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What drives older adults to continue working after official retirement age?

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Abstract

The need to ensure the economic wellbeing and quality of life of those who reach the official retirement age is a matter of concern in the world of social services and in social policy making. Since some working older adults may be forced to retire when they reach the official retirement age while others retire voluntarily, the study is based on a dedicated survey among 508 persons who retired both willingly and unwillingly for good after reaching the official retirement age and 437 persons who continued working uninterruptedly. The findings show that the odds of staying on the job after retirement age are contingent on the socio-demographic and health-related characteristics of the older adult. Furthermore, the economic predictors of remaining in the labour force after retirement age depend on how strongly the older adult wishes to retire. Those who continue working after retirement age and those who retire willingly are undifferentiated in the level of financial support that they give others. Comparing older adults who continue working uninterruptedly with those who retire unwillingly, the chances of being among the former are higher among those who are better off before reaching retirement age. These results emphasise the need to extend welfare and financial-support policies to older adults who are forced to retire, in order to minimise the economic blow that this path to retirement causes.

Keywords: official retirement age; willingness to retire; continuing to work uninterruptedly; older adults

Introduction

Academic interest in employment in old age has peaked in the past decade or so and post-retirement employment has become an increasingly important object of public debate (Fasbender *et al.*, 2016). Rising life expectancy and ageing baby boomers, potential strains on social security funds, pension reforms and

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labour-market changes are generating growing interest in the potential employment of older adult workers and retirees. Labour-market scholars study the prevalence and circumstances of employment in old age, adding relevant knowledge about older workers' expectations of working in retirement (Hess *et al.*, 2021). As against the conventional perception and experience of retirement as the point at which one quits the labour market for good, many scholars today recommend that it be conceptualised as one stage in a gradual process (Bordia *et al.*, 2020; Hasselhorn, 2020).

Most state pension schemes specify an official retirement age and many have raised this age in recent years (Organisation for Economic Co-operation and Development, 2019). Longer life expectancy accents the need to assure individuals an adequate standard of living after they officially retire from the labour force, perhaps for years. Many such schemes, however, also include a much earlier age of eligibility ('early retirement') (e.g. Italy, Belgium, The Netherlands and Slovakia) that may distinguish between women and men. Also, different sectors and occupations may offer retirement plans that begin at a much earlier age (e.g. The Netherlands). Thus, some employees may retire as soon as they can, perhaps even in their fifties, but then take on a bridge job until their final exit, or they may pause for a while and then unretire once they find a new job, all well before the official retirement age. Others switch jobs after reaching the official retirement age (Bennett *et al.*, 2016). In these cases, the earliest age of pension eligibility is indeed no more than a point in time between frequent job transitions.

Retirement is often accompanied by a substantial decrease in the standard of living of retirees and their families (Tur-Sinai and Spivak, 2021) and the need to fill time that has now become free. To sustain their standard of living at this point in their lives, some fall back on financial resources that they accumulated over the years. Those who lack such resources, however, are likely to experience an acute downturn in their wherewithal and standard of living relative to their pre-retirement situation.

Some people may wish to retire as soon as they reach the statutory retirement age; others may not. The combination of longer life expectancy and higher statutory retirement ages raises the question of what motivates those in the latter category. Are there, in fact, people who do not wish to retire when they reach their country's official retirement age but are forced to do so? Are they different from those who continue working even after official retirement age? To what extent, if any, do people who reach retirement age but continue working resemble those who retire willingly after reaching this age? These questions stand at the forefront of this study.

In addition to these questions and discussion points, an attempt is made below to determine whether the reason for continuing to work after official retirement is economic only. Do people take their health status into account when they make such a decision? To what extent, if any, do social considerations, including social support from family members and friends, find expression? The study attempts to answer these questions by carefully evaluating those who reach the official retirement age and exit the labour force, willingly or otherwise.

For many years, population ageing in the West has been accompanied by steep downturns in labour-force participation rates, particularly at advanced age, and by earlier retirement by both men and women. This trend has slowed with recent decades seeing an upturn in labour-force participation and effective retirement age. These developments have not eluded Israel, which is composed of two main

ethnicities – Jews (74%) and Arabs (24%), most of whom are Muslim (Israel Central Bureau of Statistics, 2021). Participation rates of men and women in Israel have been climbing impressively from the ‘noughties’ onward. The upward march of older adults’ employment rates originates, *inter alia*, in the gradual raising of the official retirement age from 65 to 67 (men) and from 60 to 62 (women) starting in 2004 (Achdut *et al.*, 2015).

In addition to these changes, the pension system in Israel has transitioned from traditional defined-benefit programmes to defined-contribution schemes, thus facilitating and strengthening the tendency among older adults who lack pension coverage to remain in the labour market for many additional years. Changes in the array of social benefits in Israel, too – particularly tougher terms of eligibility for disability allowances – may have given older adults’ participation rates an upward push (Eckstein *et al.*, 2018). Beyond personal eligibility for a workplace pension (second tier), all residents of Israel are entitled to an old-age benefit from National Insurance (first tier). Eligibility for this allowance ensues at the statutory retirement age, contingent on an additional-income test up to age 70.

This study breaks new ground in several ways. First, it makes unique use of dedicated surveys in Israel among older adults who reached the official retirement age, distinguishing those who continued working uninterruptedly after official retirement age from those who left their jobs. Second, it determines, in reference to those who stopped working when they reached the official retirement age, whether they did so willingly or at their employers’ behest. Third, a distinction is made between employees and the self-employed. This matters because self-employed workers are not compelled to retire when they reach their country’s official retirement age, whereas wage-earners’ employers may no longer believe it in their interest to retain workers who reach this age.

These singular characteristics of our sources illuminate the complexity of decision-making among people who reach retirement age and let us map the multiple factors – socio-demographic, health-related, economic and social – that may be key determinants of individuals’ decisions and economic quality of life after they reach retirement age.

After a comprehensive review of the literature on employment patterns and considerations in advanced age, we present at length the methods and tools of the study. In the Findings section, we show the various models that distinguish between older adults who continue working after they reach retirement age and those who do not, differentiating between those who retire willingly and those who do so unwillingly. Finally, the meaning of the findings and the main insights of the study are discussed.

Literature review and hypothesis development

Two general terms are used in the literature to categorise labour market participation after retirement: bridge employment and unretirement (Forman and Scahill, 2003; Cahill *et al.*, 2006; Van Solinge and Henkens, 2014). Bridge employment is any form of employment that a person of an eligible age for retirement benefits takes after relinquishing a career job. It is the most common and researched form of post-retirement employment. Cahill *et al.* (2006) limit the scope of bridge

employment to continued work at retirement with a different employer. However, many use the expression to denote any employment after retirement and before full withdrawal from the labour market (Wang and Shultz, 2010). The term seems to serve as a catch-all phrase for any post-retirement employment that does not include full exit from the labour market or a return to the labour market after full exit. Variations may include employment in the same industry or field, employment in a different field, contingent jobs and self-employment (Feldman, 1994; Wang *et al.*, 2008; Bennett *et al.*, 2016; Mazumdar *et al.*, 2018).

Unretirement is more specific. Unretirement, or re-entry, denotes a return to the labour market after a period in full retirement. Its paths may vary, from a hiatus of a year or less between retirement and a new job, to a longer period. Whereas studies on bridge employment or post-retirement in general tend to include in their sample all respondents who report that they are employed or partially employed as retirees, analyses of unretirement require painstaking calculation of moments and periods of full retirement followed by moments of re-entry to the labour market (Maestas, 2010).

The corpus of research on employment after retirement, bridge employment and unretirement is heavily based on samples drawn from national or cross-national large-scale surveys, such as the Survey of Health, Ageing and Retirement in Europe, the English Longitudinal Study of Ageing, the Health and Retirement Study in the United States of America (USA), and so on. The criteria for inclusion in samples may be age, retirement status or both. Retirement status is based on respondents' own reportage of their employment/retirement status or of whether they receive pension benefits. Some researchers use national registers to determine who has the formal status of retirement (Congdon-Hohman, 2018). Employed respondents who do not define themselves as retired or do not draw their pension are usually excluded, unless age is the main selection criterion.

Age is a common selection criterion used in post-retirement employment studies. The range of ages included in research samples is rather diverse. Because age is an important cutoff in employment patterns, the range of ages included in samples has implications for the findings, especially when it comes to the prevalence of post-retirement employment. The lower the minimum age included in the sample, the higher the proportion of retirees reported as employed or re-entering the labour market. The ages included in some studies may be as young as the fifties or even less (Maestas, 2010; Gonzales *et al.*, 2017; Platts *et al.*, 2019). Using retirement as a threshold for inclusion in the sample does not exclude relatively younger respondents, mainly due to the diverse paths to retirement that are available. Age is generally associated with employment in old age: the higher the age, the lower the likelihood of employment and post-retirement employment. Employees who retire at older age are less likely to accept bridge employment (Wang *et al.*, 2008; Topa *et al.*, 2014; Dingemans *et al.*, 2016; Hokema and Scherger, 2016). The younger the retirees are, the more likely it is that they will re-enter the labour market (Pettersson, 2014; Gonzales *et al.*, 2017). A decline in the share of employed retirees commensurate with rising age may be the result of a generational or a cohort effect (Madero-Cabib and Kaeser, 2016; Platts *et al.*, 2019); it may also be a manifestation of retirement policies and the makeup of the sample.

The likelihood of retirement reversal is lower as age is higher (Cahill *et al.*, 2011; Gonzales *et al.*, 2017). Once retirees reach the age of eligibility for state pension,

such as 62 for Social Security and 65 for Medicare in the USA, unretirement rates drop (Congdon-Hohman, 2018). Official retirement ages have similar effects in Europe with the likelihood of employment falling in tandem with the official retirement age (Pettersson, 2014). The proportion of employed retirees was about one-fifth among respondents in their early to mid-sixties in England, Germany, Sweden, Denmark and North America; it declined to about one in ten or fewer among respondents in their late sixties and seventies. Lower proportions were found in Slovenia, Spain and Poland, *inter alia* (Fasbender *et al.*, 2016; Hokema and Scherger, 2016; Anxo *et al.*, 2019; Dingemans and Henkens, 2019; McAllister *et al.*, 2019).

The prevalence of reported unretirement is higher in samples that include younger respondents, those under 60 years of age. A high proportion of unretirement, such as a quarter of employees, was found in studies that included persons under 60 (Maestas, 2010; Gonzales *et al.*, 2017). Re-entry may precede the country's official retirement age. If retirees reverse their retirement, they are more likely to do so within a short period, mostly within a year to three years from retirement (Pleau, 2010; Pettersson, 2014; Platts *et al.*, 2019). The proportion of unretirement drops as individuals advance into retirement and into old age (Maestas, 2010).

The findings on the effect of familial circumstances on retirees' employment are mixed. Some studies find no connection between marital status and employment, others find that having a spouse increases the likelihood of full retirement (Pengcharoen and Shultz, 2010; Virtanen *et al.*, 2014; Hokema and Scherger, 2016; Dingemans and Henkens, 2019), particularly among women (Pleau, 2010). Married women are less likely than unmarried women to be employed after their retirement. This may explain why, in general, the proportion of post-retirement employment is lower among women than among men (Pettersson, 2014). Having a spouse or children increases the likelihood of unretirement (Gonzales *et al.*, 2017; Platts *et al.*, 2019). However, having a spouse who has already retired may increase the likelihood of full retirement for married women, as do care for family members or even having grandchildren (Dingemans *et al.*, 2016). Congdon-Hohman (2018) found no effect of spouse's health on unretirement, yet Gonzales *et al.* (2017) reported that responsibility for a family member's daily care makes unretirement less likely. In Israel, Jewish men and women are more inclined than Arab men and women, in all age groups, to participate in the labour market (Sharabi *et al.*, 2020; Kasir and Yashiv, 2021). The individual's social network is a key factor in the timing of retirement (Litwin and Tur-Sinai, 2015) and intensive and frequent interpersonal contact with one's close social network, especially (but not only) the spouse, is related to early exit from the labour force (Fisher *et al.*, 2016).

Health is another factor in employment after retirement. Employed people of retirement age tend to report better health, even before retirement, than do full retirees (Wang *et al.*, 2008; Topa *et al.*, 2014; Virtanen *et al.*, 2014; Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Sewdas *et al.*, 2017; Anxo *et al.*, 2019; Zitikytë, 2019). This is true also for unretirement (Cahill *et al.*, 2011; Gonzales and Nowell, 2017). Those who report poor or fair health are less likely to unretire (Congdon-Hohman, 2018). Severe illness or disability is a factor in early full withdrawal from the labour market. By and large, the likelihood of re-employment

following an exit due to disability is low. Higher rates of illness, receiving an old-age pension and pre-retirement receipt of unemployment benefits are inversely related to post-retirement employment (Zitikytė, 2019). Indeed, health and labour-market opportunities are connected before retirement and, in turn, influence opportunities after retirement. Put simply, health is worse for lower earners and those in low-skill jobs (who are also more likely to experience unemployment) (Munnell, 2019; Platts *et al.*, 2019).

Financial determinants are among the main reasons for people to take on employment at retirement (Hokema and Scherger, 2016). However, the relationship between financial strength and post-retirement employment is more complex and depends on the type of wealth measured. Unretirement is more likely among retirees with higher pre-retirement earnings who maintain a higher income before and after retirement (Maestas, 2010). It is also more likely among individuals who need an additional income, have a mortgage or rent to pay, or have costlier and less-stable health insurance, whereas home-owners, individuals with better health plans, or eligibility for workplace pension or social security are less likely to unretire (Pleau, 2010; Congdon-Hohman, 2018; Platts *et al.*, 2019). Micheel *et al.* (2010) show that socio-economic status makes a statistically significant contribution towards explaining people's willingness to continue working after they reach the statutory retirement age.

Most studies focus only on employees, who may be pushed out of the labour force by law (Henretta, 2018) or by labour agreements. The self-employed, in contrast, have the freedom to choose the timing of their retirement (Lobley *et al.*, 2016; Axelrad and Tur-Sinai, 2021). Unless the analysis focuses on specific sectors of the labour market (or includes a comparison with the self-employed; Wahrendorf *et al.*, 2017), employment is defined in general terms – whether one is employed, even for very few hours a week or less, or not. For individuals who reach the eligible retirement age already unemployed, after stretches of unemployment, or amid high aggregate unemployment across their work history, the likelihood of bridge employment or unretirement is lower than otherwise (McGann *et al.*, 2016; Zitikytė, 2019). Bridge employees or re-enterers are, on average, workers who retired at relatively younger ages and not due to disability or unemployment.

Post-retirement employment may be more important for workers with low pension income in poorer European economies; retirees whose pensions are high enough to maintain their standard of living and who lack attractive labour-market opportunities, in turn, are more likely to retire fully (Madero-Cabib and Kaeser, 2016; Oleksiyyenko and Zyczyńska-Ciołek, 2018; Dingemans and Henkens, 2019). In the UK, for example, about two-fifths of employees over 65 are concentrated in low-skill, low-pay occupations due to hiring strategies (Lain, 2012). If this is the structure of opportunity, those who can get by without remaining in the labour force will find retirement attractive.

The relationship between wealth and employment after retirement is, to a degree, a manifestation of pre-retirement opportunities and advantages. Whether measured in occupational status or in education, relatively advantageous careers and better education predict a higher likelihood of unretirement (Pettersson, 2014; Congdon-Hohman, 2018) or post-retirement employment more generally. Relatively advantageous careers (professional career, managerial last job before

retirement, high-level or supervisory job, prestigious occupations, and so on) and better education predict a higher likelihood of prolonging employment until official retirement age and beyond; conversely, non-professional blue-collar jobs and elementary occupations predict a lower likelihood of employment beyond retirement (Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Wahrendorf *et al.*, 2017; Oleksiyenko and Życzyńska-Ciołek, 2018; Anxo *et al.*, 2019; Zitikytė, 2019). Individuals employed before retirement in less-advantageous jobs – positions that do not include autonomy and/or offer less control of conditions and time, low prestige and high stress – are more likely to retire fully (Wang *et al.*, 2008; Pengcharoen and Shultz, 2010; Virtanen *et al.*, 2014; Oleksiyenko and Życzyńska-Ciołek, 2018).

On the basis of this review, we offer several hypotheses:

- H1: Some kind of correlation exists between older adults' socio-demographic and health characteristics and the likelihood of their continuing to work after reaching the official retirement age (Wang *et al.*, 2008; Cahill *et al.*, 2011; Pettersson 2014; Topa *et al.*, 2014; Virtanen *et al.*, 2014; Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Sewdas *et al.*, 2017; Gonzales and Nowell, 2017; Anxo *et al.*, 2019, Zitikytė, 2019; Sharabi *et al.*, 2020; Kasir and Yashiv, 2021).
- H2: The economic predictors of the likelihood of continuing to work after official retirement age (economic situation, level of education, employment status, occupational branch, level of financial support, attitudes towards employment) are contingent on the extent of the older adult's wish to retire from the labour force (Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Madero-Cabib and Kaeser, 2016; Wahrendorf *et al.*, 2017; Oleksiyenko and Życzyńska-Ciołek, 2018; Anxo *et al.*, 2019; Dingemans and Henkens, 2019; Zitikytė, 2019).
- H3: The likelihood of continuing to work after reaching the official retirement age is greater among those whose social networks encourage them to do so (Litwin and Tur-Sinai, 2015).

Data and methods

The study is based on a dedicated survey among two groups of participants. The first group comprised Israeli women and men who participated in the labour force before reaching the official retirement age and retired for good after having passed this age (67 for men and 62 for women; *see* Achdut *et al.*, 2015). The second group centred on Israeli men and women who participated in the labour force before reaching the official retirement age and continued working uninterruptedly after having passed this milestone (unretirement older adults). The survey took place among a representative balanced sample of men aged 67–75 and women aged 62–75 in regard to gender, education and employment status in Israel. The study was conducted and approved by the ethical committee of The Max Stern Yezreel Valley College, Israel.

A telephone survey was conducted by a professional poll company among a pool of households in Israel in May to July 2019. The response rate was 51 per cent of

those approached. The reasons for non-inclusion in the sample included unwillingness to participate in the study (40%), no response given (7.8%) and incomplete response given (1.1%). The study included 508 participants who had retired and 437 who continued working after reaching retirement age. The sample was built in two stages. First, a random sample of men aged 67–75 and women aged 62–75 was constructed from the pool of the Israel Ministry of the Interior; second, the telephone numbers of those sampled were digitally traced. The persons interviewed were asked a filtering question and were referred to one of two versions of the questionnaire in accordance with their answer: ‘When you reached the official retirement age (65–67 for men, 60–62 for women): (1) Did you continue to work immediately after retiring (uninterruptedly)? If yes, you are a “continual worker” and must answer the “continual workers” questionnaire; (2) Did you retire permanently? If yes, you are a “non-working retiree” and must answer the “non-working retirees” questionnaire.’ The research questionnaire elicited information about each participant’s socio-demographic background, economic background and health. Additional questions addressed attitudes towards employment and retirement, relevant credentials for the labour market and the participant’s social network. Elders who had totally retired were asked about the extent of their willingness to leave the labour force. They were asked: ‘If it were up to you, to what extent would you wish to continue working for pay after retirement age?’ Retirees who replied ‘very small’, ‘small’ or ‘so-so’ were defined as not having wished to retire; those who responded ‘very large’ or ‘large’ were defined as having wished to retire.

Research variables

Explained variable

Uninterrupted continuation of work after official retirement age. This variable is dichotomous: 1 if the participant continued to work uninterruptedly after reaching official retirement age; 0 if the participant retired permanently upon reaching official retirement age.

Explanatory variables

The explanatory variables are divided into several explanation groups:

- (a) *Socio-demographic background.* (1) Gender: 1 = male, 0 = female. (2) Marital status: 1 = married or living with a partner; 0 = single/divorced/separated/widowed. (3) Education level: 1 = post-secondary/academic degree, 0 = secondary or less. (4) Population sector: 1 = Jewish, 0 = Muslim/Christian/other.
- (b) *Economic background.* (1) Employment status (when you reached the official retirement age): 1 = self-employed, 0 = employee. (2) Economic situation: this variable is based on the average of two research questions: ‘To what extent did your income (when you reached the official retirement age) allow you to live in dignity?’ and ‘The average net income of an employee is around ... – Was your total income, from all sources, when you reached the official retirement age – 1 = far below the average, 2 = a little bit below the average, 3 = as the average, 4 = a little bit above the

- average, 5 = far above average?' – the higher the value of this variable means a better economic situation. (3) Financial support for relatives (when you reached the official retirement age): 'To what extent did you give regular financial support to a relative? 1 = very small or none; 2 = small; 3 = medium; 4 = large; 5 = very large.' (4) Occupational branch (when you reached the official retirement age): 1 = white collar (professional and technical, senior administrative or junior administrative), 0 = blue collar (services, skilled or unskilled).
- (c) *Health background.* Self-reported health (when you reached the official retirement age): 1 = poor, 2 = not so good, 3 = good, 4 = very good, 5 = excellent.
- (d) *Employment background.*
- (i) *Attitudes towards employment.* Participants were asked to answer the following four questions: 'Is it preferable to continue working after official retirement age in order (a) to maintain a reasonable standard of living; (b) to maintain social relations; (c) to remain busy and active; (d) to stay in good health?' In respect of each question, the scale of responses ranged from 'totally disagree' (1) to 'strongly agree' (5). On the basis of these four questions, the 'attitude towards employment' variable, representing the average of these four responses, was calculated.
 - (ii) *Relevance to the labour market (when you reached the official retirement age).* Participants were asked: 'To what extent were your skills relevant to the labour market when you reached the official retirement age?' The scale of responses ranged from 'not much or not at all' (1) to 'very relevant' (5).
 - (iii) *Attitudes towards retirement.* Participants were asked about the extent to which they agree with each of the following claims: 'Retirement is accompanied by a decline in standard of living'; 'One should go on pension with one's spouse'; 'People feel empty after they retire'; 'It's a good thing that there's a retirement age'. The scale of responses for each question ranged from 'totally disagree' (1) to 'strongly agree' (5).
- (e) *Social background.*
- (i) *Social encouragement.* The participants were asked about the extent to which their family or friends encouraged, or are encouraging them, to work for pay after official retirement age. The scale of responses ranged from 'not much or not at all' (1) to 'very strongly' (5).
 - (ii) *Social activities.* The participants were asked whether they engaged in any of the following social activities when they reached the official retirement age: learning or listening to lectures, hobbies, volunteering, taking care of a family member, sports activities, cultural activities, meeting with friends.

Analysis

The data were analysed using Stata version 15.1 (StataCorp, College Station, TX). The analysis was carried out in several steps. First, we executed bivariate

associations of the control and the explanatory variables with employment decision. Next, Structural Equation Models (SEMs) were estimated in order to identify the role of each explanatory variable in the probability of continuing to work uninterrupted after official retirement age, *i.e.* to determine whether the variables are exogenous or whether they moderate the explanation. The variables found significant in a Logit probability model were chosen for inclusion in the SEMs. The SEM analysis was conducted using IBM AMOS Graphics software (version 25, IBM Corp., New York).

Results

Half of those who totally retire have secondary education or less. In contrast, the share of persons with secondary or less education among those who continue working after official retirement age is roughly 40 per cent. Some 90 per cent of those who continue to work after reaching official retirement age are Jews; only 79 per cent of those who totally retire belong to that demographic (Table 1).

The share of totally retired persons who were employees is 92 per cent. Nearly half of them provide relatives with little or no financial support and their economic situation is mediocre, and 60 per cent of them had held white-collar jobs before retirement. In contrast to them, one in five of those who continue to work uninterrupted were self-employed in the period leading up to retirement age. Their economic situation was medium or higher; two-thirds of them noted that they were giving relatives some amount of financial support; and 72 per cent of them had held white-collar positions when reaching the official retirement age.

The health indicators of the two investigation groups show that those who continue working uninterrupted are in better health than are those who totally retire. The two groups have significantly different perceptions of being employed: those who continue working uninterrupted consider themselves relevant to the labour market and have a positive attitude towards being employed. As for the role of friends or family members in making the decision to retire or to continue working, it is found that a minority of the totally retired consulted with friends or relatives before making the decision to retire, whereas those who continued to work are more inclined to consult with persons close to them about these issues.

In the next stage, we estimated the SEM in order to estimate the probability of continuing to work uninterrupted after the official retirement age. To determine which variables to include in the SEM, we used the findings of a probability model of continuing to work uninterrupted after reaching the official retirement age (a Logit model) (*see* the Appendix). The inclusion rule being that only variables found significant in this model would be included in the theoretical model and the one based on the SEM method.

By means of the SEM, we can identify the role of each explanatory variable in the probability of continuing to work uninterrupted after official retirement age, namely is the variable exogenous or does it condition/mediate the explanation? The initial assumption of the theoretical model is that the socio-demographic, economic and health status variables are exogenous and that those examining employment background and social background, together with the possibility of financial support for a relative, are the conditioning/mediating variables

Table 1. Associations between employment status after reaching the retirement age and explanatory variables

Variable		Retired permanently upon reaching retirement age	Continued to work uninterruptedly after reaching retirement age	χ^2/F
Socio-demographic:				
Gender (%)	Female	63.4	66.8	1.217
	Male	36.6	33.2	
Marital status (%)	Single/divorced/separated/widowed	21.1	22.2	0.167
	Married/living with a partner	78.9	77.8	
Education (%)	Secondary or less	49.5	39.3	9.843**
	Post-secondary/academic degree	50.5	60.7	
Population sector (%)	Jewish	79.0	90.6	23.681***
	Other	21.0	9.4	
Economic:				
Employment status (%)	Employee	91.6	79.6	27.729***
	Self-employed	8.4	20.4	
Economic situation, mean (SD)		3.0 (1.1)	3.4 (1.1)	6.112***
Financial support to relatives (%)	Very small extent	49.2	34.4	22.472***
	Small extent	11.4	14.3	
	Medium extent	20.8	23.7	
	High extent	10.6	15.7	
	Very high extent	8.0	11.9	

Occupational branch (%)	White collar	60.5	71.6	12.416***
	Blue collar	39.5	28.4	
Health:				
Self-reported health (%)	Poor	6.5	1.4	46.321***
	Fair	21.4	12.0	
	Good	41.1	38.0	
	Very good	21.8	32.9	
	Excellent	9.1	15.7	
Employment:				
Attitudes towards employment (after official retirement age), mean (SD)		3.4 (0.9)	3.8 (0.8)	7.103***
Relevance to the labour market (%)	Relevant	72.9	88.6	35.983***
	Not relevant	27.1	11.4	
Attitudes towards retirement:				
Retirement is accompanied by a decline in standard of living (%)	Totally disagree	24.4	16.8	49.413***
	Not so agree	12.2	7.2	
	Medium	18.8	20.9	
	Pretty agree	20.6	24.8	
	Totally agree	24.2	30.3	
One should go on pension with one's spouse (%)	Totally disagree	24.1	25.9	27.625***
	Not so agree	18.8	21.0	
	Medium	15.9	16.6	
	Pretty agree	20.7	18.1	
	Totally agree	20.5	18.4	

(Continued)

Table 1. (Continued.)

Variable		Retired permanently upon reaching retirement age	Continued to work uninterruptedly after reaching retirement age	χ^2/F
People feel empty after they retire (%)	Totally disagree	30.6	20.8	19.519***
	Not so agree	16.0	14.3	
	Medium	16.4	22.3	
	Pretty agree	16.0	23.5	
	Totally agree	20.9	19.1	
It's a good thing that there's a retirement age (%)	Totally disagree	5.2	9.0	15.802**
	Not so agree	5.2	7.2	
	Medium	11.0	12.5	
	Pretty agree	25.1	29.9	
	Totally agree	53.4	41.3	
Social background:				
Social encouragement (%)	Very small extent	72.3	39.2	116.367***
	Small extent	8.6	11.4	
	Medium extent	9.6	16.4	
	High extent	4.8	16.6	
	Very high extent	4.8	16.4	
Social activities, mean (SD)		4.7 (1.7)	4.9 (1.6)	1.161

Note: SD: standard deviation.

Significance levels: ** $p < 0.01$, *** $p < 0.00$.

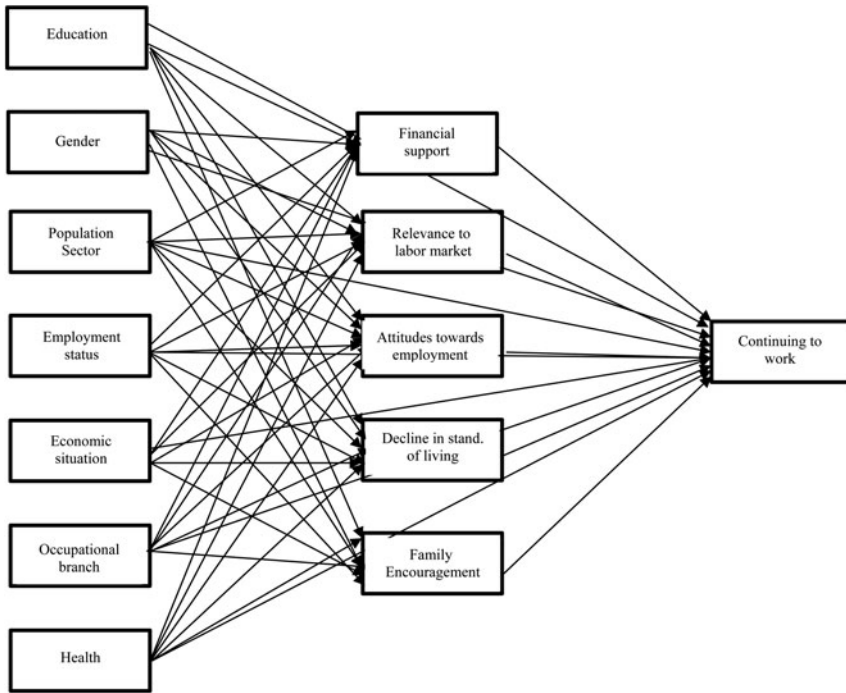


Figure 1. Theoretical conceptual model of probability of continuing to work uninterrupted after the official retirement age (*versus* the option of total retirement upon reaching retirement age).

(Figure 1). Tables 2 and 3 present descriptions on the correlations between exogenous variables and mediative variables, respectively.

Model 1: Probability of continuing to work uninterrupted after official retirement age (*versus* retiring permanently upon reaching retirement age)

The first test for structural relations between the concepts indicated a good fit between the data and the theoretical model used ($\chi^2/\text{degrees of freedom (df)} = 22.351$, $p = 0.558$; Comparative Fit Index (CFI) = 1.000; Normed Fit Index (NFI) = 0.982; Root Mean Square Error of Approximation (RMSEA) = 0.000; Tucker–Lewis Index (TLI) = 1.005). The likelihood of continuing to work uninterrupted after official retirement age is lower among men than among women, higher among Jews than among non-Jews, higher among the self-employed than among employees, higher among those who are better off financially and higher among those in better health. The likelihood of continuing to work uninterrupted after the official retirement age is higher among those who give a relative financial support. It is found that financial support for a relative is independent of one's socio-demographic characteristics and state of health but does correlate positively with one's financial strength (Figure 2).

The likelihood of continuing to work uninterrupted after the official retirement age is higher among those who consider themselves and their credentials relevant to the labour market. Labour-market relevancy and credentials are contingent on the

Table 2. Pearson's correlation: exogenous variables

	Education	Gender	Population sector	Employment status	Economic situation	Occupational branch	Health
Education	1						
Gender	-0.094**	1					
Population sector	0.198**	-0.173**	1				
Employment status	-0.126**	0.217**	-0.074*	1			
Economic situation	0.295**	0.119**	0.175**	0.030	1		
Occupational branch	0.417**	-0.189**	0.192**	-0.033	0.339**	1	
Health	0.174**	0.022	0.060	0.021	0.298**	0.153**	1

Significance levels: * significant at the 0.05 level, ** significant at the 0.01 level (two-tailed).

Table 3. Pearson's correlation: mediative variables

	Financial support	Relevance to labour market	Attitudes towards employment	Decline in standard of living	Family encouragement
Financial support	1				
Relevance to labour market	0.158**	1			
Attitudes towards employment	-0.004	0.068*	1		
Decline in standard of living	-0.069*	-0.095**	0.260**	1	
Family encouragement	0.107**	0.148**	0.285**	0.156**	1

Significance levels: * significant at the 0.05 level, ** significant at the 0.01 level (two-tailed).

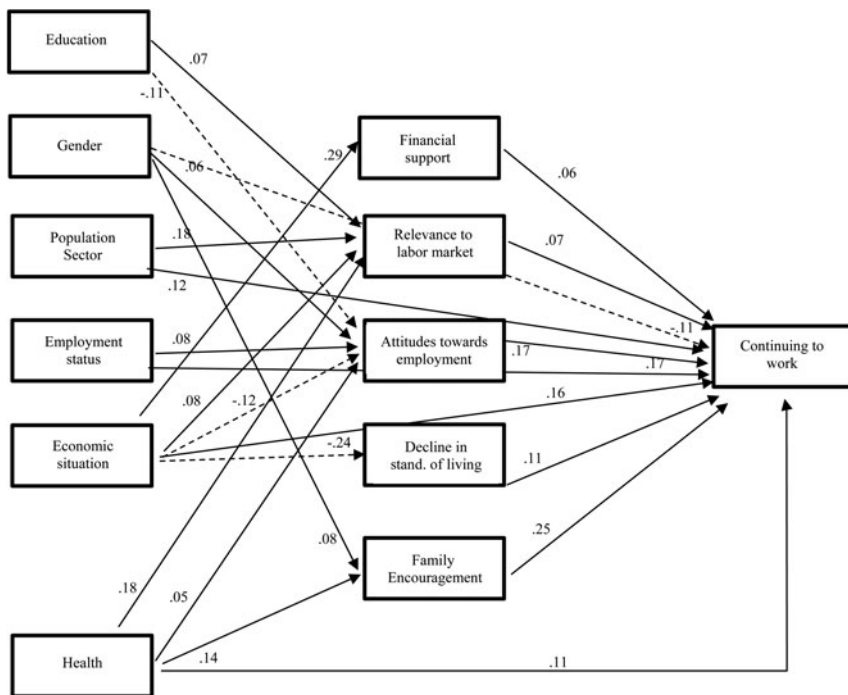


Figure 2. Probability of continuing to work uninterruptedly after the official retirement age (*versus* the option of total retirement upon reaching retirement age).

Notes: Solid line: positive correlation; dashed line: negative correlation. Education: 1 = post-secondary/academic degree, 0 = secondary or less. Gender: 1 = male, 0 = female. Population sector: 1 = Jewish, 0 = Muslim/Christian/other. Employment status: 1 = self-employed, 0 = employee. Economic situation: a higher score represents a better economic situation. Health (self-reported health): 1 = poor to 5 = excellent.

individual’s nationality, education, financial strength and state of health. The likelihood of continuing to work uninterruptedly after official retirement age is higher among those who hold positive views on employment in advanced age (*i.e.* prefer to continue working after official retirement age in order to maintain a reasonable standard of living, keep up social relations, remain busy and active, and remain in good health). Attitudes towards employment are found to be contingent on gender, education, employment status (self-employed/employee), financial strength and state of health.

The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those who link retirement to a decline in standard of living. The belief that retiring is accompanied by a decline in standard of living is contingent on the individual’s financial strength. The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those whose social network (family or friends) encourages them to work for pay after the official retirement age. Encouragement from one’s social network is contingent on gender and state of health.

One of the important issues that deserve attention in regard to the possibility of continuing to work after the official retirement age revolves around

willingness to retire. Do the determinants of the odds of remaining in the labour force after the official retirement age (as against retiring at the official retirement age) change when those who retire willingly are compared with those who do so for lack of choice?

To answer this important question, we turn to the last stage of the study. In this stage, we estimated two SEMs to estimate the probability of continuing to work uninterruptedly after the official retirement age, as against the option of retiring upon reaching the official retirement age – willingly or not.

Model 2: Probability of continuing to work uninterruptedly after official retirement age (versus retiring permanently upon reaching retirement age and doing so willingly)

The second test of structural relations between the concepts indicated a good fit between the data and the theoretical model used ($\chi^2/df = 22.314$, $p = 0.671$; CFI = 1.000; NFI = 0.983; RMSEA = 0.000; TLI = 1.009). The likelihood of continuing to work uninterruptedly after the official retirement age is lower among men, higher among Jews and higher among the self-employed (than among employees) (Figure 3).

- No direct connection was found between financial situation or state of health and the likelihood of continuing to work uninterruptedly. (Namely there is no difference in financial situation between those who continue working after official retirement age and those who retire willingly, and no difference in state of health between those who continue working after official retirement age and those who retire willingly.)
- No direct connection was found between level of education and the likelihood of continuing to work uninterruptedly. (Namely there is no difference in education level between those who continue working after official retirement age and those who retire willingly.)
- No direct connection was found between financial support for a relative and the likelihood of continuing to work uninterruptedly. (Namely there is no difference in the extent of financial support for a relative between those who continue working after official retirement age and those who retire willingly.)

The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those who consider themselves and their credentials relevant to the labour market; labour-market relevancy and credentials are found to be contingent on the individual's nationality, education, financial strength and state of health. The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those who have favourable views towards employment in advanced age (prefer to continue working in order to maintain a reasonable standard of living, of social relations, of a busy and active life, and of good health). Attitudes towards employment are found contingent on education, gender, nationality, employment status (self-employed/employee), financial strength and state of health.

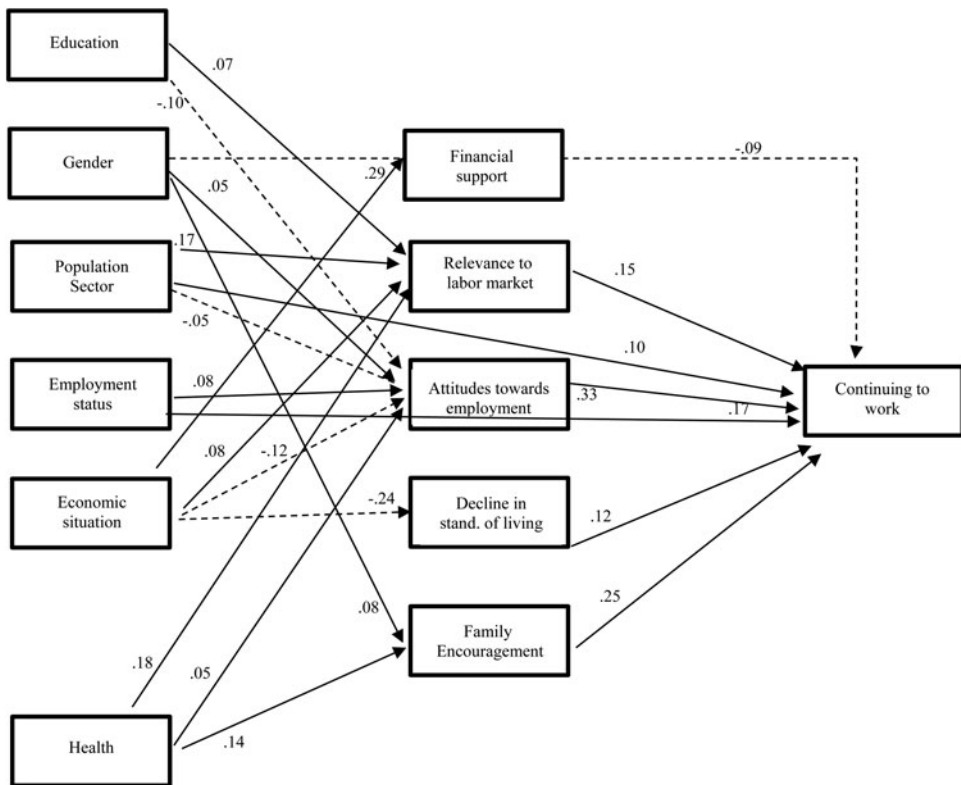


Figure 3. Probability of continuing to work uninterruptedly after the official retirement age (versus the option of *willing total retirement* upon reaching the retirement age).

Notes: Solid line: positive correlation; dashed line: negative correlation. Education: 1 = post-secondary/academic degree, 0 = secondary or less. Gender: 1 = male, 0 = female. Population sector: 1 = Jewish, 0 = Muslim/Christian/other. Employment status: 1 = self-employed, 0 = employee. Economic situation: a higher score represents a better economic situation. Health (self-reported health): 1 = poor to 5 = excellent.

The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those who link retirement to a decline in standard of living. The belief that retirement is accompanied by a decline in standard of living is found contingent on the individual's financial strength. The likelihood is higher among those who receive encouragement from their social network (family or friends) to work for pay after reaching the official retirement age. Social network encouragement is contingent on the individual's gender and state of health.

Model 3: Probability of continuing to work uninterruptedly after official retirement age (versus retiring permanently upon reaching retirement age and doing so unwillingly)

The third test of structural relations between the concepts indicates a good fit between the data and the theoretical model used ($\chi^2/df = 43.608$, $p = 0.102$; CFI = 0.992; NFI = 0.970; RMSEA = 0.017; TLI = 0.979). The likelihood of continuing to work uninterruptedly after the official retirement age is lower among men and higher among Jews. A direct connection is found between financial strength as well as state of health and the likelihood of continuing to work uninterruptedly (in a comparison among those who retire unwillingly). The likelihood of continuing to work uninterruptedly after official retirement age is higher among those who are better off and among those in better health (Figure 4).

- No direct connection was found between level of education, employment status (self-employed/employee) or white-collar employment and the likelihood of continuing to work uninterruptedly. (Namely no difference in pre-retirement education level, employment status or occupational branch was found between those who continue working after official retirement age and those who retire unwillingly.)
- Attitudes towards employment in advanced age and relevance to the labour market are not significantly different among those who continue to work uninterruptedly after reaching the official retirement age and among those who retire unwillingly.

The likelihood of continuing to work uninterruptedly after official retirement age is higher among those who give a relative financial support. Financial support for a relative is not contingent on the individual's socio-demographic characteristics and state of health but does correlate positively with his or her financial strength.

The likelihood of continuing to work uninterruptedly after the official retirement age is higher among those who associate retirement with a decline in standard of living. The belief that retiring is accompanied by a decline in standard of living is contingent on the individual's financial strength. The likelihood of continuing to work uninterruptedly after official retirement age is higher among those who receive encouragement from their social network (family or friends) to work for pay after the official retirement age. Social network encouragement is contingent on the individual's gender and state of health.

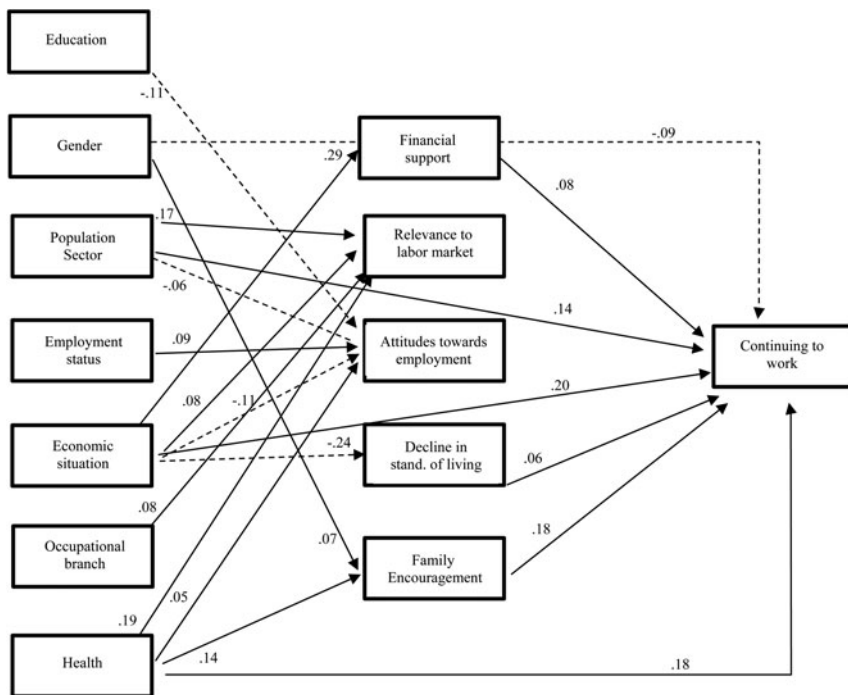


Figure 4. Probability of continuing to work uninterruptedly after the official retirement age (*versus* the option of *unwilling total retirement* upon reaching the retirement age).

Notes: Solid line: positive correlation; dashed line: negative correlation. Education: 1 = post-secondary/academic degree, 0 = secondary or less. Gender: 1 = male, 0 = female. Population sector: 1 = Jewish, 0 = Muslim/Christian/other. Employment status: 1 = self-employed, 0 = employee. Economic situation: a higher score represents a better economic situation. Occupational branch: 1 = white collar, 0 = blue collar. Health (self-reported health): 1 = poor to 5 = excellent.

Discussion

Given the steady upturn in life expectancy in recent years, the importance of understanding older adults’ patterns of life and economic behaviour is openly discussed in research. One question that occupies the world of social services generally, and of policy makers particularly, is how to assure the economic wellbeing and quality of life of older adults who, after being employed for many years, reach the retirement age and stand at the crossroads of crucial decisions that will affect the nature of their lives, their financial quality of life, and the psychological and personal burden they are about to shoulder. The official retirement age, established by the state, may be a stop sign for some working people, they and their employers determining whether they will remain part of the labour force even after their official working years or whether they will retire and set out on a new course of life of which few know anything until then.

The focal question in this study is: What motivates people to remain in the labour force even after they reach the official retirement age? Since some older adults may find themselves ousted from the labour force involuntarily when they reach this age while others may decide to retire willingly (Micheel *et al.*, 2010), our study centres on an attempt to determine whether the predictors of the likelihood of remaining in

the labour force after the official retirement age are different among those who retire unwillingly than among those who step down voluntarily.

Our first research hypothesis, H1, is that the likelihood of staying on the job after the official retirement age hinges on the socio-demographic and health-related characteristics of the older adult. Comparing participants who continued working uninterruptedly with those who retired willingly, we corroborated the hypothesis in part. Namely the odds of continuing to work uninterruptedly after official retirement age are found to be lower among men and higher among Jews. However, no difference in pre-retirement health status was found between those who continued working after the official retirement age and those who retired willingly. The surprising absence of a difference in health status between these groups evidently indicates that two subgroups carry on after the official retirement age: older adults who reach the official retirement age in good health and wish to remain active in the labour market for a few more years and, contrastingly, those who may not be in the best of health at this time but have to soldier on in order to support their households for several years going forward. Opposite these two groups stand those who, as stated, retire willingly – be it because they are in good health and wish to turn to other vocations in the coming years, or because they retire willingly due to functional difficulties related to their health. In contrast, the hypothesis is fully corroborated when we compare those who continue to work uninterruptedly with those who retire unwillingly: the likelihood of staying on the job continually after official retirement age is lower among men and higher among Jews, and the chances of continuing to work uninterruptedly are higher among those in better health (Wang *et al.*, 2008; Topa *et al.*, 2014; Virtanen *et al.*, 2014; Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Sewdas *et al.*, 2017; Anxo *et al.*, 2019; Zitikytė, 2019).

In H2, it is proposed that the economic predictors of continued employment after official retirement age are contingent on the individual older adult's wish to retire. As expected, we found that this is so. Comparing those who continue to work uninterruptedly when they reach the retirement age with those who retire willingly, we found no difference in their economic situation when they reached the official retirement age and in their level of education. In addition, the chances of continuing to work uninterruptedly after the official retirement age are found to be higher among the self-employed than among employees. Moreover, we found no difference in the level of financial support that older adults provide between those who continue to work after official retirement age and those who retire voluntarily. In contrast, comparing older adults who continued working uninterruptedly when they reached the official retirement age with those who retired unwillingly, we found a significant relation between economic situation and the decision made (Madero-Cabib and Kaeser, 2016; Oleksiyenko and Życzyńska-Ciołek, 2018; Dingemans and Henkens, 2019). Namely the probability of continuing to work uninterruptedly is higher among those who are better off when they reach the retirement age. Furthermore, the chances of continuing to work and the probability of retiring unwillingly were not found to be contingent on the occupational branch of older adults' jobs (white-collar *versus* blue-collar jobs) when they reach retirement age, contrary to previous findings on this topic (Dingemans *et al.*, 2016; Hokema and Scherger, 2016; Wahrendorf *et al.*, 2017; Oleksiyenko and Życzyńska-Ciołek, 2018; Anxo *et al.*, 2019; Zitikytė, 2019). In addition, no

difference was found in attitudes towards employment at advanced age between those who continued working uninterruptedly and those who retired unwillingly. These findings reinforce and underscore the economic difference between older adults who retire willingly and those who do so involuntarily. Older adults who retire willingly and those who remain in the labour force even after they reach the official retirement age are identical in their economic situation and their capacity to help others financially. This is not the case among older adults who retire unwillingly: their economic situation, as stated, is significantly different from that of people who continue to work. Both, however, hold similar views on the importance of being employed in advanced age.

In H3, it is proposed that the chances of continuing to work after official retirement age are higher among those whose social networks encourage them to do so. The findings corroborate the hypothesis, showing that the likelihood of continuing to work uninterruptedly after official retirement age is higher among those whose social networks (family or friends) encourage them to work for pay after official retirement age, contingent on the individual's gender and health status (Litwin and Tur-Sinai, 2015). Furthermore, the probability of continuing to work uninterruptedly after the official retirement age is higher among older adults who associate retirement with a lower standard of living. As the foregoing findings indicate, older adults presumably construe the concept of 'standard of living' in a way that includes a wide range of interpretations and aspects, some relating to their financial standard of living but others tying into the ability to assure themselves a rich and broad world of social and cultural activity and to forestall impairment to their mental quality of life when they leave their jobs.

Limitations of the study

This study has several noteworthy limitations. First, the empirical analysis is based on a cross-sectional database that rules out the possibility of estimating and tracking changes over a period of years. To cope with this limitation, the participants were asked to provide information about a large share of the explanatory variables that relate back to the time when they had reached the official retirement age and not about the time at which they were interviewed. Thus, we managed to control for potential causality between the decision on whether to continue working after the official retirement age and the variables that explain it. We advised all the participants, with emphasis, that both the health questions and the financial questions hark back to the time when they reached the official retirement age. By means of this neutralisation, we made sure that the measurements relate to a constant reality and attest optimally to the participants' views in relation to the time they had to decide whether to remain in the labour force after official retirement age or not.

Another possible limitation of the study is its disregard of information about the participants' occupations when they reached the official retirement age. Future research should fill this gap and reveal the missing tiles in the mosaic. However, the economic information presented in the current study includes, as stated, a series of variables that together yield a comprehensive and thorough picture of the characteristics of the participants' pre-retirement employment and economic situation. According to the economic literature, these variables are customarily taken to provide an accurate proxy for information estimated by measuring individuals' occupations.

In addition to the limitations described above, it should be noted that this study focuses on the contribution of individuals' personal social networks (friends/family members) to their decision to continue working after they reach the official retirement age. The study did not investigate the potential contribution of a person's social network at his or her workplace to this decision. One presumes, however, the existence of a strong positive correlation between the contribution of people's social networks and that of their social network on the job, making the possible bias in the study negligible. Future research should broaden the investigation in this context by examining the direct contribution of individuals' social network at their workplace to their decision to continue working after reaching the official retirement age or to retire.

Conclusion

The results of this study emphasise the existence of a ramified set of considerations that older adults bear in mind when deciding whether to remain in the labour force even after they reach the official retirement age. The study shows emphatically that some of these considerations are within individuals' control and others are definitely not. The main explanation for this variance is that some older adults may be forced to retire when they reach the official retirement age while others may decide to take this step voluntarily.

Given the protracted upturn in life expectancy and the ongoing need to assure the older population an optimal standard of living, the full set of factors and considerations that may explain the decision to remain in the labour force after official retirement age needs to be understood and investigated in depth in order to assure the quality of life and social wellbeing of older adults and those around them.

Author contributions. AT-S managed the article, analysed the results, reviewed the literature and drafted the manuscript. SS drafted the manuscript. AL and RK reviewed the literature and drafted the manuscript. DH drafted the manuscript. HF-G analysed the results. All authors approved the final manuscript as submitted.

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Conflict of interest. The authors declare no conflicts of interest.

Ethical standards. The study was conducted and approved by the ethical committee of The Max Stern Yezreel Valley College, Israel (EMEK YVC 2015-41).

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Appendix: Factors associated with probability to continue work after the official retirement age (logistic regression)

Variable		Odds ratio
Socio-demographic	Gender (1 = male, 0 = female)	0.524***
	Marital status (1 = married/living with a partner, 0 = single/divorced/separated/widowed)	0.947
	Education (1 = post-secondary/academic degree, 0 = secondary or less)	1.086*
	Population sector (1 = Jewish, 0 = other)	2.555***
Economic	Employment status (1 = self-employed, 0 = employee)	4.132***
	Occupational branch (1 = white collar, 0 = blue collar)	1.343***
	Economic situation (higher value means better economic situation)	1.430***
	Financial support to relatives (higher value means a higher extent)	1.181*
Health	Self-reported health (higher value means better health)	1.350***
Employment	Attitudes towards employment	1.443***
	Retirement is accompanied by a decline in standard of living	1.176**
	One should go on pension with one's spouse	0.936
	People feel empty after they retire	1.068
	It's a good thing that there's a retirement age	1.000
	Relevance to the labour market (1 = relevant, 0 = not relevant)	1.529*
Social background	Family or friends encouraged, or are encouraging them, to work for pay after official retirement age (1 = not much or not at all, 5 = very strongly)	1.629***
	Social activities (higher value means participation in many social activities)	0.928
Log-likelihood		724.106
N		687

Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

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