

# The Mediating Role of Happiness in the Relationship Between Older Adults' Intentional Activities and Health

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## Abstract

The present study examined the nature of relationships between older adults' intentional happiness-enhancing activities, happiness and health outcomes, and extended previous research by testing the prediction that happiness mediates the relationship between intentional activities and health. Multiple regression analysis of survey responses from a representative population sample of 2289 adults (aged 55-73 years) was employed to test predictions. Happiness was found to fully mediate the relationship between socially related activities and physical health, to partially mediate the relationships between personal interest and achievement oriented activities and physical health, and to fully mediate the relationships between these types of intentional activity and mental health. Results support the utility of investigating older adult's intentional activities as a determinant of happiness and indicate that they also benefit health outcomes through happiness.

**Keywords:** Intentional activities, Happiness, Subjective wellbeing, Physical health, Mental health

## Introduction

Wellbeing is one of the foci of concern around population aging and studies of older adults' wellbeing are becoming increasingly important in order to inform social policy and planning. Happiness is considered a valued social policy objective (Veenhoven, 1995) and key quality of life indicator (Angner, Ray, Saag, & Allison, 2009). It is linked to numerous positive outcomes across a number of areas, including health, relationships, income and work performance (for a review see Lyubomirsky, King, & Diener, 2005).

The importance of happiness is often seen in terms of health outcomes. Although causality has been suggested to go in both directions, there is more support to date for happiness affecting health than the reverse (e.g., Argyle, 1997; Hawkins & Booth, 2005; Veenhoven, 2008). Research support includes reported positive

associations between happiness and psychological wellbeing (e.g., Joseph, Linley, Harwood, Lewis, & McCollam, 2004; Linley & Joseph, 2004), cognitive performance (e.g., Rabbitt, Lunn, Ibrahim, Cobain, & McInnes, 2008), follow-up longevity (e.g., Koopmans, Geleijnse, Zitman, & Giltay, 2010; Veenhoven, 2008), self-rated and physical health and the absence of limiting health conditions (e.g., Koopmans et al., 2010; Siahpush, Spittal, & Singh, 2008).

Health is an important factor to consider, especially given the mental and physical declines that occur with aging and the associated impact these may have at both individual and wider societal levels (e.g., healthcare, transportation, quality of life). Negative outcomes of health declines (e.g., disability, developing other health issues) are increasing recognition that this is an important public health problem (Buchman et al., 2009). Hence, ways to delay or reduce mental and physical declines and their consequences are worthy of investigation. Given the flow-on effects of happiness on health, ways of enhancing happiness have implications for reducing declines in health and their associated impact on health and welfare systems.

Research on the relationship between older adult activity and wellbeing indicates activity engagement may be a promising avenue for enhancing the happiness and health of older adults. A growing body of evidence supports positive effects of various types of activities (e.g., social, productive, physical, spiritual) on older adult health outcomes (e.g., Buchman et al., 2009; Menec, 2003; Penedo & Dahn, 2005; Walter-Ginsburg, Shmotkin, Blumstein, & Shorek, 2005; Windle, Hughes, Linck, Russell, & Woods, 2010). Support for the potential impact of activity engagement on health includes findings such as more frequent leisure and social activity participation being associated with better cognitive function (e.g., Menec, 2003; Wilson et al., 2002) a decreased rate of decline in motor function (Buchman et al.,

2009), lower mortality risk (Bowling & Grundy, 2009), and the likelihood of institutionalisation being almost halved (Steinbach, 1992).

Research support is also accumulating for the positive effects of various types of activity on happiness. These include findings indicating positive impacts of social activities (e.g., Adams, Leibbrandt, & Moon, 2010; Menec, 2003), goal pursuit (e.g., Kasser & Ryan, 1996; Sheldon et al., 2010; Sheldon, Ryan, Deci, & Kasser, 2004), productive activities (e.g., Menec, 2003; Menec & Chipperfield, 1997), and positive cognitive activities (e.g., Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011; Sheldon & Lyubomirsky, 2006).

In addition to activity, life circumstances and personality factors have also been identified as contributing to happiness (e.g., Andrews & Withey, 1976; Braungart, Plomin, DeFries, & Fulker, 1992; Diener, 1984; Tellegen et al., 1988). Lyubomirsky, Sheldon and Schkade's (2005) sustainable happiness model integrates these three concepts. Consistent with past research, the model suggests that genetic set point accounts for around 50% of the population variance in happiness levels, circumstances for around 10%, leaving up to 40% of the variance for intentional activities.

In comparison to the other two determinants, intentional happiness-enhancing activities are considered the most promising avenue for sustainably increasing happiness (Lyubomirsky, Sheldon et al., 2005). Evidence from intervention studies is emerging for intentional activities impacting on happiness (e.g., Fordyce, 1977; Fordyce, 1983; Lyubomirsky et al., 2011; Seligman, Steen, Park, & Peterson, 2005; Sheldon & Lyubomirsky, 2006). However, there has been limited research to date with older adult samples, especially concerning the intentional happiness-enhancing activities older adults naturally choose themselves to engage in.

An exploratory study of older adults' intentional happiness-enhancing activities (Henricksen & Stephens, 2010) and subsequent testing of an inventory suggested four types of activities: self-concordant work (activities that are personally congruent), personal recreation and people (socially oriented activities), spiritual and thought-related, and goal-focused activities (Henricksen & Stephens, 2011). These findings from a more naturalistic context add to previous support regarding the influence of activities on happiness

levels and suggest specific age-related differences in intentional activity engagement and their impact on happiness. However, further research is required to verify the effectiveness of different activities on happiness and other wellbeing outcomes for this population.

The links between activity, happiness and health may offer insight into ways to reduce the impact of physical and cognitive decline experienced with aging. The literature indicates that: (a) older adult activity is positively related to happiness and health; (b) intentional happiness-enhancing activities have beneficial effects on happiness; (c) happiness has beneficial effects on health. This raises the question as to whether happiness may function as a mediator between intentional activities and health in older adults. That is, are individuals who engage more in intentional happiness-enhancing activities more likely to be happier and does this in turn contribute to their health?

The present study aims to extend previous research beyond the relationship between intentional activities and happiness to include relationships with physical and mental health and the possible mediating role happiness may play in these relationships. It is expected that significant associations will be found between intentional activities, happiness and physical and mental health. Furthermore, it is predicted that happiness mediates the relationship between intentional activities and physical and mental health.

## Method

### Participants

The sample comprised 2495 adults aged 55-73 years ( $M=63.2$ ;  $SD = 4.6$ ), who responded to a representative population survey of older New Zealanders' health, work and retirement (for further detail see Dulin, Stephens, Alpass, Hill, & Stevenson, 2011). Females made up 53% of the sample, and 29% of respondents reported a post-high school qualification. The sample also comprised 55.1% New Zealanders of European descent, 41.3% New Zealanders of Māori descent and 3.6% other ethnicities.

### Measures

#### Intentional Activities

Intentional Activities were assessed with the Happiness-enhancing Activities and Positive Practices Inventory (HAPPI; Henricksen &

Stephens, 2011), a self-report inventory designed to measure older adults' happiness-enhancing activities. The HAPPI consists of 16 items and has four sub-scales: self-concordant work, personal recreation and people, spiritual and thought-related, and goal-focused activities. Items were each rated (using five-point scales) on how important they were considered for enhancing happiness (1=not important at all; 5=extremely important) and on frequency of engagement (0=never; 4=daily or more often). Importance and engagement scores for each item were multiplied to form composite scores (0-20), with higher scores representing higher importance and engagement ratings for the corresponding activity. Alpha reliability coefficients for the sub-scales ranged from .72 to .80, and alpha for the total HAPPI was .86.

### **Happiness**

Happiness was assessed with a shortened (two item) version of Lyubomirsky and Lepper's (1999) measure of subjective happiness, which asked respondents to rate their happiness in general, and in comparison to most of their peers. Each item was assessed on a seven-point scale and the two scores were averaged to form a composite score. Higher scores reflected higher self-assessments of happiness ( $\alpha = .86$ ).

### **Health**

Health was assessed using version 2 of the SF36 health survey (Ware, Kosinski, & Dewey, 2000). The SF36 consists of 36 questions and has two components (physical and mental health). Norm-based methods were employed to standardise summary scores using means, standard deviations, and factor score coefficients for the scales, resulting in physical health and mental health scores, with higher scores reflecting better self-reported health. Alpha reliability coefficients for the sub-scales ranged from .81 to .95, and for the physical and mental health summary scores were .95 and .90, respectively.

### **Demographic Variables**

Demographic Variables included age, relationship status, education, and employment status.

### **Procedure**

The measures were included in a representative population survey of older adults' health, work and retirement. Multiple contact points were employed to maximise survey participation (in

accordance with Dillman, 2000). Initial contact letters and study information were initially posted; followed a week later by the questionnaires, each with a pre-paid self-addressed return envelope. After three weeks, reminder postcards were sent. After six weeks, all non-respondents were sent replacement questionnaires. And after 11 weeks, remaining non-respondents were sent a final postcard. Of the 3200 questionnaires initially posted, 2495 were returned (78% response rate).

### **Data Analyses**

Data were analysed using SPSS Statistics 17.0 software (SPSS Inc, 2008). Prior to analyses, the variables of interest were examined for accuracy of data entry, missing values, and to assess multiple regression assumptions. Cases with 50% or more missing data (4.8%) were identified and omitted from further analyses (in accordance with Hair et al., 2006). Multiple imputation using linear regression was employed to replace missing values.

### **Assumption Testing**

To improve the normality of the distributions, reflect and logarithm transformations (for negative skewness) of physical health, mental health and happiness were employed. Four cases with extremely low z-scores on mental health and 16 with extremely low z-scores on happiness were identified as univariate outliers and excluded, leaving 2289 cases for analyses. No multivariate outliers were identified.

### **Mediation Analyses**

The hypotheses that happiness plays a mediating role in relationships between intentional activity and both physical and mental health were tested using the process outlined by Baron and Kenny (1986) and Holmbeck (1997). For happiness to act as a mediator the following conditions are required: (a) the intentional activity variable should be significantly associated with happiness; (b) the intentional activity variable should be significantly associated with the health variable; (c) happiness should be significantly associated with the health variable; (d) after controlling for the effects of happiness on the health variable, the relationship between the intentional activity variable and the health variable should be significantly reduced. Multiple regression analyses were employed to test these requirements, with selected demographic variables entered in the first step of each analysis as control variables. The Sobel test (Sobel, 1982)

was employed to determine whether the reduction was statistically significant.

All analyses were run on both the dataset including the transformed variables and the set with untransformed variables, with the same pattern of results found. Analyses were also run with and without imputed missing data, again with very similar results found. For ease of interpretation, the results of the analyses with the original untransformed data are reported.

## Results

### Correlational Analyses

Means, standard deviations and Pearson  $r$  correlation coefficients between the variables employed in the regression analyses are presented in Table 1. Of the demographic variables assessed, only education and age were correlated with both predictors and outcomes. The impact of these covariates was controlled for by entering them at the first step of each analysis.

Bivariate correlations partially supported the predictions that intentional activities would be associated with happiness, and with physical and mental health. All four intentional activity variables were positively associated with happiness. In turn, happiness was positively associated with both physical health and mental health.

Three of the four intentional activity variables (Self-Concordant Work, Personal Recreation and People, Goal-Focused) were positively associated with both health variables. Because Spiritual and Thought-Related activities were not significantly related to either health variable, this variable did

not meet the criteria for mediational analyses and was not included in the regression analyses.

### Mediation Analyses

A summary of the regression results for each of the six sets of analyses conducted are displayed in Table 2. The control variables accounted for 1% of the variance in mental health and 3% of the variance in physical health.

### Mental Health

Self-Concordant Work positively predicted mental health, but when happiness was entered into the equation with mental health, the association between Self-Concordant Work and mental health was reduced and no longer significant, suggesting that happiness fully mediated this link. The same pattern of results was found for the other two activity variables. That is, both Personal Recreation and People and Goal-Focused activity predicted mental health, with these associations becoming reduced and no longer significant when happiness was entered into the equation.

### Physical Health

Personal Recreation and People positively predicted physical health, but when happiness was entered into the equation with physical health, the association between Personal Recreation and People and physical health became non significant (Table 2, Set 5), indicating that happiness fully mediated this link. In contrast, for the other two types of activity, when happiness was entered into the equation with physical health, the associations between Self-Concordant Work and physical health, and between Goal-Focused activity and physical health were reduced but remained

**Table 1**

*Means, Standard Deviations and Correlations between Regression Variables*

Variables	1	2	3	4	5	6	7	8
1 Self-Concordant Work								
2 Personal Rec & People	.43***							
3 Spiritual & Thought	.41***	.44***						
4 Goal-Focused	.56***	.39***	.34***					
5 Physical health	.15***	.06*	-.03	.11***				
6 Mental health	.15***	.09***	-.03	.08***	.17***			
7 Happiness	.25***	.26***	.22***	.24***	.12***	.43***		
8 Age	-.12***	.05*	.03	-.11***	-.13***	.06*	.06**	
9 Education	.16***	.04	.07***	.05*	.11***	.04	-.05*	-.06**
Mean	11.54	8.31	9.45	8.13	49.13	50.13	5.77	63.22
SD	4.46	3.03	5.64	4.68	9.72	9.49	1.06	4.57

Note. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\*  $p < 0.001$



**Table 2**

*Summary of Regression Analyses Testing the Mediating Effect of Happiness on Relationships between Intentional Activity and Health Variables (Controlling for Education and Age)*

Predictor	Activity > Health				Activity & Happiness > Health			
	$\Delta R^2$	$\beta$	SE $\beta$	Beta	$\Delta R^2$	$\beta$	SE $\beta$	Beta
	(each step)	(last in)		(last in)	(each step)	(last in)		(last in)
<b>Mental Health</b>								
Set 1 Education		0.50	0.44	0.03		1.15	0.40	0.06 **
Age	0.01 **	0.19	0.05	0.09 ***	0.01 **	0.09	0.04	0.05 *
Self-Concordant Work	0.02 **	0.32	0.05	0.15 ***		0.06	0.05	0.03
Happiness					0.19 ***	3.86	0.20	0.43 ***
Set 2 Education		0.87	0.44	0.05 *		1.27	0.40	0.07 **
Age	0.01 **	0.14	0.05	0.07 **	0.01 **	0.09	0.04	0.04 *
Personal Rec & People	0.01 **	0.25	0.07	0.08 ***		-0.09	0.07	-0.03
Happiness					0.19 ***	3.98	0.20	0.44 ***
Set 3 Education		0.88	0.44	0.05 *		1.31	0.40	0.07 **
Age	0.01 **	0.17	0.05	0.08 ***	0.01 **	0.08	0.04	0.04
Goal-Focused	0.01 **	0.15	0.05	0.07 **		-0.08	0.05	-0.04
Happiness					0.20 ***	4.04	0.20	0.45 ***
<b>Physical Health</b>								
Set 4 Education		1.44	0.45	0.07 **		1.68	0.45	0.09 ***
Age	0.03 **	-0.24	0.05	-0.12 ***	0.03 ***	-0.27	0.05	-0.13 ***
Self-Concordant Work	0.01 **	0.27	0.05	0.12 ***		0.19	0.05	0.09 ***
Happiness					0.03 ***	1.09	0.22	0.12 ***
Set 5 Education		1.78	0.45	0.09 ***		1.95	0.45	0.10 ***
Age	0.03 **	-0.29	0.05	-0.14 ***	0.03 **	-0.31	0.05	-0.15 ***
Personal Rec & People	0.00 **	0.22	0.08	0.07 **		0.12	0.08	0.04
Happiness					0.02 ***	1.23	0.22	0.13 ***
Set 6 Education		1.67	0.45	0.09 ***		1.85	0.45	0.10 ***
Age	0.03 **	-0.26	0.05	-0.12 ***	0.03 **	-0.29	0.05	-0.14 ***
Goal-Focused	0.01 **	0.18	0.05	0.08 ***		0.11	0.05	0.05 *
Happiness					0.02 ***	1.19	0.22	0.13 ***

Note. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

significant, suggesting that happiness partially mediated these links.

The Sobel test results indicated the mediations were significant. The indirect effect sizes were identified as small and medium (Cohen, 1988) for the physical and mental health models, respectively. Each intentional activity variable and happiness, together with age and education, explained up to 21% of the variance in mental health and up to 6% of the variance in physical health.

## Discussion

Higher importance and engagement ratings of four types of intentional activities were associated with greater happiness levels, which indicate support for the sustainable happiness model postulate that intentional activities influence happiness. The results additionally

support the contribution to health of activities deliberately undertaken to increase happiness. The prediction that intentional activity would be related to physical and mental health was supported for three types of intentional activity: Self-Concordant Work, Personal Recreation and People, and Goal-Focused activities. These results are consistent with previous research that has shown increased activity among older adults to be associated with better health (e.g., Buchman et al., 2009; Lampinen, Heikkinen, Kauppinen, & Heikkinen, 2006; Meisner, Dogra, Logan, Baker, & Weir, 2010; Menec, 2003; Penedo & Dahn, 2005; Walter-Ginsburg, Shmotkin, Blumstein, & Shorek, 2005; Windle, Hughes, Linck, Russell, & Woods, 2010).

The positive associations between socially oriented (personal recreation and people) activities and happiness, and both physical and mental

health, are consistent with previous findings (e.g., Argyle, 1997; Adams, 2010). However, while findings regarding the association of general older adult activity with wellbeing have commonly supported the importance of social activity over other types of activity, this was not the case for our intentional activity results. Self-concordant work, or activities that fit one's personal interests and skills, demonstrated the strongest relationships with happiness and mental and physical health. On average, participants also reported the highest importance for, and engagement in self-concordant work, further supporting the importance of this type of intentional activity for older people. These results suggest that this type of activity deserves further attention. In terms of implications for older adults, they suggest the benefits of personally fulfilling activities and the importance of personal strengths, skills and values. Older people are already aware of the health promoting value of social engagement (Pond, Stephens, & Alpass, 2010), but these findings suggest that there are also benefits to be found for those who prefer solitary pursuits.

In contrast, no relationship was found between spiritual and thought-related activities and health. This was unexpected given previously identified associations between older adults' mental and physical health and spiritual activities (e.g., Ellison & Levin, 1998; Koenig, 2000; Lawler-Row & Elliott, 2009; Schaie, Krause, & Booth, 2004) or cognitive activities (e.g., Agahi & Parker, 2005; Paillard-Borg, Wang, Winblad, & Fratiglioni, 2009; Wilson et al., 2002). Possible explanations for the inconsistencies may relate to the complex nature of associations between dimensions of spirituality and health (Ellison & Levin, 1998) and differences in the nature of the cognitive activities investigated (i.e. counting blessings and positive framing in this study of intentional happiness-enhancing activities cf. previous studies with more general cognitive activities such as reading and doing puzzles). Another possible influence may relate to cultural differences, which have been found regarding the types of activities older adults engage in (e.g., Janke, Davey, & Kleiber, 2006) and the impact of intentional activities on wellbeing (e.g., Boehm, Lyubomirsky, & Sheldon, 2011). Future research along these lines may help elucidate reasons for the lack of association found in this study. The positive association between spiritual and thought-related activities and

happiness is in line with established associations between happiness and spiritual activity (e.g., Ellison, 1991; Lawler-Row & Elliott, 2009; Poloma & Pendleton, 1990), and positive cognitive exercises (e.g., Lyubomirsky et al., 2011; Sheldon & Lyubomirsky, 2006). However, further research is recommended to clarify the constructs and their associations.

An important focus of the present study was the prediction that happiness plays a mediating role in the relationship between intentional activities and health. A similar pattern emerged across all the relationships tested, in that each intentional activity-health relationship was to some extent mediated by happiness. In regard to mental health, happiness was found to fully mediate all three relationships investigated; suggesting that the way in which self-concordant, socially oriented, and goal-focused activities influence mental health is through increasing happiness. The clearer pathway through happiness to mental health is supported by the theoretical association of happiness and mental health, together with support for the association of intentional activities and happiness (e.g., Fordyce, 1977; Fordyce, 1983; Henricksen & Stephens, 2011; Seligman, Steen, Park, & Peterson, 2005; Sheldon & Lyubomirsky, 2006; Tkach & Lyubomirsky, 2006).

Happiness was also found to fully mediate the relationship between socially oriented activities and physical health, suggesting that the way in which this type of intentional activity influences physical health is by increasing happiness. This finding supports the importance placed on social engagement for older people by public health researchers (e.g., Berkman, Glass, Brissette, & Seeman, 2000) and social gerontologists (James, Boyle, Buchman, & Bennett, 2011). In comparison, the partial mediating results for self-concordant work and goal-focused activities indicate that happiness is only one pathway by which these types of activities might impact on physical health. The direct effects on health may be due to a range of other mechanisms, such as an increased sense of mastery (Glass, Seeman, Herzog, Kahn, & Berkman, 1995), competence or usefulness (Herzog & House, 1991). Future research on these and other possible pathways from self-concordant work and goal-focused activities to health may help identify the most important factors for enhancing and maintaining health and wellbeing.

Taken together, our findings support the idea that engaging in intentional activities may enhance happiness levels, and happiness, in turn, influence physical and mental health. In terms of more general implications for the wellbeing of older adults, focusing on activities that fit individual interests and skills, that involve socially oriented recreation, and that work towards personal goals, may be the most promising routes to enhancing happiness and reducing health declines.

Support for a mediating role of happiness has implications for theories of wellbeing. For example, the sustainable happiness model could be extended to incorporate health outcomes. It could also be further developed by factoring in age differences in regard to the types of intentional activities people engage in and the impact of these on wellbeing outcomes.

As cross-sectional data was used, we cannot draw causal conclusions. This said, it is testing theory and the results support the predicted direction of the relationships (intentional activity to happiness to health). Previous longitudinal findings indicating positive effects of social, productive and cognitive activities on happiness (e.g., Adams et al., 2010; Kasser & Ryan, 1996; Sheldon et al., 2004; Sheldon et al., 2010) also support our results. The results are also in accord with reported positive effects of happiness on health outcomes (e.g., Argyle, 1997; Bowling & Grundy, 2009; Siahpush, Spittal, & Singh, 2008; Veenhoven, 2008). This support is encouraging, although comparison of results with those of other older adult activity studies is necessarily limited by the more general nature of the activities studied previously (cf. intentional happiness-enhancing activities focused on in the present study). To shed more light in this area, further investigation with longitudinal data could add to knowledge regarding the temporal relation among variables and clarify interrelationships between older adult intentional activities, happiness and health.

In conclusion, our findings support predicted relationships between intentional activities and happiness and health outcomes. Results support the utility of investigating older adult intentional activities as a determinant of happiness and indicate that intentional activities may also benefit health outcomes through happiness. Research to date indicates that the promotion of happiness and the concept of intentional activities provide

a promising approach to understanding and enhancing older adult health and wellbeing.

*Dr Annette Henricksen has recently completed her Doctoral thesis and is currently employed by Massey University as a Researcher and Paper Coordinator. Her research interests are health and wellbeing, ageing and positive psychology (resilience, strengths, wisdom).*

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