

Investing in Happiness: The Gerontological Perspective

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Longevity · Depression · Reverse causation · Worthwhile life · Well-being

Abstract

Optimising happiness is a desirable societal aim in itself, but there are four more specific reasons why research on happiness is an important emerging theme in gerontology. First, happiness is not merely the mirror of depression, anxiety or distress, but has distinct relationships with a range of outcomes, so benefits from study in itself. Second, happiness appears to be a protective factor for morbidity and mortality; although studies are complex and take a long time to complete, there is accumulating evidence that greater happiness predicts survival among older people independently of covariates including health status and depression. Third, happiness has broad ramifications at older ages, being related to personal and social relationships, economic prosperity, biological risk factors, health behaviours, and time use as well as health. Fourth, happiness is malleable, and can potentially be modified in ways that will enhance the health and well-being of older people.

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Introduction

There has been a surge in scientific research on happiness over the past two decades, involving work in experimental and social psychology, epidemiology, economics and biology. Understanding the determinants and consequences of happiness has become a serious endeavour that is relevant to health, education, and public policy. There is a wide range of approaches to happiness research ranging from the perspectives of social science, economics, developmental, experimental and clinical psychology, to biology and other disciplines [1–4]. This article presents research on happiness, health, and ageing from the orientation of population behavioural science. It outlines the relevance of happiness for gerontology, focusing on four important reasons why investing in this field may yield benefits for healthy ageing and living a fulfilling life in later years.

Happiness is not simple to define because it has multiple interrelated components, and many authorities prefer to use the terms positive psychological functioning or subjective well-being to characterise this area of research. One influential taxonomy distinguishes three broad aspects of subjective well-being [5]. The first is affective or hedonic well-being, involving feelings of joy, pleasure and vitality. Second is eudaimonic well-being, a more complex notion encompassing a sense of purpose, meaningfulness and fulfilment in life. Third is evaluative well-being, reflecting judgements of how satisfied people are

with their lives, and how good their quality of life is. The three components are moderately correlated [6], but it has long been recognised that pleasure and enjoyment may not be accompanied by a sense that life is worthwhile, and vice versa. Some researchers combine these concepts into broader constructs such as the notion of flourishing (involving life satisfaction, meaning and purpose, character, virtue, and close social relationships) [7], while Seligman [8] has proposed the PERMA model (positive emotions, engagement, relationships, meaning, achievement).

Happiness Is Not the Same as the Absence of Depression and Distress

The relief of mental suffering is a central driver in the health and social care of older people. Depression, anxiety and distress not only cause anguish, but are risk factors for serious physical illness, and are associated with adverse outcomes among people with chronic illnesses including coronary disease, cancer, diabetes and stroke [9–11]. Nonetheless, the fact that someone is not distressed, anxious or upset does not mean that they are happy. High subjective well-being involves moving beyond the neutral – neither happy nor distressed – to positive states of enjoyment, life satisfaction and sense of purpose. The links between depression or distress and positive psychological well-being are complex, and there is evidence that the two can coexist [12]. Moods can fluctuate rapidly, and many life experiences have both positive and negative components; indeed, this has been a central theme of Western literature from Shakespeare to contemporary novels and dramas. Recognition of the distinct roles of subjective well-being and negative states has stimulated the development of positive psychology as a separate topic. Studies of subjective well-being do not merely replicate investigations of negative experiences and states by reversing the terminology, focusing on the positive rather than the negative, but have identified new relationships with health and human functioning. This means that enhancing happiness at older ages is a valuable goal, and we should not be satisfied with the reduction of mental suffering on its own.

Happiness Is Associated with Better Health

It might seem obvious that happiness is linked with good health, since a person who is sick or develops a serious illness will likely experience impaired subjective

well-being. But a key reason why studies of happiness are relevant to gerontology is because there is a two-way process, and subjective well-being is associated prospectively with better health and reduced mortality [13]. Numerous longitudinal observational population studies have demonstrated that higher levels of affective and eudaimonic well-being measured at baseline predict future survival among older people. A meta-analysis of more than 60 general population studies published in 2017 showed a pooled hazard ratio (HR) of 0.920 (95% CI 0.908–0.935) for all-cause mortality for high compared with low subjective well-being, indicating an 8% reduction in relative risk [14]. These associations have been reported by researchers in many cultures, with follow-up periods of more than 20 years, and include studies of the oldest-old as well as middle-aged samples [15]. Duration as well as intensity of subjective well-being seems to be important [16]. Importantly, the relationship between subjective well-being and survival has been shown to be partly independent of sociodemographic factors, initial health states and measures of negative experiences such as depressive symptoms [13]. Not all studies have shown these protective relationships [17], and there are controversies over the measurement of happiness [18], and publication bias. There are also important issues related to reverse causation, since it is increasingly recognised that well-being declines as people approach death (terminal decline), albeit with substantial variation related to perceptions of control, relationship satisfaction and other factors [19]. This means that diminished happiness in the months preceding death may be a consequence of decline, leading to a spurious association between high well-being and survival.

The links between subjective well-being and future survival is illustrated in Table 1, which shows the relationship between enjoyment of life and mortality in 9,899 men and women in the English Longitudinal Study of Ageing (ELSA), a cohort of older men and women representative of the English population. This is an update with a longer follow-up of previously published findings [20]. Participants were aged 65.3 on average (range 50 to over 90) when they completed a 4-item questionnaire assessing affective well-being (items such as “I enjoy the things that I do”; “I enjoy being in the company of others”), together with covariates. Participants were followed up for an average of 13 years (16 years maximum), during which time 3,379 died. The association between all-cause mortality and quartiles of enjoyment of life is summarised in the top panel of Table 1. In absolute terms, 42.7% of the individuals in the lowest quartile died, compared with

Table 1. Enjoyment of life and survival over an average of 13 years

Enjoyment quartile	Fatalities, <i>n</i>	Fatalities, %	Hazard ratio (95% CI) ¹	<i>p</i>
1 (Low)	1,228/2,879	42.7	1 (ref.)	
2	749/1,980	38.8	0.77 (0.70–0.84)	<0.001
3	1,004/3,145	31.8	0.62 (0.57–0.68)	<0.001
4 (High)	398/1,884	21.1	0.49 (0.43–0.54)	<0.001
<i>Excluding deaths within 48 months of baseline</i>				
1 (Low)	921/2,572	35.8	1 (ref.)	
2	629/1,860	33.8	0.82 (0.75–0.91)	<0.001
3	848/2,989	28.4	0.66 (0.60–0.73)	<0.001
4 (High)	348/1,486	19.0	0.53 (0.46–0.60)	<0.001
Analytic models			Hazard ratio for high versus low enjoyment (95% CI)	Explained, %
Base model (age, sex, ethnicity)			0.49 (0.43–0.54)	
Base + demographics (education, wealth, employment, marital status)			0.57 (0.51–0.64)	15.7
Base + health (self-rated health, cancer, coronary heart disease, stroke, diabetes, chronic lung disease, arthritis)			0.60 (0.53–0.67)	21.6
Base + cognitive function and disability (mobility, impaired activities of daily living)			0.61 (0.54–0.69)	25.3
Base + mental health (clinical depression, depressive symptoms)			0.57 (0.50–0.65)	15.7
Base + health behaviour (smoking, alcohol, physical activity)			0.57 (0.50–0.64)	15.7
Base + all factors combined			0.76 (0.67–0.86)	52.9

¹ Adjusted for age, sex, and ethnicity.

21.1% of those who reported high enjoyment of life. The results of the Cox regression show a graded association with survival after adjustment of age, sex and ethnicity, with a HR of 0.49 for the highest enjoyment group, indicating more than 50% reduction in relative risk.

The issue of reverse causation was addressed in this analysis by excluding deaths that took place close to the time when enjoyment ratings were made. In the second panel of Table 1, deaths occurring within 48 months of the assessment of enjoyment were excluded, reducing the risk of confounding with terminal decline. It is evident that the HRs for enjoyment of life remained very similar to those in the full analysis, indicating that reverse causation is unlikely.

The lower section of Table 1 summarises the impact of various confounding factors. Different sets of confounders have been added into the statistical models, and the extent to which they explain the protective effect of high enjoyment of life has been tested by evaluating how closely the HR moved towards 1 (equipose). Taking demographic factors such as education, wealth, employment status and marriage into account had a

moderate influence, accounting for 15.7% of the protective association with high enjoyment. Initial health, including the presence at baseline of serious illness and poor self-rated health, had a slightly greater impact (21.6% variance), as did the presence of poor cognitive function and disability at baseline. Interestingly, including depression and distress in the model had a quite modest effect, reinforcing the argument that subjective well-being is distinct from negative psychological states. Finally, health behaviours including smoking and physical inactivity reduced the association between enjoyment of life and survival by 15.7%. When all these covariates were added simultaneously, the HR for high enjoyment was 0.76, indicating that around half of the relationship between well-being and survival was explained by these factors. Nonetheless, high enjoyment was still associated with a markedly reduced hazard of dying, showing that the influence of confounders is limited.

It is not of course possible to draw causal conclusions from longitudinal observational studies, since there may be unmeasured confounders that account

Table 2. Subjective well-being and non-health outcomes 4 years after baseline [31]

Domain	Findings associated with greater subjective well-being
Personal relationships	Reduced risk of divorce among people married at baseline More close relationships controlling for baseline relationships Increased contact with friends among people with low contact at baseline Lower loneliness controlling for baseline loneliness
Social activities	Greater participation in clubs and organisations controlling for baseline activity Increased likelihood of continuing to volunteer regularly among people volunteering at baseline Increased likelihood of cultural participation among people not culturally active at baseline
Financial	Increased likelihood of higher wealth controlling for baseline wealth
Lifestyle	Increased likelihood of moderate/vigorous physical activity among people inactive at baseline Increased likelihood of eating ≥ 5 portions of fruit and vegetables per day among people not eating this at baseline Increased likelihood of sleep being rated good or very good controlling for baseline ratings

for the associations between subjective well-being and survival. But there is compelling evidence that in addition to mortality, greater well-being predicts reduced incidence of serious illnesses such as coronary heart disease [21], and the development of physical impairment and disability at older ages. For instance, an 8-year study of 3,199 men and women aged 60 and over showed that greater enjoyment of life at baseline was associated with reduced incident impairment in activities of daily living and faster gait speed independently of demographic factors and baseline health and depressive symptoms [22]. There are also indications that lower subjective well-being predicts cognitive decline and dementia risk after taking clinical risk factors into account [23, 24].

The pathways through which subjective well-being is related to health likely involve both behavioural and biological processes. On average, older people with greater affective and eudaimonic well-being have more prudent and healthier lifestyles; they are more physically active in their leisure time, enjoy better sleep, healthier diets, and use preventive services such as cancer screening tests and vaccinations more conscientiously [13, 25]. So, part of the explanation of the link between happiness and subsequent disease or mortality relates to people's activities and habits. Happiness has also been associated with favourable profiles of health-related biomarkers, including lower cortisol output, lower concentrations of

inflammatory biomarkers such as C-reactive protein and interleukin-6, and reduced allostatic load [13]. This raises the possibility that greater subjective well-being inhibits chronic activation of physiological processes that enhance risk of physical illness. However, much of the research on mechanisms published to date has been cross-sectional, and relatively few longitudinal studies linking greater well-being to biology and thence to better health have yet been published [26]. These mechanisms are likely relevant across the lifespan. But they are particularly relevant to gerontology because of the greater vulnerability of older people to health shocks, and because reductions in physical capability and cognitive reserve coupled with chronic allostatic load will increase the risks associated with disturbances in biological regulation.

Broader Implications of Happiness at Older Ages

Sustained good health is of course highly desirable, but it is not the only important feature of ageing well. Another reason for taking happiness seriously in gerontology is that it is associated with numerous other features of a good life in later years. Studies of younger and middle-aged people have documented links between subjective well-being and more satisfactory personal and social relationships, work performance, and prosocial

behaviours such as volunteering [27, 28], and similar processes may apply among older people. Some early studies failed to show stable longitudinal associations [29, 30], but more recent work has established wide-ranging associations between subjective well-being and various aspects of life outside the health domain. In an analysis of ELSA involving over 7,000 participants with an average age of 67 years (range 50–100+) [31], participants provided estimates of the meaningfulness of their lives (an aspect of eudaimonic well-being). They rated the extent to which they felt that the things they did in life were worthwhile on a scale from 0 (*not at all worthwhile*) to 10 (*very worthwhile*). Ratings averaged 7.41, but ranged right across the scale. Higher ratings were associated with better health, less pain and disability, and more favourable biomarkers (C-reactive protein, vitamin D concentration, white blood cell count, etc.), after controlling statistically for age, sex, education and social class. But in addition, worthwhile ratings predicted positive changes in the social, psychological, economic and behavioural domains over a 4-year period. As can be seen in Table 2, people with higher ratings of doing worthwhile things in life had favourable outcomes in the personal, social, economic, and behavioural domains. Findings ranged from a reduced risk of divorce, to taking up a healthier diet, better sleep, and increased cultural participation. Similar longitudinal relationships have been reported in other studies [32, 33]. All these aspects of people's lives will improve the opportunities for an engaged and vital older age. It seems that the ramifications of subjective well-being spread far beyond health and disability.

Happiness Is Malleable and Can Be Enhanced

The fourth reason for investing in happiness in gerontology is the notion that subjective well-being is not static, but can be enhanced. Although happiness has a genetic underpinning [34], it fluctuates through the life course, and there are multiple factors that have an impact on subjective well-being at older ages. Analyses of changes in evaluative well-being in population cohorts indicate that social factors such as reductions in loneliness and more positive social support are as important as sustained health and lack of disability in predicting increases over an 8-year period [35]. An effective intervention programme that captures these elements might not only improve well-being but have an impact on social activity, health and cognitive function. This is an active area of

research, though much of the effort in this field is focused on the young in the hope that programmes might set them on life trajectories that reduce mental ill-health, and promote educational attainment and enduring social relationships. Other studies have involved working people in mid-life or groups at high risk of mental ill-health [36, 37]. Potentially, interventions might also have an effect on disease onset and healthy life expectancy among older individuals. But there are many challenges that need to be addressed.

The first requirement is developing programmes that reliably increase well-being over sustained periods among older people. Existing programmes are broadly of two types. First are interventions directed specifically at increasing subjective well-being, including mindfulness training, gratitude interventions, positive psychotherapy, and other methods [38]. A review of mindfulness interventions for older adults concluded that effects were mixed, due in part to weak methodologies [39]. The second group comprise procedures that may impact happiness but not necessarily as the primary outcome; examples include enhancing physical activity, increasing social activity or cultural engagement [40, 41]. To date, most well-being interventions have measured outcomes over relatively short periods of 12–18 months. Such effects are worthwhile, but are unlikely to promote enhanced health unless sustained for longer periods. We also know little about how large improvements would have to be to have a convincing impact on health. Thus, definitive studies establishing long-term effects of interventions on happiness and subsequently on the health of older men and women have yet to be conducted. Nonetheless, the field holds great promise.

Conclusions

A strong case can be made for the assessment of subjective well-being not only at the individual level, but in large scale surveys of older people [42]. Although there are challenges in the interpretation of self-report measures of well-being [43], the monitoring of happiness provides valuable information about demographic trends, and might also be useful in gauging the impact of public policy. This is a fertile area of research and practice and opens up possibilities for gerontology from multiple perspectives ranging from economics and sociology, through psychology, to health and biology.

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