Influence of work quality on the retirement intentions of low-educated and work disabled of 50 years or older in Flanders

Caroline Masquillier
Maxim Kovalenko
Dimitri Mortelmans

Een onderzoek in opdracht van de Vlaamse minister van Financiën, Begroting, Werk, Ruimtelijke Ordening en Sport, in het kader van het Vlaams Programma Strategisch Arbeidsmarktonderzoek

Masquillier, C., Kovalenko, M., Mortelmans, D.

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Masquillier, C., Kovalenko, M., Mortelmans, D. – Leuven: Steunpunt Werk en Sociale Economie / Antwerpen: CELLO, Universiteit Antwerpen, 2011, 39 p.

ISBN-

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Steunpunt Werk en Sociale Economie
Parkstraat 45 bus 5303 – B-3000 Leuven
T:32(0)16 32 32 39 - F:32(0)16 32 32 40
steunpuntwse@econ.kuleuven.be
www.steunpuntwse.be
Universiteit Antwerpen
Centrum voor Longitudinaal en Levenslooponderzoek (Cello)
Stadscampus - Sint Jacobstraat 2 -
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Samenvatting

Inleiding

De vergrijzing in combinatie met ontgroening oefent een grote druk uit op onze sociale zekerheid. De beleidsuitdagingen die deze situatie oproepen werden reeds door vele onderzoekers ter harte genomen in verscheidene studies, onder meer naar factoren om ouderen langer aan het werk te houden. Deze doelgroep wordt echter vaak als homogeen gezien. In dit rapport schenken we aandacht aan de diversiteit binnen de groep vijftigplussers. Meer specifiek bekijken we de pensioneringsintenties van laaggeschoolde en arbeidsgehandicapte vijftigplussers in Vlaanderen. Pensioen zien we als een keuze die iemand maakt. Dit impliceert dat we niet kijken naar personen die gedwongen worden om op pensioen te gaan door bijvoorbeeld een reorganisatie. We gaan na welke invloed de verschillende arbeidsomstandigheden hebben op de verwachte pensioenleeftijd, met het oog op het formuleren van beleidsaanbevelingen die ook ouderen uit beide kansengroepen langer aan het werk zouden kunnen houden.

Onderzoek suggereert dat de kwaliteit van arbeid en perceptie van werk een significante impact kunnen hebben op beslissingen met betrekking tot iemands arbeidsmarktpositie (vb. pensioen). Ook in het beleid wordt deze idee gereflecteerd. Zo is één van de vijf centrale thema's van het Pact 2020: " Meer mensen aan de slag, in meer werkbare jobs en in gemiddeld langere loopbanen". Hoewel werkbaarheid van het werk reeds sinds het Pact van Vilvoorde onder de aandacht is gebracht, is er sindsdien slechts een beperkte vooruitgang geboekt. In 2004 vond 52.3% van de mensen hun job werkbaar, tegenover 54.3% in 2010. Voor de laaggeschoolden en personen met een arbeidshandicap ligt de werkbaarheid van het werk onder het algemeen Vlaams gemiddelde.

Laaggeschoolden en personen met een arbeidshandicap

Personen met een arbeidshandicap

Er bestaan verscheidene definities van personen met een handicap bestaan. In dit rapport gebruiken we de subjectieve definitie. Indien iemand 'ja in zekere of erge mate' antwoordde op de vraag: "*Ervaart u in uw dagelijkse bezigheden (op het werk of daarbuiten) hinder door een handicap, een chronische aandoening of een langdurige ziekte, die al dan niet werkgerelateerd is?"*. Er zijn argumenten voor en tegen het gebruik van een subjectieve definitie. Sommige onderzoekers toonden aan dat zo'n definitie een goede maat is van de objectieve gezondheidssituatie. Een subjectieve evaluatie is ook belangrijk bij de beslissing om op pensioen te gaan. Diegene die hun

gezondheidsproblemen als allesbepalend ervaren, zullen andere keuzes maken met betrekking tot hun pensioen dan deze die eerder denken in termen van hun andere goede kwaliteiten. Anderen stellen dan weer dat het vergelijken tussen individuen moeilijker wordt bij dergelijke subjectieve evaluatie van de eigen gezondheidssituatie.

Het belang van gezondheid voor personen met een arbeidshandicap is groot. Zo kunnen zij bijvoorbeeld bepaalde jobs niet uitvoeren, zelfs niet met aanpassingen aan de werkomgeving en werkritme. Daarnaast neemt de gezondheidstoestand af met het ouder worden, ongeacht het hebben van een arbeidshandicap. Verslechterende gezondheid kan er voor zorgen dat er een discrepantie ontstaat tussen de jobvereisten en iemands capaciteiten. Een achteruitgang in de gezondheid kan er ook voor zorgen dat men de prioriteiten in het leven gaat verleggen. Dat men oordeelt dat er meer in het leven is dan enkel werk, wat op zijn beurt een effect heeft op de pensioenintenties.

Resultaten van vorige studies met betrekking tot arbeidshandicap en pensionering zijn niet consistent. Aan de ene kant zien we dat mensen met een slechte gezondheid pensioen verkiezen boven inkomen. Aan de andere kant, bestaat er onderzoek dat aantoont dat personen met een arbeidshandicap doorheen hun leven minder middelen hebben kunnen sparen waardoor ze later gaan pensioneren. Deze discrepanties in de onderzoeksresultaten zijn wellicht te verklaren door een verschillende operationalisering van de gezondheidsstatus over de verschillende studies heen.

Laaggeschoolden

Voor de tweede kansengroep hanteren we in dit rapport de definitie van de VDAB. We beschouwen iemand als laaggeschoold indien hij of zij geen diploma of getuigschrift van secundair onderwijs behaalde.

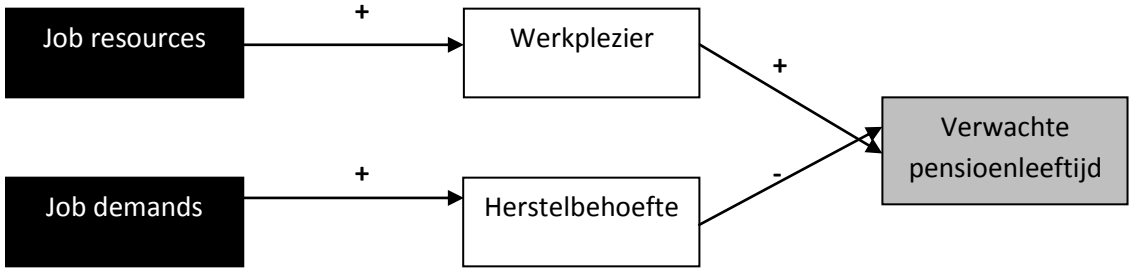
Eerder onderzoek toont aan dat een hoger diploma leidt naar een job met betere werkomstandigheden wat zich reflecteert in een pensioenwens op latere leeftijd. Zelfs onder controle voor deze werkomstandigheden heeft het onderwijsniveau een positief effect op de pensioenleeftijd. Daarnaast leert de literatuur ons dat het belangrijk is te blijven investeren in iemands capaciteiten. Vorig onderzoek toont aan dat diegene die de gewoonte hebben zichzelf bij te scholen doorheen de carrière, dit op latere leeftijd ook meer zullen doen. We zien ook dat laaggeschoolden minder in een verdere carrière investeren. Dit zorgt voor een soort Matteüseffect.

Ook leeftijd blijkt een invloed te hebben op iemands capaciteiten. Zo nemen de 'fluid intellectual abilities', zoals redeneren, snelheid en geheugen, af met de leeftijd. Terwijl de 'crystallized intellectual abilities' toenemen. Op latere leeftijd heeft men immers betere communicatie vaardigheden en verbale capaciteiten ontwikkeld, en heeft men een grotere algemene en domein specifieke kennis opgebouwd.

Theorie

De basis voor onze studie is het '*Job Demands-Resources Model*'. In deze theorie worden arbeidskenmerken gecatalogeerd in twee groepen. Sommige arbeidsomstandigheden worden gezien als een *job demand*, zoals werkdruk, emotionele stress en rolonduidelijkheid. Andere arbeidsomstandigheden plaatst men eerder in de categorie *job resource*, zoals vaardigheidsbenutting en sociale steun.

Voorgaand onderzoek leert ons dat de invloed van *job demands* en *job resources* wordt gemediëerd door andere variabelen, waaronder 'herstelbehoefte' en 'werkplezier'. Het onderliggende psychologische proces waarbij 'herstelbehoefte' de mediërende variabele is voor *job demands,* wordt het 'health impairement proces' genoemd. Hierbij leggen de *job demands* een grote druk op iemand, wat kan leiden tot een afname van energie. Op korte termijn kan dit resulteren in vermoeidheid, en op de lange termijn tot gezondheidsproblemen. Vorig onderzoek toont aan dat *job resources* een motivationeel potentieel hebben. Ze zijn positief geassocieerd met motivatie-gerelateerde concepten als job tevredenheid, werkengagement. In dit onderzoek gebruiken 'werkplezier' als een indicator van motivatie.



Data

De analyses worden uitgevoerd op basis van data die in het voorjaar van 2011 verzameld werden door het Steunpunt Werk en Sociale Economie in het kader van de survey 'Loopbanen in Vlaanderen'. Hierbij werden verscheidene aspecten van het arbeidsleven van de Vlaamse bevolking onder de loep genomen. Dit databestand bestaat uit 1518 personen, waarvan 73.41% (N = 1114) tewerkgesteld is. Omdat we geïnteresseerd zijn in de effecten van de kwaliteit van de arbeidssituatie op de verwachte pensioenleeftijd bestaat onze substeekproef uit 341 tewerkgestelde vijftigplussers. Hiervan zijn er 76 laaggeschoold (22.2%) en hebben 78 personen een arbeidshandicap (22.8%).

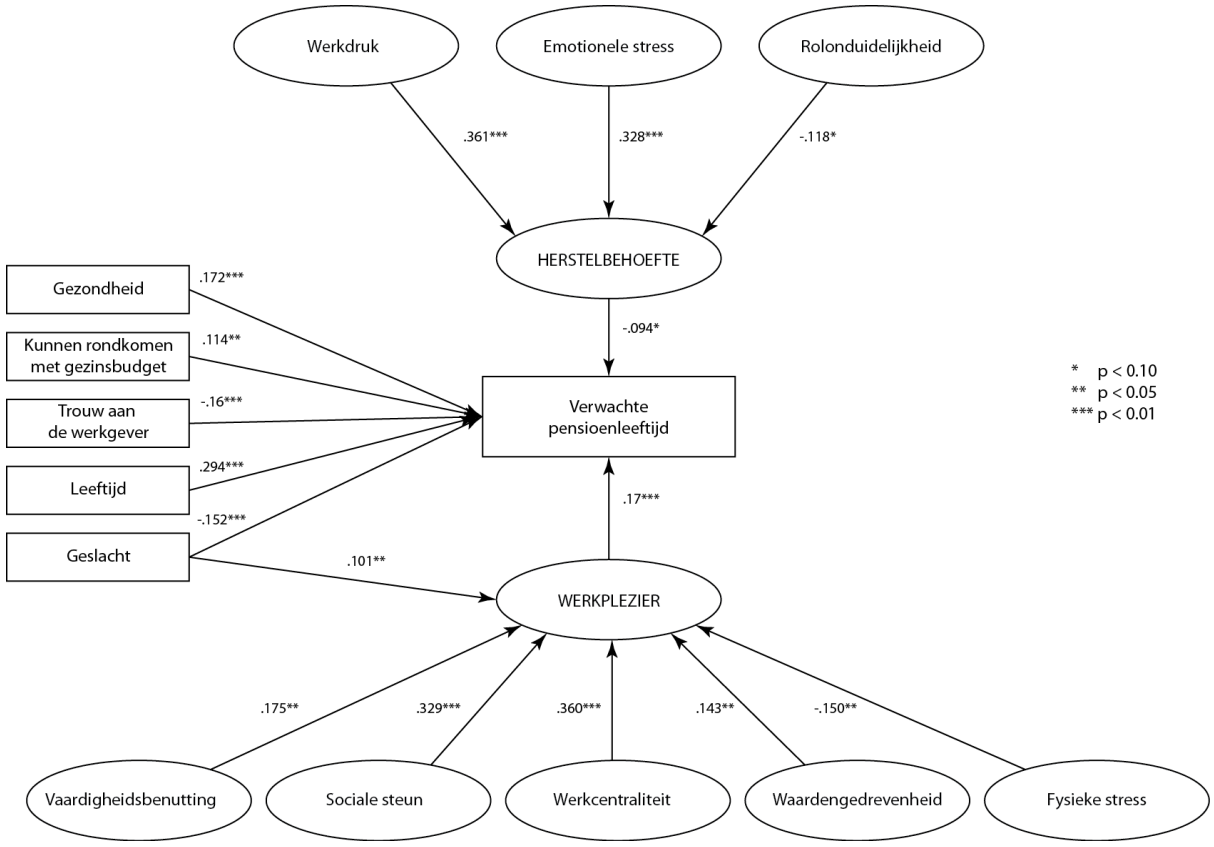
Methode

Naast exploratieve analyses, worden de data door middel van structurele vergelijkingsmodellen (SEM) geanalyseerd. Hierbij worden latente factoren geschat op basis van verschillende indicatoren. Elke indicator vormt een gedeeltelijke meting van zijn factor, maar geen enkel van de indicatoren volstaat op zichzelf om een volledig beeld te geven van de latente dimensie. SEM laat vervolgens toe om deze latente constructen samen met manifeste variabelen te mediëren via directe en indirecte paden naar de uitkomst variabele (i.e. verwachte pensioenleeftijd).

Bij deze techniek is het keuzeproces tussen alternatieve modellen erg belangrijk. Daarom worden drie verschillende modellen geschat. Het eerste model bevat directe relaties van de *job demands* en *job resources* op de verwachte pensioenleeftijd. Het tweede model is op basis van de literatuur aangepast door de mediërende variabelen 'werkplezier' en 'herstelbehoefte' toe te voegen. Het derde model is een aanpassingen van het eerste op basis van literatuur en empirische overwegingen. Het verschilt van het tweede model op twee punten. Zo wordt 'fysieke belasting' in dit derde model gemediëerd door 'werkplezier' in plaats van 'herstelbehoefte'. Ook wordt er een nieuwe relatie onderzocht tussen 'gender' en 'werkplezier' daar er verschillen tussen mannen en vrouwen werden gevonden met betrekking tot deze mediërende factor. Het uiteindelijke model zal voor de verschillende groepen worden getest. We bekijken de invloed van de kansengroepen op twee verschillende manieren, namelijk via het introduceren van een dichotome variabele en via meetinvariantie.

Resultaten

Drie verschillende structurele modellen worden vergeleken met elkaar. Uit de resultaten blijkt dat het model met de mediërende factoren (‘werkplezier’ en ‘herstelbehoefte’) het best bij de data past. Onderstaande figuur toont aan dat de *job demands* ‘werkdruk’ en ‘emotionele stress’ een significant positieve invloed hebben op ‘herstelbehoefte’. ‘Rolonduidelijkheid’ daarentegen heeft een significante negatieve invloed op ‘herstelbehoefte’. Deze mediërende factor heeft op zijn beurt een negatieve invloed op de verwachte pensioenleeftijd. Deze relatie is marginaal significant. De *job resources* hebben een significante positieve invloed op ‘werkplezier’, terwijl ‘fysieke stress’ een negatieve invloed heeft op deze mediërende variabele. De relatie van de arbeidskenmerken via ‘werkplezier’ heeft een positieve significante invloed op de verwachte pensioenleeftijd.



Het best passende model wordt daarna vergeleken voor laaggeschoolden en arbeidsgehandicapten. Er worden geen verschillen gevonden tussen beide kansengroepen. Indien laaggeschoolden worden gedefinieerd als personen zonder een diploma hoger onderwijs, worden wel verschillen gevonden tussen laag- en hooggeschoolden. Uitgebreide beschrijving van deze analyses kan terug worden gevonden onder de hoofding ‘An alternative approach: post-hoc models’ (p. 30).

Besluit

De resultaten bevestigen het '*Job Demands-Resources Model*' met een positieve invloed van de *job resources* en een negatieve invloed van de *job demands*. De resultaten leren ons dat de positieve factoren meer impact hebben op de verwachte pensioenleeftijd dan de negatieve factoren. Zo is de mediërende variabele 'werkplezier' significant, terwijl 'herstelbehoefte' marginaal significant is. Ook de sterkte van de eerste mediërende factor is groter dan de sterkte van de tweede effect.

Tussen beide kansengroepen en de controlegroep wordt geen verschil gevonden. Hierbij dient opgemerkt te worden dat we een relatief kleine steekproef hebben (laaggeschoolden: N = 76; personen met een arbeidshandicap: N = 78). We hebben dit proberen op te vangen door twee methoden te gebruiken om te kijken naar de verschillen tussen de groepen, namelijk via het introduceren van een dichotome variabele en via meetinvariantie. Omdat de resultaten van beide methoden in dezelfde richting wijzen, zijn er sterke aanwijzingen om aan te nemen dat het model gelijk is voor beide groepen.

Op individueel niveau zien we dat attitudes, zoals werkcentraliteit en waardengedrevenheid, belangrijk zijn bij het bepalen van de verwachte pensioenleeftijd. Mogelijk zouden deze persoonlijke *job resources* kunnen gestimuleerd worden via job coaching. Daar jobkenmerken een invloed hebben op de verwachte pensioenleeftijd, zou het stimuleren van een leeftijdsbewust personeelsbeleid in de organisaties ook een mogelijke beleidspiste kunnen zijn op organisationeel niveau. Inspelen op de jobkenmerken zou kunnen bijdragen tot het doel om meer mensen langer aan het werk te houden in kwaliteitsvollere jobs.

1. Introduction

The ageing of the European population and stagnating birth rates have profound consequences on the labor markets. This trend is likely to become aggravated in the coming years when the baby-boom generation reaches its retirement age (Blekesaune & Solem, 2005; Pelfrene, 2005; Schreurs, Van Emmerik, De Cuyper, Notelaers, & De Witte, 2010). Many investigators have analyzed the implications of this evolution, as a major policy challenge is to increase the number of gainfully employed people of older age by influencing the determinants of early exit from the labor market (Siegrist, Wahrendorf, Von Dem Knesebeck, Jürges, & Börsch-Supan, 2006). Previous research does not always treat the group of older employees as heterogeneous, in regard to the antecedents of the retirement process. However, this is not the case. In Flanders, in 2010, 27.1% of the low-educated persons of 55 years and older were at work in comparison with 52.8% of the high-educated (Statistics Belgium, 2011). In 2009, 38.2% of the employees who indicated to be troubled to a small or greater degree by a disability, a chronic disorder or protracted illness, were 50 years of age or older (VDAB, 2010a). This group has a lower labor force participation than their counterparts without a labor disability (Verbelen, Samoy, & Van Geel, 2005). In this report we will take a closer look at the work quality at the end of the career of both low-educated and labor disabled persons of 50 years and older, as it is also important to stimulate the labor force participation of people with specific needs in the respective categories. In addition to the age factor, the individuals in question experience an interference of limited education and/or labor disability, which makes employment at the end of the career even more difficult. These two factors are intrinsically tied to an older age, as older generations are generally lower educated and are more likely to have a poorer health situation than younger generations (J. E. Ilmarinen, 2001; TNO Arbeid, 2004; VDAB, 2010a, 2010b).

Researchers have addressed in various studies the concern in regard to the increase of retirees relative to the active labor force. Recent literature suggests that the quality and perception of work may have a significant impact on behavioral responses of workers and therefore play an important role in the decision to retire or continue employment at the end of the working career (Kubicek, Korunka, Hoonakker, & Raymo, 2010; Siegrist, et al., 2006; Sirgy, Efraty, Siegel, & Lee, 2001). In the 'Pact 2020' for Flanders, a policy aiming to rise labor market activity of older workers is linked with "workability of the work" (Luc Sels, Herremans, Nuyts, & Vansteenkiste, 2010). A workable job offers enough learning opportunities, is linked with a good work-life balance and does not give cause for work related stress of motivational problems (Vlaanderen in Actie, 2011). Although the quality of working life is prominent on the agenda since 2001 with 'het Pact van Vilvoorde' (Bourdeaud'hui,

Janssens, & Vanderhaeghe, 2004), only limited progress has been made. In 2004, 52.3 % of the employees considered their work as “workable”, in comparison with 54.3% in 2010. The statistics are even more concerning for the labor disabled. One out of four individuals who have to a considerable extent a labor disability, experience their job as “workable”, in comparison with two out of five workers with a certain degree of labor disability. For the low-educated their workability of the job is under the average of all Flemish employees (N., 2011). Nonetheless, one of the central measures that can be taken by organization to keep older people at work is the optimization of the working conditions.

This report sets out to test the associations of work quality indicators with early retirement intention of vulnerable groups, with the focus on low-educated and labor disabled persons of 50 years and older.

2. Risk groups

The bulk of research on the labor market withdrawal is based on the experiences of white, middle class males (Flippen & Tienda, 2000). Research is scarce in regard to the desired retirement age of older people of either of the two groups studied in this report, in relation to the effects of work quality. Consequently, we will examine the impact of respectively health and the education level for labor disabled and low-educated persons on their desired retirement age.

2.1 Labor disabled persons

Various definitions for the work disability exist. In this report we use the subjective self-assessment. According to that definition, a work disabled person is someone who is troubled to a small or greater degree by a disability, a chronic disorder or protracted illness, whether or not currently employed (Samoy, 2010; VDAB, 2010a).

This subjective self-assessment gives an indication of the perception of an individual’s health situation. There are arguments both to support and criticize the use of the self-reported indicator. The former position relates to the empirical evidence that perception of one’s own health is an accurate measure for the objective health situation (McGarry, 2002; Verlet & Callens, 2010). The opposing argument states that the self-assessment is based on subjective judgments and may not be comparable across individuals. Another concern is the fact that the self-reported health status might be biased in order to justify the departure from the labor force (Jones, Rice, & Roberts, 2010;

McGeary, 2009). This justification bias is mitigated by using currently employed individuals workers in our model. Furthermore, the subjective aspect is also important in the retirement decision. Those who consider their health problems as all-decisive, will take other work-related choices than those who are thinking in terms of their good qualities in spite of their poor health situation (Gelderblom & de Koning, 2007; van Hooft, Ottervanger, & van Dam, 2007). There is abundant empirical evidence that dissatisfaction with one's health status is associated with work withdrawal temporarily or permanently (Borghgraef, Denaeghel, Mortelmans, & Van Looy, 2010; Schreurs, et al., 2010). As can be expected, the labor disabled are more concerned with their health, than people without a labor disability (Verbelen, et al., 2005).

Physical health and work

The importance of health for work-disabled people is evident. Considering poor health, several objective consequences can be identified, such as when the work-disabled cannot perform certain tasks, even with adaptations of the working environment, or they have to put in a great effort to compensate the labor disability (J. Ilmarinen, 2006; Van Laer, Verbruggen, & Janssens, 2010). Poor health might affect the time horizon workers perceive and consequently the decision to retire (Dwyer & Mitchell, 1999). Health problems may cause workers to reconsider their priorities and increase the awareness that there is more in life than work (Schreurs, et al., 2010). Furthermore, reduced health may create a discrepancy between job requirements and working capabilities (Blekesaune & Solem, 2005). Within this framework, disability, chronic illness and poor health are important determinants of premature departure from the working life (Feldman, 1994; Harkonmäki, 2007; Henkens, Solinge, & Dalen, 2009; Kalwij & Vermeulen, 2008 ; Karpansalo, Manninen, Kauhanen, Lakka, & Salonen, 2004; Siegrist, et al., 2006).

When analyzing the effect of health on the desired retirement age, it is important to take the 'healthy worker effect' into account. Those with a advantageous health status and employed in the most qualitative jobs, will work longer than unhealthy individuals (L. Sels, Van Woensel, & Herremans, 2008).

Physical health and ageing

Irrespective of whether one has a work disability, the person's labor market position is influenced, among other factors, by the interaction between social and biological aspects of one's life. These aspects can cause specific stress moments, for instance in the course of ageing a person will be confronted with diminishing health (Henderickx, Janvier, Van Beirendock, Humblet, & Lorré, 2010).

Beside physical health deterioration, older people are more likely to have more mental exhaustion than their younger counterparts (De Coen, Forrier, Lamberts, & Sels, 2007).

Results of previous studies on retirement of labor disabled are inconsistent. On the one hand, for instance Heyma (2004) found that people who report to be in bad health prefer immediate retirement above income. On the other hand, the results of Miah & Wilcox-Goek (2007) indicate that chronic illness leads these people to accumulate fewer assets during their working years and consequently retire later. As articulated by Salas the contradictory results are largely due to differences in the measures of health status used across studies (Miah & Wilcox-Goek, 2007; Salas, 2002).

2.2 The low-educated

The definition of the VDAB will be used in this report. A low-educated person is someone who does not have a certificate of secondary education (VDAB, 2010b). Consequently, low-educated persons in our analysis are those who do not have a diploma, or certificate of primary or lower secondary school.

Education and work

Since a higher level of education may lead to more desirable jobs and working conditions, more education is likely to provide a desire for continuing to work at older ages (Kim & Devaney, 2005). There is a body of evidence which gives this statement an empirical underpinning, by stating that higher education is a predictor of later retirement, even when certain job characteristics are controlled (Blekesaune & Solem, 2005; Kim & Devaney, 2005).

Education and ageing

Without additional investments for older employees the depreciation of human capital can entail substantial social and economic consequences (Ester & Kerkhofs, 2007; Henderikse, Henkens, & Schippers, 2007). Previous research has shown that those who are used to educating themselves during their career, will acquire additional learning with more ease at older age (Forrier, Marescaux, & De Winne, 2010). Furthermore, there is evidence that the older and the low-educated employees invest in their employability to a lesser degree (Dewilde, Vlaminckx, De Vos, & Buyens, 2006). Due to this, it is possible that the gap exists between those with most human capital and least human capital, with a concomitant Matthew effect (Van Laer, et al., 2010).

The existing literature states that cognitive abilities such as reasoning, speed and memory, declines significantly after 50 years of age ("Fluid intellectual abilities") (Skirbekk, 2003; Stoner, 1982). The outlook, however, is not all negative. The older one is getting, the more one becomes the carrier of general and domain-specific knowledge, verbal capacities and communication skills – also known as *crystallized intellectual abilities* (De Coen, et al., 2007).

In this report we take a decision-process based approach to the concept of early retirement. Following Schreurs et al. (2011, p. 2) retirement is "the product of an informed decision-making process that unfolds over time, in which workers evaluate the overall utility of retirement before they reach the decision about whether to retire". This implicates that the focus of our analysis will be on workers who choose to retire, and do not take people who are forced to retire into account (e.g. due to reorganization). Within this scope, we will focus on the intended retirement age, i.e. the worker's perception concerning the intended time span before retirement (Schreurs, et al., 2010).

3. Job Demands-Resources model

We hypothesize that employees want to leave jobs with worse working conditions at a different age than jobs with better working conditions, since the exposure to poor working conditions was shown to increase intentions of premature departing from working life (Boumans, de Jong, & Vanderlinden, 2008; Siegrist, et al., 2006; Von Bonsdorff, Vanhala, Seitsamo, Janhonen, & Husman, 2010). The underlying principle is that each of the aspects of the job has a positive or negative influence on the decision to retire. This principle forms the basis of the Job Demands-Resources model. The latter classifies all working conditions into two categories, that are differently related to specific outcomes (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

On one hand, the model identifies *job demands*, factors such as role ambiguity in the job, emotional, physical and mental burden. These demands result in a heightened job-related strain, when meeting those demands depletes employees' mental and physical resources and may therefore lead to psychological exhaustion. This underlying psychological process is called 'health impairment process' (Bakker & Demerouti, 2007; de Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004; Schreurs, et al., 2011). We need to note, that job demands are in themselves not necessarily negative in all contexts. For instance, mental stress can be stimulating under certain levels. This does not, however, undermine their role as stressors in the relationship to health impairment process, and the

concomitant recovery need. To continue our example, the mental stress can make a job less boring, but it still takes its toll on the individual psychological resources.

On the other hand, *job resources*, such as well matched skills, autonomy and labor relations, are specified in the Demands-Resources model as characteristics of employment which have motivational potential, leading amongst others to work enjoyment. They may play either an intrinsic motivational role by stimulating personal development and learning, or they may play an extrinsic motivational role, since job resources are functional in achieving work goals (Bakker & Demerouti, 2007). The more satisfied one is with his or her job, the later one wishes to retire (Beehr, Glazer, Nielson, & Framer, 2000; Borghgraef, et al., 2010; Mein et al., 2000). In addition to classic job resource factors, such as social support or skill utilization, which are situated on the level of organization, we include factors on the individual level, pertaining to attitudes and orientations towards work. This choice is based on the same logic, namely that positive work attitudes (e.g. ascribing high value to work and pro-active career orientation) will positively influence motivation, which in turn will lead to postponed labor market exit.

We will use the Job Demands-Resources model as the underlying theoretical foundation of our inquiry, as it has proven its value abundantly (Bakker & Demerouti, 2007; Schreurs, et al., 2011). When someone scores high on a certain job quality indicator which can be classified as a job demand, we hypothesize that this job quality aspect will be negatively related to the intended retirement age mediated by recovery need, When someone scores high on a labor quality character that can be categorized in accordance with the Job Demands-Resources model as a job resource, we expect a positive relation with intended retirement age, mediated by work enjoyment.

4. Data

The data for the current report originate from the survey "Careers in Flanders". The mentioned survey has been carried out in 2011 under the auspices of *Steunpunt Werk en Sociale Economie*. Various aspects of the working lives of the Flemish population became the focus of the computer-assisted personal interviews, ranging from the objective career history to values and attitudes towards learning. The sample is representative of the Flemish population between 18 and 65 for age and gender.

4.1 Sample

The sample consists of 1518 respondents, of which 73.41% (N = 1114) are employed. Because we are interested in the quality of the working position occupied at the time of the survey, and the effects thereof on the retirement age, our subsample concerns 341 individuals (22.5% of the total sample), who were 50 years of age or older at that moment.

Of these 341 respondents 52.9% were men and 47.1% - women. 22.2% are low educated (N = 76) and 22.8% are work-disabled (N = 78). The latter percentage is in line with data of the 'Socio-Economic Survey' (2001), where 22.4% of the aged 50 to 64 and active on the labor market, are troubled to a small or greater degree by a disability, a chronic disorder or protracted illness (Verbelen, et al., 2005); as well with data from the 'Enquête naar de Arbeidskrachten' (2007), which rendered 22,2 % (Samoy, 2008).

4.2 Variables

Aside from socio-demographic variables, which are self-explanatory, a number of latent factors were constructed (the entire list of the corresponding indicators can be found in the Appendix 1):

Table 1: included variables

Income sufficiency	the subjective perception of whether income matches household needs
Skill utilization	the match between worker's skills and work requirements
Social support	work-related help and appreciation from colleagues and management in the organization
Role fuzziness	the degree to which work-related roles are

	unclear to the respondent (reverse scoring)
Work centrality	how important is work to the respondent
Protean attitude (value-driven)	a subset of the protean attitude scale (Briscoe, Hall, & Frautschy DeMuth, 2006), related to career being propelled by individual values, and not those of the employing organization
Physical stress	whether work is related to heightened physical demands
Work pressure	whether work is characterized by heightened effort and/or tempo
Emotional stress	whether work is related to negative or difficult feelings
Work enjoyment	degree to which the respondent gains pleasure in his/her work
Recovery need	degree to which the respondent feels the need to rest or recover after a typical working day
Organizational loyalty	the item measures respondent's wish to stay in the current place of employment until retirement (manifest variable)
Low-educated	a dichotomous variable indicating whether the respondent belongs to the corresponding risk group as defined above
Work-disabled	a dichotomous variable indicating whether the responding belongs to the corresponding risk group as defined above

Our dataset contains other variables pertaining to employment qualities. However, they were eliminated in the preliminary analysis (regressions) as not being related to the retirement age. We have also tested the absence of relationships in structural models, yielding the same result. The omission of these variables is in principle as informative, as the inclusion of the statistically related variables; hence we specify the complete list, without elaborating the non-significant relationships:

Table 2: excluded variables

Work autonomy:	the ability to determine one's workflow and its tempo
Organizational identification	personal identification with the employing organization
Protean attitude (self-drivenness):	a subset of the protean attitude scale, related to career being propelled by individual values, and not those of the employing organization
Mental stress	degree to which the job requires intense mental effort (e.g. a lot of concentration, frequent reflection)

In addition, we include a number of control variables in the model, the relevance of which has been proven abundantly in the literature: health, age, income sufficiency (Denaeghel, Mortelmans, & Borghgraef, 2011; Mein, et al., 2000; Parker & Rougier, 2007; Taylor & Shore, 1995) and gender (Hatch, 1992; Schils, 2008; Vanderleyden & Schoenmaeckers, 2009).

5. Method

Aside from the initial explorative analysis, we use structural equation modeling with latent factors. Since the indicators are not normally distributed, we use the Satorra-Bentler scaled (mean-adjusted) chi-square, where the usual normal-theory chi-square statistic is divided by a scaling correction to better approximate chi-square under non-normality (Satorra & Bentler, 1994). As the application of SEM techniques is in the essence the process of choice of the most adequate model between several alternatives, we conduct our analysis in three steps. After reviewing the initial descriptive results, we depart with the basic unmediated model. In the subsequent steps we compare the basic model to its alternatives, namely the mediated model based on the literature, and the adjusted mediated model based on the combination of theoretical and empirical considerations. After the best fitting model has been chosen for the whole sample of 50+, we proceed to the analysis of the risk groups at hand.

6. Results

6.1 Descriptive results

As our main question pertains to the distinctions in regard to the vulnerable groups in focus-namely the work-disabled and low-education, we begin by comparing the means for our variables, to explore the differences.

Table 3: means for age and work quality factors scores for low-educated (ANOVA)

	Control group	Low-educated	Sig.
Estimated retirement age	61.30	61.36	0.896
Protean: value-driven	0.36	-0.12	0.006
Skill utilization	0.05	-0.23	<0.001
Social support	0.02	-0.12	0.073
Work pressure	0.03	-0.17	0.017
Emotional stress	0.04	-0.21	0.002
Physical stress	-0.09	0.5	<0.001
Role fuzziness	-0.24	0.14	0.038
Recovery need	0.008	-0.07	0.339
Work enjoyment	0.05	-0.26	<0.001
Work centrality	0.05	-0.25	<0.001

In the table above we use factor scores to assess the inter-group differences. Although factor scores have certain drawbacks as input for causal analysis (Zuccaro, 2010), it is feasible to use them in the preliminary exploration in the context of the current study. We consider the dependent variable, namely retirement age, and the scores for the latent factors. In the table above we see that the difference in retirement age between the low-educated group and the control group is not statistically significant. The factors scores, on the other hand, are largely consistent with the expected differences, including the direction thereof. A notable exception is the *recovery need* factor; while *social support* exhibits only marginal significance. Overall, the low-educated score worse on the self-drivenness values, match between job and individual skill set, social support, physical stress, pleasure in work and work centrality. The control group scores worse in terms of emotional stress, role fuzziness, and work pressure.

Table 4: means for age and work qualify factor scores for work-disabled

	Control group	Work-disabled	Sig.
Estimated retirement age	61.43	60.94	0.230
Protean: value-driven	-0.18	0.06	<0.001
Skill utilization	0.03	-0.18	0.004
Social support	0.04	-0.23	<0.001
Work pressure	-0.04	0.22	0.001
Emotional stress	-0.05	0.27	<0.001
Physical stress	-0.09	0.48	<0.001
Role fuzziness	-0.002	0.01	0.820
Recovery need	-0.07	0.39	<0.001
Pleasure in work	0.03	-0.16	0.022
Work centrality	0.02	-0.11	0.075

Also for the work-disabled the estimated retirement age does not significantly differ between the risk and control group. Most of the factors yield significant differences, with the exception of *role fuzziness.* The *Work centrality* difference is marginally significant. The direction of the inequalities is not identical to the previous distribution: work-disabled maintain higher scores for value-drivenness, work pressure, emotional stress, physical stress and recovery need. Work-disabled score worse than the control group for skill utilization, social support, pleasure in work and work centrality.

Considering the absence of inequality in regard to the retirement age, we are to commence causal analysis under the hypothesis that both groups at risk are, indeed, similar to the general population, in regard to the effects of work quality (as conceptualized hereinabove).

6.2 Measurement model

Before estimating the effects of the latent factors, we need to see whether these factors are adequately measured by their respective indicators:

Table 5: measurement model

Indicator	*Value*
Comparative Fit Index (CFI)	0.926
Tucker-Lewis Index (TLI)	0.916
RMSEA	0.039
90 Percent Confidence Interval	0.037 0.041
P-value RMSEA <= 0.05	1.000

The fit of the measurement model is good, which allows us to proceed to the structural relationships between factors.

6.2.1 Basic model (A)

In the first step the direct effects of all latent factors and manifest exogenous (control) variables on the estimated retirement age are measured:

Table 6: Model A – direct regression effects on estimated retirement age

	Estimate	Standardized	P > |z|
Skill utilization	-1.348	-0.198	0.032
Social support	0.642	0.130	0.238
Role fuzziness	-0.975	-0.141	0.104
Physical stress	-0.220	-0.043	0.543
Work centrality	0.625	0.193	0.016
Protean attitude: value-driven	0.832	0.135	0.036
Gender (1=man, 2 = woman)	-0.817	-0.136	0.011
Work pressure	0.171	0.044	0.607
Emotional stress	0.164	0.039	0.618
Work enjoyment	0.832	0.127	0.155
Recovery need	-0.639	-0.125	0.115
Age	0.258	0.293	0.000
Health general	0.264	0.128	0.018
Income sufficiency	0.267	0.057	0.343
Organizational loyalty	-0.550	-0.153	0.003

Table 7: goodness-of-fit indices for Model A

Comparative Fit Index (CFI)	0.887
RMSEA	0.043
90 Percent Confidence Interval	0.039 0.047
P-value RMSEA <= 0.05	0.999

Some of the effects are statistically significant, and the model exhibits relatively good fit—CFI is slightly below the recommended 0.90 threshold, while RMSEA shows good values, well below the 0.05 threshold, including the 90% confidence interval.

Nevertheless, a substantial share of the effects does not yield sufficient levels of statistical significance. In addition, the direction of some effects contradicts the postulates of the resource-demand theory. Theoretical considerations play an important role in SEM-modeling, since multiple alternative models may account for the same data (Kline, 2005). As consequence, alternative models must be considered and compared with the basic model and against each other.

6.2.2 Mediated model (B)

In the second model we will attempt to replicate the logic of the typical JR-D model proposed by Schreurs, et al. (2011), whereby the demand and resource factor sets are mediated by *recovery need* and *work enjoyment* respectively. We alter the original model by changing the antecedent factors:

Table 8: Model B – mediated effects on estimated retirement age

	Estimate	Standardized	P > |z|
RECOVERY NEED			
Work pressure	0.271	0.353	0.000
Emotional stress	0.266	0.322	0.000
Physical stress	0.034	0.034	0.605
Role fuzziness	-0.155	-0.116	0.060
WORK ENJOYMENT			
Skill utilization	0.175	0.143	0.049
Social support	0.365	0.378	0.000
Work centrality	0.245	0.377	0.000
Protean attitude: value-driven	0.144	0.114	0.089

ESTIMATED RETIREMENT			
Work enjoyment	0.842	0.167	0.002
Recovery need	-0.490	-0.095	0.081
Health general	0.358	0.172	0.002
Gender	-0.903	-0.149	0.007
Age	0.260	0.293	0.000
Organizational loyalty	-0.575	-0.159	0.005
Income sufficiency	0.541	0.113	0.043

Table 9: goodness-of-fit indices for Model B

Comparative Fit Index (CFI)	0.902
RMSEA	0.041
90 Percent Confidence Interval	0.036 0.045
P-value RMSEA <= 0.05	1.000

Model B shows a slightly better fit, both CFI and RMSEA being within the range of the recommended values. A significant improvement of the model is that the direction of effects is fully consistent with the theory. This was not the case with the previous model, for instance *Skill utilization*, which indicates a good match between individual skill set and job requirement, had a negative effect on the retirement age, while in the mediated model the same effect obtains the expected positive sign.

Four demand-related factors are linked to the *Recovery need*. Two of them – *Work pressure* and *Emotional stress* have significant influence on the mediating variable, with substantial effects—both above 0.3. *Physical stress,* on the other hand, does not have a relationship to the *Recovery need*, as we initially hypothesized. This issue will be considered in the adjusted mediated model. The statistical significance of *Role fuzziness* is just above the threshold, but is still acceptable; the strength of the relationship is relatively weak, however.

Skill utilization and *social support* have a positive effect on *Work enjoyment,* along with attitudinal characteristics of *Work centrality* and *Protean attitude.* Note the strength of the influence of *Social support* (being valued by colleagues and direct management) and *Work centrality*, both indicators being above 0.37.

The direct effects on the estimated retirement age by the mediating variables are conjoined with a set of control variables. The influence of the *Recovery need* is of marginal significance. This is an improvement in relation to Schreurs' (2011) own results, where no relationship was found. The strength of the effect is relatively small, but still comparable with that of the other variables.

As one can expect, the overall state of health affects respondent's estimation of retirement age, better condition thereof leading to career prolongation. In regard to gender, women expect to retire a little earlier than men, even though the legal retirement age is equal for both sexes. The significant relationship with age may suggest that individuals in early 50s underestimate their retirement age, and that this estimation is adjusted towards a more realistic timing as the actual retirement approaches.

A peculiar finding is that the desire to work in the same (current) organization until the end of one's career has a negative relationship with the retirement age, even after controlling for age. Finally, the self-reported measure of income sufficiency has a positive effect: if the family has enough means to support the household, the retirement is slightly postponed.

6.2.3 Adjusted mediated model (C)

Based on the empirical considerations we are able to render an alternative model, which slightly better accounts for the data. It has but a few minor alterations in comparison with the previous model:

(1) Physical stress is made to be mediated by *Work enjoyment* instead of *Recovery need*

(2) A new connection is made between gender and *Work enjoyment*, as gender differences have been found in regard to the latter (Frederick & Fast, 2001; Manning, 2002)

Table 10: Model C – mediated effects on estimated retirement age

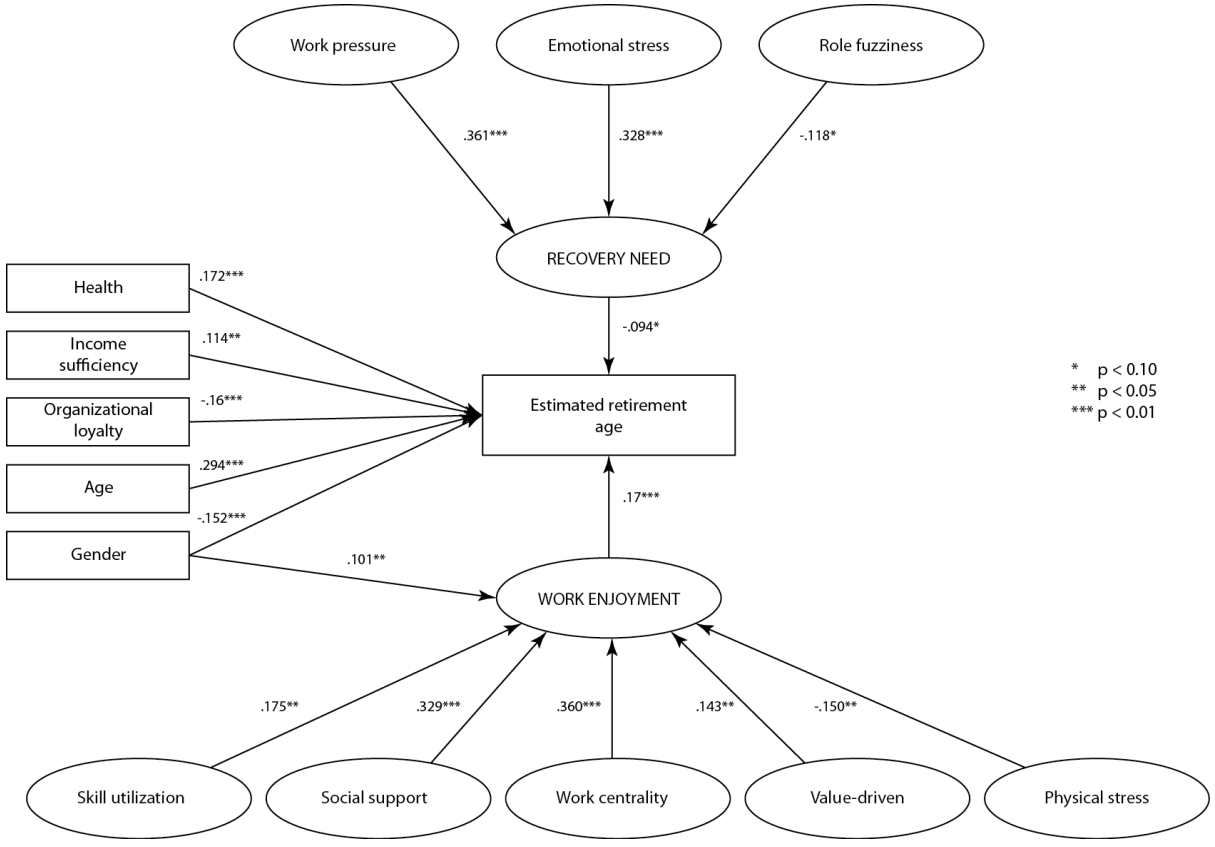
	Estimate	Standardized	P > |z|
RECOVERY NEED			
Work pressure	0.278	0.361	0.000
Emotional stress	0.271	0.328	0.000
Role fuzziness	-0.158	-0.118	0.055
WORK ENJOYMENT			
Skill utilization	0.209	0.175	0.017
Social support	0.319	0.329	0.000
Work centrality	0.238	0.360	0.000
Protean attitude: value-driven	0.181	0.143	0.031
Physical stress	-0.157	-0.150	0.025
Gender	0.123	0.101	0.048
ESTIMATED RETIREMENT			
Work enjoyment	0.845	0.170	0.002
Recovery need	-0.486	-0.094	0.082
Health general	0.357	0.172	0.002
Gender	-0.921	-0.152	0.007
Age	0.260	0.294	0.000
Organizational loyalty	-0.576	-0.160	0.005
Income sufficiency	0.543	0.114	0.043

Table 11: goodness-of-fit indices for model C

Comparative Fit Index (CFI)	0.904
RMSEA	0.040
90 Percent Confidence Interval	0.036 0.045
P-value RMSEA <= 0.05	1.000

The path diagram of the model is rendered on the path diagram below:

Figure 1: path diagram for model C



The goodness-of-fit indices are slightly better, although this is likely to be a consequence of adding an extra relationship. The core of the model has been discussed above, only the mentioned adjustments remain to be addressed. First, the factor *Physical stress* has a statistically significant negative relationship with work enjoyment. This is corroborated by other studies (Glenn & Weaver, 1982). Regressing this factor on work enjoyment is strictly speaking not in line with the Resources-Demands model, but we deem it a better solution to adjust the model to the actual data, than to omit a relevant factor altogether (considering the absence of its significance in the previous model).

Second, the additional link between gender and work enjoyment suggests that women have higher levels of satisfaction in work. In addition, control for physical stress and gender seems to have affected the significance level for *Protean attitude*, making it acceptable. The significance level for the *Recovery need* factor has not improved, staying approximately on the same level. In the next section we will make an evaluation of the parameters of all three models to make a choice between them. The negative link between *Role fuzziness* and *Recovery need* is explained by the reverse scoring of the indicators for the former factor.

6.2.4 Model comparison

As our models are non-nested, we cannot rely on the standard χ^2 comparison for significance testing between the alternatives. Model A can be easily rejected based on its theoretical incoherence and lesser fitness in relation to the remaining two models, as we have discussed previously. The choice between models B and C can then be made based on Akaike information criterion (AIC); we include model A for the sake of exhaustiveness:

Table 12: general model comparison

	AIC	Δ AIC
Model A	31739.590	-
Model B	29884.821	1854,769
Model C	29877.258	7,563

Model C has the minimal value of the index and is therefore preferred to other models. The AIC difference with model B is more than 7 points, which means that Model C in general receives substantially more support. However, model C contains two changes in relation to model B, which should be tested separately in order to confirm the validity of both additions. One of these changes (changing the path pertaining to *Physical stress*) entails a structural change, which requires a test for non-nested models. The other alteration, the addition of a path between gender and *Work enjoyment*, entails a comparison between nested models, therefore a χ^2-based comparison is applicable. We begin with the former, comparing Model C as rendered previously (section 5.2.3) with its alternative, whereby *Physical stress* is still related to *Recovery need.*

Table 13: comparison of model C variants

	AIC	Δ AIC
Model C: PS linked to RN	29883.738	
Model C: PS linked to WE	29877.258	6,480

The difference is large enough to support the change of the parameter as in the previously rendered model C.

The second test compares model C as given above with its variant in which the relationship between gender and *Work enjoyment* is absent. Since we have used the Satorra-Bentler correction to account for deviations from index normality, the regular χ^2 test is not possible. Instead, we have to use Satorra-Bentler scaled difference χ^2 test (Satorra & Bentler, 2001):

Table 14: scaled difference χ^2 test for the alternative path for gender

	χ^2	Satorra-Bentler χ^2	df
Model C with gender	1478.826	1297.927	892
Model C without gender	1482.684	1301.774	893
Satorra-Bentler Scaled Difference = 5,0881 df = 1 Chi Square probability = 0,024091[1]			

The latter model change is supported as well, which confirms that both changes in model C are statistically justified and lead to a better data representation.

[1] The specific software used for the calculation of this test is described in Crawford & Henry (2003)

6.3 Testing for risk groups

We have started the analysis under the grounded presupposition that there is no difference in regard to the effects under study between the control group and both risk groups (low educated and labor disabled), based on the ANOVA results. Having constructed the general model we will re-test that hypothesis, in order to confirm the absence of causal relationship in the presence of control variables.

Two approaches lend themselves to this goal. The first one entails the inclusion of the risk groups as additional (dummy) variables in the analysis. The second one involves the use of grouped model estimation.

Method 1: dummy use

The inclusion of dummy group variables in the model gives the following results:

Table 15: group membership effects on estimated retirement age (model C, partial results)

	Effect (unstandardized)	Sig
Work disability	0.193	0.640
Low education	-0.443	0.279

These results corroborate our previous findings, namely that the effects of work characteristics are independent of the group membership[2].

Method 2: grouped model

The second manner to scrutinize differences between the groups is to use grouped models, more specifically, the measurement invariance testing. This approach allows forcing model parameters to be identical for both groups, whereby the group model is compared to the baseline model in terms of (scaled) χ^2 difference. However, the small size of both risk groups (cf. supra) carries a risk of making the model unreliable. Keeping that in mind, we conduct the measurement invariance test for both risk groups, again using the Satorra-Bentler scaled difference χ^2 test.

[2] It is theoretically possible, that the general state of health suppresses the effects of the work-disabled group dummy due to their mutual relationship. However, the removal of the health variable from the model still did not yield a significant relationship between the group dummy and the retirement age.

Table 16: measurement invariance for work-disabled (grouped model)

	scaled χ^2 (unscaled)	df	CFI	RMSEA
Model 1: configural invariance	2670.690 (2974.489)	1784	0.818	0.059
Model 2: strict invariance (equal loadings + intercepts + residuals)	2683.244 (3130.526)	1884	0.836	0.055
Model 3 (idem + regressions)	2725.502 (3170.027)	1900	0.830	0.056
Model 2 vs. Model 1: scaled $\Delta\chi^2 = 73.910$, $\Delta df = 100$, $p = 0.977$ Model 3 vs. Model 1: scaled $\Delta\chi^2 = 101.725$, $\Delta df = 116$, $p = 0.825$				

Imposing the full invariance restrictions (including factor loadings, intercepts, residuals and regression coefficients) on the grouped model did not yield significant differences from the baseline (unrestricted) model. The same result is found for the lower educated:

Table 17: measurement invariance for lower educated (grouped model)

	scaled χ^2 (unscaled)	df	CFI	RMSEA
Model 1: configural invariance	2498.120 (2743.181)	1784	0.846	0.053
Model 2: strict invariance (equal loadings + intercepts + residuals)	2389.978 (2946.811)	1884	0.891	0.044
Model 3 (idem + regressions)	2404.034 (2970.805)	1900	0.891	0.043
Model 2 vs. Model 1: scaled $\Delta\chi^2 = 55.952$, $\Delta df = 100$, $p = 1.000$ Model 3 vs. Model 1: scaled $\Delta\chi^2 = 68.025$, $\Delta df = 116$, $p = 0.999$				

Overall, these findings lead to conclusion that the model can be applied for both groups. However, we must stress once again that the small subsample size for both risk groups is strictly speaking insufficient to serve as the basis for definitive evidence using group analysis, therefore we should interpret the results of the group analysis in conjunction with the previous methods (ANOVA and dummification).

6.4 An alternative approach: post-hoc models

In the previous models the influence of factors specific to either of the risk groups under discussion has not been established. Even though this result answers the original research question, it is not entirely satisfactory, as both educational levels and work disability are important factors that are expected to have effects on the dynamic of retirement (cf. supra).

Alternative definition of the input group: lower education

This led us to the re-definition of the initial parameters of the problem formulation, namely the input categories of work disability and lower education. In regard to the latter aspect, we (by order of a hypothesis) change the operationalization from the gap between individuals without secondary education and the rest, and focus on those without higher educational qualifications. To re-introduce the factors pertaining to work disability, we have departed from the definition of work disability rendered hereinabove. Instead, we take into account seven items related to specific problems related to work disability:

(1) having concentration problems
(2) having to work at a slower rate
(3) having to isolate oneself
(4) having problems taking decisions
(5) having to postpone work
(6) having to delegate work to someone else
(7) having to work extra,

all of the above as the result of health-related problems, while being at work. The first four of these items appeared to be statistically relevant for the model, and are therefore included:

Table 18: grouped model C (higher education)[3]

	Higher education = 1		Higher education = 0	
Recovery need	Est.std	Sig.	Est.std	Sig.
Work pressure	0.331	0.005	0.392	0.000
Emotional stress	0.372	0.001	0.211	0.013
Concentration problems	0.243	0.011	0.066	0.434
Slower work tempo	0.136	0.120	0.260	0.010
Isolate oneself	-0.123	0.069	-0.150	0.026

[3] RMSEA = 0.042, p (RMSEA < 0.05) = 0.996, CFI = 0.883

Problem taking decisions	0.240	0.000	-0.021	0.835
Work enjoyment				
Skill utilization	0.364	0.008	0.142	0.108
Social support	0.089	0.482	0.361	0.000
Work centrality	0.307	0.021	0.403	0.000
Protean attitude	0.236	0.026	0.141	0.074
Physical stress	-0.039	0.739	-0.228	0.003
Gender	0.161	0.059	0.077	0.209
Estimated retirement age				
Work enjoyment	0.182	0.040	0.179	0.007
Recovery need	-0.088	0.284	-0.104	0.218
Health general	0.210	0.001	0.092	0.193
Gender	-0.486	0.000	0.074	0.297
Age	0.187	0.003	0.387	0.000
Organizational loyalty	-0.166	0.029	-0.148	0.036
Income sufficiency	0.039	0.699	0.121	0.076

First, it should be mentioned that the added work-impairment[4] indicators relate to *Recovery need,* and not either to *Work enjoyment* or the dependent variable. This choice is based on the comparison of the respective AIC indices, as well as the concomitant RMSEA and CFI values. Second, it should be noted that the model is **not invariant** between the educational groups, as confirmed by the scaled difference χ^2 test:

Table 19: measurement invariance (grouped model)

	scaled χ^2	df	CFI	RMSEA
Model 1:configural invariance	2084.642	1672	0.885	0.042
Model 2: weak invariance (equal loadings)	2116.857	1697	0.883	0.042
Model 3: strong invariance (loadings + intercepts)	2213.150	1723	0.864	0.045
Model 2 vs. Model 1: scaled $\Delta\chi^2 = 32.040$, $\Delta df = 25$, $p = 0.157$ Model 3 vs. Model 1: scaled $\Delta\chi^2 = 162.380$, $\Delta df = 51$, $p = 0.000$				

[4] The choice of the label is in order to distinguish the alternative operationalization from the standard one.

It is therefore feasible to constrain the factor loadings of the group model, but leave the rest of the parameters free, as doing otherwise would result in a significantly worse model. The model rendered above adheres to the former design (factor loadings constrained).

Both stress-related factors mediated by *Recovery need* have significant relationships with the latter, whereby those without higher education are more heavily affected by working under pressure, whereas respondents with higher educational qualifications are influenced to a larger degree by *Emotional stress*. Health issues related to *Concentration problems* lead to higher recovery need levels for highly educated, but have no effects on the rest. On the other hand, health issues resulting in *slower work tempo* lead to the opposite result, influencing only those without higher education. Health impediments leading to the need to isolate oneself surprisingly has the negative effect for both groups, although the significance of that relationship is marginal for the highly educated. It is possible that such isolation is a recovery measure in itself, which would account for the negative relationship. Finally, health issues related to problems with making decisions have significant effects for highly educated, but not for the rest.

Factors mediated by *Work enjoyment* also have effects consistent with the expectations towards white and blue-collar job profiles. *Skill utilization* appears to have influence for highly educated alone, while *Social support* is relevant only for those with secondary education or less. Both attitudinal measures—*Work centrality* as well as *Protean attitude: value-drivenness*—are significant for both groups (albeit in one case the level of significance is marginal), but the strength of the effects is different. *Work centrality* factor, which can be seen as corresponding to the traditional career profile with the classic work ethic, is somewhat more influential for those without higher education. On the other hand, the *Protean attitude*, which is an orientation typical for the post-traditional career pattern, is more prominent in the highly educated group. Consistent with the same profile, *Physical stress* plays no role in the latter group, but has significant effects for the lower educated. Finally, women report higher *Work enjoyment* rates than men, in accord with the literature.

As for the effects on the dependent variable, *Work enjoyment* is a significant mediator for both groups, while *Recovery need* has no effects on the estimated retirement age in both groups as well, conform the findings of Schreurs et al. (2011). Provided the rejection of the model including the direct effects of the four indicators pertaining to work disability, we can conclude that this factor has

no effect on the estimated retirement, controlling for health in general. Indeed, the removal of the health variable renders *Recovery need* a significant factor, we can therefore speak of the moderator effect. Interestingly, the effects of health are significant only for the group with higher education.

Alternative definition of the input group: work disability

The second experimental post-hoc model adjustment concerns the re-definition of the work-disability group operationalization. Departing from the common definition employed in the main thread of analysis, we have considered someone as belonging to the work-impaired group[5] if the respondent scores at least on one indicator (i.e. sometimes having health-related issues resulting in the impairment of the working process). The idea of this operationalization is to test whether the indicators describing very specific behavioral patterns fare better in the analysis than the direct question, which might be more prone to subjective interpretation by the respondent. In addition, the specific indicators pertain strictly to work-related health impairment, while the previously used variable also included non-work related health issues. Unfortunately, the test for the measurement invariance yielded a negative result: the same model can be applied to both groups in the context of the alternative definition as well. This implies that Model C should be used.

[5] The choice of the label is in order to distinguish the alternative operationalization from the standard one.

7. Conclusion and discussion

In this paper we have explored the effects of individual characteristics in combination with those pertaining to the working environment (i.e. incorporating both micro- and meso-level factors), on the estimated retirement age. Most of the initially selected variables were included in the model based on their statistical significance. Having considered three alternative models, the selection was made for the best fitting model based on the goodness-of-fit criteria (AIC, RMSEA) and the Satorra-Bentler scaled difference χ^2 test (Satorra & Bentler, 2001). The model selected largely corresponds to the theoretical logic of the JR-D model, whereby job resource-related aspects have a positive influence on the estimated retirement age, and job demand-related ones affect the dependent variable negatively. Both groups of aspects are mediated respectively by enjoyment of work (theoretically linked to motivation) and the need to recover from work strain (theoretically linked to the health impairment process).

The model was subsequently tested for measurement invariance for two risk groups: work-disabled and lower educated. In the first instance, no differences were found in the logic of the model application between either of these groups and the rest of the sample.

In the post-hoc analyses we have found a difference in terms of the model effects between the group with higher educational qualifications and the rest of the sample. This suggests that the education does indeed play a role in shaping the retirement decisions, but the disprivileged group is not defined by lower education (i.e. not having the secondary educational degree), but rather by the absence of higher education. Naturally, this grouping also includes the lower educated as per original definition.

All of the rendered models show a difference between men and women in regards to the estimated retirement age, whereby women expect to retire somewhat sooner. The legal retirement age has been equalized for both genders since 2009. Our data do not suggest an explanation for the phenomenon of the difference in the expectations. It is possible that these expectations, linked to the culturally defined gender schemata (Marler & Moen, 2005), introduce a specific dynamic of how the retirement is perceived by men and women. The comparable findings for gender can be encountered in the report of Vanderleyden & Schoenmaeckers (2009).

Mediation by work enjoyment (job resource-related) and by recovery need (job demand-related) plays an important role in the model, as the non-mediated model was significantly less well fit to the data at hand. This mediation is in line with the theoretical construct of the JD-R model.

We have observed the moderating effects of the self-reported health on the recovery need. If the health variable is removed from the model, the effects of the recovery need become statistically significant, whereas with the former variable in the model the significance of the latter is marginal. This finding is well explained by the theoretical underpinnings of the JD-R model, namely the health impairment process (de Croon, et al., 2004; Schreurs, et al., 2011). Recovery need is related to withdrawal from work given a demanding work environment, and is necessary in order to replenish one's physical and/or psychological resources. The same withdrawal can be expressed as the early retirement intention, whereby health problems, related to a higher need for recovery, may interfere with being able to perform at the job. In other words, poor health and high recovery need may be different sides of the same medal in the context of the JD-R model. A significant negative correlation between the variables ($r = -.242$) corroborates that statement.

Attitudes towards work being driven by values in one's career and work being central to one's personal identity, are a significant predictor of work enjoyment, and through its mediation also of the retirement age.

One of the model aspects not lending itself to an apparent explanation is the indicator of organizational loyalty, which is the desire to remain in the same organization until retirement. Its negative effect seems counterintuitive, as the implication of being satisfied with the current employer should lead to postponed retirement. Nevertheless an alternative explanation can be considered, whereby individuals with unsecure working situations (with the concomitant higher job demands) have more incentive to choose to keep their current employment. This interpretation can be to some degree supported by statistically significant bivariate correlations of the loyalty variable with mental stress ($r = 0.10$) and role fuzziness ($r = 0.24$). In other words, the motivation to stay with the same employer is not necessarily driven by positive factors.

Conform the findings of Vanderleyden & Schoenmaeckers (2009) age is the most important predictor of the estimated retirement age (considering non-mediated effects). Two considerations may explain the finding. First, there could be a twofold selection effect, whereby those who are still at work (for any reasons) rationalize their situation by providing a higher retirement age. In addition,

individuals of the similar age who are already retired, are simply not present in the data, therefore potentially creating a bias.

On the other hand, the same relationship can also suggest a perception adjustment effect, consisting in that individuals approaching the retirement age have a more concrete and realistic outlook on the retirement process, as well as on their own motivations and attitudes towards working, retirement and the financial situation of their household.

A finding that calls for a rethinking of the original JD-R model is that *Physical stress* is more strongly related (in terms of the model fit) to the job resource-related cluster of factors, whereas theoretically it should belong the demand-related branch. Given that (1) none of the other factors exhibited the same behavior and (2) *Physical stress* was found to be insignificant for the lower educated in the post-hoc models, we can suspect a moderating effect of the job content (e.g. white, blue or pink collar). While in some working arrangements physical strain is an inherent job characteristic (i.e. entirely manual labor), in other contexts it may be seen as a hinder to otherwise comfortable employment (e.g. services). This would explain both the relation to education and to work enjoyment (but not to the recovery need, as this dynamic is unrelated to health). However, additional research is required to confirm that hypothesis.

Various empirical and theoretical studies about occupational stress have deemed autonomy to be an important job resource factor (Bakker, Demerouti, & Euwema, 2005). In our dataset, however, the autonomy variable did not show significant interconnections with the dependent variables and was removed from the model.

Aside of the mentioned considerations, our findings are in line with the empirical research on the subject. The importance of mediation is confirmed (Schreurs, et al., 2011), the effects of gender and age are comparable with the existing findings (Beehr, et al., 2000; Vanderleyden & Schoenmaeckers, 2009; Zappalà, Depolo, Fraccaroli, Guglielmi, & Sarchielli, 2008). The positive direction of *Income sufficiency* effect is consistent with Zappalà et al. (2008), although is contrary to the intuitive expectations—subjective well-being leads to later retirement.

8. Policy implications

In the recent years the issue of keeping older workers longer at work has received increasing attention in the public policy. On one hand, the respective postulations appear in the policy documents (both national and European); on the other employers are urged to introduce "age-aware" HRM policies, catering to the specific needs of different age groups, including of course the older employees (Aarendonk, 2003; Martens, Manshoven, Lambrechts, & Vandenberk, 2006; Vanmullem & Hondeghem, 2006). Unfortunately, the recent data are scarce in regard to the actual implementation of the specific age-aware policies in Belgium of Flanders. This is especially the case for the private sector, whereas the effort in the public sector is somewhat better documented (e.g. see Platteau & Hondeghem, 2010; Vanmullem & Hondeghem, 2005).

One of the practical applications of our current analysis is on the level of the organization, as our model suggests. Factors like social support, skill (mis)match, as well as the reduction of emotional and mental stress can be managed through various HRM measures. Companies can be stimulated to introduce and/or strengthen such policies, specifically oriented at older workers. Individual factors, attitudes and orientation towards work and career in general can, on the other hand, be fostered by the means of coaching and/or career consulting. This is probably applicable to a larger degree to the development of the protean outlook on career, which is not solely an attitude, but also a practical skill in a certain sense.

Although our model incorporates a diverse set of factors (both on the individual and organizational level, cognitive and emotional), they nevertheless fit into the dual logic of the Job Demands-Resources model. In this sense our findings corroborate a substantial line of research (for an overview see Bakker & Demerouti, 2007). We augment the latter by incorporating attitudinal factors in regard to the retirement age, and by confirming a relationship of the negative factors (albeit with marginal significance) to the same outcome, which the existing research on this specific subject has failed to do. In this sense our findings support the methodology used in the measurement of "workability of work" in *Vlaamse werkbaarheidsmonitor* (Bourdeaud'hui & Vanderhaeghe, 2010), which employs the same dual logic with the inclusion of psychological tiredness (in terms of our model related to recovery need) and well-being in work (in terms of our model related to work enjoyment).

Another potential policy concern is the staying power of the gender differences in regard to the expected retirement age, when we consider the impact of work quality. The difference is apparent in all models, and is also confirmed by the ANOVA (without any antecedent factors). The same finding is demonstrated in other studies (Vanderleyden & Schoenmaeckers, 2009), and stands in contrast with the legal equalization of the retirement age for men and women. The difference is especially large for the respondents with higher educational qualifications, as the post-hoc model attests, amounting to about 6 months.

Finally, in our analysis we find no difference in the strength of the effects between either risk group and their respective control groups, in case the original definitions are used. On the other hand, we find a model with substantial differences in case the sample is split into those with higher education and those without. This finding may call for a rethinking about the traditional definitions of the risk group margins in regard to processes related to quality of work.

9. Study limitations

The small subsample size for both risk groups has negative consequences for the reliability of the measurement invariance tests. It is possible, that the failure to detect differences in regard to the effects of the model between groups can be attributed to this factor, although given similar results from the alternative approaches, we deem it unlikely.

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11. Appendix 1: study variables

Gelieve deze vragen te beantwoorden met nooit, soms, vaak of altijd = *

Gelieve aan te geven in welke mate u wel of niet akkoord gaat met deze uitspraken = **

Income sufficiency	*Hieronder volgen een aantal vragen over hoe moeilijk of gemakkelijk uw huishouden globaal gezien kan rondkomen per maand. Gelieve elke vraag te beantwoorden met een punt tussen 1 (helemaal niet) en 5 (heel erg).* 1 Hoe moeilijk is het momenteel voor u om rond te komen met uw huishoudinkomen? 2 Hoe sterk verwacht u dat u of uw gezin effectief moeilijkheden (zoals gebrekkige huisvestiging, tekort aan voedsel of medische zorg) zult ondervinden in de komende twee maanden? 3 Hoe sterk verwacht u dat u in de komende twee maanden uw levensstandaard zult moeten verminderen tot de basislevensbehoeften?
Skill utilization*	1 Doet uw werk voldoende beroep op al uw vaardigheden of capaciteiten? 2 Leert u nieuwe dingen op het werk?
Social support *	1 Kunt u, als dat nodig is, uw collega's om hulp vragen? 2 Voelt u zich in uw werk gewaardeerd door uw collega's? 3 Kunt u, als dat nodig is, uw directe leiding om hulp vragen? 4 Voelt u zich in uw werk gewaardeerd door uw directe leiding?
Role fuzziness *	1 Weet u precies wat anderen op uw werk van u verwachten? 2 Weet u precies waarvoor u wel, en waarvoor u niet verantwoordelijk bent? 3 Weet u precies hoe uw directe leiding over uw prestaties denkt? 4 Ligt duidelijk voor u vast, wat precies uw taak is? 5 Weet u precies wat u van de andere mensen van uw afdeling mag verwachten?
Work centrality**	1 Zelfs als ik een groot bedrag bij de loterij won, zou ik nog willen werken 2 Een job hebben is erg belangrijk voor mij 4 Ik zou verveeld geraken zonder job 6 Zelfs als de werkloosheidsuitkering erg hoog zou zijn, zou ik nog verkiezen om te werken
Protean attitude (value-driven)	1 Ik zal zelf voor mijn loopbaanontwikkeling zorgen als mijn werkgever me daartoe niet de nodige mogelijkheden geeft 2 Ik bepaal mijn eigen loopbaan aan de hand van mijn persoonlijke prioriteiten, en niet de prioriteiten van mijn werkgever. 3 Het maakt mij niet uit hoe andere mensen de keuzes die ik in mijn loopbaan maak beoordelen. 5: Ik volg mijn eigen geweten wanneer mijn werkgever van mij iets verlangt wat tegen mijn waarden in gaat. 6 Wat ik denk over wat goed is in mijn loopbaan is voor mij belangrijker dan wat mijn werkgever denkt. 7 In het verleden verkoos ik altijd mijn eigen waarden als ik van mijn

	werkgever iets moest doen waar ik het niet mee eens was.
Physical stress*	1 Werkt u in ongemakkelijke of inspannende houdingen? 2 Vindt u uw werk lichamelijk erg inspannend? 3: Vereist uw werk lichaamskracht?
Work pressure*	1 Werkt u onder tijdsdruk? 2 Moet u extra hard werken om iets af te krijgen? 3 Moet u zich haasten?
Emotional stress*	1 Is uw werk emotioneel zwaar? 2 Wordt u in uw werk geconfronteerd met dingen die u persoonlijk raken? 3 Komt u door uw werk in aangrijpende situaties terecht?
Work enjoyment*	7 Meestal vind ik het wel prettig om aan de werkdag te beginnen 8 Ik vind mijn werk nog steeds boeiend, elke dag weer 9 Ik heb plezier in het werk
Recovery need*	1 Ik vind het moeilijk om me te ontspannen op het einde van de werkdag 2 Mijn baan maakt dat ik me aan het eind van een werkdag nogal uitgeput voel 3 Het kost mij moeite om me te concentreren in mijn vrije uren na het werk 4 Het kost mij over het algemeen meer dan een uur voordat ik helemaal hersteld ben na mijn werk
Organizational loyalty **	6 Ik zou graag de rest van mijn loopbaan in deze organisatie blijven werken