will I be asked to do?

Teachers and relevant school community members will be invited to take part in a semi-structured interview pre- and post- program. Interviews will be conducted one-on-one by a member of the research team, with discussion expected to last for around 20 to 40 minutes. During the interviews, participants will be asked questions about the core features of the program (e.g., what, if anything, would you change about the current program?), and their experiences of the program (e.g., what do you think the program did well? what were the things you did not like about the program?). Interviews will be conducted either in-person or over-the-phone and will be audio recorded. Participation in the interviews is entirely voluntary.

Will I be identifiable by being involved in this study?

If you decide to participate, the responses you provide as part of the interview described above will remain strictly confidential. Participants will not be personally identifiable in any publications arising from the study.

Are there any potential risks or discomforts if I am involved?

The researchers do not expect the questions to cause any harm or discomfort to you. If participating in focus group discussion results in any experiences of emotional discomfort, you may wish to raise this with your program facilitator. You can also contact the following services for support:

Lifeline – 13 11 14

Beyond Blue – 1300 22 4636

Withdrawal Rights

You may, without any penalty, decline to take part in this research study. If you decide to take part and later change your mind, you may, without any penalty, withdraw at any time without providing an explanation. Upon request, we will securely destroy any data collected up to the point of your withdrawal.

Confidentiality and Privacy

All interviews will be recorded and transcribed, however no names will be linked to specific responses or views expressed within the interview. Only researchers listed on this form have access to the individual information provided by you. Privacy and confidentiality will be assured at all times.

The research outcomes may be presented at conferences, written up for publication or used for other research purposes as described in this information form.

However, the privacy and confidentiality of individuals will be protected at all times. You will not be named, and your individual information will not be identifiable in any research products without your explicit consent.

No data will be shared or used in future research projects without your explicit consent.

Data Storage

The information collected may be stored securely on a password protected computer and/or Flinders University server throughout the study. Any identifiable data will be de-identified for data storage purposes unless indicated otherwise. All data will be securely transferred to and stored at Flinders University for five years after publication of the results. Following the required data storage period, all data will be securely destroyed according to university protocols.

How do I agree to participate?

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How will I receive feedback?

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**CONSENT FORM FOR PARTICIPATION IN
RESEARCH**

(Interviews)

The Wisdom Club: Ageing Well Through Intergenerational Connections

- ☐ I have read and understood the information about the research, and I understand I am being asked to provide informed consent to participate in this research study.
- ☐ I am not aware of any condition that would prevent my participation, and I agree to participate in this project.
- ☐ I understand that I am free to withdraw at any time during the study.
- ☐ I understand that I can contact Flinders University's Research Ethics & Compliance Office if I have any complaints or reservations about the ethical conduct of this study.
- ☐ I understand that my involvement is confidential, and that the information collected may be published.
- ☐ I understand that I will not be identified in any research products. I further consent to:
 - ☐ Participating in an interview
 - ☐ Having my information and participation audio recorded
 - ☐ My data and information being used in this project and other related projects for an extended period of time (no more than 5 years after publication of the data)

Participant's name.....

Participant's signature.....**Date**.....

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher's

name.....

Researcher's**signature.....Date.....**

This research project has been approved by Flinders University's Human Research Ethics Committee (Project ID 4325). For more information regarding ethical approval of the project you may contact Flinders University's Research Ethics & Compliance Office team