DOCTORAL THESIS NO.37

Being Active in Working Life at Older Ages

Marie Bjuhr

UNIVERSITY OF GÄVLE

Gävle University Press

Dissertation for the Degree of Doctor of Philosophy in Caring Sciences to be publicly defended on Friday 27 October at 10.00 in 33:202, University of Gävle.

External reviewer: Professor Kerstin Nilsson, Kristianstad University and Lund University

Cover illustration: Nashua Volquez-Young/Pexels photo

Gävle University Press
ISBN 978-91-89593-13-8
ISBN 978-91-89593-14-5 (pdf)
urn: nbn:se:hig:diva-42873

Distribution:
University of Gävle
Faculty of Health and Occupational Studies
Department of Caring Sciences
SE-801 76 Gävle, Sweden
+46 26 64 85 00
www.hig.se

To myself and to my beloved family

Abstract

The overall aim of the thesis was to examine factors associated with (*Study I*), predictors (*Study II*), and experiences (*Study III*) involved with being active in working life after the expected retirement age and the experiences of exiting working life before the expected retirement age (*Study IV*). In *Studies I and II*, a quantitative approach was used, with data derived from the Swedish National Study on Aging and Care (SNAC). In *Studies III and IV*, a qualitative approach was used, with data collected through semi-structured interviews. The results from *Studies I and II* revealed that being active in working life at age 66 was associated with being male, having a university education, working in a highly skilled occupation, having light physical activity at work, or having no more than one diagnosed disease. Being male (*Studies I and II*), having a university education (only in *Study I*) or working in a highly skilled occupation (only in *Study II*) were associated with being active in working life at age 72. The results from *Studies III and IV* revealed that from an individual perspective, health was a prominent aspect in either remaining in or exiting from working life. Staying active in working life increased feelings of vitality; the innermost dimension of health. Favorable working conditions could be beneficial to cognitive and physical health as well as to social well-being and a sense of meaningfulness. In contrast, strenuous working conditions contributed to the deterioration of health and pushed people at older ages toward an early exit from working life. The present results confirm the complexity regarding the predictors for being active in working life at older ages. The results add knowledge regarding how health in overall life and staying active in or exiting from working life at older ages can be experienced from a subjective perspective. With a successive increase in statutory retirement ages, the focus on the possibilities for healthy aging through being active in working life at older ages needs to be increased.

Keywords: Health, healthy aging, older people, working life.

Sammanfattning

Avhandlingsarbetet övergripande syfte var att undersöka faktorer associerade med (*Studie I*), prediktorer (*Studie II*), och erfarenheter av (*Studie III*) att vara aktiv i arbetslivet efter förväntad pensionsålder och erfarenheter av att avsluta yrkeslivet före förväntad pensionsålder (*Studie IV*). I de kvantitativa *Studierna I och II* användes data från The Swedish National Studie on Aging and Care (SNAC). I de kvalitativa *studierna III och IV*, samlades data in genom semistrukturerade intervjuer. Resultaten från *Studie I och II* visade att oavsett vilken studiedesign som använts var manligt kön, universitetsutbildning, arbeta inom en profession som företrädesvis kräver 4-års universitetsutbildning, ej haft ett fysiskt tungt arbete samt att inte ha mer än en diagnostiserad sjukdom associerade med att vara aktiv i arbetslivet vid 66 års ålder. Medan manligt kön (både *Studie I och II*), ha universitetsutbildning (*Studie I*) eller att arbeta inom en profession som företrädesvis kräver 4-års universitetsutbildning (*Studie II*) var de faktorer som kunde associeras med att vara aktiv i arbetslivet vid 72 års ålder. Resultaten från *Studie III och IV* visade att hälsa var en framträdande aspekt för om deltagarna valt att antingen stanna kvar i, eller att avsluta arbetslivet vid högre ålder. Utifrån subjektiva erfarenheter kunde fortsatt arbete förstärka känslor av vitalitet, som betraktas som den innersta dimensionen av upplevd hälsa. Till exempel beskrevs att goda arbetsförhållanden gynnade kognitiv och fysisk hälsa samt socialt välbefinnande och tillförde känslor av meningsfullhet. Tvärtom, beskrevs att ansträngande arbetsförhållanden bidrog till försämrad hälsa vilket också bidrog till ett tidigt utträde ur arbetslivet. Föreliggande resultat bekräftar komplexiteten vad gäller förutsättningar för att vara aktiv i arbetslivet i högre åldrar. Resultaten tillför kunskap om hur upplevd hälsa i livet i stort och att hålla sig aktiv i eller lämna arbetslivet i högre åldrar kan erfaras från ett subjektivt perspektiv. Parallellt med den successiva höjningen av den lagstadgade pensionsåldern behöver också fokus på möjligheterna till ett hälsosamt åldrande genom att vara aktiv i arbetslivet i högre åldrar också ökas.

Nyckelord: Hälsa, hälsosamt åldrande, äldre personer, arbetsliv.

Förord

Jag vill börja med att rikta ett stort tack till min huvudhandledare Britt-Marie Sjölund. Med din jordnära och varma personlighet har du lotsat mig genom de utmaningar som uppkommit under min tid som doktorand, vi har också delat glädje och skratt under dessa år. Frikostigt har du delat med dig av din kompetens och hjälpt mig att komma framåt i processen. Du kommer alltid att ha en speciell plats i mitt hjärta. Tack också till mina biträdande handledare Maria Engström, Magnus Lindberg och Anna-Karin Welmer. Ni har bidragit med kloka kommentarer som också hjälpt mig att komma i mål med mitt avhandlingsarbete. Naturligtvis vill jag även tacka min arbetsgivare Högskolan i Gävle som stått för finansieringen av hela doktorandprojektet och till er som var involverade i rekryteringen. Tack för att ni hade tilltro till min kapacitet och kompetens. Jag vill tacka min nuvarande chef Maria Lindberg för ett fantastiskt stöd, du har haft en förmåga att få mig att känna mig som en kapabel medarbetare, vilket varit ovärderligt i stunder av självtvivel. Jag vill rikta ett tack till alla mina doktorandkollegor, tillsammans med er har jag utvecklats och lärt mig massor. Särskilt tack till Karin Lundin, Lisa Arvidsson, Åsa Hedlund och Denise Högstedt, vi startade den här resan ihop och ni har varit mina medresenärer och bollplank i stort och smått. Jag vill även tacka övriga kollegor som på olika vis har bidragit till en känsla av tillhörighet och gemenskap på vår fantastiska arbetsplats, det har varit så betydelsefullt för mig. Mina vänner och kollegor Maria Radeskog, Britt-Mari Wågström, Ann-Sofi Wigert, Katrin Ohlsson och Eva Dahlkvist ni har under hela den här tiden fyllt mig med tilltro till mig själv, inte enbart för det jag presterar utan för den jag är som människa. Eva, du har också med värme och entusiasm läst och kommenterat mina texter. Jag vill naturligtvis också tacka Robin Quell, för ditt fina arbete med språkgranskning av alla avhandlingens alla engelska texter.

Stort tack till alla medarbetare från SNAC och att jag gavs möjlighet att kunna använda data som ni samlat in. Tack också till er som var behjälpliga av rekrytering av deltagare i studie III och studie IV. Ett extra varmt stort tack vill jag rikta till alla 36 deltagare i studie III och IV som på ett mycket förtjänstfullt sätt bidragit till resultaten av dessa studier.

Tack så mycket till min familj, ni är viktigast av allt. Mina kära föräldrar, min älskade livskamrat Henrik och mina underbara barn: Simon, Anton, Lisa och Tilde, ni har under hela den här tiden fått mig att känna mig älskad och betydelsefull utanför den akademiska världen och hjälp mig att balansera arbete och fritid. Slutligen till mina barnbarn Freja och Vide, ni fyller mig med outgrundlig kärlek.

List of Papers

This thesis is based on the following papers, which are referred to in the text by Roman numerals.

Paper I. Bjuhr, M., Engström, M., Welmer, A.K., Elmståhl, S., & Sjölund, B.M. (2023). Being active in working life at age 60, 66 and 72 -a study of two Swedish cross-sectional samples 12 years apart. *Nordic Journal of Working Life Studies* submitted 23-04-19.

Paper II. Bjuhr, M., Engström, M., Welmer, A.K., Elmståhl, S., & Sjölund, B.M. (2023). Health and work-related factors as predictors of still being active in working life at age 66 and 72 in a Swedish population a longitudinal study. *WORK*. 2023 Jun 26. doi: 10.3233/WOR-220480. Epub ahead of print. PMID: 37393472.

Paper III. Bjuhr, M., Engström, M., Welmer, A.K., Lindberg, M., & Sjölund, B.M. (2022). Incentives Behind and Experiences of Being Active in Working Life after Age 65 in Sweden. *International Journal of Environmental Research and Public Health,* 19(23), 15490. doi:10.3390/ijerph192315490

Paper IV. Bjuhr, M., Lindberg, M., Engström, M., Welmer, A.K., & Sjölund, B.M. Antecedents and Experiences of Voluntary Early Exit from Working Life before the Expected Retirement Age of 65 in Sweden. *Journal of Aging studies*. Submitted 23-05-24.

Abbreviations (optional)

OECD	The Organisation for Economic Co-operation and Development
SNAC	Swedish National Study on Aging and Care

Table of Contents

Introduction

The increased proportion of older people in the population in recent decades is a global phenomenon. In 2019, 1 of 11 people in the world was older than 65, and by 2050 it is predicted to be 1 of 6 [1]. The aging population can be viewed as a positive development since it reflects improvements in public health and social structures, but also as an economic challenge due to increased pressures on pension- and healthcare systems [1,2]. An aging population has thereby forced authorities to adapt pension systems and other reforms, raise the statutory retirement age and promote active and healthy aging [2,3]. In many countries in The Organization for Economic Cooperation and Development (OECD), this has led to a pervasive increase in the exit age from the labor market for both men and women within all socioeconomic classes [4-6]. However, since research is showing inconsistent results, it is still unclear whether an extended working life for older people is beneficial to healthy aging [2,7]. It has been determined that the complex prerequisites for remaining active in working life, as opposed to exiting from working life, should be viewed from a multidimensional perspective, i.e., societal, organizational, and individual [8,9]. The societal perspective includes external conditions e.g., raising the statutory pension age and limiting access to early retirement programs. These reforms often have the aim of delaying retirement [9]. However, this might not always be in harmony with the employers' needs from an organizational perspective, where the benefits of retaining older workers, to a great deal, depend on whether there is a shortage of specific labor skills in the organization [10]. The organizational perspective also includes aspects from different work environments that are impacting older people's retirement timing; often called push or pull factors [8]. Pull factors refer to financially attractive opportunities for older workers that facilitate an early exit from the labor market, while push factors refer to circumstances that make it more difficult or less attractive to stay active in working life at an older age [11]. The individual perspective includes any unique motivating circumstance as well as the ability to stay active in working life at an older age. Level of education, occupation, individual health status, and gender are all known factors that are related to retirement timing [8,9]. The World Health Organization (WHO) reports that the key considerations for healthy aging are diversity and inequity [12]. These considerations also reflect the necessity to view the aging population from a heterogenous perspective since a considerable part of the diversity regarding one's ability at an older age to e.g., postpone retirement, is due to the cumulative impact of advantages and disadvantages across an individual's life course [13]. Research within caring science is viewed from a multidimensional perspective and relies on the following concepts: person, health, environment, and caring, i.e., the meta paradigm of nursing. Caring science focuses on e.g., promoting a sustainable environment for both healthy and unhealthy individuals [14]. The

present dissertation primarily embraces how a person's health and environment, i.e., the work environment and their whole life context are associated and experienced with being active in working life at an older age.

Background

Summary of earlier research

When summing up some of the extensive amounts of earlier empirical research aimed at investigating participation in working life and retirement patterns among the aging population[1], several studies used a quantitative approach [15-37, 39-44], and a smaller number of studies used a qualitative approach [45-55] or a mixed method [38, 56]. This was also true in a report published in 2022 by the Swedish Agency for Work Environment Knowledge, i.e., a literature review focusing on senior workers in a Swedish context where 83% of their included studies had a quantitative approach [57]. It has been suggested that more qualitative research would contribute to the understanding of retirement timing by adding a deeper understanding of retirement decisions [58]. Many studies seem to be focusing on factors associated with the desired or planned age for exiting from working life [16-23, 45-47, 56], and most of which with a sample having a mean age of less than 60 years [15-19, 21, 24, 45,46]. Studies investigating factors associated with an early exit from working life [25-37, 48] also have samples with a mean age of less than 60 years [26-28, 31-37]. Other studies investigating factors associated with staying active in working life after the expected retirement age mainly include participants aged around 60–70 years [39-41, 50-55], and only a few seem to include participants older than 72 years [42-44, 49]. In studies with a quantitative approach, both cross-sectional [18-23, 25, 43, 44] and longitudinal designs [15-17, 24, 26-42] are quite common. Follow-up times in studies with a longitudinal design seem to be mainly six years or less [15-17, 24-28, 36-42], and less common are studies with a follow-up time over 10 years [29, 35].

Being active in working life

During the last decades, research on being or not being active in working life at older ages has grown. Retirement timing is often conceptualized as early retirement, expected (on-time) retirement and late retirement [8]. Retirement timing can be measured by self-reported questionnaires where activity status may be among the questions [24, 26, 29, 32, 36, 38, 40]. An alternative to this would be the use of data that has been retrieved from national register databases [27, 30, 35, 39]. Early exit from working life can be defined and

[1] The search for previous research was conducted in the autumn of 2022. PubMed, Scopus, and Discovery were the databases used with search terms such as working life, experiences, associations, older people, early exit, postponed retirement, and extended working life within a 10-year time limit. The search ended up with 42 empirical studies of relevance related to the overall aim in this dissertation.

measured as e.g., having no paid work or receiving a (pre-) pension before reaching the statutory retirement age [29, 35, 36]. In addition, in previous research people with reported disability insurance or unemployment benefits at older ages may be considered as having an early exit from working life [15, 26, 30, 31]. The age, which is considered as expected (on-time) retirement, depends on e.g., the country's statutory retirement age, employer-specific pension rules, or eventual cultural and organizational norms [8]. Late retirement can be defined as postponing retirement timing after the expected retirement age [39]. The definition of postponed or late retirement can also include working as an employee, while also receiving some form of retirement pension [40, 41].

In 2020, the average retirement age across all OECD countries was 63.8 years [59], and in Sweden 64.2 years [60]. However, there are some variations between countries e.g., Turkey had an average retirement age of 49 for women and 52 for men and Slovenia 57 years for both men and women. In 2020, Island and Norway had the highest average retirement age of 67 years [59].

In 2020, Sweden had a flexible retirement age of 62–68 years. However, the normally anticipated, i.e., the expected retirement age has for a long time been considered 65 years, which is still true today [60]. Previous research within a Swedish context defined late exit from working life as remaining employed after age 65. Early exit was defined as retiring before age 65 [43]. However, a study with a representative Swedish sample revealed that 57% of the participants preferred to exit working life at age 64 or earlier, 36% at age 65, and 7% at age 66 or later [17]. Moreover, there is an ongoing successive increase in the Swedish statutory pension age. In 2026, it is suggested that the retirement age will be based according to the development of life expectancy. For example, for cohorts born in 1967–1968, the recommended retirement age is 68 years [61].

In this thesis, the expected retirement age is defined as 65 years. Additionally, being active in working life includes participation in the labor market either fully or to some extent, and with possibilities to combine retirement and work. In line with The International Labour Organization's (ILO) broad definition of labor participation which includes subsistence work for at least one hour a week [62]. Not being active in working life is defined as being fully retired, on full sick leave, on total disability, or unemployed. In this thesis, the definition of being active in working life at older ages does not include people with different kinds of voluntary work. Due to the successive rise in the statutory retirement age, factors related to and incentives behind prolonged employment in the traditional working force are considered a prioritized interest for society.

Aging and growing older

In caring science, a person should be viewed as an integrated whole with physical, mental, social, and existential dimensions, and a person is born into a life context that also entails individual aging processes [63]. Aging is not only a matter of chronological age. What is more, chronological age is becoming a

weaker indicator of an individual's capacities at an older age. Earlier research has typically included three different aspects of aging, which do not necessarily correlate with one another or with chronological age. Biological age refers to survivability or potential longevity, psychological age is defined by cognitive capacity, and social age refers to norms related to age within the socio-cultural context. Age values may differ in different contexts, which may have an impact on attitudes toward older people. For example, views on older workers and retirement age are factors that define social age [64]. Research has revealed that managers within a Swedish context considered the employees as older workers at age 59 [65], or at age 60 [66].

From developmental psychology theory regarding aging, middle age occurs between the ages of 30-65 years, which passes into later adulthood from 65 years and older. The later years of life, sometimes referred to as the third age, are often perceived as a time of opportunity to live an active and independent life [67]. The United Nations standard age of "older" people begins at 60 years, which is a seemingly young age given the increased life expectancy in most regions of the world. Of importance, is to acknowledge that chronological age is not a precise indicator of the individual's age-related changes in function or health [68]. In this dissertation, the included participants under study vary between 60 and 90 years.

Life-course theory

The life-course theory embraces the aging process with the assumption that a person's life course consists of multiple and contemporary paths or trajectories such as work, family and health. A vital concept in the life-course theory is transitions, i.e., changes between different phases of life e.g., the transition into entering working life, as well as the transition of exiting working life. The transition from being active in working life to withdrawing from working life is viewed as an adaptation process that involves complex mechanisms [69]. Life course theory has been used as a theoretical framework in earlier research studying older people's behavior in working life [e.g.,70-74].

Life course theory includes some central principles, such as lifespan development, human agency, time and place, timing, and linked lives. Life-span development refers to human development and aging as lifelong processes that have the assumption that previous experiences in life also explain later events in life. Inequalities tend to accumulate as people grow older, such that the gap increases between those who had it better socioeconomically earlier in life and those who did not [75]. Research has shown that the retirement transition leads to cumulative advantages and disadvantages among older people [72, 74], for example, differences in well-being between different socio-economic groups were larger among pensioners compared with those who were still working [72].

Human agency refers to the notion that the planning and choices people make during their life course are based on their biography and are important in understanding individual differences within the same birth cohort [75]. The choice and ability to engage in being active in working life at older ages may relate to, for example, an individual's level of education, working in an

occupation that requires higher education [73] and experiencing good health throughout the life course [71]. Timing refers to, for example, age norms and expectations on both the individual level and normative level, as well as some generalized expectations for when a certain transition or event should occur. These age norms change over time and are also dependent on events that can be considered generation or birth cohort-specific e.g., changes made through pension reforms. This is also similar to the principle of time and place, which are important when understanding the differences between different birth cohorts [75]. Research has also indicated that structural changes and reforms intended to raise the retirement age in society have also increased the desired retirement age [76]. Over the past 30 years, in OECD countries, a systematic review revealed that the most prominent cause for the increase in age when exiting working life was changed social security systems [77]. It has also been suggested that research that aims to investigate being active in working life at older ages, should alongside individual, health- and work-related aspects also include social changes in society [78].
The principle of linked lives refers to the notion that people's lives are lived interdependently, meaning that transitions in one individual's life often entail transitions for other people as well [75].

Health and participation in working life at older ages

Health is a well-known factor that influences older people's participation in working life in regard to its associations with the desired retirement age [19-24], early exit from working life [26-30, 32-35] and staying active in working life after the expected retirement age [38-43]. Typically, in earlier research where for the most part quantitative approaches were used, health has been defined according to diagnosed diseases [19, 23, 28, 30, 33, 34, 39, 42] and self-reported health [15, 17, 19, 20, 26, 27, 29, 35, 37, 40, 41, 43]. Other measured health aspects are e.g., functional ability or disability [24, 29] and lifestyle behaviors [30, 35, 37, 39, 40, 42].

Earlier research has shown that bad self-rated health had a stronger relationship to older workers' beliefs regarding their ability to work beyond 65 years of age than diagnosed diseases [19]. Furthermore, research has also shown that factors related to voluntary early retirement did not differ between the workers who had a chronic disease and those who did not [27]. Bad self-rated health, on the other hand, has been shown to be associated with a higher risk for voluntary early retirement [27, 29]. Good self-reported health has been shown to be a strong predictor of working beyond the standard retirement age [43]. Furthermore, some research has also revealed that better physical health predicts the likelihood of working beyond the expected retirement age [40, 41]. A study has shown that the absence of a diagnosed mental disorder or psychological distress was associated with working beyond retirement, while chronic somatic disease contributed only modestly as a factor [39].

However, some research has revealed that the likelihood of working until retirement is significantly associated with the presence of chronic disease [23, 33, 34, 37, 42]. One study revealed that personal beliefs regarding life

expectancy, perceived future work limitations, and vitality could mediate the relationship between chronic health conditions and an older worker's retirement preferences. Arthritis and cardiovascular disease were associated with perceived health-related work limitations that have been shown to bring about early retirement. Lower self-predicted life expectancy contributed to early retirement among older workers with cardiovascular diseases. Lower vitality played a role in early retirement among older workers with sleep and psychological disorders. [23]. Additionally, there is an increased risk of an early exit from working life among workers affected with more than one chronic disease [33, 34, 42]. An example of this is in a study that revealed that workers with a complex multimorbidity, consisting of the coexistence of three or more body system disorders, were prevented from being active in working life after the expected retirement age. Complex multimorbidity was found to be a more important factor in working beyond retirement age than e.g., psychological aspects, income or level of education [42]. Another study revealed that the risk of exiting from working life increased among older workers with chronic obstructive pulmonary disease if they additionally had cardiovascular disease, depression, or rheumatoid arthritis. This also applied to workers with type 2 diabetes if they additionally had cardiovascular disease or depression [24].

Qualitative research has also revealed health-related issues regarding older people's decisions to participate in working life [46, 48, 51, 53]. A barrier to an eventual extended working life might be if a person perceives that their work has a deleterious influence on their health [46, 51]. One study that included participants aged 55–65, described that one of the prerequisites for still being active in working life was dealing with one's own health, i.e., having strategies to overcome eventual health problems [47]. However, older people's health status and their participation in working life should not always be viewed as linear; having a good health status can be associated with either a delayed or an early exit from working life [79]. An interview study with participants who retired early confirmed that both good and poor health influenced the timing of their retirement. Participants e.g., felt unable to stay active in their working life due to health problems, they feared that working would exacerbate their health problems and their self-perceived future capacity for work would be decreased. Some participants who were in good health chose early retirement because they wanted to enjoy life as a retiree while their health was still intact [48].

Work environment and participation in working life at older ages

The relationship between various aspects of the work environment and retirement timing is well documented regarding associations with the desired retirement age [16-18, 20-22], early exit from working life [25, 27, 28, 31, 32, 36], and working after the expected retirement age [40, 41, 43]. Physical workload [21, 27, 28, 31, 32, 35, 40, 41, 43], job satisfaction [16, 20-22, 24, 25, 27, 31, 32], job demands e.g., time constraints at work [22, 35, 40, 41, 43], job autonomy e.g., flexibility at work [18, 21, 22, 27, 35, 40, 41, 43], psychological aspects e.g., emotional distress [17, 22, 25, 36, 40] and social support [17, 20,

31, 40, 41] are commonly cited aspects of the work environment that are associated with participation or non-participation in working life at older ages.

Research has revealed that hard physical work throughout working life e.g., lifting heavy loads and/or both awkward body postures increases the risk of an early exit from working life [27, 28, 31, 32]. Furthermore, concerns regarding the ability to work until 65 years old have been related to physical exhaustion after work [21]. Research has revealed that a preference for later retirement was related to high job satisfaction [16]. Conversely, lower job satisfaction has been found to be associated with a higher risk for voluntary early retirement [27], as well as a potential risk factor for an early exit from working life due to ill health [32]. Displeasure with work tasks e.g., teachers' dissatisfaction with non-teaching related workloads such as meetings and paperwork [25], and frequent feelings of inadequacy regarding opportunities to achieve a satisfactory work effort decreased the workers' belief that they would work beyond the expected retirement age [21]. Feelings of emotional exhaustion [17, 22, 25] and limited job autonomy [18, 21, 22, 27] have been found to increase the likelihood of a preferred earlier retirement, whereas resources at work, such as having influence and supportive leadership, could be associated with a decreased risk of an early exit [31]. Research has revealed that low equality at work [18], and age-related inequalities at work [17] increased the likelihood of preferring retirement compared to staying active in working life. In contrast, having respectful leadership [20] and having a good psychosocial work environment have been found to increase the odds of still being active in working life after the expected retirement age [43].

Qualitative research has also revealed various aspects of the work environment that influence older people's decisions to participate in working life [45-47, 54, 56]. Healthcare personnel have described how they expect their strenuous working conditions to be difficult to manage in older age, and therefore they have a preferred early retirement [45, 46]. On the other hand, nurses in another study aged 55–65, described having high job satisfaction and strong commitment to their work. Having the required resources at work to handle the mental and physical job demands was an important aspect of their late career planning [47]. Moreover, people who were previously retired have described how workplace changes exacerbated by digitalization and modern technology contributed to their decision to retire [54].

Health perspective

In caring science, various models can be used to define health, moreover, health and well-being are often seen as equal and interconnected [14]. Being in a state of good health means experiencing well-being, feeling good, and being able to carry out small and large life projects. [63]. Eriksson's (1994) caritative nursing theory is a non-medical paradigm within caring sciences. The theory is based on a humanistic point of view, with a multidimensional definition of health [80]. Eriksson illustrates health as having different dimensions, i.e., multidimensional health, and argues that the pure concept of health means wholeness and holiness. The theory of multidimensional health embraces

different levels (the human being as an entity with a body, soul, and spirit) and different dimensions (doing, being, and becoming) of an individual's overall health, see Figure 1 [81].

Moreover, embracing a person's prospects of experiencing health and well-being cannot be understood without including a person's whole life context. The environment is also one of the concepts within caring science. This concept can also be named as one's surroundings, world, or lifeworld, i.e., the whole life context in which the person exists. The environment includes the physical, psychosocial, and symbolic or spiritual aspects of a person's life-world; and the ongoing interplay between the person experiencing health and well-being and his/her environment. Moreover, within the caring science literature, the environment is viewed as dynamic and can be health-promoting and/or inhibitive to health and well-being [82]. This perspective of the concept of health and its interplay with the concept of the environment may contribute to a deeper knowledge of the complexity surrounding older people's participation in working life.

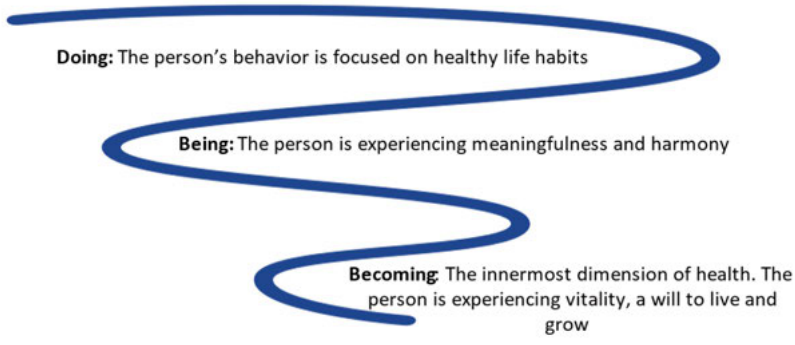

Figure 1: Eriksson´s three dimensions of health

The swAge-model

SwAge is an acronym for Sustainable working life for all ages. The framework for this theoretical model has been developed by several studies over the last decades [9]. The swAge-model includes influences from the societal level, the organizational level, and the individual level regarding the prerequisites for a prolonged and sustainable working life for older people. At an individual level, nine factors are described that determine if older people can and want to be active in working life [9, 83, 84].

Furthermore, according to the swAge-model, the decision to either extend or exit from working life precedes four considerations. These considerations embrace the person's whole life context. Therefore, this model is also congruent with caring science and the interplay between the concept of health and the concept of environment. The four considerations are also linked to the nine determinants that influence whether the person can or wants to remain in working life at an older age [9], see Figure 2.

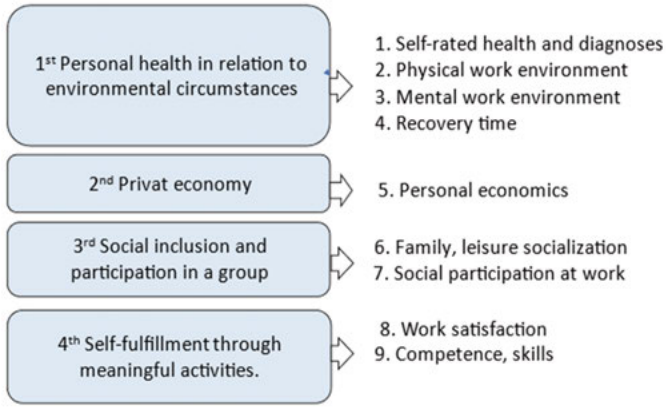

Figure 2: The included considerations and determinants in the swAge model

The Rationale for the thesis

Both individual and societal expectations regarding participation in working life at an older age are increasing. There is an ongoing successive increase regarding the statutory retirement age, and this has led to a pervasive increase in the exit age from the labor market for both men and women within all socioeconomic classes. Earlier research has determined that the complex prerequisites for remaining active in or exiting from working life at older ages should be viewed from a multidimensional perspective, i.e., societal, organizational and individual.

Problematic with previous research investigating older people's working life patterns, which has most often consisted of quantitative research investigating desired retirement planning or factors associated with early retirement, is that the participants have not been older than 65. Such research may not have included an individual longitudinal population-based sample with follow-up data collected over 10 years. Additionally, the research may not have included an investigation into changes affecting factors associated with being active in working life after age 65 over a specified time, i.e., shortly after a major reform of the pension system. There is a call for further research regarding older people's participation in working life that includes societal changes alongside e.g., aspects of individual characteristics, health status and work environment. There is also a call for future research that utilizes a qualitative approach that can contribute to the field of understanding and move toward a deeper understanding of the complexity of staying active in working life at older ages.

Health is known to be one of the most important factors influencing people's ability to be active in working life at older ages. From a caring science perspective, health is often defined as multidimensional. Experiencing meaning and being able to complete one's life projects may significantly affect an individual's prerequisites for experiencing health and well-being at older ages. Furthermore, the surrounding environment, i.e., a person's lifeworld is interrelated with the experience of health. This perspective on the concept of health may add to a deeper knowledge about the complexity surrounding older people's participation in working life. It may also add to a broader and deeper understanding of experiencing health and contribute to caring science and its practices.

Overall and specific aims

The overall aim of the thesis was to examine factors associated with, predictors of, and experiences involved with being active in working life after the expected retirement age, and the experiences of exiting working life before the expected retirement age.

Specific aims

I. The aim of paper I was twofold: 1) to examine associations, stratified by age group, between being active in working life and the variables: socio-demographics, health, work environment, and time, i.e., 2001–2003 (T1) vs. 2013–2015 (T2); 2) to explore changes occurring in those associations during the first decade after a major reform in the Swedish pension system (between T1 and T2).

II. The aim of paper II was first to investigate socio-demographic, health, and work environment factors as possible predictors of still being active in working life at ages 66 and 72. Secondly to investigate eventual changes over time in predictors of still being active in working life at age 66.

III. The aim of paper III was to explore incentives behind and experiences of extended working life after the expected retirement age of 65 among Swedish people.

IV. The aim of paper IV was to explore antecedents and experiences of a voluntary early exit from working life before the expected retirement age of 65 in Sweden.

Methods

Design

To study aspects of being active in working life after the expected retirement age or exiting working life before the expected retirement age, various approaches of both a quantitative and a qualitative nature were used. In *Study I*, a descriptive, comparative and correlational design that was stratified by age group, was used to study associations between older people being active in working life and socio-demographic, health and work environment factors. In addition, any changes over time with those associations were studied. In *Study II*, a longitudinal design with a quantitative approach was used. Socio-demographic, health, and work environment factors were studied as possible predictors of still being active in working life at 66 and 72 years of age. Furthermore, changes over time in the predictors of still being active in working life at age 66 were studied.

Study III and Study IV used a descriptive and interpretive design with a qualitative approach. An inductive approach was used in *Study III* and an abductive approach in *Study IV*. *Study III and Study IV* were designed to describe people's experiences of their working life during the past years, as well as their experiences of the incentives behind or antecedents of either staying active beyond- or exiting working life before the expected retirement age of 65 years. See Table 1.

Table 1: Overview of the thesis: Study design, sample, data collection, and data analysis

Study	Design	Sample	Data collection	Data analysis
I	A comparative, and correlational design with a quantitative approach	Age groups 60,66 and 72 years T1: n = 2558 T2: n = 2921	SNAC register data T1: 2001–2003 T2:2013–2015	Chi-Square Logistic regression analysis (age-stratified)
II	A longitudinal design with a quantitative approach	Aged 60 and active in working life at baseline. Cohort 1: n = 479 Cohort 2: n = 751	SNAC register data Cohort 1: 2001–2003/ 2007–2009/2013–2015 Cohort 2: 2007–2009/2013–2015.	Chi-Square Logistic regression analysis
III	A descriptive and interpretive design with a qualitative approach	18 participants: active in working life after age 65	Semi-structured interviews	Qualitative content analysis (inductive approach)
IV	A descriptive and interpretive design with a qualitative approach	18 participants: exited working life before age 65	Semi-structured interviews	Qualitative content analysis (abductive approach)

Data collection and sample

In *Study I and Study II*, the data are derived from The Swedish National Study on Aging and Care (SNAC-project). SNAC was established in 1998 by the Swedish government with the aim of increasing our understanding of the aging process and identifying possible preventative strategies to improve health among older people. Individuals were randomly sampled from the National Population Registry and invited to participate. To obtain a representative sample with demographic variation, SNAC is subdivided into four geographical areas including urban and rural areas. Using a stratified sampling procedure, it consists of eleven age cohorts and different age intervals. Physicians and nurses collect data through interviews and clinical examinations using standardized protocols. The protocols contain core questions covering all areas and some optional questions, including an item on the transition from work to retirement. The individual-based data collection began in 2001. Follow-up for cohorts 60–78 years occurs every six years, and a new cohort of 60-year-olds joins the study. A description of the national study has been published elsewhere [85].

In *Study I*, data from three of the four geographical areas were used. Data were collected during the period 2001–2003 (T1) from the participants in the age groups 60-, 66-, and 72 years n = 2558. Data were collected from the same age groups again during 2013–2015 (T2) n = 2921. In *Study II*, data from two of the four geographical areas were used with participants aged 60 years who at the time were still active in working life. Data were collected during the period 2001–2003, with follow-ups after 6 and 12 years. In addition, data from a new cohort of participants aged 60 years and still active in working life were used. Baseline data from the period 2006–2009 and one follow-up after 6 years were selected.

The sample in *Study III* consists of 18 participants aged 67–90 years. During a follow-up assessment, participants in the Swedish National Study on Ageing and Care (SNAC project) were asked, through purposive sampling (n = 13), to participate in *Study III*. To secure enough participants, additional purposive participants were identified through contacts with the already selected participants or the responsible researchers within the project (n = 5), i.e., snowball sampling. The inclusion criteria were people who had remained active in working life for at least one year after turning 65 years. The sampling method enabled a sample of participants with various characteristics as well as various experiences of extended working lives. Data in *Study III* were collected by using semi-structured interviews conducted between August 2021 and February 2022.

The sample in *Study IV* consists of 18 participants aged 63–69 years. Participants were recruited through snowball sampling. The first participants were recruited within the research group's circle of acquaintances, and thereafter with referrals from already included participants. Data were collected by using semi-structured interviews conducted between August 2022 and October 2022. The inclusion criteria were people who had exited working life at least one year before age 65. The included participants had exited working life at ages

61–64. The sampling method secured participants with various characteristics and various experiences of withdrawal from working life.

All 36 interviews were carried out by the first author of the papers (M.B). The participants chose where the interviews took place, i.e., at the participant's home, at the first author's workplace, by telephone, or by computer meeting. The interviews lasted 13–45 minutes. See Table 2 for an overview of the data collection from the different studies in the thesis.

Table 2: Timetable of cross-sectional data (Study 1), longitudinal data (Study II), and qualitative data collection (Study III and IV)

	2001-2003	2007-2009	2013-2015	2021-2022
Study I	Cross-sectional data age group 60 years 66 years 72 years		Cross-sectional data age group 60 years 66 years 72 years	
Study II	60 years and employed	6-year follow-up	12-year follow-up	
		60 years and employed	6-year follow-up	
Study III				Qualitative data: Semi-structured interviews (aged 67–90 years)
Study IV				Qualitative data: Semi-structured interviews (exited working life at age 61–64 years)

Data Source

Outcome

Outcome, i.e., the dependent variable in *Study I and Study II* was being active in working life and is defined as participating in working life to some extent with possibilities to combine retirement and work. Not participating in working life is defined as being fully retired, on full sick leave, on total disability or being totally unemployed. This categorization is like that used by Nilsson et al., 2016 [6].

Participation in working life among respondents 60 years of age was measured by posing one question regarding their current occupation. There were ten

different response options, and more than one option could be selected e.g., employed (number of hours a week), employed combined with early retirement, or retired pensioner. The responses were recoded into two options: 1) participating in working life, which included employed and employed combined with retirement pension/early retirement, 2) not participating in working life, which included receiving a retirement pension, early retirement pension, unemployment benefits, sick leave and disability pension. For respondents 66 and 72 years of age, participation in working life was measured by posing the yes or no question: Are you participating in working life to some extent? Working at least one hour per week was defined as being active in working life to some extent, which corresponds to one of the International Labor Organization's (ILO) definitions of a person in employment [62].

Independent variables

Independent variables in *Study I and Study II* covered changes over time (one variable), socio-demographic factors (*Study I* = three variables, *Study II* = four variables), health status (two variables), and work environment factors (five variables).

Time in *Study I* was the period between the first data collection (2001–2003), and the second data collection (2013–2015), i.e., 12 years. In *Study II* time was the period that differed between the two included cohorts (when participants were at age 66 in 2007–2009 or 2013–1015), i.e., 6 years.

Socio-demographic factors were measured by posing one question about gender (man or woman), and living circumstances (living alone or cohabiting, only in *Study II*)[2]. The level of education was measured as primary or lower secondary education, vocational/upper secondary education, or university. The typical qualification level of the occupation at which respondents worked the longest during their entire working life was classified by using the Swedish Standard of Occupations (SSYK). This classification includes sub-groups of occupations classified with numbers down to a three-figure code. In *Study I and Study II*, occupations are classified using the first figure in the code that defines the occupational field. There are four levels of divisions based on the qualification level typical for that occupation. It should be noted that this does not necessarily correspond to the qualifications of the worker carrying out the occupation. The levels are as follows: Level 1: no or low formal educational requirements e.g., restaurant and kitchen assistants or cleaning and home service staff. Level 2: upper secondary education and post-secondary education shorter than two years e.g., construction workers, mechanics, secretaries or hairdressers. Level 3: practical or vocation-specific college or university education of at least 2–3 years e.g., bank officials, pharmacy dispensers or IT technicians. Level 4: theoretical or research preparatory university education of at

[2] In *Study* I, marital status was measured with four options: married, widowed, unmarried, or divorced, and was only used as a description of each cross-sectional data sample and not as an independent variable in the regression analysis.

least 3 years, typically 4 or more e.g., registered nurses, civil engineers or teachers [86].

Health status was measured using a self-reported health questionnaire with yes or no responses similar to the health index used by Statistics Sweden (SCB). The diagnosed diseases were substantiated either by a clinical examination performed by a physician or through an examination of the medical records. The total number of diseases was calculated and recoded into a dichotomous variable; none to one disease or two or more diseases. This was based on the consideration that in both *Study I and Study II*, the median value of the number of diagnosed diseases was one disease.

Work environment factors were measured with three yes or no questions: 1) Have you been exposed to something in your physical work environment(s) that you believe could have affected your life or your health? 2) Has your workplace(s) been organized in a way that entailed great mental or physical strain? and 3) Have you had any negative experiences in your relations with superiors or work colleagues that you believe could have affected your life or health? Work satisfaction was measured with the question: How satisfying do you feel your work has been? That question had five response alternatives, but due to the low proportion of the responses 'very unsatisfying', 'unsatisfying', or 'neutral'; the question was recoded into the dichotomous variable unsatisfying/neutral or satisfying. One question with three response alternatives ranging from light, medium, or heavy measured the level of physical activity usually required during the person's main occupation in their life.

Qualitative data

The data in *Study III and Study IV* consisted of verbatim transcriptions of all the audio-recorded interviews. The aim and intention of the sampling strategy were to obtain a variety in the participant demographics, i.e., to facilitate a variety of experiences regarding each aim in *Study III and Study IV*. See Table 3.

The semi-structured interview guides were designed to encourage the participants to give detailed descriptions of their experiences regarding the aim of the study. Initially, the interviews for both *Study III and Study IV* started with questions regarding background data e.g., living circumstances, health status, level of education, and occupation. In *Study III* the interviews were preceded by asking open-ended questions covering the incentives behind the decision to extend working life after age 65. They were asked what factors have enabled and facilitated a continued working life after turning 65. Experiences of working life during the last years and any experiences of how working life and health may be interrelated were also inquired about. In *Study IV* the interviews were preceded by asking open-ended questions covering the antecedents to the decision to exit working life before age 65, which included experiences of working life during the last years, and experiences from exiting working life.

Both in *Study III and Study IV* prompts were prepared that aimed to encourage the participants to expand their answers by e.g., asking them to give examples and asking them to elaborate. Finally, at the end of the interview, the participants were also asked if they had anything further to add about their experiences regarding the research topic.

Table 3: Participants' characteristics in Study III and Study IV.

	Study III	Study IV
Number	18	18
Age	74.4 (mean)	65.6 (mean)
63		1
64		5
65		5
66		3
67	1	1
68	3	
69	3	3
72	1	
73	1	
76	1	
77	1	
78	4	
79	1	
82	1	
90	1	
Sex		
Female	11	12
Male	7	6
Living situation		
Urban	11	14
Rural	7	4
Living Alone	8	3
Cohabiting	10	15
Health-Status*		
Cardiovascular disease	9	5
Musculoskeletal disease	4	12
Diabetes		1
Eye disease		1
Cancer	2	1
Asthma	1	
Blood disease	1	
Mental disease		3
None	4	1
Occupation		
Architect	1	
Carpenter/Mechanic/Welder	3	1
Cartographer		1
Community tourism manager	1	
Driver	2	
Education/teacher	3	6
Hairdresser	2	
Health Care personnel	2	1
Illustrator	2	
IT-developer		2
Journalist		1
Municipal official		2
Newspaper administrator		1
Personnel administrator		1
Secretary		2
Shop manager	1	
Pharmacist	1	

*Self-reported diagnosed diseases, some reported more than one disease

Data analysis

Statistical analysis

In *Study 1*, initially, the characteristics and occupation status of the participants in the two cross-sectional samples were described by using descriptive statistics with frequencies and percentages. Chi-square analyses with a cell-by-cell comparison of observed and estimated expected frequencies were used to compare the two samples with each other. If the adjusted residual was greater than two, significance is derived from those cells [87]. In the next step, logistic regression models were used to examine associations between the outcome, being active in working life, and each of the independent variables, i.e., time 2001–2003 (T1) vs. 2013–2015 (T2), gender, level of education, typical qualification level for the occupation, health status, and work environment. These analyses were stratified by age group. Finally, interaction variables with time multiplied by each of the independent variables (time*independent variable) were used to investigate eventual changes over time in factors significantly associated with being active in working life. Although the design was not longitudinal, the same 60-year-old individuals at T1 were also included at T2 when they were 72 years old. In the interaction analysis of the whole sample, these individuals were regarded as they were sampled from two independent populations and the analyses were adjusted for the age group.

In *Study II*, initially, descriptive statistics with frequencies and percentages were used to describe the characteristics, health status and work environment factors in the two cohorts. The two cohorts were compared by using cross-tabulation and Chi-Square statistics. In the next step, first, all analyses were stratified by cohort, and logistic regression analyses were used to investigate predictors of being active in working life at age 66 (in cohort 1 and cohort 2) and at age 72 (in cohort 1). The independent variables with baseline data i.e., when the participants were at age 60, were used to investigate predictors of being active in working life at age 66. Predictors of being active in working life at age 72 were investigated by using baseline data regarding the typical qualification level of the occupation, level of education, and gender; and the data from age 66 regarding living circumstances, health status and work-related factors. The logistic regression was conducted as unadjusted analyses, followed by analyses adjusted only for gender, followed by analyses adjusted for gender and level of education, as well as analyses adjusted for gender and SSYK level. Secondly, these analyses were also conducted on the whole sample, i.e., Cohorts 1 and 2 combined. To examine possible differences (regarding predictors of being active in working life at age 66) between the two cohorts, interaction terms, i.e., cohort multiplied with each independent variable (cohort*independent variable) were analyzed.

The statistical analyses for both *Study I and II* were performed using IBM SPSS, version 27.0. The results are presented as adjusted odds ratios (aOR) and 95% confidence intervals (CI) with the level of statistical significance set at $p<0.05$.

Qualitative analyses

In *Study III and Study IV,* the data were analyzed by qualitative content analysis (using an inductive approach in *Study III* and an abductive approach in *Study IV*) as suggested by Graneheim and Lundman (2004); Graneheim, Lindgren, and Lundman (2017) [88, 89] since this method enabled the analysis to be both descriptive and interpretative. The first step in the analysis was to get an overall understanding of the wholeness of all the data units, i.e., all transcribed interviews were read as a whole. The next step in the analysis process was, by using an inductive approach, to divide the text into identified meaning units relevant to each aim. Thereafter, the meaning units were condensed, i.e., the original text was shortened by removing words; without losing the content of the meaning unit. The last step in the de-contextualization was, on a low level of abstraction and interpretation, to label the meaning units with descriptive codes.

In *Study III*, the first step in the re-contextualization was to sort the codes based on differences and similarities. These different groups of sorted codes formed categories. The categories showed the manifest content of the text and had a low degree of abstraction. In the next step, categories with similar content formed sub-themes. The heading of each sub-theme was more distant from the original text and had a higher level of abstraction. Finally, one overall theme was interpreted, i.e., a common "red thread" through all the categories and sub-themes. The theme is an interpretation of the latent content of the text and represents "how" the incentives behind and being active in working life after the expected retirement age are described.

After the de-contextualization in *Study IV*, when sorting the codes and identifying groups with similar content, sub-themes evolved reminiscent of the four considerations in the swAge-model, i.e., considerations that precede the decision to either exit or extend working life when approaching retirement age. This inspired the use of an abductive approach, which implies a movement back and forth between inductive and deductive approaches [89]. In the next step, a deductive approach was used, moving from the four considerations in the SwAge-model towards the data, i.e., from a more general level to a more concrete and specific level. Each sub-theme was described with categories (derived from the nine determinants in the swAge-model) that expressed the manifest content of the text. Finally, one main theme was interpreted that linked all the sub-themes, i.e., the underlying common thread in the participants' descriptions of antecedents and experiences of voluntary exit from working life before the expected retirement age. See Table 4, for an overview of the abductive analysis process in *Study IV*.

Table 4: Overview of the abductive analysis process in Study IV

Meaning units	Codes	Sub-themes	Categories	Theme
Inductive approach (descriptive manifest content)	Inductive approach (descriptive labels)	Deductive approach (Groups with similar content were found to be reminiscent of the four considerations in the swAge model)	Deductive approach (concept-driven method based on the nine determinants in the swAge model, expressing manifest content)	Inductive approach (interpretive latent content)
E.g., I have arthritis, so I have pain in my joints. I also have back pain, so the main reason to stopped working was because I have pain problems (I.8).	E.g., Pain problems, exhaustion, and illness development	E.g., Health benefits with an early exit from working life (Inspired by the first consideration)	E.g., Own health status, the possibility for recovery time, and the work environment contributed to poor health (derived from three of the nine determinants)	Choosing freedom for increased well-being in one's overall life

Ethics

Study I–IV ethical applications were necessary according to the guidelines of the Declaration of Helsinki [90]. For *Study I* and *Study II*, ethical permissions were obtained when the SNAC project started in 2001 from the Regional Research Ethics Committees at Karolinska Institute: KI reg.no 01-114 and reg.no 2013/828-31/3 and at Lund University: LU reg.no 128-00, reg.no 604-00 and reg.no 744-00. Written and oral consent were obtained from the participants, who were also informed that they could end their participation at any time. For each follow-up, a new ethical permission has been sent in and approved. During the research process, changes were made in the ethical legislation that requires additional specifications and information to be given to participants. To conform to this, the documents with information to the participants as well as the signed informed consent form were adapted to the new legislation. However, this new legalization was introduced after the time of data collected in *Study I and Study II*. When the applications to use the data for *Study I* and *Study II* were sent to the respective research centers, the aims of the studies in which the data were to be used needed to be approved by the respective research managers. This is because the aims needed to correspond to the overall purpose on which the SNAC ethical permission to collect data was based. Data obtained from the SNAC was deidentified and coded with serial numbers.

Ethical approval for *Study III* and *Study IV* was granted by the Swedish Ethical Review Authority, Dnr 2021-04236. The participants were given both written and oral information about the aim of the respective study and were informed that participation was voluntary and that it was possible to withdraw at any time, without further explanation. Before each data collection, a written informed consent statement was obtained. To protect the privacy of the participants and the confidentiality of their personal information, i.e., name and address; their personal data were only accessible to the first author in each study. Data were coded with numbers before the transcription of the interviews and the analysis process.

Results

Study I

The results from the comparative cross-sectional analyses showed a significant increase in the proportion of participants being active in working life for all age groups in 2013–2015 (T2) vs. 2001–2003 (T1) (p-values <0.001). In the age group 60 years, participation in working life increased from 59.0% to 77.3%, in the age group 66 years from 6.7% to 26.6%, and in the age group 72 years from 3.3% to 10.4%. This was also confirmed in the logistic regression analyses that were adjusted for gender and level of education. The analyses showed significant positive associations with the outcome variable being active in working life and the independent variable time, i.e., T2 (2013–2015) vs. T1 (2001–2003). The odds for being active in working life at T2 vs. T1 were in the age group 60: aOR = 2.07 (95% CI = 1.69–2.59), in the age group 66: aOR = 3.96 (95% CI = 2.89–5.43) and in the age group 72: aOR = 2.77 (95% CI = 1.56–4.91). The results from the analyses that aimed to investigate changes over time with interaction variables also confirmed that the most prominent increase in participation in working life was among the age group 66 since those analyses regarding being active in working life, after adjusting for gender and educational level, revealed that the gap between age group 60 and age group 66 significantly decreased.

The adjusted (for time, gender, and level of education) logistic regression analyses stratified by age group showed age-specific differences in factors that were significantly associated with being active in working life. In the age group 60, all independent variables were significantly associated with being active in working life except gender. While in the age groups 66 and 72, men vs. women had significantly higher odds of being active in working life. In the age group 66 years: aOR = 1.46 (95 % CI = 1.10–1.92) and in the age group 72 years: aOR = 1.84 (95 %CI = 1.12–3.03). Level of education, i.e., university vs. primary or lower secondary, was significantly associated with being active in working life in all three age groups. In the age group 60, the analyses showed an aOR = 2.65 (95% CI = 1.90–3.70), in the age group 66 an aOR = 3.54 (95% CI = 2.22–5.64), and in the age group 72 an aOR = 2.76 (95 % CI = 1.35-5.61). While the level of qualification for the occupation, i.e., SSYK level 4 vs. level 1 was only significantly associated with being active in working life in the age group 60: aOR = 5.35 (95% CI = 3.19–8.97) and in the age group 66: aOR = 4.55 (95% CI = 1.88–10.94). The health status variables were only significantly associated with being active in working life in age groups 60 and 66. In the age group of 60, self-reported good health vs. ill health revealed an aOR = 3.19 (95% CI = 2.59–3.93) and none-one disease vs. two or more diseases revealed an aOR = 2.16 (95% CI = 1.76-2.66). In the age group of 66, self-reported good health vs. ill health revealed an aOR = 1.53 (95% CI = 1.13–2.07)

and none-one disease vs. two or more diseases revealed an aOR = 1.65 (95% CI = 1.24–2.17). All the work environment variables were significantly associated with being active in working life in the age group 60 as follows: no experience of being exposed to the psychical work environment aOR = 1.88 (95% CI = 1.53–2.31), no experience of physical or mental strain at work aOR = 2.19 (95% CI = 1.78–2.69), and no negative experiences when relating with superiors or colleagues aOR = 1.68 (95% CI = 1.27–2.22). The same applies to light physical activity required at work vs. heavy aOR = 1.53 (95% CI = 1.20–1.96) and satisfying working life vs. unsatisfying/neutral aOR = 1.80 (95% CI = 1.39–2.33). In the age group 66, the significant associations remained only in the variable no experience of being exposed to a heavy physical work environment aOR = 1.41 (95% CI = 1.03–1.94), and light physical activity required at work vs. heavy aOR = 1.59 (95% CI = 1.102.30). None of the health status or work environment variables were significantly associated with being active in working life in the age group 72.

Regarding changes over time in factors associated with being active in working life, in the adjusted analyses, none of the other interaction variables, except age*time showed any significant changes between T1 and T2. However, in the unadjusted analyses, the gap between the level of qualification for occupation SSYK level 3 and level 4 regarding being active in working life significantly decreased. While not having negative experiences in relationships with superiors or colleagues were strengthened at T2 vs. TI regarding the odds of still being active in working life. See Table 5 for an overview of the results of *Studies I and II.*

Study II

The results from the descriptive statistics showed that the mean value for working hours at age 66 was 28.5 hours in Cohort 1 and 27.9 hours in Cohort 2. The corresponding value in Cohort 1 at 72 years was 17.2 hours a week. In Cohort 1, 27.5% of the population was still active in working life at age 66, and the corresponding value in Cohort 2 was 33.2%. However, in the analyses aimed at investigating possible differences over time, i.e., between the two cohorts, the results showed that cohort as an independent variable, gave non-significant results in regard to being associated as a predictor of being active in working life at age 66.

The descriptive analysis of the participant's health status at baseline revealed that in both cohorts there were higher proportions of having none to one diagnosed disease vs. two or more diseases (71.0% in Cohort 1 and 70.3% in Cohort 2) and of no self-reported ill health vs. self-reported ill health (76.6% in Cohort 1 and 71.6% in Cohort 2). Regarding work environment factors, there were higher proportions of reported good work satisfaction vs. bad or neutral work satisfaction (89.1% in Cohort 1 and 88.1% in Cohort 2).

The results from the adjusted (for gender) logistic regression analyses revealed that in Cohort 1 only the level of qualification for the occupation, i.e., SSYK level 4 vs. level 1 or 2 was a significant predictor (aOR = 1.69, 95% CI = 1.01–2.82) for being active in working life at age 66. This was also a

significant predictor in Cohort 2 (aOR = 2.06, 95% CI = 1.41–3.02). In Cohort 2, there were an additional three predictors of being active in working life at age 66 found, i.e., having a university education vs. primary or lower secondary education (aOR = 2.31, 95% CI = 1.39–2.83), having none to one diagnosed disease vs. two or more diagnosed diseases at age 60 (aOR = 1.57, 95% CI = 1.07–2.30), and having a light vs. heavy level of physical activity required in their main occupation at age 60 (aOR = 1.59, 95% CI = 1.02–2.48). However, those health and work environment-related predictors became non-significant after adjusting for both gender and level of education. The two included separate cohorts with a difference of six years at baseline enabled analyses aimed at examining differences in the predictors of being active in working life at age 66 during those six years. Only one of the interaction variables, i.e., the odds of being active in working life at age 66 and having a medium level of physical activity required at work vs. a heavy level at age 60 increased during the period studied. It showed significant changes (aOR = 2.55, 95% CI = 1.04–6.25). However, this also enabled analysis with both cohort 1 and cohort 2 combined. The results gave the same predictors as in the analysis that only included Cohort 2, except for gender, which also became a significant predictor (aOR = 1.32, 95% CI = 1.01–1.74) of being active in working life at age 66.

The results from the unadjusted regression analysis showed that being a man vs. a woman significantly predicted still being active in working life at age 72 (OR = 2.48, 95% CI = 1.26–4.88). The result remained significant after adjusting for the level of education (aOR = 2.58, 95% CI = 1.29–5.13), as well as after adjusting for SSYK level (aOR = 2.64, 95% CI = 1.32–5.28). When adjusting for gender, working in an occupation that requires at least three years (typically four or more years) of university education vs. working in an occupation with low educational requirements, significantly predicted still being active in working life at age 72 (aOR = 2.17, 95% CI = 1.05–4.51). See Table 5 for an overview of the results of *Study I* and *Study II*.

Table 5: Overview of results in Study I and II, X=significant associations (Study I) and significant predictors (Study II) of being active in working life.

Independent variables	**Study I**: Two cross-sectional samples, sampled 12 years apart, including age groups 60, 66, and 72.			**Study II**: Two longitudinal Cohorts, sampled six years apart, including participants aged 60 years and being active in working life	
Time	Time (12 years, i.e., 2001–2003 and 2013–2015) as an independent variable was **significantly associated** with being active in working life among all age groups.			Time (6 years, i.e., 2001–2003 and 2007–2009) **was a non-significant predictor** of being active in working life at age 66 after a 6-year follow-up.	
	60 years	66 years	72 years	66 years (6-year follow-up)	72 years, (12-year follow-up)
Gender: Man (ref. woman)		X	X	X	X
Education: University (ref. primary or lower secondary)	X	X	X	X	
Level of Qualification for the Occupation: SSYK level 4 (ref. level 1 or 2)	X	X		X	X
No more than one diagnosed disease: (ref. two or more diagnosed diseases)	X	X		X	
Self-reported ill-health: No (ref. yes)	X	X			
Not been exposed to something affecting your health in the physical work environment	X	X			
No experiences from work that entailed mental or physical strain	X				
Negative experiences in relations with superiors/ work colleagues	X				
Light physical activity required in work: (ref. heavy)	X	X		X	
Good work satisfaction: (ref. bad/neutral)	X				

Study III

The results from the inductive qualitative content analysis in this study revealed four sub-themes and one main theme that reflected the incentives behind and experiences of being active in working life after age 65. The sub-themes were: 1) sustained external resources, which includes the categories of socially enriching, maintained everyday routines, and economically beneficial; 2) sustained internal resources, which includes the categories of good for my cognitive function, good for my physical ability, and increases my vigor; 3) added meaningfulness, which includes the categories of I am still needed, work satisfaction, and I am still capable; 4) having flexible working conditions, which includes the categories of I decide for myself what, I decide for myself when, and I decide for myself how much. The unifying main theme was interpreted as "working increases feelings of vitality". The theme, sub-themes, and categories with representative citations are presented in Figure 3.

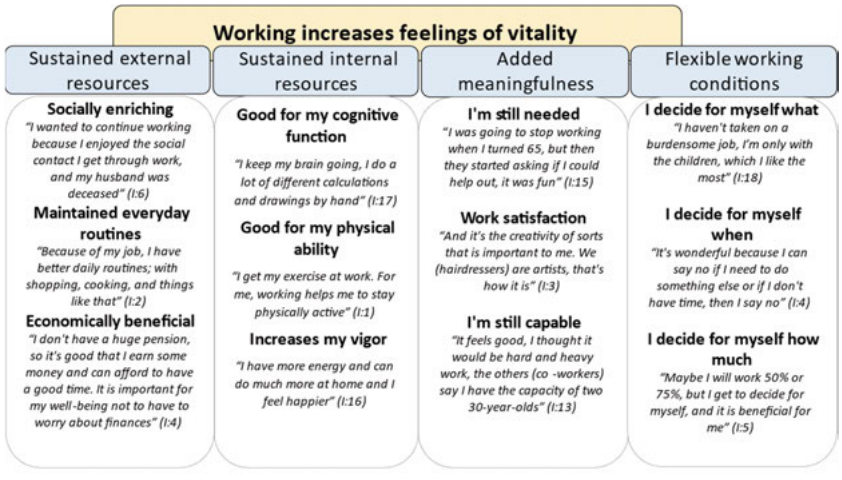

Figure 3: An illustration of the main findings of the results in *Study III*. The parentheses indicate from which coded participant the quotes were made.

Sustained External Resources

The participants described that working sustained their external resources because they felt that it was socially enriching. For example, through experiences of fellowship and collaboration with co-workers, as well as meeting other people in working life e.g., customers. Some participants had the experience that working life facilitated social interactions with people of different ages, which was described as a positive resource since most of the participants' acquaintances were the same age as themselves. Working life also contributed to the maintenance of a healthy and "normal" circadian rhythm. The participants believed that maintaining everyday routines through working life also benefited their everyday activities and structure in their overall life such as house

cleaning and cooking routines. Another incentive behind still being active in working life was the financial benefits, which the participants described as a way to uphold their external resources. Some participants described that due to a low pension, their salary from work is what enabled them to maintain their standard of living. Additionally, some participants described that being able to e.g., travel, save money, or not have to worry about bills was something that strengthened the participants' well-being in their overall life.

Sustained Internal Resources

The participants described that working sustained their internal resources because they felt that it maintained their cognitive functions. Performing stimulating and challenging tasks at work was experienced as something that helped to keep their brain active. Furthermore, being pushed to learn new things at work, as well as stay updated regarding their own job was believed by the participants to maintain their cognitive capacity. Being active in working life was also described as something that promoted the participants' physical activity and therefore it maintained their physical ability and health. Examples of this are the physical requirements at work or getting to the workplace by walking or cycling. Additionally, some of the participants described how coping with physical burdens at work also encouraged them to seek physical exercise outside of work. The participants also described that still being active in their working life was increasing their vigor, which was beneficial in their overall life, and not just at work. For example, working life facilitated inner energy, the participants felt joyful and they believed that working life maintained their courage e.g., in social contexts and daring to ride a bike.

Added meaningfulness

The participants described how working added meaningfulness to their overall life since it felt good to still be sought after in working life due to their experience and competence. Some participants also experienced a sense of meaningfulness when they were able to contribute their expertise to occupations with staff shortages. Another incentive behind still being active in working life after the expected retirement age was experiencing genuine job satisfaction. Some of the participants described that working encouraged creativity and stimulation, and if the working tasks were considered pleasurable, their age had no impact on their decision to stay active in their working life. The participants also described that working added feelings of meaningfulness when they experienced a sense of still being capable. An example of this is when they were able to manage difficult tasks at work or support younger co-workers with their skills.

Having Flexible Working Conditions

The participants experienced that the opportunity to have control over which tasks they had at work contributed to their decision to remain active in working life after the expected retirement age. This enabled a new, more positive perception of work as they could opt out of tasks that were previously perceived

as burdensome. Another incentive for extending their working life was the flexibility regarding to what extent, and when, they felt they could and wanted to work. This meant they could have a sufficient balance between work and leisure that the participants described as beneficial to their overall health and well-being.

Study IV

The results from the abductive qualitative content analysis in this study revealed four sub-themes and one main theme that reflected on the antecedents and experiences of voluntary exit from working life before the expected retirement age. The sub-themes were based on the four considerations in the theoretical swAge-model that precedes the decision to either leave or extend working life. The sub-themes were: 1) health benefits with an early exit from working life, with the categories of own health status, the possibility for recovery time and the work environment contributed to poor health; 2) having economic conditions that enable an early exit from working life, which included the categories of offers from the employer and financial compromises; 3) social benefits with an early exit from working life, which included the categories of enabling more time with my own social network and a decreased social context at work; 4) enable self-fulfillment activities in senior years, which included the categories of enabling time for activities beyond work and decreased job satisfaction. The unifying main theme was interpreted as "exiting working life was considered to be choosing freedom for increased well-being in one's overall life". The theme, sub-themes, and categories with representative citations are presented in Figure 4.

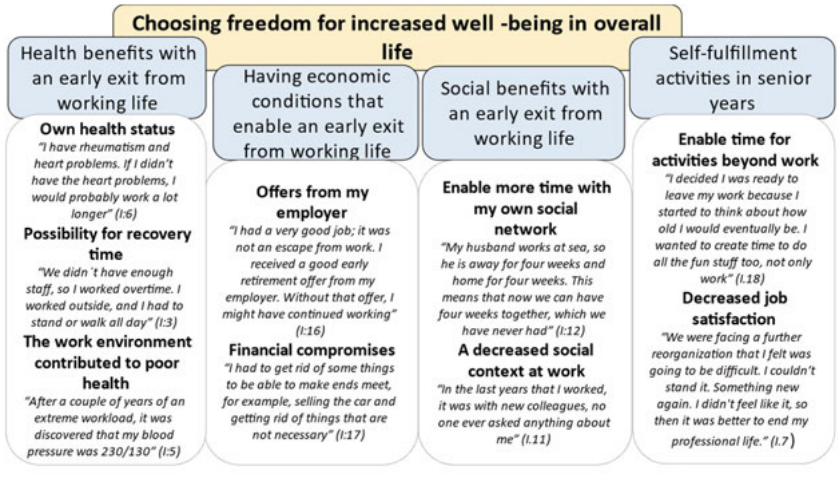

Figure 4: An illustration of the main findings of the results in *study IV*. The parentheses indicate from which coded participant the quotes were made.

Health Benefits with an Early Exit from Working Life

Before the decision was made to exit working life early, the participants had considered the health benefits of early retirement. The problems they had due to their diagnosed diseases contributed to their decision since e.g., pain problems or cardiovascular diseases made it hard to manage the physical activities their work required. The participants described that they lacked enough recovery time, and in their leisure time they did not have the energy to get involved in self-care activities they knew would improve their health. Stressful working conditions contributed to health problems e.g., anxiety or sleeping difficulties. Some participants developed hypertension, coped with a destructive alcohol intake, or were diagnosed with severe depression, which they related to their working environment.

Having Economic Conditions That Enable an Early Exit from Working Life

Economic considerations were preceding the decision to exit working life early. Some participants were offered favorable pension plans from their employers, which meant that exiting working life early would not have a tangible effect on their financial situation. Others would need to carefully consider if they would be able to withdraw from working life early. Some participants described that before they made the decision to exit working life early, they made plans and compromises to cut unnecessary costs e.g., no longer owning a car. The participants described how they prioritized their health and well-being over better economic conditions.

Social Benefits with an Early Exit from Working Life

Before making the decision to exit working life early, the participants considered the social benefits of early retirement. Being able to freely arrange all their time facilitated better social interaction within the participants' own social context. One circumstance that preceded the decision made to exit from working life early was the desire to spend more time with family and friends. Many of the participants' previous co-workers had quit or retired and they experienced a decrease in their social inclusion at work, and they anticipated their social contexts outside of work would improve with retirement. Working conditions also played a part in their decision to exit working life early when e.g., they did not have any co-workers and they anticipated improved social benefits when they retired.

Enable Self-Fulfillment Activities in senior years

Considerations of creating time for self-fulfillment activities were circumstances that preceded the decision to exit working life early. The participants expressed that after a long working life, they wanted to have time to engage in activities beyond work. This consideration became more prominent if the participants had a family member or an acquaintance who unexpectedly acquired a debilitating illness/disease or death. The participants described that they wanted to make time for meaningful activities while they still had good health.

Some participants described that they have had a great commitment to work and felt job satisfaction during their working life, but work took up a very large part of their lives and it was time for other activities. Others experienced decreased job satisfaction during the last years of their working life and therefore anticipated better opportunities for self-fulfillment activities with retirement. Their decreased job satisfaction was due to e.g., changes in working conditions, reorganization, and resource-saving actions that impaired the conditions necessary to carry out quality work.

Discussion

Main findings

This dissertation aimed to examine various aspects of being active in working life at older ages. The results revealed and verified the complexity of both pulling and pushing factors related to participation in working life at older ages. Furthermore, the results also highlighted that both intracohort differences as well as temporal aspects, i.e., intercohort differences seem to play a significant role regarding participation in working life at older ages. On a group level, health status, as in the number of diagnosed diseases and self-reported health, was associated with being active in working life at older ages. On an individual level, staying active in working life helped sustain health. For example, favorable working conditions could be beneficial to cognitive and physical health as well as to social well-being and add to a sense of meaningfulness. On the other hand, strenuous working conditions could be a detriment to health and push older workers toward an early exit from working life. However, even if some of the participants valued their jobs, they still wanted time for meaningful activities beyond work, while their health was still perceived as good. In regard to socio-demographic factors, on a group level being a man and working in a highly skilled occupation increased the odds of still being active in working life after the expected retirement age of 65 years. However, subjective experiences revealed that on an individual level, this was not always true. Staying active in working life at older ages even in lower-skilled occupations could be experienced as something that increased feelings of vitality. The pull toward an early exit from working life and choosing freedom for increased well-being may not necessarily depend on one's occupation or working life conditions.

Result discussion

The results of *Study I–IV* in this dissertation will be discussed through the theoretical framework of life course theory and a health perspective; and when suitable also synthesized. Life course theory is a universal meta-theory on aging [75] and the health perspective includes a universal meta-theory on multidimensional health [80]. The swAge model is developed as a theoretical framework for relevant aspects of participation in working life at older ages. These theoretical frameworks can combine as well as complement one another and provide a broad theoretical perspective in regard to the interpretation of the findings.

Temporal perspective on being active in working life at older ages

In line with life course theory and the principles of timing and time and place, the results in *Study I* revealed intercohort differences, regarding being active in working life, between the included age groups over time, i.e., a timespan of 12 years. Age norms are changing over time and both individual and societal expectations e.g., participation in working life, are associated with different ages in each society [75]. During the data collection of *Study I* and *Study II*, the pension system in Sweden went through a significant structural change with the implementation of a new pension system in 2003. Examples of these changes are the age for the right to remain employed increased from 65 to 67 years, pension benefits became more linked to employment over one's entire working life and it became financially advantageous to exit working life after the age of 65 [91]. In line with life course theory, an explanation for this is that in 2013–2015 vs. 2001–2003 the participants had better overall societal opportunities regarding participation in working life at older ages (especially in the age group 66 years) [75]. The new Swedish pension system did not address people born in or before 1938 who would continue to receive pensions according to the old pension system. People born in 1954 would receive all their pensions from the new system, but people born between 1939 and 1953 would receive a sliding portion from both the old and the new system. In *Study I*, the included cohorts were born between 1929–1931 and 1941–1943 and therefore had different portions of their pension from the new system. An explanation can be made that it was not only the changes in the pension system that contributed to the increased participation in working life after age 65, but also something on an individual level where age norms regarding being active in working life had changed. Research has also shown that subjective views on successful aging involve being able to participate in activities. Moreover, about 15% of the participants declared that work- and job-related activities were important aspects of successful aging [92].

The last decades increased proportion of older people in the population, an increased number of healthier years, and longer life expectancy; have been the main arguments for the reform changes e.g., a higher statutory retirement age [1]. However, these temporal health improvements have a social gradient e.g., average life expectancy is about five to six years longer for people with a university education compared to those with a primary education [93]. In Sweden, inequality regarding health has also increased in relation to education [94]. Therefore, the ability to stay active in working life due to temporal health improvements should be viewed from a heterogeneous perspective. According to WHO, the key considerations of healthy aging are diversity and inequality. Approximately 75% of the diversity in the capacities among older people is due to the cumulative impact of advantages and disadvantages across people's lives [12].

Socio-demographic factors related to being active in working life at older ages

In line with the principle of human agency in the life course theory, the results revealed intracohort differences in associations and predictors of being active in working life at older ages. This highlights that individuals construct their life course transitions through their abilities and the opportunities they may have [75]. The results can also add to earlier knowledge regarding the diversity among the aging population [12], and the complexities surrounding participation in working life at older ages. Still, general reforms aimed to yield a successive increase in the statutory retirement age are based on life expectancy [61] and do not consider a heterogeneous perspective.

Both *Study I* and *Study II* revealed that the odds of staying active in working life increased if the individual had a university education as well as working in a highly skilled occupation. In addition, having a job without a heavy physical component was also significantly related to staying active in working life at older ages. Having a higher level of education is a well-documented factor related to an extended working life among older people [e.g., 24, 26, 29, 30, 35, 43, 44]. Earlier research has suggested that people working within highly skilled occupations and having a higher level of education may also have better opportunities to prolong their working life compared to those who have a lower level of education [95-97]. Working within occupations that require a lower level of education may be related to poorer working conditions and poorer health, which is less the case for those with higher levels of education and highly skilled occupations [96]. According to the principle of life-span development in the life course theory, aging is a lifelong process and inequalities tend to increase and accumulate with aging [75]. Moreover, the results in *Study I* showed a tendency for a decreased gap in the odds of staying active in working life between high-skilled occupations and modest-skilled occupations, which is in line with earlier research [98, 99]. The results in *Study III* revealed that one incentive behind being active in working life after age 65 was because it was economically beneficial. The participants described that their salary from work enabled them to uphold their standard of living, which otherwise would have been difficult with only their pension. There is concern that a prolonged working life among people working in lower-skilled occupations is due to economic incentives [98, 100], whereas people working in higher-skilled occupations may work longer due to job satisfaction and better working conditions [98].

The results in *Study I* and *Study II* revealed that men had higher odds of still being active in working life at age 66 and 72 than women. However, in *Study I*, there were no differences in the odds of participating in working life in the age group of 60 years in regard to gender. Sweden has during the last decades actively supported women's participation in working life, and women in Sweden have compared to other countries, a high employment rate [60]. In Sweden, the government supports a dual-earner model and offers substantial public-funded caregiving facilities [101]. The life-course theory emphasizes that welfare systems and institutional contexts also play a role in individuals' life-

course development and biographies [102]. The principle of linked lives focuses on people's obligations in their social contexts e.g., the care and responsibilities for relatives [75]. Earlier research has also confirmed that women with responsibilities for next of kin seem to be more vulnerable to less advantageous conditions in a late-career job [103]. Further, a study that used a comparative gendered life course perspective showed that family ties had a greater impact on older people's working life behaviors in systems with a breadwinner caregiver structure, compared to when a dual-earner model is promoted [104]. However, a study with a Swedish context revealed that a higher proportion of women compared to men reported being informal caregivers [105]. The result of *Study IV* revealed that one circumstance preceding the decision to an early exit from working life was the experience of a stressful overall life due to a combination of work and caring for a sick relative. Despite overall equalized proportions between women and men regarding participation in working life in Sweden, the results in *Study I* and *Study II* showed that men still have higher odds of being active in working life after age 65. Surprisingly, in both *Study I* and *Study II,* the interaction terms with gender and time/cohort were not significant. Another explanation for this is that women are more represented in human-to-human occupations that entail a great deal of physical and emotional strain [13].

Health factors related to being active in working life at older ages

As mentioned above, the results in *Study I* and *Study II* revealed that on a group level, a better health status also increased the odds of still being active in working life at age 66. On an individual level, the participants in *Study III* described how being active in working life at an older age was beneficial to their health. In *Study IV*, a motive the participants had for exiting working life before the expected retirement age was to achieve increased well-being in their overall lives. According to the swAge model, on an individual level, health is a crucial aspect regarding whether older people think that they can or want to extend their working life or retire [9, 106]. Earlier research has also highlighted the inconsistency of whether a prolonged working life is beneficial to one's health [2, 7]. A systematic review that included longitudinal studies of health effects after retirement showed that exiting working life was beneficial to one's mental health, but there were inconsistencies regarding the effect on one's physical and general health [7]. Earlier research has highlighted that health after retirement and in later life mainly depends on the reasons behind the decision to exit from working life and not the retirement transition itself [70, 71, 73, 74]. A longitudinal study from the U.K. showed that those who worked beyond the statutory age had better health compared to those who had exited working life. However, these differences disappeared when adjusting for health status at baseline [71]. Another study revealed that for those who retired due to ill health, there was a correlation with declined mental and physical health in later life, but not for those who retired for other reasons. This was still true after adjusting for the level of educational and social class. Age at retirement or postponed retirement were not correlated with better health in later life after adjusting for other relevant factors [73]. The life span development in life

course theory can aid in the explanation for this, which could be that people remaining active in working life at older ages are often the ones with good health status, to begin with. According to the swAge model, the first consideration regarding eventual participation in working life at an older age is a concern regarding one's individual health in relation to work and the work environment. One of the determinants that are linked to this first consideration is diagnosed diseases and self-reported health [9].

In *Study IV* the results showed that one circumstance preceding the decision to exit working life early was the presence of illness. The participants described e.g., how pain problems sometimes made it difficult to cope with work. Having a diagnosed cardiovascular disease was also described as a reason for exiting working life before the expected retirement age. This is also in line with a study that investigated how different disorders may influence early retirement preferences. The results showed that living with arthritis or cardiovascular disease contributed to self-predicted health-related work limitations [23].

In earlier research regarding participation in working life at older ages, health has mostly been defined by the number of diagnosed diseases, self-reported health and/or functional disabilities [57]. In *Study III* the concept of health and its relation to older people's participation in working life was broadened by using a multidimensional health perspective. The results revealed subjective experiences of sustained internal and external resources by remaining active in working life. An explanation for this can be made through the multidimensional health dimension of "doing" e.g., finding a life practice that is expressed in good health habits. Internal resources are defined as e.g., physical, mental, and spiritual elements necessary for an individual to experience good health and well-being, while external resources are e.g., relationships with family members or social networks at work [107]. An explanation of the results in *Study III* can be interpreted with the health dimension of "being" i.e., striving for well-being and harmony since the participants described increased feelings of meaningfulness by staying active in working life. Previous research has shown that strengthened vitality in work goes hand in hand with increased internal and external health resources acquired through work [55]. According to the dimension of "becoming" in the multidimensional health theory, vitality can be described as a force to energy in life, joy and a willingness to live and grow [81]. These findings are in line with the results from a systematic review that aimed to explore why people who have reached retirement age continue to work. Health was a prerequisite for work to begin with, as well as a desired outcome from staying active in working life. Work was expected to maintain both physical and mental health and possibly reduce the deterioration that generally comes with chronological age [108].

It has been suggested that decisions regarding staying active or not staying active in working life, need to move beyond chronological age and instead be more closely related to one's perceptions of health [9, 43, 109]. This is an aspect that healthcare personnel in different health facilities need to consider. Treatment and caring activities may need to adjust to catch up with the changed age norms regarding being active in working life at older ages and its impact on a person's overall health and well-being. Within caring science,

professional care is obligated to embrace all aspects of a person regardless of the specific health problem. The foundation of professional care is to constantly broaden and deepen knowledge regarding the unique human being [110]

Work environment factors related to being active in working life at older ages

The impact the physical and mental work environments might have on overall health are among the determinants for staying active in working life at older ages and linked to the first consideration in the swAge model [9]. The results in *Study IV* revealed that despite a voluntary decision to exit early from working life, the decision was often closely linked to changes in the work environment that caused a deterioration in the participant's health and/or diminished the participants' job satisfaction. Earlier research in a Swedish context showed that the changes in the disability pension regulations seemed to have contributed to a decrease in the proportion of individuals receiving disability pensions or sickness benefits, while the proportion of individuals taking early retirement increased [6, 111]. It is well documented that aspects of a better work environment are positively associated with being active in working life at older ages [e.g., 40, 41, 43, 112]. In addition, the results in *Study I* showed that during the period under study, positive associations between participation in working life and the absence of negative experiences with colleagues or superiors that could affect their life or health; were strengthened. This shows the importance of striving for improved working conditions that can make it possible for more of the aging population to participate in working life. In 2021, the Swedish Work Environment Authority reported that 32% of Swedish employers had health-related problems due to work, which were mainly due to strenuous working conditions [113]. Furthermore, a previous study in a Swedish context revealed that stress and mental pressure at work were the most frequent causes of reported work-related difficulties [21]. Some managers or supervisors have described negative attitudes toward older employees with health problems affecting work production negatively [112]. The results in *Study IV* revealed that a lack of recovery time was a circumstance preceding the decision to exit working life before the expected retirement age. The participants experienced strained working conditions e.g., due to staff shortages or cuts in resources. Interviews with managers and human resources (HR) in the Swedish healthcare sector revealed that the informants had positive attitudes toward older workers, based on their long experiences and skills. However, the high workload among line managers and universal HR policies' lack of age-management strategies was considered a hindrance to the retention of older healthcare workers [114]. A study aimed to examine opportunities to accommodate work in accordance with individual needs and preferences showed that poor health was associated with a higher risk of early exit from working life at older ages. Further, this risk was increased by the joint effect of poor health and low opportunities for work accommodations i.e., regarding working hours, pace, and planning [115]. A previous study in a Swedish context revealed that I-deals (formal or informal work arrangements regarding e.g., workload

reduction, tasks, or schedule flexibility) were less prevalent among those with lower socioeconomic positions, those with shorter organizational tenure, those with poor health and among women [116].

It has been concluded that deficiencies in working conditions seem to be a threat to public health, as well as to people's ability to work until age 65 [21]. According to the swAge-model, if aspects of the work environment e.g., the pace at work, working hours, and recovery time are beneficial to a worker's overall health, the likelihood of remaining in working life increases [9]. *Study III* revealed that one of the incentives behind staying active in working life was having flexible working conditions, i.e., the participants described that they, to a large extent, could direct how much and when they were scheduled to work. These flexible working conditions contributed to a satisfying balance between work, recovery, and leisure time. Earlier research in a Swedish context, with a sample aged 64–72, also revealed that new working conditions with increased flexibility were a crucial aspect of staying active in working life. The oldest workers described that with the flexibility in their work, they were able to protect the autonomy and freedom that retirement characterized. With short-term work contracts, the workers could continually reassess their decision to work [117]. Additionally, in line with previous research [118], the participants in *Study III* described that the new flexible working conditions also enabled them to retain favored working tasks and avoid previous tasks that were described as burdensome and stressful. This enabled a changed and more positive perception of work as well as an incentive to remain active in working life. Earlier research with a quantitative approach has shown that individuals who had reduced working hours after the expected retirement age, reported significant improvements in their job quality [118].

Methodological Considerations and Limitations

Research within health- and caring science relies mainly on the postpositivist paradigm and the constructivist paradigm. The positivist assumption is related to determinism, i.e., phenomena occur due to objective correlated predicted causes and are presented with quantitative measures and statistics. The postpositivist paradigm recognizes the impossibility of being totally objective, and the goal is to be as neutral and objective as possible [119]. However, this quantitative approach may not generate knowledge about human values, among which are the meaning and necessary dimensions of human behavior [120]. The constructivist paradigm, sometimes referred to as the naturalistic paradigm, presumes that reality is diverse, subjective, and constructed by individuals. Data usually consist of narratives and are analyzed through different types of qualitative content analyses [119]. By using a quantitative approach in *Study I* and *Study II*, the goal was to generate broad general knowledge about associations and predictors of being active in working life at older ages. To achieve deeper knowledge about participation in working life at older ages, based on the findings from *Study I* and *Study II*; a qualitative approach was used in *Study III* and *Study IV*.

The Quantitative methods

The methodological considerations regarding *Study I* and *Study II* were based on a description of methodological procedures needed to achieve validity and reliability. Validity means that what is measured is relevant in the context, while reliability means that data is measured in a reliable (trustworthy) way [119].

The data used in both *Study I* and *Study II*, as mentioned above, have been derived from a large, individualized population-based study, i.e., SNAC data. The overall aim of the SNAC study is to create longitudinal databases that cover both rural and urban areas in Sweden, broad aspects of aging among the population that is 60 years and older and create conditions that further the research and analysis of various issues that surround aging after age 60. Using SNAC data made it possible to cover many factors that are known to play a significant role regarding aspects behind being active in working life at older ages. Substantial data regarding health, level of education, occupational status, working conditions, and present as well as past occupations were included. Therefore, the results of the studies were judged valid. Since the data was collected by professionals, the collected data were judged reliable. One major strength is that the data from the SNAC project enable temporal perspectives via repeated cross-sectional analyses as well as longitudinal analyses. In *Study I* and *Study II*, logistic regression analysis was used since the outcome variable in both studies was dichotomous, i.e., 1 = Yes being active in working life, and 0 = No not being active in working life [121]. Independent variables in logistic regression analysis can be continuous, categorial, or interaction terms. Although there are no strict limits to the number of independent variables that can be included, it is best with a parsimonious model having a strong predictive power and using a small set of good independent variables [119]. Initially, in *Study I* and *Study II*, univariate analysis was conducted with each independent variable and the outcome. Thereafter, the analysis was adjusted for gender and level of education, i.e., no more than three independent variables were included within each analysis. Therefore, the analysis was judged reliable.

A descriptive, comparative, and correlational design that was stratified by age group, was applied in *Study I* since the motive was to study older people being active in working life and any associations with socio-demographic, health, and work environment factors as well as any changes over time. Although the design was not longitudinal, the same 60-year-old individuals in T1 (2001-203) were also included in T2 (2013.2015) when they were 72 years of age. In the interaction analysis of the whole sample, these participants were considered as individuals since they were sampled from two independent populations and the analyses were adjusted for the age group. One limitation may be that the results came from a cross-sectional analysis, which makes it more difficult to infer causality from the associations found. A longitudinal design would have been more suited for that. However, the main interest for *Study I* was to study temporal trends, i.e., 'timing' from a life-course perspective, and compare factors associated with older people's active participation in working

life within different age groups, i.e., 'time and place' from a life-course perspective.

Since the motive for *Study II* was to study socio-demographic, health, and work environment factors as possible predictors of still being active in working life at ages 66 and 72, as well as any changes over time in the predictors of still being active in working life at age 66, a longitudinal design was applied. The outcome measure, being active in working life, was defined as working at least one hour a week. As a result of this definition, a large difference in the minimum and maximum values was generated among those who were active in working life. However, it is important to emphasize that the majority, i.e., in the 50 and 75 percentiles of those who were active in working life at the age of 66 worked 30–40 hours a week in both cohorts. Therefore, the sample was judged valid. We only included participants who were active in working life at age 60, which led to the exclusion of people who were on full sick leave or unemployed. This could explain the skewed distribution in the independent health status and work environment variables and be a limitation in this study. However, with a dichotomous outcome variable, there is no requirement for normal distribution; logistic regression can handle a skewed amount of data [121]. The proportion of dropouts between the follow-up time points, in regard to outcome, varied between 17–19%. The remaining, over 80% of the study population, was considered an acceptable response rate [119].

Since the data in *Study I* and *Study II* covered both rural and urban areas, the results may be generalized in Sweden. Generalization might not apply on an international basis since the surrounding circumstances differ within different countries and cultures. However, the results may still be of international interest regarding the heterogeneous conditions of those working beyond age 65.

The Qualitative methods

The methodological considerations regarding *Study III* and *Study IV* were based on a description of methodological procedures needed to achieve trustworthiness. The concepts of credibility, transferability, dependability, conformability, and authenticity are cornerstones of trustworthiness [89, 122].

Credibility is a criterion for evaluating trustworthiness in qualitative studies and refers to the level of confidence in the truth of the data, results, and interpretations that have been made [122]. To achieve credibility regarding the included participants in *Study III* and *Study IV*, the inclusion criteria for each study were closely connected with the aims. Furthermore, the goal for both studies was to include participants with a rich variation regarding experiences of remaining active in working life for at least one year after age 65 or exiting working life at least one year before age 65 [89]. In *Study III* both purposive and snowball sampling were utilized, and in *Study IV* only snowball sampling was used. A limitation of the snowball sampling strategy, also known as chain sampling or network sampling, is that the sample may have been restricted to a narrow network of acquaintances [119]. However, the samples consisted of participants with varied characteristics that described varied experiences relevant to the aim of the studies. Transferability refers to the possibility of

transferring the findings into other settings [89, 122]. To facilitate the evaluation of credibility and transferability, a detailed description of the sampling and characteristics of the participants (Table 3) has been provided. One limitation in Study III might be that a few of the participants were active in working life only 20–35 %. This is mostly due to the relatively high mean age of the participants in *Study III*. However, during the interviews, those participants revealed that they were fully employed up to the age of 67. In regard to the participants included in *Study IV*, a few had exited working life about five years before the data were gathered and therefore might have had a biased memory regarding the antecedents of their decision. Semi-structured guides were used to achieve dependability, i.e., the degree of documented and described research procedures that enable someone outside the research team to follow the research. The prepared interview guides were used to make the procedure replicable, as well as to ensure that the interviews focused on the same topics. All interviews in *Study III* and *Study IV* were conducted by the first author who is a registered nurse and Ph.D. student with previous experience in communication and interviewing in clinical practice and research. A limitation of *Study III* and *Study IV* might be that the duration of some of the interviews could be considered rather short. However, there is no strict recommendation regarding the volume of the data, it is rather the quality of the data and that there is sufficient variation in the data necessary to answer the aim that is important [90]. After the completion of all the interviews in both *Study III* and *Study IV*, it was determined that the data was sufficiently rich in regard to each of the aims. However, when reflecting on the contribution from the interviews, the interviews with the longer duration revealed the greatest depth in the results. The data in *Study III* and *Study IV* were analyzed according to the qualitative content analysis process [88, 89, 123]. One of the advantages of using qualitative content analysis is that this method offers researchers various alternative methodological approaches, i.e., an inductive, deductive, or abductive approach, which can be chosen based on the purpose of the study [89, 124]. *Study III* utilized an inductive approach, i.e., a movement from data to a theoretical understanding. *Study IV* utilized an abductive approach with a movement back and forth between data and theory, which makes it possible to integrate the surface e.g., of a phenomenon with deeper structures [89]. In contrast to other qualitative methods of analysis e.g., hermeneutics, phenomenology, or grounded theory; qualitative content analysis is not based on any specific theory or philosophy [125]. This can be seen as an advantage when the researcher wants to use a different theory that is based on their purpose or the results that have emerged, and thereby reducing the risk of threats to various credibility aspects of a study. The assessment of confirmability can be seen as the researcher's capacity for neutrality and objectivity [122]. The first step of the analysis was conducted by the first and last authors. All co-authors have previous health science experience in research, education and practice. During the analysis process, the co-authors discussed the identified categories and sub-themes until a consensus was reached. To facilitate the assessment of the credibility, dependability, and transferability of the data analysis in *Study III* and *Study IV*, the analysis processes are described in detail, both in text and tables that illustrate the main

results from quotes→ categories → sub-themes → themes [88, 124]. The representative quotes would also contribute to the facilitation of the assessment of the authenticity of the data analysis.

Conclusion and future research

The present results confirm and further highlight the complexity regarding the factors and experiences involved in being active in working life at older ages. From a group-level perspective, participation increased in working life after the expected retirement age of 65 years during the first decade after the major Swedish pension reform. However, during the same period, there did not seem to be any obvious changes regarding factors associated with staying active in working life at older ages. Being a man, working in a high-skilled occupation, having a light level of physical activity at work and having fewer diseases increased the likelihood of still being active in working life after age 65. However, regarding the odds of remaining active in working life at older ages, there seems to be an ongoing decrease in the gap between the higher and lower levels of qualification for occupation. Surprisingly, no significant changes were found in the gap between women and men, despite equalized proportions of men and women being active in working life at younger ages. This emphasizes the importance of focusing on the development of reforms that aim to facilitate ways for older people to remain active in working life from a heterogeneous gender perspective. Furthermore, this highlights a reason to extend research and knowledge on how this gendered inequality might be managed and decreased. Factors associated with participation in working life at older ages seem to be age-specific. Finding the factors that increased the odds of being active in working life among the age group of 72 years proved to be challenging, which is why future research that aims to examine working life in older age groups is necessary. With an ongoing successive increase in the statutory pension age, it is especially important and urgent to increase the possibilities for healthy aging in the workplace. From an individual level, the results highlighted the importance of embracing a broader view of the interplay between health and the work environment and its consequences on an individual's overall life context. Regardless of chronological age, staying active in working life can increase feelings of vitality, the innermost dimension of health. Further actions and research supporting flexible working conditions, especially for disadvantaged senior workers should be given high priority. The results have also revealed a substantial variety of motives preceding the decision to voluntarily early exit from working life. Even if the decision to exit working life was voluntary, it was often closely linked to a deteriorated health status combined with strenuous work. On the other hand, social benefits and existential thoughts also "pulled" older workers out of working life. Further knowledge regarding the mechanisms behind an early exit from working life is therefore also needed.

References

1. United Nations. World Population Ageing 2019: Highlights. Department of Economic and Social Affairs, Population Division. New York: United Nations; 2020;(ST/ESA/SER.A/430).
2. Avendano M, Cylus J. Working at Older Ages: Why it's important, how it affects health, and the policy options to support health capacity for work. In: Sagan A, Normand C, Figueras J, North J & White C, editors. European Observatory on Health Systems and Policies. Copenhagen, Denmark); 2019. PMID: 31820889.
3. Ogg J, Rašticová M. Introduction: Key Issues and Policies for Extending Working Life. In: Ní Léime A, Ogg J, Rašticová M, Street D, Krekula C & Bédiová M et al., editors. Extended Working Life Policies. Springer, Cham; 2020. p. 3-29.
4. Loichinger E, Weber D. Trends in Working Life Expectancy in Europe. J Aging Health. 2016 Oct;28(7):1194-213. doi 10.1177/0898264316656509.
5. The Organization for Economic Co-operation and Development (OECD). Pensions at a Glance 2019: OECD and G20 Indicators 2019 [Internet]. Paris: OECD Publishing; 2019. [cited 2023 May 22]. Available from: https://www.oecd-ilibrary.org/social-issues-migration-health/pensions-at-a-glance-2019_b6d3dcfc-en
6. Nilsson K, Östergren P-O, Kadefors R, Albin M. Has the participation of older employees in the workforce increased? Study of the total Swedish population regarding exit from working life. Scand. J. Public Health 2016;44(5):506-16.
7. van der Heide I, van Rijn RM, Robroek SJ, Burdorf A, Proper KI. Is retirement good for your health? A systematic review of longitudinal studies. BMC Public Health. 2013 Dec;13:13:1180. doi: 10.1186/1471-2458-13-1180
8. Fisher GG, Chaffee DS, Sonnega A. Retirement timing: A review and recommendations for future research. Work Aging Retire. 2016;2(2), 230-261.
9. Nilsson K. A sustainable working life for all ages - The swAge-model. Appl Ergon. 2020;86:103082. doi: 10.1016/j.apergo.2020.103082.
10. Arman R, Kadefors R, Wikström E. 'We don't talk about age': a study of human resources retirement narratives. Ageing & Society. Cambridge University Press; 2022;42(11):2588–614.
11. Shultz KS, Kelly R. Morton KR, and Joelle R. Weckerle JR. The Influence of Push and Pull Factors on Voluntary and Involuntary Early Retirees' Retirement Decision and Adjustment. J. Vocat. Behav. 1998;53: 45-57.

12. World Health Organization (WHO). Ageing: Healthy ageing and functional ability [Internet]. Geneva: World Health Organization; 2020. [cited 2023 May 22]. Available from: https://www.who.int/news-room/questions-and-answers/item/healthy-ageing-and-functional-ability
13. Krekula C, Vickerstaff S. Theoretical and conceptual issues in the extending working lives agenda. In Léime Á. N, Street D, Vickerstaff S, Krekula C & Loretto W, editors. Gender, ageing and extended working life: Cross-national perspectives. Bristol University Press; 2017. p. 27-52.
14. Meleis AI. Theoretical Nursing: Development & Progress. 6th ed. Philadelphia: Lippincott Williams & Wilkins; 2018.
15. Stynen D, Jansen NWH, Slangen JJM, de Grip A, Kant IJ. Need for recovery and different types of early labour force exit: a prospective cohort study among older workers. Int Arch Occup Environ Health. 2019 Jul;92(5):683-697. doi: 10.1007/s00420-019-01404-9.
16. Pilipiec P, Groot W, Pavlova M. The Analysis of Predictors of Retirement Preferences over Time. JPA. 2022;15(6):1-28.
17. Sousa-Ribeiro M, Bernhard-Oettel C, Sverke M, Westerlund H. Health- and Age-Related Workplace Factors as Predictors of Preferred, Expected, and Actual Retirement Timing: Findings from a Swedish Cohort Study. Int J Environ Res Public Health. 2021 Mar 8;18(5):2746. doi: 10.3390/ijerph18052746.
18. Neupane S, Kyrönlahti S, Kosonen H, Prakash KC, Siukola A, Lumme-Sandt K, et al. Quality of work community and workers' intention to retire. Int Arch Occup Environ Health. 2022 Jul;95(5):1157-1166. doi: 10.1007/s00420-021-01826-4.
19. Nilsson K, Hydbom AR, Rylander L. How are self-rated health and diagnosed disease related to early or deferred retirement? A cross-sectional study of employees aged 55-64. BMC Public Health. 2016 Aug 26; 16(1):886. doi: 10.1186/s12889-016-3438-6.
20. Wöhrmann AM, Fasbender U, Deller J. Does More Respect from Leaders Postpone the Desire to Retire? Understanding the Mechanisms of Retirement Decision-Making. Front Psychol. 2017 Aug 23;8:1400. doi: 10.3389/fpsyg.2017.01400.
21. Nilsson, K. When is work a cause of early retirement and are there any effective organizational measures to combat this? A population-based study of perceived work environment and work-related disorders among employees in Sweden. BMC Public Health. 2020 May 19;20:716. doi: 10.1186/s12889-020-08865-5.
22. Khan A, Teoh KR, Islam S, Hassard J. Psychosocial work characteristics, burnout, psychological morbidity symptoms and early retirement intentions: a cross-sectional study of NHS consultants in the UK. BMJ Open. 2018 Jul 23;8(7): e018720. doi: 10.1136/bmjopen-2017-018720.

23. Vanajan A, Bültmann U, Henkens K. Why do older workers with chronic health conditions prefer to retire early? Age and Ageing. 2020 May;49(3):403-10. doi: 10.1093/ageing/afz180.
24. De Preter H, Van Looy D, Mortelmans D. Individual and institutional push and pull factors as predictors of retirement timing in Europe: A multilevel analysis. J Aging Stud. 2013 Dec;27(4):299-307. doi: 10.1016/j.jaging.2013.06.003.
25. Van Droogenbroeck F, Spruyt B. To stop or not to stop: an empirical assessment of the determinants of early retirement among active and retired senior teachers. Res Aging. 2014 Nov;36(6):753-77. doi: 10.1177/0164027513519449.
26. de Breij, S., Huisman M, Deeg, DJH. Educational differences in macro-level determinants of early exit from paid work: a multilevel analysis of 14 European countries. Eur J Ageing. 2020; 17: 217–27. doi: 10.1007/s10433-019-00538-6.
27. Sewdas R, Thorsen SV, Boot CRL, Bjørner JB, Van der Beek AJ. Determinants of voluntary early retirement for older workers with and without chronic diseases: A Danish prospective study. Scand J Public Health. 2020 Mar;48(2):190-99. doi: 10.1177/1403494819852787.
28. Sundstrup E, Hansen ÅM, Mortensen EL, Poulsen OM, Clausen T, Rugulies R, et al. Retrospectively assessed physical work environment during working life and risk of sickness absence and labor market exit among older workers. Occup Environ Med. 2018 Feb;75(2):114-23. doi: 10.1136/oemed-2016-104279.
29. De Breij S, Mäcken J, Qvist JY, Holman D, Hess M, Huisman M, Deeg DJH. Educational differences in the influence of health on early work exit among older workers. Occup Environ Med. 2020 Aug;77(8):568-75. doi: 10.1136/oemed-2019-106253.
30. Thern E, Falkstedt D, Almroth M, Kjellberg K, Landberg J, Bodin T, Melin B, Hemmingsson T. Educational qualification differences and early labor market exit among men: the contribution of labor market marginalization measured across the working life. BMC Public Health. 2022 May 20;22(1):1015. doi: 10.1186/s12889-022-13397-1.
31. d'Errico A, Burr H, Pattloch D, Kersten N, Rose U. Working conditions as risk factors for early exit from work-in a cohort of 2351 employees in Germany. Int Arch Occup Environ Health. 2021 Jan;94(1):117-38. doi: 10.1007/s00420-020-01566-x.
32. Kang MY, Myong JP, Kim HR. Job characteristics as risk factors for early retirement due to ill health: The Korean Longitudinal Study of Aging (2006-2014). J Occup Health. 2019 Jan;61(1):63-72. doi: 10.1002/1348-9585.12014.
33. Gurgel do Amaral GS, Ots P, Brouwer S, van Zon SKR. Multimorbidity and exit from paid employment: the effect of specific combinations of chronic health conditions. Eur J Public Health. 2022 Jun 1;32(3):392-97. doi: 10.1093/eurpub/ckac018.

34. Oude Hengel K, Robroek SJW, Eekhout I, van der Beek AJ, Burdorf A. Educational inequalities in the impact of chronic diseases on exit from paid employment among older workers: a 7-year prospective study in the Netherlands. Occup Environ Med. 2019 Oct;76(10):718-725. doi: 10.1136/oemed-2019-105788.
35. Robroek SJ, Rongen A, Arts CH, Otten FW, Burdorf A, Schuring M. Educational Inequalities in Exit from Paid Employment among Dutch Workers: The Influence of Health, Lifestyle and Work. PLoS One. 2015 Aug 7;10(8):e0134867. doi: 10.1371/journal.pone.0134867. PMID: 26252013; PMCID: PMC4529245.
36. de Wind A, Leijten FR, Hoekstra T, Geuskens GA, Burdorf A, van der Beek AJ. "Mental retirement?" Trajectories of work engagement preceding retirement among older workers. Scand J Work Environ Health. 2017 Jan 1;43(1):34-41. doi: 10.5271/sjweh.3604.
37. Sewdas R, van der Beek AJ, de Wind A, van der Zwaan LGL, Boot CRL. Determinants of working until retirement compared to a transition to early retirement among older workers with and without chronic diseases: Results from a Dutch prospective cohort study. Scand J Public Health. 2018 May;46(3):400-408. doi: 10.1177/1403494817735223.
38. Wildman, JM. Life-Course Influences on Extended Working: Experiences of Women in a UK Baby-Boom Birth Cohort. WES. 2020; 34(2), 211–27. doi: 10.1177/0950017019880077.
39. Virtanen M, Oksanen T, Batty GD, Ala-Mursula L, Salo P, Elovainio M, et al. Extending employment beyond the pensionable age: a cohort study of the influence of chronic diseases, health risk factors, and working conditions. PLoS One. 2014 Feb 19;9(2):e88695. doi: 10.1371/journal.pone.0088695.
40. Scharn M, van der Beek AJ, Huisman M, de Wind A, Lindeboom M, Elbers CT, et al. Predicting working beyond retirement in the Netherlands: an interdisciplinary approach involving occupational epidemiology and economics. Scand J Work Environ Health. 2017 Jul 1;43(4):326-36. doi: 10.5271/sjweh.3649.
41. de Wind A, van der Pas S, Blatter BM, van der Beek AJ. A life course perspective on working beyond retirement results from a longitudinal study in the Netherlands. BMC Public Health. 2016 Jun 10;16:499. doi: 10.1186/s12889-016-3174-y.
42. Kato D, Kawachi I, Kondo N. Complex Multimorbidity and Working beyond Retirement Age in Japan: A Prospective Propensity-Matched Analysis. Int J Environ Res Public Health. 2022 May 27;19(11):6553. doi: 10.3390/ijerph19116553.
43. Anxo D, Ericson T, Herbert A. Beyond retirement: who stays at work after the standard age of retirement? Int. J. Manpow. 2019;40(5):917–38.
44. Madero-Cabib I, Kaeser L. How voluntary is the active ageing life? A life-course study on the determinants of extending careers. Eur J Ageing. 2015 Sep 14;13(1):25-37. doi: 10.1007/s10433-015-0355-y

45. Roy D, Weyman AK, Nolan P. Self-preservation comes at a cost: Why British National Health Service paramedics might be choosing a healthier, but poorer, retirement. SAGE Open Med. 2020 Jan 21;8:2050312120901545. doi: 10.1177/2050312120901545.
46. Sousa-Ribeiro M, Persson L, Sverke M, Lindfors P. Approaching retirement: A qualitative study of older nursing assistants' experiences of work in residential care and late-career planning. J Aging Stud. 2022 Mar;60:100994. doi: 10.1016/j.jaging.2021.100994.
47. Sousa-Ribeiro M, Lindfors P, Knudsen K. Sustainable Working Life in Intensive Care: A Qualitative Study of Older Nurses. Int J Environ Res Public Health. 2022 May 18;19(10):6130. doi: 10.3390/ijerph19106130.
48. de Wind A, Geuskens GA, Reeuwijk KG, Westerman MJ, Ybema JF, Burdorf A, et al. Pathways through which health influences early retirement: a qualitative study. BMC Public Health. 2013 Apr 3;13:292. doi: 10.1186/1471-2458-13-292.
49. Shura R, Opazo S, Calvo E. Older adults' accounts of the relationships between retirement timing and health: a descriptive qualitative analysis in Chile. Ageing Soc. Cambridge University Press; 2022;42(5):1054–78.
50. Hovbrandt P, Carlsson G, Nilsson K, Albin M, Håkansson C. Occupational balance as described by older workers over the age of 65. J Occup Sci. 2019;26:40–52.
51. Edge CE, Coffey M, Cook PA, Weinberg A. Barriers and facilitators to extended working life: a focus on a predominately female ageing workforce. Ageing Soc. Cambridge University Press; 2021;41(12):2867–87.
52. Niesel C, Buys L, Nili A, Miller E. Retirement can wait: a phenomenographic exploration of professional baby-boomer engagement in non-standard employment. Ageing Soc. Cambridge University Press; 2022;42(6):1378–402.
53. Hovbrandt P, Håkansson C, Albin M, Carlsson G, Nilsson K. Prerequisites and driving forces behind an extended working life among older workers. Scand J Occup Ther. 2019 Apr;26(3):171-183. doi: 10.1080/11038128.2017.1409800.
54. Stevens MJ, Barker M, Dennison E, Harris EC, Linaker C, Weller S, et al. Recent UK retirees' views about the work-related factors which influenced their decision to retire: a qualitative study within the Health and Employment After Fifty (HEAF) cohort. BMC Public Health. 2022; 22:116. doi: 10.1186/s12889-022-12541-1.
55. Söderbacka T, Nyholm L, Fagerström L. What is giving vitality to continue at work? A qualitative study of older health professionals' vitality sources. Scand J Caring Sci. 2022 Sep;36(3):699-705. doi: 10.1111/scs.13031.
56. Stattin M, Bengs C. Leaving early or staying on? Retirement preferences and motives among older health-care professionals. Ageing Soc. Cambridge University Press; 2022;42(12):2805–31.

57. Nilsson K, Jönsson S, Nilsson E. Senior arbetskraft – en systematisk kunskapssammanställning med fokus på mental arbetsmiljö och arbetssocial miljö i Sverige [Internet]. Gävle: Myndigheten för Arbetsmiljökunskap; 2022. Kunskapssammanställning 2022:3. ISBN 978-91-986882-9-0. [cited 2023 May 22]. Available from: https://mynak.se/wp-content/uploads/2022/04/SENIOR1-1.pdf
58. Amabile T.M. Understanding Retirement Requires Getting Inside People's Stories: A Call for More Qualitative Research. Work Aging and Retire. 2019;5: 207-11.
59. The Organization for Economic Co-operation and Development (OECD). Pensions at a Glance 2021: OECD and G20 Indicators 2021 [Internet]. Paris: OECD Publishing; 2019. [cited 2023 May 22]. Available from: https://www.oecd-ilibrary.org/docserver/ca401ebd-en.pdf?expires=1684756544&id=id&accname=guest&checksum=B6D55CCE21F90E9C143FB8AE8D67B10C
60. Fondberg R, Wimark Kreuger L. Pensionsåldrar och arbetslivets längd. Svar på regleringsbrevsuppdrag [Internet] 2022. Stockholm: Pensionsmyndigheten; 2022: VER 2022-158. [cited 2023 May 22]. Available from: https://www.pensionsmyndigheten.se/statistik/publikationer/pensionsaldrar-arbetslivets-langd-2021/pensionsaldrar-arbetslivets-langd-2021.pdf
61. Pensionsmyndigheten. Pensionsåldrar och riktålder [Internet]. Stockholm: Pensionsmyndigheten; 2023. [cited 2023 May 22]. Available from: https://www.pensionsmyndigheten.se/ga-i-pension/planera-din-pension/pensionsaldrar-och-riktalder
62. International Labour Organization (ILO). ILO estimates and projections of the economically active population: 1990–2030. 2017 edition [Internet]. Geneva: International Labour Organization; 2017. [cited 2023 May 22] Available from: https://www.ilo.org/ilostatfiles/Documents/LFEP.pdf
63. Dahlberg K, Segersten, K. Hälsa och vårdande: i teori och praxis. 1. utg. Stockholm: Natur & kultur; 2010.
64. Johansson B. Kognitivt åldrande (kapitel 3) [Internet]. Solna: Arbetsmiljöverket; 2016. Friska arbetsplatser för kvinnor och män I alla åldrar; Kunskapssammanställning 2016:8. [cited 2023 May 22]. Available from: https://www.av.se/globalassets/filer/publikationer/kunskapssammanstallningar/friska-arbetsplatser-for-kvinnor-man-kunskapssammanstallning-rap-2016-8.pdf
65. Nilsson K. Managers' attitudes to their older employees: A cross-sectional study. Work. 2018;59(1):49-58. doi: 10.3233/WOR-172663.
66. Löfqvist L, Nilsson K. Chefer – Hållbart arbetsliv i Helsingborgs stad [Internet]. Lund: Arbets- och miljömedicin Syd, Lunds universitet; 2019; 17:1–72. [cited 2023 May 22]. Available from: https://lucris.lub.lu.se/ws/portalfiles/portal/69170083/Rapport_17_2019_Chefer_H_llbart_arbetsliv_i_Helsingborgs_stad.pdf

67. Hwang P, Nilsson B. Utvecklingspsykologi. fjärde upplagan. Stockholm: Natur och Kultur Akademisk; 2019. ISBN: 9 789 127 826 977.
68. World Health Organization (WHO) [Internet]. Active ageing: a policy framework. Geneva: World Health Organization; 2002. [cited 2023 May 22]. Available from: https://apps.who.int/iris/bitstream/handle/10665/67215/WHO_NMH_NPH_02.8.pdf?sequence=1&isAllowed=y
69. Wang M, Henkens K, van Solinge H. A review of theoretical and empirical advancements. Am Psychol. 2011;66(3):204-213.
70. Halleröd B, Örestig J, Stattin M. Leaving the labour market: the impact of exit routes from employment to retirement on health and wellbeing in old age. Eur J Ageing. 2012;10(1):25-35.
71. Di Gessa G, Corna LM, Platts LG, et al. Is being in paid work beyond state pension age beneficial for health? Evidence from England using a life-course approach. J Epidemiol Community Health. 2017;71(5):431-438.
72. König S, Lindwall M, Henning G, Johansson B. Retirement as a lens for socioeconomic differences in Cognition and well-being. NJWLS [Internet]. 2018 Jun. 4 [cited 2023 May 22];8(2). Available from: https://tidsskrift.dk/njwls/article/view/106155
73. Iveson MH, Deary IJ. Early-life predictors of retirement decisions and post-retirement health. SSM Popul Health. 2019 Jun 10;8:100430. doi: 10.1016/j.ssmph.2019.100430.
74. Wetzel M, Bowen CE, Huxhold O. Level and change in economic, social, and personal resources for people retiring from paid work and other labour market statuses. Eur J Ageing. 2019;16(4):439-453.
75. Elder GH, Johnson, MK, Crosnoe R. The Emergence and Development of Life Course Theory. In: Mortimer JT & Shanahan MJ, editors. Handbook of the Life Course. Handbooks of Sociology and Social Research. Boston: Springer; 2003. p. 3-19.
76. Hess M. Rising Preferred Retirement Age in Europe: Are Europe's Future Pensioners Adapting to Pension System Reforms? J Aging Soc Policy. 2017;29(3):245-261.
77. Boissonneault M, Mulders JO, Turek K, Carriere Y. A systematic review of causes of recent increases in ages of labor market exit in OECD countries. PLoS One. 2020;15(4):e0231897.
78. Krekula C, Vickerstaff S. Theoretical and conceptual issues in the extending working live agenda. In Léime ÁN, Street D, Vickerstaff S, Krekula C & Loretto W, editors. Gender, ageing, and extended working life: Cross-national perspectives. Bristol: Policy Press; 2017. p. 27-52.
79. Scharn M, Sewdas R, Boot CRL, Huisman M, Lindeboom M, van der Beek AJ. Domains and determinants of retirement timing: A systematic review of longitudinal studies. BMC Public Health. 2018 Aug 31;18(1):1083. doi: 10.1186/s12889-018-5983-7.

80. Näsman Y. The theory of caritative caring: Katie Eriksson's theory of caritative caring presented from a human science point of view. Nurs Philos. 2020 Oct;21(4):e12321. doi: 10.1111/nup.12321.
81. Bergbom I, Nåden D, Nyström L. Katie Eriksson's caring theories. Part 1. The caritative caring theory, the multidimensional health theory and the theory of human suffering. Scand J Caring Sci. 2022 Sep;36(3):782-790. doi: 10.1111/scs.13036.
82. Ylikangas C (2017). Miljö- ett vårdvetenskapligt begrepp i Wiklund Gustin L & Bergbom I,redaktörer. Vårdvetenskapliga begrepp i teori och praktik, andra upplagan. Lund: studentlitteratur; 2017. p. 269–278.
83. Nilsson K. To work or not to work in an extended working life? Factors in working and retirement decisions. [dissertation on the internet]. Lund: Lund University; 2013 [cited 2023 May 12]. Available from: https://pub.epsilon.slu.se/9479/11/nilsson_k_130304.pdf
84. Nilsson K. The Influence of Work Environmental and Motivation Factors on Seniors' Attitudes to an Extended Working Life or to Retire. A Cross-Sectional Study with Employees 55 - 74 Years of Age. JSS. 2017; 5(7): 30–41.
85. Lagergren M, Fratiglioni L, Hallberg IR, Berglund J, Elmståhl S, Hagberg B, et al. A longitudinal study integrating population, care and social services data. The Swedish National study on Aging and Care (SNAC). Aging Clin Exp Res. 2004 Apr;16(2):158-68. doi: 10.1007/BF03324546.
86. Statistiska Centralbyrån (SCB). SSYK 2012 Standard för svensk yrkesklassificering [Internet]. Örebro: SCB, avdelningen för ekonomisk statistik; MIS 2012:1 [cited 2023 May 22]. Available from: https://www.scb.se/contentassets/c9d055b6f2114b62bd23c33602b56da5/ov9999_2012a01_br_x70br1201.pdf
87. Fitzmaurice GM, Laird NM, Ware JH. Applied Longitudinal Analysis. 2nd ed. New York: Wiley Blackwell; 2011.
88. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24(2):105-112. doi:10.1016/j.nedt.2003.10.001.
89. Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: A discussion paper. Nurse Educ Today. 2017;56:29-34. doi:10.1016/j.nedt.2017.06.002.
90. World Medical Association. WMA Declaration of Helsinki- Ethical principles for medical research involving human subjects [Internet]. World Medical Association;2022 [updated 2022-09-06; cited 2023-05-22] Available from: https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/
91. The Organization for Economic Co-operation and Development (OECD). Key policies to promote longer working lives in Sweden.

Country note 2007 to 2017 [Internet]. Paris: OECD Publishing; 2018. [cited 2023 May 22]. Available from: https://www.oecd.org/els/emp/Sweden_Key%20policies_Final.pdf
92. Jopp DS, De Feo M, Jung S, Jeswani S, Wozniak D, Damarin AK. How could lay perspectives on successful aging complement scientific theory? Findings from a U.S. and a German life-span sample. Gerontologist. 2015 Feb;55(1):91-106–106.
93. Albin M, Liljefors E, Parmsund M, Wadensjö E. Äldre i arbetslivet- en omvärldsanalys [Internet]. Stockholm: Svenska Europeiska Socialfonden.; 2017: Rapportnummer 2017/00501–1. [cited 2023 May 22]. Available from: https://eufonder.se/download/18.5073e01b16020d08de91d06a/1512550487535/%C3%84ldre%20i%20arbetslivet%20omv%C3%A4rldsanalys.pdf
94. Engström LG, Heikkinen S, Krekula C. Sweden. In: et al. Extended Working Life Policies. Springer, Cham; 2020. p. 449-58.
95. Komp K, Tilburg T, Groenou, NB. Paid work between age 60 and 70 years in Europe: A matter of socio-economic status? Int. J. Ageing Later Life. 2010;5(1):45–75.
96. Ravesteijn B, van Kippersluis H, van Doorslaer E. The contribution of occupation to health inequality. Res Econ Inequal. 2013; 21:311–32.
97. Radl J. Labour market exit and social stratification in Western Europe: The effects of social class and gender on the timing of retirement. Eur. Sociol. Rev. 2012;29(3):654–68.
98. Hofaecker D, Naumann E. The emerging trend of work beyond retirement age in Germany Increasing social inequality? ZEITSCHRIFT FUR GERONTOLOGIE UND GERIATRIE. 2015 Jul 1;48(5):473–9.
99. Kadefors R, Albin M, Östergren P-O, Rylander L, Nilsson K. Occupation, gender and work-life exits: a Swedish population study. Ageing Soc. 2017 Mar; 38:1332–49.
100. Cahill K.E, Giandrea M.D, Quinn J. F. To what extent is gradual retirement a product of financial necessity? Work. Aging Retire. 2016;3(1):25–54.
101. Halldén K, Gallie D, Zhou Y. The Skills and Autonomy of Female Part-Time Work in Britain and Sweden. Res. Soc. Stratif. Mobil. 2012 June;30(2):187–201.
102. Mayer KU. Whose lives? How history, societies, and institutions define and shape life courses. Res. Hum. Dev. 2004 May; 1(3):161–87.
103. Madero-Cabib I. THE LIFE COURSE DETERMINANTS OF VULNERABILITY IN LATE CAREERS. Innov Aging. 2017 Jun 30;1(Suppl 1):278
104. Worts D, Corna L.M, Sacker A, McMunn A, McDonoug P, Di Gessa G, Sacker, A. Understanding Older Adults' Labour Market Trajectories: A Comparative Gendered Life Course Perspective. LLCS. 2016 October;7(4):347-367.

105. Elmståhl S, Dahlrup B, Ekström H, Nordell E. The association between medical diagnosis and caregiver burden : a cross-sectional study of recipients of informal support and caregivers from the general population study 'Good Aging in Skåne', Sweden. Aging clinical and experimental research EpiHealth: Epidemiology for Health. 2018 Jan;30(9):1023–32.
106. Nilsson K, Hydbom AR, Rylander L. Factors influencing the decision to extend working life or retire. Scand J Work Environ Health. 2011;37(6):473-480.
107. Fagerström L. Livskraft och livshållning. I: Wiklund GL & Bergbom I, redaktörer. Vårdvetenskapliga begrepp i teori och praktik. 3:e upplagan. Lund: Studentlitteratur; 2012.p. 155–65.
108. Bratun U, Asaba E, Zurc J. Motives of retirement-aged workers and the importance of doing, being, becoming, and belonging: A systematic review of qualitative studies. Journal of Occupational Science. 2022; ISSN: 1442-7591. Online ISSN: 2158-1576.
109. Fasbender U, Wang M. Negative Attitudes toward Older Workers and Hiring Decisions: Testing the Moderating Role of Decision Makers' Core Self-Evaluations. Front Psychol. 2017 Jan 12;7:2057. doi: 10.3389/fpsyg.2016.02057.
110. Eriksson K. Vårdvetenskap. Vetenskapen om vårdandet. Om den tidlösa i tiden (Nursing science. The science of care. About the timeless in time). 2018; Stockholm, Liber, ISBN: 9789147106653.
111. Kadefors R, Nilsson K, Östergren PO, Rylander L, Albin M. Social inequality in working life expectancy in Sweden. Soziale Ungleichheit in der Erwerbslebensdauer in Schweden. Z Gerontol Geriatr. 2019;52(Suppl 1):52-61.
112. Nilsson K. Active and Healthy Ageing at Work—A Qualitative Study with Employees 55 - 63 Years and Their Managers. J S S. 2017;5: 13-29. doi: 10.4236/jss.2017.57002.
113. Arbetsmiljöverket. Arbetsorsakade besvär 2018 [Internet]. Stockholm: Arbetsmiljöverket; 2018: Arbetsmiljöstatistik ISSN 1652-1110.Produktnummer: AM0502. [cited 2023 May 22]. Available from: https://www.av.se/globalassets/filer/statistik/arbetsorsakade-besvar-2018/arbetsorsakade_besvar_2018_rapport.pdf
114. Jonsson R, Lindegård A, Björk L, Nilsson K. Organizational Hindrances to the Retention of Older Healthcare Workers. Njwls. 2020; 10(1): 41-58. doi: 10.18291/njwls.v10i1.118679.
115. Jonsson R, Dellve L, Halleröd B. Work despite poor health? A 14-year follow-up of how individual work accommodations are extending the time to retirement for workers with poor health conditions. SSM Popul Health. 2019 Nov 6;9:100514. doi: 10.1016/j.ssmph.2019.100514.
116. Jonsson R, Hasselgren C, Dellve L, Seldén D, Larsson D, Stattin M. Matching the Pieces: The Presence of Idiosyncratic Deals and Their Impact on Retirement Preferences Among Older Workers. Work, Aging Retire. 2021;7(3): 240–255. doi:10.1093/workar/waab003.

117. Platts LG, Ignatowicz A, Westerlund H, Rasoal D. The nature of paid work in the retirement years. Ageing Soc. 2021:1-23. doi:10.1017/S0144686X21001136
118. Sacco LB, Cahill KE, Westerlund H, Platts LG. Changes in Job Quality as People Work Beyond Pensionable Age in Sweden. Work Aging Retire. 2022;8(3), 282–95.
119. Polit DF, Beck CT. Nursing Research: generating and assessing evidence for nursing practice. Eleventh ed. Philadelphia: Wolters Kluwer; 2021
120. Rosenberg A. Philosophy of Science. A Contemporary Introduction. 3 ed. New York: Routledge; 2012. ISBN 9780415891776.
121. Menard S. Logistic Regression Analysis. 2 ed. Thousand Oaks, Calif: Sage Publications Inc; 2001. ISBN: 9780761922087
122. Elo S, Kääriäinen M, Kanste O, Pölkki T, Utriainen K, Kyngäs H. Qualitative content analysis: A focus on trustworthiness. SAGE Open, 2014; Jan-Mar: 1–10. doi: 10.1177/2158244014522633.
123. Lindgren BM, Lundman B, Graneheim UH. Abstraction and interpretation during the qualitative content analysis process. Int J Nurs Stud. 2020;108:103632. doi:10.1016/j.ijnurstu.2020.103632.
124. Elo S, Kyngäs H. The qualitative content analysis process. J Adv Nurs. 2008 Apr;62(1):107-15. doi: 10.1111/j.1365-2648.2007.04569.x.
125. Sandelowski M. Whatever happened to qualitative description? Res Nurs Health. 2000 Aug;23(4):334-40. doi: 10.1002/1098-240x(200008)23:4<334::aid-nur9>3.0.co;2-g.

Papers
Associated papers have been removed in the electronic version of this thesis.
For more details about the papers see:
http://urn: nbn:se:hig:diva-42873