Leaving the labour market: the impact of exit routes from employment to retirement on health and wellbeing in old age

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Abstract The study analyses whether and to what degree specific routes into retirement affect older people, i.e. the relationship between heterogeneous exit patterns and post-retirement health and wellbeing. We used longitudinal data from two points in time; data related to t_0 were collected in 1993, 1994, 1995 and 1996 and data related to t_1 were collected in 2002 and 2003 ($N = 589$). We focused on older people (55+ at t_1) who were employed at t_0 and retired at t_1 . We used confirmative factor analysis to identify identical measures of health and wellbeing at both t_0 and t_1 . Hence, we were able to control for pre-retirement health and wellbeing when evaluating the effects of different exit routes. These routes were defined as dependence on incomes from sickness benefit, disability pension, part-time pension, unemployment insurance and active labour market programmes. Our initial structural equation model showed a clear relation between exit routes and post-retirement wellbeing. People who prior to retirement were pushed into social benefit programmes related to health and unemployment were significantly worse off as retirees, especially those with health-related benefits. However, these relationships disappeared once pre-retirement wellbeing was added to the model. Our main conclusion is that post-retirement wellbeing first and foremost is a consequence of accumulation of advantages and disadvantages

during the life course. Both labour market exit routes and post-retirement wellbeing can be seen as outcomes of this process. There are no independent effects of the retirement process. Judging from our findings, there is no reason to believe that involvement in social security programmes allowing early retirement on health grounds has any additional negative consequences for health and wellbeing.

Keywords Retirement · Health · Wellbeing · Labour Market · Longitudinal · Structural Equation

Introduction

Exit patterns from employment to retirement have changed radically during the past decades. In most industrialised countries, the standardised three-phase life-course chronology—including education, work and retirement—is gradually being transformed by complex and rather paradoxical interactions between the changing demographic age structure, reorganizations of labour markets (Kohli et al. 1991; Hyde et al. 2004) and the growth of new and in relation to ordinary old age pension, atypical unpredictable trajectories from employment to retirement (Ebbinghaus 2006; Hyde et al. 2004; Wadensjö and Sjögren 2000; Nordenmark and Stattin 2009; Wilensky 2002; de Vroom and Guillemard 2002; Maltby et al. 2004; Stattin 2009). Our aim is to analyse the relationship between heterogeneous exit patterns and post-retirement health and wellbeing. While most other studies have analysed how specific atypical retirement pathways (i.e. disability benefits, early retirement) are related to post-retirement health and wellbeing, our study will employ a wide and more general definition of retirement circumstances. Also, whereas most other studies employ quite specific measures

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of post-retirement health, our ambition is to take advantage of a large number of health and wellbeing indicators and by means of structural equation modelling identify robust dimensions of health and wellbeing. Also, recent research has clearly demonstrated that all efforts to study the relationship between retirement transitions and post-retirement health and wellbeing require strong measures to control for selection bias, which otherwise may obscure the research results (Hult et al. 2010). In this study, we will therefore pay particular attention to this matter.

Different theoretical perspectives on inequality in post-retirement health and wellbeing

The focus of the study is on the relative influence of atypical retirement transitions on post-retirement health and wellbeing. This question is closely linked to the more general issue of whether retirement transitions generally are good or bad for health. Here, social gerontology theory and research have come to very different conclusions. Some research results indicate that retirement basically is good for individual health, while the exact opposite effect has also been empirically supported. Yet again, there are studies suggesting that retirement has virtually no implications at all for post-retirement health and wellbeing. The inconclusiveness of previous studies is reflected by the divergent assumptions put forward in different theoretical perspectives. Different theoretical approaches have been employed in studies in this area, and one commonly used approach is role theory, which considers retirement as an entry into a new phase of life that brings about considerable changes in the social roles of those concerned (Quandagno 2005).

Role expansion theory suggests that multiple roles (e.g. being a parent, a husband/wife, employed) may serve as a buffer, as failure in one social sphere can be compensated for by success and satisfaction in another. Retirement entails the disappearance of the work role and, according to the theory, this may lead to a general decline in wellbeing and quality of life (Barnet and Hyde 2001; McGoldrick and Cooper 1994). However, engagement in multiple roles may also be interpreted as having quite the opposite effect. The *role stress* perspective argues that multiple social roles are a potential source of role overload, involving problematic levels of demands and exposures, expectations and potential role conflicts. In this perspective, loss of social roles may be experienced as a relief and thus as having a positive effect on wellbeing (Doyle and Hind 1998; Duxbury et al. 1994; Hall 1992; Lundberg et al. 1994; Westerlund et al. 2009).

Rather than theorising retirement transition consequences in terms of discontinuities, continuity theory (Atchley 1976) highlights the fact that people largely retain most of their lifestyle, self-image and preferences also after the transition to life as a retiree. Also, further theoretical development has

stressed this perspective even more strongly by applying a life-course perspective to inequalities in old age. Here, the notion of cumulation of advantage or disadvantage (CAD) is of special relevance, as the main message is that post-retirement health and wellbeing should be understood as primarily a result of enduring inequalities (health, working conditions and so on) across the entire life course (Blane 2006; Moen 2011). In support of this perspective are a number of studies showing that people feel neither better nor worse when they retire. This implies that retirement per se has no significant effect on the subsequent wellbeing of pensioners (Salokangas and Joukamaa 1991; Kim and Moen 2001; Midanik et al. 1995).

It has been suggested that the differences in research results should be understood as a consequence of large variations across different subgroups of retirees (Pinquart and Schindler 2007; Westerlund et al. 2009, 2010). People who have managed to work until old age pension in good health show more positive life experiences in retirement than do those without these advantages (Dorfman 1995, 1985; Kim and Moen 2001; McGoldrick and Cooper 1994; Mein et al. 2003; Hyde et al. 2004; Smith and Moen 2004; Pinquart and Schindler 2007). People who leave the labour market involuntarily, on the other hand, compelled by push factors such as health problems or as a result of environmental or structural constraints, are less likely to perceive retirement in positive terms (Nordenmark and Stattin 2009). As recently demonstrated by Westerlund et al. (2009), those who experienced a poor work environment and reported health complaints prior to retirement experienced a positive health effect of retiring. Other studies suggest that a sense of control over the timing and conditions of retirement has a positive effect on subsequent quality of life and wellbeing (Nordenmark and Stattin 2009; van Solinge 2007). Experience of retirement may also vary depending on time spent in retirement. Retirement may include an initial honeymoon in which the retired experience relief from the burdens of working life, but after a period of accommodation retirees may discover negative aspects such as a poorer social life and idleness, which in turn may have a negative impact on wellbeing (Atchley 1976; Kim and Moen 2001; Jæger and Holm 2004).

Yet another crucial aspect concerns the influence of health selection bias. Recent studies have questioned the welfare and health gains of premature departure from work and even suggested that early retirement increases mortality (Wallman et al. 2006, 2010). However, this conclusion has been challenged by other studies claiming that no such effect exists when adequate adjustments for pre-retirement health are made (Hult et al. 2010; Brockmann et al. 2009).

Thus, retirement as a transition process is indeed a highly complex phenomenon. This is also the basic point of departure for the design of our study. First, the

operationalisation of retirement transition circumstances is designed to capture different kinds of transitions, such as transitions characterised by general difficulties in the labour market as well as ordinary old age pension transitions. Second, the obvious methodological challenges of health selection bias are thoroughly treated in the study. Third, it is important to have a robust and interpretable measure of health and wellbeing and to deploy longitudinal data that allow us to study these dimensions of wellbeing over time.

Data, measures and method

The analyses are based on data from the Panel Survey of Ageing and the Elderly (PSAE). PSAE is an integrated part of the Swedish Survey of Living Conditions (Vogel and Häll 2006), which has been conducted annually since 1975. The working sample used here consists of panel data from two points in time; data related to t_0 were collected in 1993, 1994, 1995 or 1996 (the bulk of respondents were interviewed in 1994 and 1995), and data related to t_1 were collected in 2002 and 2003. In addition, PSAE also includes register data from the Longitudinal Integration Database for Health Insurance and Labour Market Studies. These data include information on all individuals aged 16 and above who were nationally registered the 31st of December every year. By using income data for the years 1991 through 2002, information on income patterns for the 6 years prior to retirement can be obtained. In a first step, we limited the PSAE to a sub-sample consisting of those who at t_1 were between 55 and 75 years of age. This population can be subdivided into three groups in relation to retirement: those who were already retired at t_0 ($n = 688$), those who were working at both t_0 and t_1 ($n = 1,358$), and those who were working at t_0 and retired with an old age pension at t_1 ($n = 589$), i.e. people who actually have made the transition into retirement between t_0 and t_1 . Because we are interested in the effect of different labour market exit routes, we selected our basic working sample from the latter group. Thus, we are not trying to estimate whether those who retire are better or worse off compared to the two other groups, i.e. we are not analysing whether it is better to be retired or not being retired. Our focus is on analysing the connection between exit routes and health and wellbeing among those who actually retire.

Indicators of labour market exit

A straightforward transition from work to retirement implies a more or less abrupt shift from work to retirement and that income from paid work is replaced by old age pensions. However, in reality, the transition from work to retirement often is more complex, which among other

things means that people tend to move into and out of different types of income protection schemes. The degree to which an individual's total income package is made up of different transfers can be seen as an indicator of labour market exit complexity. In order to capture this complexity, we have constructed in a first step a variable that measures the *transfer income ratio* (TIR) as a proxy for retirement circumstances. The ratio shows the percentage of an individual's total income (wage income and social security incomes) that is made up of the five different types of social security transfers. These five are

- Sickness benefit
- Disability pension
- Part-time pension
- Unemployment insurance
- Active labour market programmes

TIR gives an overall indication of a prolonged and possibly complex labour market exit. One reason to use TIR is that it is common for one and the same individual to receive transfers from several programmes, which illustrates the difficulty of evaluating the effect of any single programme. However, in order to analyse whether or not specific exit routes affect post-retirement wellbeing in different ways, we have distinguished between five exit categories:

- People who made a straightforward transition from work to retirement, i.e. the no-transfer group. Part-time pension is also included in this category, as this retirement option, at the time of our study, was part of the old age pension programme and represented a voluntary retirement transition.
- People who have received only sickness benefit.
- People who have received a combination of disability pension and sickness benefit. The reason for combining the two is that disability pension in virtually all cases is preceded by a period(s) of sickness benefit.
- People who received transfers related to unemployment, i.e. unemployment benefit or/and benefits tied to active labour market programmes.
- People who prior to retirement received a mixture of health- and unemployment-related transfers.

Indicators of health and wellbeing

In order to capture the multi-dimensional aspect of health and wellbeing, we use ten different indicators, listed in Table 1, that tap into four sub-dimensions. Two indicators capture the general health situation. The widely used subjective health question discriminates between those who believe their health is excellent or good and those who believe their health is poor or at least not particularly good.

Table 1 Indicators of health and wellbeing

Measure	Definition and operationalisation
Poor subjective health	Subjectively evaluates own health condition as being less than good
Frequent and non-trivial health problems	Is affected regularly or at least now and then affected by non-trivial health problems
Restricted mobility	Is not able to run a shorter distance (about 100 m)
Pain: upper	Has severe problems with aching upper part of the body
Pain: lower	Has severe problems with aching lower part of the body
Pain: limbs	Has severe problems with aching limbs
Anxiety	Is suffering from anxiety, worry or anguish
Tired	Has often been tired during the past 2 weeks
Sleeping problem	Has been suffering from sleeping problems during the past 2 weeks
Dissatisfying living conditions	Scores six or below on an eleven point scale measuring overall satisfaction with living conditions (0 = worst imaginable, 10 = best imaginable)

We also use an indicator that measures whether people are affected regularly or at least now and then by non-trivial health problems. Four indicators measure physical conditions related to pain in different body parts and restricted mobility. These indicators are particularly relevant in relation to labour market exit, as they often are work related and causes of early labour market exit (Höög and Stattin 2001; Försäkringskassan 2011). Psychosocial wellbeing is measured with three indicators. The first measures whether the respondent suffers from anxiety, worries or anguish. The second measures whether the respondent often has felt tired during the past 2 weeks. The third indicator captures whether the respondent has suffered from sleep problems during the past 2 weeks. Finally, a measure evaluating overall current living conditions is included. The respondent is asked to rate his/her living conditions on a scale from 0 (worst possible) to 10 (best possible).

Control variables

In order to study whether an adaptation process during retirement affects post-retirement wellbeing, *time in retirement* was measured. Other included control variables are age, gender and social class. Because old age retirement as well as health and wellbeing clearly are age dependent, it is important to control for age differences within our sample. There is also reason to believe that there is a nonlinear relationship between age and post-retirement health and wellbeing that relates to both selection effects and norm deviations, for example, a negative impact of leaving the labour market earlier than the de facto median retirement age (Rijs et al. 2012). Also, as Atchley (1976) suggested, health may vary over time in relation to a process of adaptation to new living conditions as a retiree. In order to control for nonlinearity, a quadratic term for age is included as a

control variable.¹ We need to control for gender because women tend to report more ill health as well as retire earlier than men do (Halleröd 2009; Socailstyrelsen 2010; Försäkringskassan 2009). Class is important for the same reasons, i.e. there are systematic class differences in health and wellbeing (Halleröd and Seldén 2012; Halleröd and Gustafsson 2011). Our class variable is based on the Swedish Socio-Economic Code (SEI), which provides a categorization of occupations based on formal educational requirements. We use this information to form five occupational groups: unskilled blue-collar workers, skilled blue-collar workers, lower white-collar workers, middle-range white-collar workers, and upper white-collar workers. The SEI and hence also our class categories reassemble the well-known Erikson, Goldthorpe and Portocarero (EGP) schema (Erikson and Goldthorpe 1993; Bihagen 2000).

Statistical method

Our empirical analysis is based on *structural equation modelling* (SEM) and conducted in two steps; first, we estimate the measurement model and thereafter the structural model. When estimating the measurement model, we use the SEM framework to estimate a nested latent variable model based on *confirmative factor analysis* (CFA) (Halleröd 2009; Halleröd and Seldén 2012). CFA estimates the relationships between an unobserved latent variable and a set of manifest observed indicators. The latent variable is comprised of only the covariance among a set of manifest indicators, and in that sense is error free (Hoyle 1995). This is an important feature, especially when it comes to longitudinal analysis. All data, not least survey data, are

¹ The curve-linear relationship is captured by the factor $(u_i - \hat{u})^2$, where u_i is the age of i th individual and $\hat{u}$ is the mean age in the sample.

affected by measurement errors that may or may not be random. If not taken into consideration, random errors will increase the variance and decrease the precision of our measures at each point in time. In a longitudinal perspective, random errors will in addition lead to an overestimation of individual change over time.

Statistical approaches such as factor analysis most often are based on the assumption that error terms are randomly distributed and uncorrelated with each other. But this is not always a realistic assumption; it could be that error terms form a unique residual factor, a factor with substantial meaning (Halleröd 2009; Gustafsson and Balke 1993). CFA enables us to specify such a factor because it allows correlated error terms, i.e. a nested model. The reason to estimate a nested model is that we know that one specific manifest indicator sometimes relates to more than one latent factor (Gustafsson and Balke 1993; Halleröd 2009; Halleröd and Seldén 2012). What this means is that one single indicator, for example, a question concerning anxiety, might in fact function as a measure of two or more distinctive phenomena (Halleröd 2009; Halleröd and Seldén 2012). The nested measurement model helps us separate variance in the manifest indicators that belongs to a common factor from variance that belongs to specific residual factors.

We use three measures—‘Root Mean Square Error of Approximation’ (RMSEA), ‘Comparative Fit Index’ (CFI) and ‘Tucker Lewis Index’ (TLI)—to test the fit of the measurement model. RMSEA adjusts for sample size and model complexity, and the general view is that a good fit is signified by a RMSEA of 0.05 or less, and that a value above 0.10 indicates an unacceptably poor fit. The RMSEA can be somewhat problematic in cases when the observed correlations are of modest strength. Therefore, we also use the CFI and the TLI (Gignac 2007). CFI and TLI values above 0.95 indicate a good fit, while a value below 0.90 represents an inadequate fit (Wu and Yao 2007).

Once the measurement model is in place, we will be able to estimate the structural model that also includes the exit variables and control variables discussed above. The structural model is specified as a path analysis and allows us to estimate both direct and indirect effects.

Because several manifest variables are dichotomies, we use weighted least-squares with robust standard errors and mean- and variance-adjusted Chi-squared (WLSMV) estimates (Beauducel and Herzberg 2006; Flora and Curran 2004). Modelling of incomplete data is used to handle the very few cases with missing observations on one or more variables. This approach provides unbiased estimates of missing data under the assumption that the missing values occurred randomly (Gustafsson and Stahl 2004). The models are estimated with the help of Mplus 6.1.

Table 2 Income transfer categories included in the analysis

Income transfer categories	Frequency	(%)	Mean (TIR)	Std (TIR)
No transfers or less than 1 % TIR and part-time pension	266	45.2	0.1	0.2
Only sickness benefit	173	29.4	12.3	13.4
Disability pension and sickness benefit	77	13.1	39.8	21.3
Only unemployment and/or active labour market programme	26	4.4	34.4	29.0
Combination of health- and unemployment-related transfers	47	8.0	30.7	23.8
Total	589	100.0	13.3	20.0

Results

As can be seen from Table 2, about 45 % of the sample receive at baseline no or only a negligible part of their total income from any of the five benefit schemas. Almost 30 % have sickness benefit only, and the average TIR value in the group was 12.3, i.e. sickness benefit made up 12 % of their total income. 13 % received a combination of disability pension and sickness benefit. In this category, almost two-fifths of the total income came from these two income sources. A small fraction, less than 5 %, received some sort of unemployment benefit, and 8 % received benefits from both health- and unemployment-related transfer. The TIR in these latter groups was somewhat above 30 %. The TIR standard deviations, displayed in the last column, show that there are, with the exception of the first category, substantial variations within each category, which justify our inclusion of both the categories and TIR in the structural model.

The measurement model

Table 3 displays the distribution of our ten indicators of health and psychosocial wellbeing. Looking first at t_0 , we see that health problems are fairly common, with more than one-third reporting frequent and non-trivial health problems. Moving on to t_1 , we can see a significant deterioration of the situation concerning health and mobility, but not when it comes to pain, which may indicate that these problems are related to the previous work situation. Regarding psychosocial conditions, the situation seems more stable, apart from the fact that more people seem to sleep less well at t_1 but at the same time they are less tired than at t_0 .

Our preferred measurement model, presented in Fig. 1, is a nested two-factor model estimating one global factor and

Table 3 Distribution of wellbeing problems (%)

	Working sample	
	t_0	t_1
Poor subjective health	26.8	36.2**
Frequent and non-trivial health problems	36.2	48.2***
Restricted mobility	14.1	29.9***
Pain: upper	15.1	14.3
Pain: lower	14.3	16.4
Pain: limbs	12.2	14.1
Anxiety	17.4	20.7
Tired	37.7	30.7*
Sleeping problem	22.9	29.3*
Dissatisfying living condition	18.8	19.3
<i>N</i>	589	589

Significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

one residual psychosocial factor. The model fulfils the criteria of both representing the observed data and being parsimonious. Identical factors are extracted for both t_0 and t_1 . The first factor relates to all manifest indicators and measures a global health factor that incorporates both the physical and psychosocial dimensions, and we will henceforth refer to this factor as the global health and wellbeing factor Glob. Besides the global factor, a *psychosocial* factor, Psych^R , is also extracted from the data. Psych^R is a residual factor, i.e. people who score high on Psych^R do not experience worries, anxiety, etc., in relation to health problems; they have other reasons to feel anxiety and worries. Thus, the

analysis above provides measurements of a lack of overall health and wellbeing and a lack of specific psychosocial wellbeing before and after retirement. Henceforth, pre-retirement global health and wellbeing will be referred to as $\text{Glob-}t_0$, and post-retirement global health and wellbeing as $\text{Glob-}t_1$. Accordingly, psychosocial wellbeing will be labelled Psych^R-t_0 and Psych^R-t_1 .

The fit of the measurement model, obtained under the assumption that $\text{Glob-}t_0$ and Psych^R-t_0 are uncorrelated and that correspondingly also $\text{Glob-}t_1$ and Psych^R-t_1 are uncorrelated, is sufficiently good, with high CFI and TLI values and a low RMSEA value. This model has been compared with a set of alternative models. First, a three-factor model also including a residual factor for health complaints was tested, but it did not significantly improve the model fit. We also specified two-group models to test for differences between men and women and between age groups. None of these tests resulted in significant improvements of the model. Hence, the basic relationship between our indicators looks the same among men and women and among different age groups within our sample.

Figure 1 shows that there are strong correlations over time between the latent factors. The standardised regression coefficient for $\text{Glob-}t_0$ on $\text{Glob-}t_1$ is 0.83. The psychosocial residual factors are even more strongly correlated over time. The standardised regression coefficient is close to 1, and the remaining residual variance in Psych^R-t_1 is insignificant. Since Psych^R also is stable during the transition from work to retirement, it seems unlikely that the retirement process in itself has any impact on this aspect of wellbeing.

Fig. 1 Measurement model. Standardised factor score estimates (WLSMV) times 100 and model fit

Table 4 Initial structural equation models: standardised WLSMV estimates

Independent variables	Dependent variables	
	Glob- t_1	Psych ^R - t_1
Model 1		
TIR (ln) ^a	0.432***	0.105
Model 2		
TIR (ln)	0.114	0.001
No transfer (=0)		
Health—only sickness benefit	0.272***	0.045
Health—combination	0.386***	0.100
Only unemployment	−0.009	0.104
Health and unemployment combination	0.232**	0.088

Significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ ^a Transfer income ratio

Structural models

In Table 4, two initial structural models are displayed. Model 1 includes only Glob- t_1 , Psych^R- t_1 , and the logarithm of TIR. We use the logarithm of TIR because initial analysis supports the assumption that a TIR value between, say, 65 and 85 basically reflects a similar situation, while the difference between a value of 5 and 25 is considerable. There is a fairly strong association between TIR and Glob- t_1 , supporting the idea that a complex exit route is associated with lower post-retirement wellbeing. However, we do not see any relationship between TIR and Psych^R- t_1 . Model 2 also includes the income transfer categories. The model shows that health-related retirement pathways are strongly related to Glob- t_1 . It is also the case that the TIR measure becomes insignificant when the transfer categories are included in the model. These results may be viewed as indicating that the transition pathway to retirement may actually affect post-retirement wellbeing. However, such a

conclusion cannot be made without taking into consideration the influence of relevant confounders. Exit route seems to be completely unrelated to Psych^R- t_1 , and we therefore choose to carry on our analysis without the residual factor Psych^R, concentrating on the global factor that does change over time and is related to exit routes.

In Fig. 2, the full structural model is outlined. The principle is that there is a causal impact that goes from the left to the right of the model. That is, the exogenous variables affect all the variables to the right in the figure, not only pre-retirement wellbeing but also retirement circumstances and post-retirement wellbeing. Glob- t_0 affects retirement circumstances and Glob- t_1 . Finally, retirement conditions are supposed to affect Glob- t_1 . However, after testing several models, it became clear that we could use a considerably more parsimonious model, as the exogenous variables basically only directly affected Glob- t_0 . Hence, apart from the effect of age on time in retirement, we could, without any loss of model fit, remove these relationships, marked with a dash (–) in Table 5, from the model. It should also be mentioned that in addition to the variables displayed in Fig. 2 and Table 5, the manifest variables are also used to estimate the measurement model included in the structural model.

The estimate relating to age is nonlinear, both the age and the quadratic age-term are significant, and shows, rather unexpectedly, that older people score lower on the Glob- t_0 , i.e. older people seem to be in better health. As is shown in Fig. 3, in the lower age-range, we observe the negative effect. As expected, the analysis also show that older people in general have been retired for a longer period of time. Gender affects Glob- t_0 in the expected way, that is, men score lower. Also, the class variable behaves in the expected way, and blue-collar workers score higher on Glob- t_0 . But, it is also the case that gender and class only significantly affect Glob- t_0 . This does not mean that gender and class are unimportant for TIR, years in retirement and

Fig. 2 Causal relationships in the structural model

Table 5 Structural equation model: standardised WLSMV estimates

Independent variables	Dependent variables							
	Glob- t_0	Time (ln)	TIR ^a (ln)	Health—only sickness benefit	Health—combination	Only unemployed.	Health and unemployed combination	Glob- t_1
Age	−0.218***	0.393***						
Age Square	0.129*	0.234***						
Sex (women = 0)	−0.141**	—	—	—	—	—	—	—
Class: (Unskilled blue-collar worker = 0)								
Skilled blue collar	0.012	—	—	—	—	—	—	—
Lower white collar	−0.139**	—	—	—	—	—	—	—
Middle white collar	−0.220***	—	—	—	—	—	—	—
Upper white collar	−0.158**	—	—	—	—	—	—	—
Self-employed	−0.167***	—	—	—	—	—	—	—
Glob- t_0		0.142**	0.491***	0.068	0.725***	−0.049	0.157 [#]	0.890***
Time (ln)								−0.021
TIR (ln)								0.001
No transfer (=0)								
Health—only sickness benefit								0.100*
Health—combination								−0.063
Only unemployment								−0.036
Health and unemployment combination								0.071
RMSEA ^b	0.046							

Significance: [#] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

^a Transfer income ratio

^b Root mean square error of approximation

Fig. 3 The relationship between age and Glob- t_0 score

Glob- t_1 ; it only means that they affect these conditions indirectly via Glob- t_0 .

Glob- t_0 affects time in retirement and has a profound impact on TIR. Thus, as expected, people with poor global health and wellbeing tend to be dependent on welfare transfers and to retire relatively early. We can also see that

a high Glob- t_0 score not only leads to increased benefit dependence in general (high TIR) but is also strongly related to the health combination benefits exit path. This is not surprising, as individuals in this category have health problems that are longstanding and serious enough to qualify for a disability benefit. Interestingly, though, the analysis shows that Glob- t_0 is completely unrelated to pre-retirement sickness benefits.

Looking further to the right in the table, we see a strong correlation between Glob- t_0 and Glob- t_1 , a correlation that is just as strong as it was in the measurement model. This clearly indicates that the main explanation for post-retirement global health and wellbeing is to be found in pre-retirement health and wellbeing.

Judging from Table 5, it is clear that the effect of retirement transition circumstances is almost entirely absent. This is the case both for the TIR measure, for the different more specific exit routes, and for time in retirement. None of these have any substantial impact on Glob- t_1 . There is one exception to this pattern, however. Sickness benefit prior to old age pension is significantly associated with an increased Glob- t_1 score.

Discussion and conclusions

Exit patterns from employment to retirement have become increasingly heterogeneous. Traditional pathways out of the labour market such as old age pension have come to be accompanied by alternative ones. The exit patterns are even more complex considering the various possible combinations of partial labour market participation, different benefits and participation in different programmes (Phillipson 2004). Policy-makers, interest groups and researchers have expressed concern that these diverse patterns may accentuate inequalities between older people in retirement (Hyde et al. 2004). In addition, some studies have indicated that leaving the labour market prematurely through certain exit pathways may be associated with decreased post-retirement health.

We have used a nested confirmative factor analysis to derive identical and reliable pre- and post-retirement health-related wellbeing measures from a set of ten manifest indicators of physical and psychosocial conditions. We derived a global health and wellbeing factor that was strongly related to subjective health and frequent and non-trivial health problems, which is a result that is in line with earlier findings and shows the central importance of health to overall wellbeing (Halleröd 2009; Halleröd and Seldén 2012; Idler et al. 2004; Idler and Benyamini 1997). The global factor was related to all ten indicators and a residual factor that only related to the psychosocial dimension. The latter factor measured the existence of psychosocial problems not related to physical problems and somatic illnesses. Our final analysis was based on a structural equation model (SEM) that included: pre-retirement health and wellbeing, retirement transition circumstances (exit patterns), and post-retirement health and wellbeing. In addition, we used age, sex and class as exogenous variables assumed to affect all of the above-mentioned conditions.

Our initial results did indeed indicate that exit patterns are related to post-retirement health. A complex exit route that included high dependence on different kinds of income benefits such as sickness benefit and disability pensions was related to a high degree of post-retirement health-related wellbeing problems. Naturally, this was to be expected. It is not surprising that people who, for example, are highly dependent on health-related social security benefits prior to retirement continue to experience health problems also when they are retired. What we need to know is whether retirement patterns affect post-retirement wellbeing even after we have controlled for pre-retirement wellbeing.

If anything, we had anticipated that exit routes should be related to psychosocial wellbeing but not necessarily somatic health, hence, exit routes should affect the residual factor Psych^R . However, this was not the case. In fact, Psych^R showed such stability over time that it seems more

likely to represent a stable personality trait (McAdams et al. 2010) than an effect of specific circumstances and, whether or not we controlled for pre-retirement $\text{Psych}^R_{t_0}$, exit routes did not affect post-retirement $\text{Psych}^R_{t_1}$. Thus, if we stick to the idea that Psych^R captures a personality trait, we can also conclude that this personality trait is unrelated to the exit patterns we are measuring. This is an interesting result, as it implies that psychosocial wellbeing does not affect exit routes unless it is combined with some sort of physical health condition.

The SEM showed that pre-retirement health and wellbeing, Glob_{t_0} , affected both pre-retirement circumstances and post-retirement health and wellbeing, Glob_{t_1} . The analysis revealed that post-retirement health and wellbeing largely can be seen as a reflection of pre-retirement health and wellbeing, whereas retirement transition circumstances, measured both as exit complexity (TIR) and as specified exit routes, showed no or at most, in the case of sickness benefit, only very marginal effects on post-retirement health and wellbeing. The fact that sickness benefit has an effect on post-retirement health and wellbeing is nonetheless somewhat puzzling, but we wish to point out two possible explanations. First, the strong correlation between Glob_{t_0} and disability pension shows that this group was suffering from poor health already at the beginning of our observation window. This was not the case for the sickness benefit group. Thus, it may be that some in this group had an onset of health problems during our observation window, which led to a health situation that was worse at t_1 than at t_0 . It may also be that sickness benefit works as an indicator of entirely different things than health. In Sweden, decisions about short-term sick leave are initially made by the individuals themselves and may, for example, represent a coping strategy in relation to exposure to demanding or conflicting work conditions, which in turn have the potential to affect post-retirement health and wellbeing. Even though this is an interesting question, further analyses of this topic are beyond the scope of the present study.

Another seemingly puzzling result is the negative impact of age on pre-retirement wellbeing, i.e. younger respondents suffer to a larger extent of health and wellbeing problems. The effect is curvilinear, which means that it is the youngest section that have the largest health and wellbeing problems and the problems thereafter decreases only to slightly increase among the oldest section of the working sample. The reason for this is selection. Two groups are excluded from the working sample: those who already at t_0 had left the labour market and those who were working at both t_0 and t_1 . If we compare our sample with those who had already left the labour market at t_0 , we can see that the latter group was considerably worse off with regard to both health and psychosocial aspects. The mean

age was also higher in this group than in our sample. Hence, older people with poor health are largely excluded from our sample. If we instead look at those who work at both t_0 and t_1 , we can see that this is a younger and much healthier group, which presumably explains why they continued to work. Thus, the younger part of our sample has a negative health selection, i.e. it consists of people who have health problems and therefore are about to leave the labour market. It is this age-biased health selection that generates the negative parameter for age.

Our overall conclusion is that the retirement transition complexity typical of recent decades, and articulated in a variety of atypical exit pathways, has no substantial effect on post-retirement health. Given the conflicting results from previous research in this area, our study cannot provide support for any of the role theory perspectives that have suggested both negative and positive effects of retirement transitions. The results should rather be understood in relation to a continuity theory way of thinking, i.e. it is not the transition per se that is the problem but rather circumstances that individuals brings on from the pre-retirement phase into the post-retirement phase. This certainly apply also to the notion of cumulation of advantage and disadvantage (CAD) perspective. CAD assumes that inequalities in wellbeing among pensioners largely reflect individual accumulation of advantages and disadvantages earlier on in the life course. The results thus lend themselves to emphasizing the importance of a life-course perspective in studies aimed at understanding the determinants of health and wellbeing in old age (Blane 2006; Moen 2011).

Moreover, the results support conclusions from previous studies, suggesting that careful control for health selection bias is crucial in any attempt to evaluate the effects of retirement transitions. Our results also call into question studies identifying negative health effects of premature withdrawal from the labour market through the disability pension/benefit pathway (Wallman et al. 2006, 2010). When adequate adjustments for initial health were made, we found no support for such a conclusion. On the contrary, the strong relationship between pre-retirement health, disability pension benefits and post-retirement health rather suggests that these social security programmes actually manage to single out those individuals most affected by ill health and, thus, serve their intended purposes. Therefore, judging from the present findings, there is no reason to believe that involvement in social security programmes allowing early retirement on health grounds have any additional negative consequences for post-retirement health and wellbeing. In relation to this, we would like to point out that since the time for this study a series of changes of the Swedish social security programs have been introduced. It has been considerably harder to receive disability benefits since eligibility criteria have been

substantially tightened, which have led to a dramatic decrease of annual entrants in the programme from an annual rate of 30,000–60,000 during the 90 and 00s to about 8,000 in 2011 (Försäkringskassan 2012). Given the overall objective of disability benefit programmes—to help the disabled live socially and economically satisfactory lives, freed from exposure to employment health hazards and thus avoid further declines in health—it is indeed an important research task to study if this development have jeopardised health and general welfare among people with limited working capacity due to ill health.

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References

- Atchley RC (1976) *The Sociology of retirement*. Halstad Press, New York
- Barnet RC, Hyde JS (2001) Women, men, work, and family: an expansionist theory. *Am Psychol* 56(10):781–796
- Beauducel A, Herzberg PY (2006) On the performance of maximum likelihood versus means and variance adjusted weighted least squares estimation in CFA. *Struct Equ Modeling* 13(2):186–203
- Bihagen E (2000) *The significance of class*. Dissertation, Umeå University, Umeå
- Blane D (2006) The life course, the social gradient, and health. In: Marmot M, Wilkinson R (eds) *Social determinants of health*, 2nd edn. Oxford University Press, Oxford, pp 54–77
- Brockmann H, Müller R, Helmert U (2009) Time to retire – Time to die? A prospective cohort study of the effects of early retirement on long-term survival. *Soc Sci Med* 69(2):160–164
- de Vroom B, Guillemand AM (2002) From externalisation to integration of ageing workers: institutional changes at the end of the work life. In: Andersen JG, Jensen PH (eds) *Changing labour markets, welfare policies and citizenship*. The Policy Press, Bristol, pp 183–208
- Dorfman LT (1995) Health conditions and perceived quality of life retirement. *Health Soc Work* 20(3):192–200
- Dorfman LT, Kohout FJ, Heckert DA (1985) Retirement satisfaction in the rural elderly. *Res Aging* 7(4):577–599
- Doyle C, Hind P (1998) Occupational stress, burnout and job status in female academics. *Gender Work Organ* 5(2):67–82
- Duxbury L, Higgins C, Lee C (1994) Work–family conflict: a comparison by gender, family type and perceived control. *J Fam Issues* 15(3):449–466
- Ebbinghaus B (2006) *Reforming early retirement in Europe*. Oxford University Press, Oxford, Tokyo, New York
- Erikson R, Goldthorpe JH (1993) *The constant flux: a study of class mobility in industrial societies*. Clarendon Press, Oxford
- Flora DB, Curran PJ (2004) An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychol Methods* 9(4):466–491
- Försäkringskassan (2009) *Medelpensioneringsålder*. Socialförsäkringsrapport 2009:9. Försäkringskassan, Stockholm
- Försäkringskassan (2011) *Sjukskrivningsdiagnoser i olika yrken*. Socialförsäkringsrapport 2011:17. Försäkringskassan, Stockholm
- Försäkringskassan (2012) *Socialförsäkringen i siffror 2012*. Försäkringskassan, Stockholm

- Gignac GE (2007) Multi-factor modeling in individual differences research: some recommendations and suggestions. *Pers Individ Dif* 42(1):37–48
- Gustafsson JE, Balke G (1993) General and specific abilities as predictors of school-achievement. *Multivariate Behav Res* 28(4):407–434
- Gustafsson JE, Stahl PA (2004) STREAMS 3.0 User's Guide. Multivariate Ware, Mölndal
- Hall EM (1992) Double exposure: the combined impact of the home and work environments on psychosomatic strain in Swedish women and men. *Int J Health Serv* 22(2):239–260
- Halleröd B (2009) Ill, worried, or worried sick? Inter-relationships among indicators of wellbeing among older people in Sweden. *Ageing Soc* 29:563–584
- Halleröd B, Gustafsson JE (2011) A longitudinal analysis of the relationship between changes in socio-economic status and changes in health. *Soc Sci Med* 72(1):116–123
- Halleröd B, Seldén D (2012) The multi-dimensional characteristics of wellbeing: how different aspects of wellbeing interact and not interact with each other. *Soc Indic Res*. doi:10.1007/s11205-012-0115-8
- Höög J, Stattin M (2001) Förtidspensionärer i ett tioårsperspektiv. En jämförelse av de nya förtidspensionärerna 1988, 1993 och 1998. Arbetslivsinstitutet, Stockholm
- Hoyle RH (1995) Structural equation modeling. Sage, London
- Hult C, Stattin M, Janlert U, Järvholm B (2010) Timing of retirement and mortality: a cohort study of swedish construction workers. *Soc Sci Med* 70(10):1480–1486
- Hyde M, Ferrie J, Higgs P, Nazroo J (2004) The effects of pre-retirement factors and retirement route on circumstances in retirement: findings from the Whitehall study II. *Ageing Soc* 24:279–296
- Idler E, Benyamini Y (1997) Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 38(1):21–37
- Idler E, Leventhal H, McLaughlin J, Leventhal E (2004) In sickness but not in health: self-rating, identity and mortality. *J Health Soc Behav* 45(3):336–356
- Jæger MM, Holm A (2004) How stressful is retirement? New evidence from a longitudinal, fixed-effects analysis. Centre for Applied Macroeconometrics, Institute of Economics, University of Copenhagen: Copenhagen
- Kim JE, Moen P (2001) Is retirement good or bad for subjective wellbeing? *Curr Dir Psychol Sci* 10(3):83–86
- Kohli M, Rein M, Guillemard AM, van Gunsteren H (eds) (1991) Time for retirement: comparative studies of early exit from the labour force. Cambridge University Press, Cambridge
- Lundberg U, Mårdberg B, Frankenhäuser M (1994) The total workload of male and female white collar workers as related to age, occupational level, and number of children. *Scand J Psychol* 35(4):315–327
- Maltby T, de Vroom B, Mirabile ML, Øverbye E (eds) (2004) Ageing and the transition to retirement: A comparative analysis of European welfare states. Ashgate, Aldershot
- McAdams DP, Olson BD, Bradely D (2010) Personality development: continuity and change over the life course. *Annu Rev Psychol* 61:517–542
- McGoldrick AE, Cooper CL (1994) Health and ageing as factors in the retirement experience. *EAWOP* 4(1):1–20
- Mein G, Martikainen H, Hemingway S, Stansfeld M, Marmot M (2003) Is retirement good or bad for mental and physical health functioning? Whitehall II longitudinal study of civil servants. *J Epidemiol Community Health* 57(1):46–49
- Midanik LT, Soghikian K, Ransom LJ (1995) The effect of retirement on mental health and health behaviors: the Kaiser Permanente retirement study. *J Gerontol B Psychol Sci Soc Sci* 50B(1):59–61
- Moen P (2011) A life course approach to the third age. In: Carr DC, Komp K (eds) *Gerontology in the area of the third age. Implications and next steps*. Springer, New York
- Nordenmark M, Stattin M (2009) Psychosocial wellbeing and reasons for retirement in Sweden. *Ageing Soc* 29:413–430
- Phillipson C (2004) Work and retirement transitions: changing sociological and social policy contexts. *Soc Pol Soc* 3(2):155–162
- Pinquart M, Schindler I (2007) Changes in life satisfaction in the transition to retirement: a latent-class approach. *Psychol Aging* 22(3):442–455
- Quandagno J (2005) Aging and the life-course. McGraw Hill, New York
- Rijs KJ, Cozijnsen R, Deeg DJH (2012) The effect of retirement and age at retirement on self-perceived health after three years of follow-up in Dutch 55–64-year-olds. *Ageing Soc* 32:281–306
- Salokangas RK, Joukamaa M (1991) Physical mental health changes in retirement age. *Psychother Psychosom* 55(2–4):100–107
- Smith DB, Moen P (2004) Retirement satisfaction for retirees and their spouses: do gender and the retirement decision-making process matter? *J Fam Issues* 25(2):262–285
- Socailstyrelsen (2010) Folkhälsorapport 2010. Socialstyrelsen, Stockholm
- Stattin M (2009) Den äldre arbetskraften—deltagande, attityder och arbetsförhållanden (should i stay or should i go?). Umeå University, Umeå
- van Solinge H (2007) Health change in retirement: a longitudinal study among older workers in the Netherlands. *Res Aging* 29(3):225–256
- Vogel J, Häll L (eds) (2006) Äldres levnadsförhållanden: arbete, ekonomi, hälsa och sociala nätverk 1980–2003. Umeå Universitet/Statistiska centralbyrån, Stockholm
- Wadensjö E, Sjögren G (2000) Arbetslinjen för äldre i praktiken. Institutet för social forskning, Stockholm universitet
- Wallman T, Svärdsudd K (2010) Do disability pensioners have a higher mortality rate than non-pensioners? Adjusting for potential confounding: a commentary on Hult, Stattin, Janlert, and Järvholm. *Soc Sci Med* 70:1487–1488
- Wallman T, Wedel H, Johansson S, Rosengren A, Eriksson H, Welin L, Svärdsudd K (2006) The prognosis for individuals on disability retirement: an 18-year mortality follow-up study of 6887 men and women sampled from the general population. *BMC Public Health* 6:103
- Westerlund H, Kivimäki M, Singh-Manoux A, Melchior M, Ferrie JE, Pentti J, Jokela M, Leineweber C, Goldberg M, Zins M, Vahtera J (2009) Self-rated health before and after retirement in France (GAZEL): a cohort study. *Lancet* 374(9705):1889–1896
- Westerlund H, Vahtera J, Ferrie JE, Singh-Manoux A, Pentti J, Melchior M et al (2010) Effect of retirement on major chronic conditions and fatigue: French GAZEL occupational cohort study. *Brit Med J* 341:c6149
- Wilensky H (2002) Rich democracies: political economy, public policy and performance. University for California Press, London
- Wu CH, Yao G (2007) Examining the relationship between global and domain measures of quality of life by three factor structure models. *Soc Indic Res* 84(2):189–202