

# Living longer, working longer? The impact of subjective life expectancy on retirement intentions and behaviour

Hanna van Solinge, Kène Henkens

**Background:** Virtually all Western countries are seeking to bring retirement ages more in line with increases in longevity. The central question in this article is whether individuals choose a retirement age that fits their life expectancy. This would be ideal from a public policy perspective. The present study aims to test empirically whether retirement planning varies with expectations of survival among a sample of older employees in the Netherlands. Two questions are addressed: (i) what are older employees' expectations of their remaining lifetime, and what factors influence this subjective life expectancy? (ii) Are individuals who perceive longer life horizons (high subjective life expectancy) more inclined to retire later than people who expect to live shorter? **Methods:** Using data from a panel study on retirement behaviour in the Netherlands ( $N=1621$  older employees aged 50–60 years), regression and survival models are estimated to examine the effect of subjective life expectancy on retirement planning and behaviour. **Results:** The results indicate that subjective life expectancy is a factor that is taken into account in retirement decision making, at least as far as retirement intentions are concerned. Older employees with longer time horizons have a preference for later retirement. When it comes to actual behaviour, however, time horizon does not appear to play a role. **Conclusion:** The results suggest that particularly employees with a high perceived life expectancy and an intention to work longer do not succeed in carrying their intentions into effect.

**Keywords:** older employees, retirement intentions, retirement timing, subjective life expectancy.

## Introduction

There is a growing interest in subjective measures of health and survival. People have expectations about their remaining length of life, and these expectations make sense.<sup>1</sup> They tend to base their expectations of their remaining life years on their family's longevity, in particular parental mortality experiences.<sup>2</sup> Subjective—or self-rated—life expectancy shows systematic variation across individuals in accordance with known risk factors, such as poor health conditions or diagnosed diseases and socio-economic circumstances.<sup>3,4</sup> Moreover, there is evidence that individuals adapt subjective life expectancy in response to new information, such as health change and onset of diseases.<sup>5</sup> The notion that people have an expectation of their remaining lifetime and that this horizon may affect behaviour is not new.<sup>6,7</sup> Subjective life expectancy has been studied in relation to a broad range of human behaviour, such as investment in human capital,<sup>8</sup> saving and consumption<sup>9</sup> and health behaviour<sup>10</sup> but few studies relate this issue to retirement decision making.<sup>11,12</sup>

Retirement is a formalized transition within the life course, granting employees agency in directing that transition.<sup>13</sup> Retirement has become an increasingly complicated process of labour force withdrawal, influenced by push and pull factors inside and outside the workplace. The extant literature, however, has focused primarily on the impact of

resources—health and wealth in particular—on retirement decision making. Few studies have examined the role of subjective life expectancy. The few examples postulate that individuals expecting to live long will retire at a later age than those expecting to die early as they will need greater wealth to finance more years of retirement.<sup>11</sup> The results are mixed, with both negative,<sup>11,14</sup> non-linear<sup>12</sup> and no effects of subjective life expectancy on retirement timing.<sup>15</sup> These inconsistent findings may reflect the fact that many older employees have limited control over the timing of retirement and that retirement is not always voluntary.<sup>16,17</sup> Observed retirement behaviour may differ from retirement intentions.<sup>18–20</sup> The age of actual retirement may represent limited or restricted choice rather than the employee's retirement intention.<sup>21</sup>

This study examines the impact of individual subjective life expectancy on both retirement intentions and actual retirement behaviour, addressing two questions. First, what are employees' subjective expectations of life, and which factors determine this subjective life expectancy? Second, are individuals who perceive longer life horizons more inclined to retire later than people who expect to live shorter? We benefited from two waves of a prospective study on retirement to examine the effect of subjective life expectancy on retirement planning and behaviour.

## Methods

### Population

The data have been taken from a prospective study on retirement behaviour in the Netherlands. Wave 1 (2001) collected data from two sources: civil servants and employees working for four large Dutch multinational companies active in information and communication technology (ICT), retail, trade, industry and banking. A questionnaire was sent to a

Netherlands Interdisciplinary Demographic Institute (NIDI), Social Demography Department, PO Box 11650 2502 AR The Hague, the Netherlands

**Correspondence:** Hanna van Solinge, PhD, Netherlands Interdisciplinary Demographic Institute (NIDI), PO Box 11650 2502 AR The Hague, the Netherlands, tel: +31 70 3565244, fax: +31 70 3647187, e-mail: [solinge@nidi.nl](mailto:solinge@nidi.nl)

random sample of employees aged 50 years and older in these organizations ( $n = 3900$ ). The total number of individuals who completed the survey at Wave 1 was 2406. In 2006–07 (Wave 2), a follow-up survey was conducted, in which all surviving Wave 1 participants were re-surveyed by mail questionnaire. The survey asked respondents about changes in employment status, including retirement, since Wave 1.

## Measurements

### Outcome variables

In the first wave of the study older employees were asked about their retirement intentions. Participants were asked three questions. (i) Do you intend to stop working before age 65? (=state pension age) [answer categories: '1' yes, '2' no, '3' don't know (yet)]; (ii) do you intend to work after age 61? (answer categories ranging from '1' no, certainly not to '5' yes, most certainly) and (iii) at what age do you plan to stop working? (continuous variable). On the basis of the responses to questions [(i, scores recoded as follows: 1 = 1, 2 = 3, 3 = 2), (ii) and (iii, reverse coded)], we constructed an aggregate measure by summing the standardized and unweighted items. Reliability of the scale was satisfactory (Cronbach's  $\alpha = 0.82$ ). The scale was subsequently linearly transformed into a 0–10 range, where higher values represent a stronger intention to retire early.

In the Wave 2, participants were asked whether they had retired between survey waves. Individuals who responded affirmatively were then asked in what year and month. On the basis of this information the timing of retirement was determined. The duration between age 50 and taking (early) retirement (in years) was used as the dependent measure. Participants who had not retired between Waves 1 and 2 were treated as right-censored.

### Primary explanatory variable

Subjective life expectancy is the explanatory factor of interest in this study. To create this measure, we combined the responses from two survey questions. Participants were first asked to express the likelihood that they would live to age 75 on a 5-point scale ranging from 1 (highly unlikely) to 5 (highly likely). Later in the questionnaire they were presented the statement (ii) 'I think that my chances of living to a very old age (90+) are considerable'. The 5-point Likert-scaled responses ranged from 1 (totally agree) to 5 (totally disagree). On the basis of the responses to (i) and (ii—reverse coded) we constructed a single measure by summing the unweighted items. The scale, which ranges from 1 to 5, represents subjective life expectancy. Higher values represent a longer life horizon.

### Covariates

Retirement decision making is contingent on several factors, some of which also influence subjective life expectancy. Factors taken into account are established determinants of retirement decision making and life expectancy, including age, family longevity, gender, socio-economic status, health status, partner status and job characteristics. Parental longevity was constructed on the basis of each parent's actual age at the time of the survey, or the age at death if the parent had died. On the basis of the participant's gender, this information was transformed into two other variables indicating age (at death) of the same-sex parent and age (at death) of the other-sex parent. Furthermore, two dummy variables were constructed indicating whether or not the same-sex or other-sex parents were still alive (information obtained at Wave 1). Educational

attainment was rated from 1 (primary school) to 7 (university graduate). Wealth was rated from 1 (<500 euros) to 7 (>500 000 euros). In the analyses we used class averages. Health status was based on the participant's self-assessed health and ranged from 1 (very poor) to 5 (very good). In order to control for work environment we included job pressures. This is a 3-item scale (range 1–5; Cronbach's  $\alpha = 0.75$ ) based on the responses to the following three statements: 'the workload is so great that it creates tension'; 'at times, there is so much work to be done that I am unable to do everything well'; 'I often have to push myself to the limits to be able to do my job well'. Unweighted, 5-point Likert-scaled responses ('totally agree', 'agree', 'neither agree nor disagree', 'disagree', 'completely disagree') were first summed, and subsequently linearly transformed into a 0–5 range, where higher values represent greater pressure.

### Analyses

We described characteristics of the sample and provided descriptive statistics for subjective life expectancy and retirement intentions. We used a linear regression model to estimate the impact of subjective life expectancy on retirement intentions. In model B1, we estimated the zero-order correlation of subjective life expectancy with retirement intention. In model B2, we included the covariates in order to investigate whether or not the association between the two variables of interest could be traced back to confounding factors, variables that may be related to retirement planning, to subjective life expectancy, or to both. In addition, we estimated Cox proportional hazard ratios to determine the impact of subjective life expectancy, adjusted for the above-mentioned covariates, on the timing of retirement.

## Results

For the follow up, we approached all surviving Wave 1 participants. There was some attrition due to company takeovers ( $N = 116$ ) and mortality ( $N = 45$ ). A total of 2240 questionnaires were sent out. Of these, 1678 surveys were returned, providing complete or virtually complete data. The Wave 2 response rate, following two reminder notices, was 75%. Of the total potential sample of 1678, we excluded 56 individuals aged  $\geq 61$ , and people with missing information on survival expectations and parental longevity. The final sample thus included 1621 individuals. Item non-response was low (<3%). Missing data were imputed using the MVA option in SPSS.<sup>22</sup>

Mortality information was available for all Wave 1 participants (except for the 116 employees whose company had been taken over). Sensitivity analysis provided further evidence for the hypothesis put forward by Siegel *et al.*<sup>1</sup> and Van Doorn & Kasl.<sup>2</sup> Also in this study, subjective life expectancy turned out to be a predictor of mortality, even after controlling for subjective health status in Wave 1. We discovered limited selective non-response. Whereas neither Wave 1 health nor gender nor subjective life expectancy predicted participation likelihood at Wave 2, younger and less educated people were somewhat less likely to participate in the follow-up survey.

### Descriptive results

Table 1 provides a description of the sample, of which 74% were men and 87% had a partner at the time of the interview. Baseline age ranged from 50 to 60. The average age of the participants in 2001 was 54.2 years. Six percent of the participants had low values on subjective life expectancy (corresponding with a short life horizon), and 8% had high

values (corresponding with a very long life horizon). Sixty percent of the older employees had taken (early) retirement in between the two waves.

Table 2 shows retirement intentions, both for the full sample and by subjective life expectancy. Results for the full sample indicate that the majority of employees (81%) intended to take early retirement and that there was only limited interest in working beyond the company's early retirement age (21%). Comparing individuals across life horizon categories, higher proportions of participants reported that they intended to retire early among people with a low subjective life expectancy (very short life horizons) compared with people with a medium and very long life horizon.

**Table 1** Characteristics of the sample of Dutch older employees

Male (%)	74
Age at baseline (average)	54.2
Wealth	
Low (1–3)	27
Medium (4, 5)	58
High (6, 7)	25
Education	
Low (1–3)	40
Medium (4, 5)	27
High (6, 7)	33
Health	
Poor (1, 2)	5
Medium (3)	14
Good (4, 5)	81
With partner (%)	87
Job pressures (average)	2.9
Family longevity	
Age same-sex parent (average)	74.0
Age other-sex parent (average)	76.5
Same-sex partner still alive (%)	27
Other-sex partner still alive (%)	38
Subjective life expectancy	
Low (<2)	6
Medium (2–4)	86
High (>4)	8
Taken (early) retirement between Waves 1 and 2 (%)	60

## Multivariate results

The results of the multivariate analyses are presented in tables 3 and 4. Column 1 in Table 3 provides the results of the ordinary least squares (OLS) regression explaining subjective life expectancy (Model A). As shown, subjective life expectancy is correlated with age and gender, which is consistent with current-table actuarial estimates. The expected impact of health on subjective life expectancy was also confirmed. Individuals in good or excellent health were much more optimistic about their survival than those in poor health. Furthermore, the results indicated that individuals take their parents' longevity—same-sex parent's age in particular—into account when assessing their own life horizons. Finally, we did not find significant effects of partner status. Nor did we find an effect of individuals' socio-economic position (wealth and education) on their survival expectations.

**Table 2** Descriptive statistics for items constituting the retirement intentions scale, full sample and by subjective life expectancy (%)

	Subjective life expectancy			
	Low (<2)	Medium (2–4)	High (>4)	Full sample
<i>Do you intend to stop working before age 65?</i>				
Yes	93	80	76	81
Don't know (yet)	5	13	10	12
No	2	7	14	7
Total	100	100	100	100
<i>Do you intend to work after you reach the age of 61?</i>				
No, definitely not	64	38	39	39
No, probably not	17	24	16	23
Maybe	10	18	12	17
Yes, probably	6	13	19	13
Yes, most certainly	3	8	14	8
Total	100	100	100	100
<i>At what age do you plan to stop working?</i>				
Average	59.5	60.2	60.8	60.2
N	90	1401	130	1621

**Table 3** Estimates of regression analyses predicting older employees' subjective life expectancy and retirement intentions, estimates and standard errors

	Model A		Model B1		Model B2	
	Subjective life expectancy <sup>a</sup>		Retirement intention <sup>b</sup>		Retirement intention <sup>b</sup>	
	Unstandardized coefficient	SE	Unstandardized coefficient	SE	Unstandardized coefficient	SE
Subjective life expectancy			0.23***	0.04	0.13**	0.05
Gender (male = 1)	−0.04**	0.05			0.09	0.08
Age at baseline	0.02***	0.00			0.10***	0.01
Wealth	0.00	0.00			−0.02***	0.00
Education	0.00	0.01			0.16***	0.02
Health	0.34***	0.02			0.11**	0.05
Partner (1 = yes)	0.03	0.06			−0.55***	0.11
Job pressures	−0.09***	0.02			−0.23***	0.04
Family longevity						
Age same-sex parent (/10)	0.10***	0.00			0.00	0.00
Age other-sex parent (/10)	0.02	0.00			−0.00	0.00
Same-sex parent alive (1 = yes)	0.20***	0.05			0.00	0.09
Other-sex parent alive (1 = yes)	0.09*	0.04			0.08	0.08
Constant	−0.27	0.45	−2.0	0.15	−2.35	
R <sup>2</sup>	20.3		1.6		11.5	

N = 1621

a: Subjective life expectancy (1–5)—high scores indicate that respondents have a very long life horizon

b: Retirement intention (1–10)—high scores indicate that respondents are more inclined to retire later

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$

**Table 4** Estimates for Cox regression model predicting age at retirement, hazard ratio and standard errors

Model C		
Timing of retirement <sup>a</sup>		
	Hazard ratio	SE
Subjective life expectancy	1.01	0.04
Gender (male = 1)	1.23*	0.11
Wealth	1.01***	0.00
Education	0.93***	0.02
Health	0.85***	0.04
Partner (1 = yes)	1.06	0.11
Job pressures	1.09*	0.04
Family longevity		
Age same-sex parent	1.00	0.00
Age other-sex parent	1.00	0.00
Same-sex parent alive (yes = 1)	0.91	0.08
Other-sex parent alive (yes = 1)	0.87	0.07
Log likelihood	-6128.24	

N = 1621

a: Duration between age 50 and taking (early) retirement (in years). Participants who had not taken early retirement between Waves 1 and 2 were treated as right-censored

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$

Columns 2 and 3 present the results of the OLS regression explaining retirement intentions. The results of the base-line model (Model B1) confirm the descriptive findings: participants with higher values on subjective life expectancy (longer life horizons) are less inclined to retire early. In Model B2 we controlled for potentially confounding factors that may influence both subjective life expectancy and retirement intentions. The findings confirm the strong impact of social, economic and health resources on retirement planning, as well as the importance of job pressures. After controlling for these possible confounding factors there is still a substantial and significant effect of survival expectations on retirement intentions, suggesting a direct effect of longevity itself.

Table 4 presents the results of a Cox regression model, with the timing of retirement as the dependent variable. The findings confirm the strong impact of economic and health resources on actual retirement timing, as well as the importance of job pressures. There is, however, no evidence that subjective life expectancy has an effect on the timing of retirement. Older employees with longer perceived time horizons do not retire later.

Additional analysis, comparing older employees' retirement intentions and behaviour, discloses a substantial discrepancy between stated and revealed preferences. The data suggest that there is a huge tendency to advance the moment of retirement: on average, older employees retired 1.6 years earlier than originally intended.

## Discussion

In this article, we studied the impact of subjective life expectancy on retirement planning and behaviour using a 6-year follow-up study among 1621 older employees in the Netherlands aged 50–64 at baseline in 2001. The results support our hypothesis that individuals' expectations of their remaining lifetime influence the retirement decision making process. We established that employees who expect to live longer, intend to retire later than those who expect a shorter life span. This finding may encourage governments striving to bring retirement age more in line with increased longevity.

When it comes to actual retirement behaviour, however, we did not find empirical support for our hypothesis. There is no evidence that older employees who expect to live longer retire later. Apparently, older employees with longer perceived time horizons have a preference for later retirement, but in the end they do not retire later. This is an important result as it may indicate that particularly employees with a high perceived life expectancy and an intention to work longer do not succeed in carrying their intentions into effect. Further research should make clear what forces prevent these employees from achieving their career goals. Several explanations could be explored. Research on older retirees' perceptions of involuntary retirement suggest that social pressures in the workplace are among the main forces that limit individual agency in retirement decisions.<sup>16,23</sup> At the organizational level, there is generally a lack of managerial support for later retirement.<sup>24</sup> But even if retirement is not perceived as forced, employees often have to make retirement decisions in a social context that does not give them a large degree of freedom. The Netherlands can be characterized as a country with a strong *early exit culture*. Until recently, early retirement programmes were designed in such a manner that leaving the labour force at the early retirement age was an offer employees could not refuse. Though the official (and mandatory) retirement age is still 65, very few employees (<10%) reach that age while still active in the labour force.<sup>25</sup>

This study has several noteworthy strengths. The most obvious strength is its capacity to examine retirement intentions in tandem with actual retirement behaviour, which enabled us to gain more insight into the role of subjective life expectancy in the retirement decision making process. This is an important advancement of the extant literature, which has focused exclusively on actual retirement behaviour. Our findings suggest that the mixed results in earlier studies may be due in part to the fact that the timing of retirement is not as free a choice as is often assumed, and that one may question in particular the degree of choice there is in delaying retirement. Next, several pre-retirement employment characteristics enabled us to control effectively for theoretically important confounding factors in testing the impact of subjective life expectancy on retirement. Moreover, the longitudinal design of the study, including the mortality information about Wave 1 respondents, enabled us to validate the main explanatory variable in this study, namely subjective life expectancy. Our results provide additional evidence for the predictive power of subjective expectations of life with respect to mortality at the individual level.<sup>1,2</sup>

This study also has a number of limitations, however. A first point that deserves attention is the fact that although the data were collected with the intention of investigating numerous retirement-related antecedents and outcomes, they are not nationally representative and may not be entirely generalizable to the Dutch population as a whole. The sample does, however, contain substantial variation in terms of important variables such as gender, educational level, socio-economic status and health. As a result, the explanatory mechanisms described in this article—i.e. the responsiveness of retirement planning to survival expectations—are assumed to be representative, at least for the population working in large companies. A second and related drawback is the lack of variation in the companies' pension plans. The overall design of the schemes was quite similar in the sense that they are all defined benefit plans. As a result, we were not able to examine whether the responsiveness of retirement planning to survival expectations varies across pension design, as has been suggested by O'Donnell *et al.*<sup>12</sup>



Our results suggest that there is a potential for extending one's working life, and that perceived longevity is a factor in this respect. As life expectancy increases, employees may be more inclined to continue working until a more advanced age. The anticipated gains in life expectancy at age 65 as projected by the statistical offices in Europe and the US amount to one month per year in the coming decades. Though only part of this increase may concern gains in life expectancy in good health, communicating the positive message that at age 65 individuals may expect to live, on average, another 20 years may stimulate older adults to remain gainfully employed until an older age.

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### Key points

- Individuals' expectations of their remaining lifetime influence the retirement decision making process.
- Employees who expect to live longer, intend to retire later than those who expect a shorter life span. There is, however, no evidence that subjective life expectancy has an effect on the actual timing of retirement. Older employees with longer perceived time horizons do not retire later.
- On average, older employees retired 1.6 years earlier than originally intended. The results suggest that particularly employees with a high perceived life expectancy and an intention to work longer do not succeed in carrying their intentions into effect.

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